

CHAPTER 1

Overview of the Chapter

This chapter presents an overview of the research, beginning with the research aims, the problem statement, the purpose of the research, the rationale for the research and the limitations experienced in the process of undertaking the research.

1.1 Aims of the Research

This study aims to investigate the problems and challenges experienced by Grade 12 Biology, Mathematics and Physical Science educators in the effective implementation of Continuous Assessment (CASS) at Grade 12 level. CASS can be defined as assessment which takes place on a continuous basis, meaning assessment which takes place on and off throughout a course or period of learning (Sieborger & Macintosh, 1998).

Further, this study seeks to determine the kinds of support provided to educators to strengthen and to sustain the effective implementation of CASS. Finally, it examines the extent to which the Grade 12 CASS marks are fair, valid and reliable.

1.2 Problem Statement

In 1999, the Minister of Education, Professor Kader Asmal invited the Cambridge International Examinations to conduct an investigation into the credibility of the Grade 12 (commonly referred to as the “matric”) examinations (DoE, 1999a). At the time, three provincial examining bodies, namely, Western Cape, Northern Cape and Gauteng had already introduced CASS as part of the teaching and learning programme. The marks generated through CASS in these provinces were also being included as part of the final examination results of their Grade 12 learners. Reporting on the state of CASS implementation in these three provinces, the Cambridge team of consultants indicated that on the evidence produced by the three examining bodies, they were not convinced that the CASS marks will be moderated in such a way that differences in the rigour and quality of work and in the awarding of marks at school level, will be brought into line between the

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thousands of centers involved (Howarth, 1999). In essence, the report highlighted that the implementation of CASS in these three provinces was problematic since there was no consistency in the manner in which CASS was being implemented. Based on their findings the Cambridge report recommended that CASS should only be introduced in the other six provinces once proper subject specific guidelines had been written to indicate the kind of work to be done and how teachers and moderators can assess the work. They further indicated that the structure and uniformity of assessment seems to be lacking (DoE, 1999a).

Despite the recommendations of the Cambridge report the Minister of Education announced that all learners exiting the Further Education and Training (FET) band as from 2001 must accumulate year marks in the subjects offered at Grade 12 level through a process of CASS (DoE, 2001d). The National Education Policy (2001) stipulates that CASS is a compulsory component of the final promotion marks at Grade 12 level (DoE, 2001d). The policy states further that the weighting of CASS must be at least 25 percent of the final examination marks, or a maximum of 50 percent in the case of practical subjects such as Music and Art (DoE, 2001d).

The period between the announcement to introduce CASS at Grade 12 level and the actual implementation thereof was short and untimely. Most provincial examining bodies had not yet instituted systems and structures to deal with this new, complex and challenging innovation. The nature of CASS demanded a dramatic shift from the assessment practices of the past. It entails the adoption of a new and complex approach to teaching and learning and in particular, it involves a change in assessment methodologies, the type of tasks given to learners and the manner in which these tasks are evaluated and feed back given to learners. The introduction of CASS meant that sufficient preparation had to be made in terms of ensuring that the systems and structures were in place to deal with this complex challenge. The main area that should have been prioritised and addressed is that of the preparation of educators to deal with CASS. Ideally, educators should have undergone high quality professional training to familiarise themselves with the new assessment methodologies which would have improved

their levels of competence and skills so that they are able to cope effectively with the implementation of CASS in their subjects.

However, having witnessed the first year of CASS implementation in 2001, both national and provincial examination authorities have realised that the implementation of CASS was problematic in certain schools (DoE, 2003c). In the analysis of the 2001 and 2002 Senior Certificate examination results by SAFCERT¹, huge disparities were found in certain schools between the raw CASS marks and the adjusted examination marks of the same learners in a number of subjects. In 2001, a total of 10 182 examination centers supplied CASS marks that were more than 20% above the adjusted examination marks (SAFCERT, 2002a). The term “examination centers” refers to all educational institutions, including schools, colleges and Public Adult Learning Centers (PALCs) that offer Grade 12 classes either on a full or part - time basis.

According to the findings of SAFCERT, “subjects are offered at many schools/examination centers by one or more educators at every school/examination center. Each of these educators, together with their learners, establishes a standard of education and compiles a year mark by means of CASS. The nature of the tasks and the standard of CASS therefore differ from school to school” (DoE, 2001b, p. 5). As revealed by the Cambridge report, SAFCERT is also of the view that there is no uniformity in the manner in which learners are assessed.

Given the well - intentioned objectives of CASS, which is the advancement of knowledge, skills and understanding that will enable learners to demonstrate competence across a range of contexts, it is essential that CASS be regarded as one part of a coherent system that leads to the holistic assessment of learners (DoE, 1999a). In the context of this study the main concern is whether educators are able to implement internal school - based assessment (SBA) so as to ensure national comparability of standards (DoE, 1999a).

¹ SAFCERT was the quality assurance council responsible for the integrity and credibility of the Senior Certificate examinations. In 2003, SAFCERT was replaced by Umalusi.

School - based assessment can be referred to as the evaluation of learner performance against a set of criteria, which takes place during the teaching and learning process in the classroom. School - based assessment may comprise assessment of oral and practical work, assessment of classroom - based work, class tests, assignments, portfolios, projects, controlled tests and examinations (DoE, 2000a).

CASS is a form of school-based assessment that is aimed at continually improving teaching and learning and provides opportunities in assessment that are logistically impossible to include in a single once - off external examination (Oberholzer, 1998). However, contrary to the multiple standards of CASS at operational level (DoE, 1999a) the external component of assessment in Biology, Mathematics and Physical Science became a national responsibility since 2001. The examination question papers in these subjects are set and moderated at national level to ensure consistency in standards across provincial examining bodies. The marking guidelines are also discussed between the national panels of examiners and representatives from provincial examining bodies and standardised to ensure that there is uniformity in the interpretation of the marking guidelines so that moderators and markers know how to apply the marking guidelines.

The formal, externally set and marked examinations in Biology, Physical Science and Mathematics sets a common standard and measures the performance of all learners in a common question paper whereas the assessment of learners in CASS lacks standardisation and is largely dependent on the educator's perception of what constitutes a national standard of achievement (Oberholzer, 1998).

Based on the research evidence that there is not an acceptable standard of CASS at operational level (DoE, 1999b; DoE, 2003c; DoE, 2002c), drastic measures are taken by Umalusi (ex SAFCERT) to reduce the impact of CASS on the examination marks of Grade 12 learners. In this regard Umalusi states that the raw CASS marks of Grade 12 learners “*do not give a true reflection of the learner's achievements in terms of the national norms and must be statistically adjusted*” (DoE, 2001b, p. 5). The CASS marks are statistically adjusted so that the mean of the CASS marks are not more than 5% above the mean of the examination mark

for every subject offered at Grade 12 level at every school (DoE, 2003c). However, Umalusi and the Department of Education regard this as an interim measure to ensure the validity and reliability of the CASS marks. It is accepted that the CASS marks cannot be standardised against the exam marks indefinitely and that appropriate measures must be taken to stabilise the CASS system so that the CASS marks can be accepted as is.

Since CASS has been introduced as an essential component of the final exit examination of the schooling phase and the fact that the validity and reliability of the CASS marks are doubted in certain instances, it is critical that the implementation of this component of the assessment system be properly investigated and appropriate measures are taken to enhance its fairness, validity and reliability. The fairness and appropriateness of examination results are always a matter of public concern (Riding & Butterfield, 1990). These measures will add credibility to the Senior Certificate examination.

Appropriate measures to enhance the fairness, validity and reliability of CASS can only be proposed if there is a good understanding of the problems and challenges that are experienced by educators with the implementation and use of CASS. The principles of fairness, validity and reliability of CASS will be examined in detail in Chapter 3. It is in this context that the purpose of this study is to investigate:

1. the problems and challenges experienced by Grade 12 Biology, Mathematics and Physical Science educators in the effective implementation of CASS;
2. the kinds of support provided to educators to strengthen and to sustain the effective implementation of CASS; and
3. to what extent the Grade 12 CASS marks are fair, valid and reliable.

1.3 Rationale for the Research

This research has been motivated by numerous reports and discussions at national level on the problems relating to CASS implementation at operational level. The report on the Audit of the Systems and processes of Examining Bodies

to implement CASS, states that the capacities of individual examining bodies differ and so are their levels of readiness to implement CASS (SAFCERT, 2002a). Investigations conducted by the Department of Education (2002a) on the role of district offices indicate that the dissemination of policy and guideline documents to schools is not being effectively managed. This investigation also adds that CASS implementation is especially problematic in poorly resourced schools. Since most poorly resourced schools are located in the rural and township areas, it is expected that CASS implementation in these schools would be problematic. The educators in the rural and township schools would therefore apply and implement CASS differently compared to those educators in areas where the provision of resources are adequate. An article by Bisseker (2003) indicates that although there have been considerable advances in education, many schools still lack basic utilities, and teachers are still under skilled and largely unaccountable for what happens in the classroom.

The report of the Ministerial Committee on Examinations (DoE, 1998), also highlights that the oral marks (and even year marks) are inflated and are at times far above the provincial average. The key findings of the National Forum for Learner Performance (NFLP) indicate that many schools are compiling CASS marks just before the commencement of the final examination and that there is a perception amongst certain educators that CASS is a separate activity from the daily teaching and learning activities (DoE, 2003c).

According to the Department of Education (2003c, p. 6) “some teachers, from their experience, will be stricter than others, others will be more lenient, others may not have the necessary experience to know what an acceptable standard is, and yet others may not even conduct the assessments but still provide some mark”. Umalusi also states that the development of assessment instruments or assessment criteria for CASS happens mainly at the upper levels of the public system due to the limited expertise among educators (Umalusi, 2002b).

Despite some of the above - mentioned shortcomings in the implementation of CASS, it is widely accepted that the introduction of CASS in the schooling phase is a major step forward in the South African education system (Oberholzer, 1998;

DoE, 2002c). However, it must be made worthwhile for teachers and learners to implement it properly (DoE, 2003c). The Report on the Investigation and Advice on a Single Examination and Assessment System for NQF levels 1 to 4 supports this view. This report indicates that SBA forms a critical part of sound assessment practice, and that, if properly conducted, it enhances both the fairness and validity of the assessment process (DoE, 2002c).

CASS helps the learner develop a variety of skills through multiple opportunities under different conditions and situations. For educators, it helps in their development through understanding, generating and creating appropriate standards. This two - fold function is expected to influence the culture of teaching and learning thereby resulting in improved learner performance.

If CASS is to count 25% of a learner's promotion mark at the most crucial point in her/his schooling career, it is axiomatic that the implementation of CASS should be thoroughly workshopped and training provided to implementers. If there are possible ways in which policy makers and others (meaning subject advisors, curriculum specialists, subject heads and school principals) can give direct help and support to the everyday classroom task of achieving better learning, then these ways ought to be pursued vigorously (Black & Wiliam, 1998).

It is envisaged that the findings from this research may be useful to:

- (a) the Department of Education who is involved in policy making, whole school evaluation, systemic evaluation, and the overall conduct of the Senior Certificate examinations;
- (b) Umalusi, who is responsible for the quality assurance of the Senior Certificate examinations and CASS, and has to ensure that the marks obtained through CASS are fair, valid and reliable;
- (c) provincial, district and regional managers who are involved in the training, quality assurance and moderation of CASS;
- (d) subject advisors and curriculum specialists who render advisory services and who play a key role in the moderation of CASS; and
- (e) educators who are involved in the implementation of CASS.

1.4 Limitations of the Research

The following limitations have had an impact on this study:

Since the sampled subject advisors and educators of Biology, Mathematics and Physical Science do not represent the entire Grade 12 Mathematics and Science subject advisors and educators and the fact that only five individuals involved in the management and monitoring of CASS were interviewed, the results from this study cannot be generalised to the entire Grade 12 population of which these participants are only a part. The study should be seen as an exploratory one.

Further, the return of questionnaires by subject advisors and their educators in certain provinces was poor. For example, in Mpumalanga, only 4 out of 12 questionnaires were returned by educators and in the case of the Northern Cape 8 out of 12 questionnaires were returned. In certain provinces, for example, KwaZulu - Natal, Gauteng and Limpopo, not all questionnaires were returned by subject advisors. This has had a limiting effect on the sample size used in this study.

1.5 Conclusion

This chapter outlined the context of the study in terms of its aims, the problem statement, the purpose of the research, the rationale for the research and the limitations experienced in the course of this research. From the problem statement it is evident that much more attention needs to be given to the implementation of CASS at Grade 12 level as it forms 25% of the final exit examination. Since the fairness, validity and reliability of the Grade 12 CASS marks impacts on the integrity and credibility of the Senior Certificate examinations, education authorities must take appropriate measures to ensure that the qualification and certification of learners exiting the schooling phase reflect their true skills, attitudes and capabilities.

Chapter 2 presents an overview of the education transformation in South Africa that has led to the introduction of Outcomes - Based Education (OBE) in schools and the introduction of continuous assessment (CASS) at Grade 12 level. Chapter 3 deals with the moderation and other quality assurance measures adopted by both the Department of Education and Umalusi to ensure the integrity and

credibility of the Senior Certificate examinations. Chapter 4 undertakes a critical review of some of the existing literature on assessment. In presenting the literature review the focus is on the research questions and the conceptualisation of the theoretical framework underpinning this study. The research design and methodology is presented in Chapter 5. This chapter further describes the research questions, the research design and methodology, the sampling framework, the instrument design, the data collection and the data analysis procedures.

Chapter 6 presents the overall results of the research and is structured according to the three main research questions. The results of the research are reported using descriptive statistics. Chapter 6 begins with a profile of the location, qualifications and experience of the sampled subject advisors and their educators. This provides a context for the interpretation of the data. The data gathered from the educators are compared and contrasted with the data reported by subject advisors. The responses from the five interviews have also been used to verify the data from the survey. This would also enhance the internal validity of the data on the implementation of CASS across the six provinces and across rural, township and urban areas. The chapter ends with a discussion on the fairness, validity and reliability of the Grade 12 CASS marks.

Chapter 7 presents a summary of the main findings of the research, a discussion on the lessons that can be learnt from the research methodology and the recommendations for further research, recommendations for educational policies relating to CASS and recommendations for educational practice at district and school level.

CHAPTER 2

CONTINUOUS ASSESSMENT IN THE SOUTH AFRICAN CONTEXT

Overview of the Chapter

This chapter focuses on the new democratic government's vision for quality public education for all learners in South Africa, which is articulated in the many policies, programmes and intervention measures adopted by the Government. It examines the rationale for the focus on Mathematics and Science, the current status of the Senior Certificate examinations and highlights the shift from a predominantly content - based approach to teaching and learning to a more Outcomes-based approach, which introduces continuous assessment (CASS) at Grade 12 level. The role of continuous assessment and the importance of teacher training, teacher development and support to implement CASS are discussed.

2.1 Introduction

The Nationalist government of pre - 1994 instituted apartheid policies that impacted negatively on education and training in South Africa. The fragmentation of the education system into 19 racially based sub - systems meant that each sub-system had its own examinations and assessment policies, which differed significantly in the manner in which teaching, and learning was conducted. These examination and assessment sub - systems entrenched inequalities in learning opportunities. Assessment practices during the apartheid era benefited the state by employing a system that deliberately and methodically disempowered its black citizenry and forced them to join the cheap labour market (SADTU, 1999).

Since examination and assessment are important in determining the educational and training opportunities for individual learners, the transformation of the education system, particularly in the area of curriculum and assessment, necessitated a radical and comprehensive change in policies, procedures and administration. With the ushering in of a new constitutional order based on the principles of equality, freedom and human dignity, a number of interventions and

new policies have been introduced to bring about uniformity, fairness and credibility in the public examination and training system.

The following section presents the transformative principles that led to the adoption of outcomes - based education to teaching and learning. Mention is also made of some of the education policies that were promulgated with the aim of improving the quality of education in South Africa.

2.1.1 The Transformative Principles

The transformation of education in South Africa emphasises the right of all to quality education. The first intent is to redress the discriminatory, unbalanced and inequitable distribution of the education services of the apartheid regime, and secondly, to develop a world - class education system suitable to meet the challenges of the 21st century (DoE, 1995). The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) makes provision for curriculum transformation and development in South Africa. The following principles are stated in the preamble to the Constitution (Government of South Africa, 1996):

- heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights;
- improve the quality of life of all citizens and free the potential of each person;
- lay the foundations for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law; and
- build a united and democratic South Africa that is able to take its rightful place as a sovereign state in the family of nations.

The above principles contribute significantly to the educational transformation in South Africa and have led to the review of curriculum and assessment in the schooling phase.

2.1.2 Policies for Educational Transformation

The Lifelong learning through a National Curriculum Framework (1996) was the first major curriculum statement of a democratic South Africa. It is based on the transformative principles of the National Qualifications Framework (NQF) that provides opportunities for people to learn regardless of their age, circumstances and the level of education and training (Education Information Centre & Independent Examinations Board, 1996). The NQF is a framework for transformation in which quality enhancement is an integral component. It seeks to bring together education and training, skills development and the needs of a critical democracy, personal, social and economic development (DoE, 2001d).

The following principles have been adopted that underpin education and training in South Africa (Education Information Centre & Independent Examinations Board, 1996):

Integration

Integration in the new education system means that education and training will be combined so that both knowledge and skills are obtained. This will enable a person to move from one place of learning to another.

Relevance

Historically, there has been little relevance between what has been taught at school and the needs of the economy and the workplace. This has been addressed theoretically in the NQF by providing opportunities for people to gain the skills, knowledge, experience and understanding necessary to build a strong, productive and skilled workforce.

Credibility and Standards

Whilst in the past, organisations, examining bodies and private institutions have had their own pass requirements, this has been changed by the establishment of the NQF which stipulates that any acceptable assessment system must now meet the standards and qualifications registered on the NQF.

Flexibility

The NQF makes it possible to achieve national qualifications through both formal and informal learning situations. A formal learning situation refers to the learning that takes place at a school, Public Adult Learning Center (PALCs), Higher Education Institution or any other institution that is recognised as an assessment provider. Informal learning refers to learning that takes place in informal situations such as in a community, or through courses offered by Non-Governmental Organisations (NGOs), churches and in the workplace.

Access and Redress

Access and redress is provided by enabling learners to enter and exit the different levels of education and training by crediting previous experience and /or qualifications.

Portability

The NQF in theory allows a person to transfer qualifications and credits more easily from one learning situation to another; for example, a person may transfer her/his credits from one learning institution to another. Although this is articulated in the framework document, in practice it is sometimes difficult to transfer credits since institutions have their own syllabus requirements.

Articulation

The NQF allows a person to move between the education and work environments, once all the relevant credits have been successfully accumulated. This means that a person can move from a work situation as in the case of an apprentice to a study situation, where she/he is able to complete her/his studies.

Progression

In terms of the NQF, any person wishing to resume their studies after a period of time will be allowed to do so. This means that credit will be awarded for experience and knowledge already gained.

Recognition of Prior Learning

This principle allows individuals to be assessed and credited for knowledge, skills and experience obtained through formal and informal learning. Although this has been mentioned in policy documents, not much is being done to afford learners the opportunity to receive recognition for prior learning. Both the South African Qualifications Authority (SAQA) and Umalusi are responsible to ensure that recognition of prior learning is effected.

Guidance of Learners

The NQF provides for the counselling of learners by specially trained individuals who meet nationally recognised standards. Here too, provision is only made in theory, without the facilities and human resources to deal with the practicalities of implementation.

The above NQF principles have been informed by the White Paper on Education and Training (1995), the South African Qualifications Act (No. 58 of 1995) and the National Education Policy Act (No. 27 of 1996). The White Paper on Education and Training (1995) emphasised the need for major changes in education and training in South Africa to normalise and transform teaching and learning in South African schools (DoE, 2002d).

One of the most significant changes in the education system is the unification of the racially based examinations into a single non - racial public examination system administered by the nine provincial education departments. Thereafter, a number of policies and interventions have been introduced with the aim of improving the quality of education of all learners.

The adoption of *outcomes - based education (OBE)* in all education and training policies is another intervention that facilitates a major paradigm shift away from content orientated learning to a liberating, learner - centred approach to teaching and learning. It also emphasizes the acquisition of skills and values.

OBE was operationalised in Curriculum 2005. The introduction of the school curriculum plan, referred to as *Curriculum 2005* - which suggests a time - scale for

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implementation began in 1998 in Grade 1, followed by Grade 2 in 1999, Grade 3 and 7 in 2000, and Grade 4 and 8 in 2001. According to this curriculum plan, learners in the General Education and Training (GET) band had to achieve a total of 66 learning outcomes during the course of their schooling career.

The new curriculum statement promotes a vision of:

“A prosperous, truly united, democratic and international competitive country with literate, creative and critical citizens leading productive, self-fulfilled lives in a country free of violence, discrimination and prejudice” (DoE, 2002b, p. 13).

According to William Spady (1999), the narrow content focus of the existing matric exam system should be replaced as soon as possible with a more performance oriented alternative that directly embodies the 7 critical outcomes and the performance challenges that youth face in today’s world of continuous discovery and constant change. Hence OBE and Curriculum 2005 (C2005) were introduced. C2005 involves learners as participants in curriculum and learning, responds to their learning styles and cultures, and builds on their life experiences and needs (DoE, 2001c).

However, in the South Africa context, the introduction of C2005 was met with much resistance amongst educators and educational managers. One of the reasons being that it was literally pushed down their throats, without sufficient training and support to implement and understand the challenges facing educators. According to Sieborger (1999), his involvement in the processes leading to the adoption of C2005 has revealed that key stakeholders (meaning educators) were not consulted during the review of the curriculum. He cited that the lack of time coupled with the authority with which the national Department of Education led this process created a situation where the new curriculum had to be accepted.

Assessment in Curriculum 2005

Curriculum 2005 was said to promote a continuous formative assessment where teachers and learners accept responsibilities for assessment, to promote

continuous learning and enable the assessment of competence and complex performances. Assessment is conducted on a continuous basis and in different ways in order to accurately record learner's progress. Hence the term “continuous assessment” (CASS) which provides opportunities for the assessment of learners in an informal and relaxed atmosphere. The importance of CASS is that it is designed to assess those attitudes, skills and values that cannot be easily assessed in for example a 2 - hour examination question paper (Oberholzer, 1999).

The adoption of CASS in line with the principles of OBE suggests that educational authorities believe that the traditional methods of assessment are not sufficient for the creation of a responsible and productive society (Oberholzer, 1998). To create a platform for the realisation of these goals, the education system must incorporate the changed principles and multiple methods of assessment from an early age.

The Assessment policy for Grades R to 9 and ABET², which caters for assessment within the framework of OBE, was launched in 1998 (DoE, 1998c). This policy provides for the conducting of systemic evaluation at the key transitional stages, viz. Grade 3, 6 and 9. Systemic evaluation is a quality assurance measure taken to evaluate the teaching and learning at Grades 3, 6 and 9. It is conducted as a means of determining on a periodic basis the strengths and weaknesses of the learning system thereby providing constant feedback to role - players for the purpose of improving performance of schools and the education system as a whole.

Another policy that is aimed at improving the quality of education is the *Whole School Evaluation (WSE)*. The WSE requires that schools conduct internal self-evaluations by analysing their strengths, weaknesses, opportunities and threats, and developing strategic plans to address ways in which the school can improve the quality of teaching and learning. External evaluations are also conducted by provincial examining bodies. As a further measure, school implementation plans

² Adult basic Education and Training (ABET) provided for at levels 1-4 on the National Qualifications Framework (NQF) and level 1 on the General Education & Training Band.

are developed for the purpose of improving the culture and quality of teaching and learning.

Many other statutes and policies exist which are aimed at improving the quality of education in South Africa. Examples of such policies are, the South African Schools Act, No 84 of 1996 (SASA) whose main aim is to promote access to quality education and democratic governance in the schooling system, the Further Education and Training Act, No 98 of 1998 (FET), Education White Paper 4 on FET (1998) and the National Strategy for Further Education and Training (1999-2001), which provides the basis for developing a nationally co-ordinated further education and training system comprising the senior secondary school component and technical colleges (DoE, 2001c). Legislation such as the Employment of Educators Act (1998) regulates the professional, moral and ethical responsibilities and competencies of teachers. The professional Council responsible for teacher conduct and professionalism, established in terms of the latter act is the South African Council of Educators (SACE) (DoE, 2001c).

Whilst emphasis is being placed on the promulgation of policies to improve the education system as a whole, regrettably very little is being done to ensure that the policies being introduced are effectively implemented (Pahad, 1998). However, it must be emphasised that a number of education policies were introduced due to political pressure and the need for accountability in the education system (Jeevanantham, 1998). The main challenge remains to evaluate the success of the many policies being implemented.

The next section examines the rationale for the focus on Mathematics and Science in this study.

2.2 Rationale for the focus on Mathematics and Sciences

“Science today is a highly globalised activity. Even in developed countries, concern is being raised about the shortage of scientists. Many scientists are also leaving their countries, namely, in Germany and Canada to join the United State’s highly successful science programme” (Government of South Africa, 2002, p. 51).

This study focuses on mathematics and science because of the diminishing number of secondary school learners taking these subjects and the poor performance of learners in these subjects. One of the aims of this study is to enhance the effective implementation of CASS so that it can contribute to the improvement in learner performance in mathematics and science.

Decreasing enrolment in Mathematics and Science

In South Africa, Mathematics and Science is fast becoming less popular amongst young learners, especially girls (DoE, 2001f). In 2002, 18 867 full - time male learners wrote mathematics on the higher Grade compared to 16 598 full - time female learners. In Physical Science the same pattern emerged, 28 279 full - time male learners wrote Physical Science on the higher Grade compared to 22 713 female learners (DoE, 2002f). The difference in the enrolment figures between the boys and girls may seem insignificant, however, considering the fact that there were approximately 38 000 more female learners than male learners who wrote the senior certificate examination in 2002, the small number of female learners taking mathematics and science is a cause for concern.

According to Bisseker (2003) there are many reasons for the low enrolment in Mathematics and Science. He indicates that the most critical being that principals are failing to ensure that teachers cover the curriculum, provinces are under-spending and failing to deliver textbooks and the national education department is failing to assure the quality of teacher’s work.

Lack of Qualifications of Professional Staff in Mathematics and Science

The findings of the TIMSS-R study indicates that 38% of pupils were taught science by teachers with no formal qualifications in science and 27% of pupils were taught mathematics by teachers with no formal qualifications in mathematics (Howie, 2001). These figures are disturbing. The level of qualifications, knowledge and skills of educators have a direct impact on the effective teaching of mathematics and sciences in the classroom.

According to the HSRC, other factors that impact on the low quality of teaching and learning in Mathematics and Science is the lack of professional staff at district offices to lend support to schools (Kanjee, Paterson, Prinsloo, Khosa, Moore, Kivilu & Pheiffer, 2001). Bisseker (2003) also adds that in 41% of districts across provinces there are no mathematics specialists. He states that district officials are unable to monitor schools due to the resistance from teacher unions to visit classrooms. This lack of direct support has impacted on the provision of quality teaching and learning over the past years.

Lack of Skills in Mathematics and Science

Research conducted by Bisseker (2003) shows that the majority of pupils are unemployed as they leave school, incompetent in Mathematics and Science and barely equipped for further study.

The concern raised here is that large numbers of learners who leave school have either not studied mathematics or science at school or even if they did, very few learners have passed with good results. Currently there is a demand for people with skills in the field of engineering, science and technology (Government of South Africa, 2002). Without the necessary knowledge and skills in these fields, the chances of becoming employed are greatly reduced. Higher Education Institutions (HEI's) are also expressing their dissatisfaction on the small number of learners that are exiting the schooling phase with Mathematics and Science (Bisseker, 2003). HEI's are also not confident that Grade 12 mathematics and science graduates possess the necessary knowledge and skills to cope with tertiary education in the mathematics and science field (Bisseker, 2003). Their concern is justified on the grounds that even the quality of passes in mathematics and science is not very good.

Table 2.1 shows the pass % for full - time learners in Physical Science and Mathematics for the period 2000 to 2002.

Table 2.1 Pass percentage of full - time learners in Physical Science and Mathematics Higher Grade and Standard Grade for the period 2000 - 2002

Subject		2000			2001			2002		
		Grade	No. Wrote	No. Pass	Pass %	No. Wrote	No. Pass	Pass %	No. Wrote	No. Pass
Mathematics	HG	38 520	19 327	50.2%	34 870	19 504	55.9%	35 465	20 528	57.9%
	SG	245 497	79 631	32.4%	229 075	72 301	31.6%	225 524	96 302	42.7%
Physical Science	HG	55 699	23 344	41.9%	48 996	24 280	49.6%	50 992	24 888	48.8%
	SG	107 486	54 884	51.1%	104 851	45 314	43.2%	102 863	56 741	55.2%

Source: (DoE, 2001f; DoE, 2002a)

HG = Higher Grade
SG = Standard Grade

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With reference to Table 2.1, although the pass rates for Mathematics Higher Grade have shown a steady improvement from 50.2% in 2000 to 57.9% in 2002, the pass rates are still relatively low since there are a significantly larger number of learners taking Mathematics on the Standard Grade than on the Higher Grade. The performance of learners in Mathematics Standard Grade is poor.

The performance of learners in Physical Science Higher Grade has improved from 2000 to 2001 but has remained more or less stable in 2002. It is disappointing to note that the number of learners taking Physical Science on the Standard Grade is approximately two times the number of learners taking Physical Science on the Higher Grade (see Table 2.1). More learners should be encouraged to take Physical Science on the Higher Grade than on the Standard Grade. However, this would depend largely on whether there are sufficient qualified and skilled educators to teach the subject on the Higher Grade.

The overall pass rate in Mathematics, Biology and Physical compared to other popular senior certificate subjects for 2001 is shown in Figure 2.1.

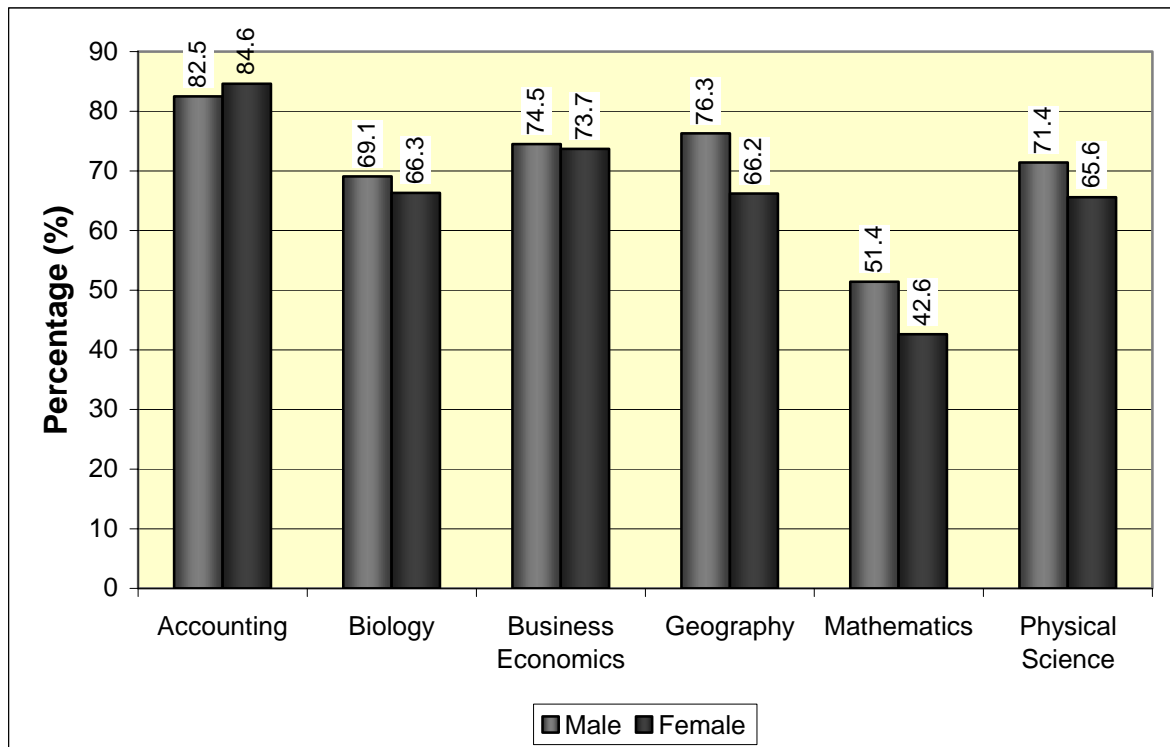
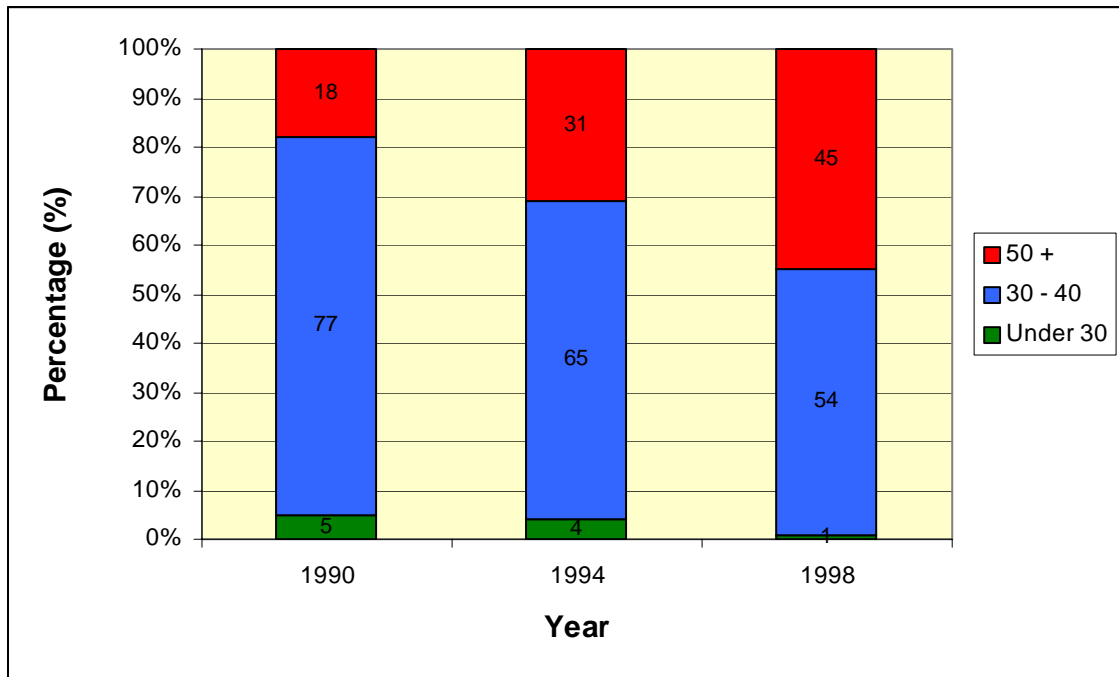


Figure 2.1 The overall pass rate in Mathematics, Biology and Physical Science compared to other popular Grade 12 subjects for 2001 (DoE, 2003b, p. 28)

The above figure shows that the overall pass rate in Mathematics, Biology and Physical Science is lower than the pass rate in the other subjects. This means that fewer learners will be obtaining the necessary skills in Mathematics and Science which will enable them to enter tertiary institutions to further their studies. According to the findings of South Africa's National Research and Development strategy, South Africa has an ageing scientific (Mathematics, Science and Technology) population (Government of South Africa, 2002). A disturbing factor is that currently about 50% of scientific output is contributed by scientists over the age of 50, as opposed to 18% in 1990. The statistics are presented in Figure 2.2.



Note: No information was available on the number of scientists between the ages of 40 and 50.

Figure 2.2 The diminishing number of scientists by age (Government of South Africa, 2002).

The above graph illustrates that the number of scientists in the age bracket of 30 - 40 is steadily decreasing. In 1990, only 5% of the population was under the age of 30. This figure decreased to 4% in 1994 and to just 1% in 1998, which confirm that the number of learners taking Mathematics and Science and qualifying in these fields is declining rapidly.

In 1994, only 4% of the total population of researchers in Science and Technology were black. Although this figure has improved to 30% today, the numbers of black researchers are still low. Figure 2.3 shows the percentage of scientific publication by race.

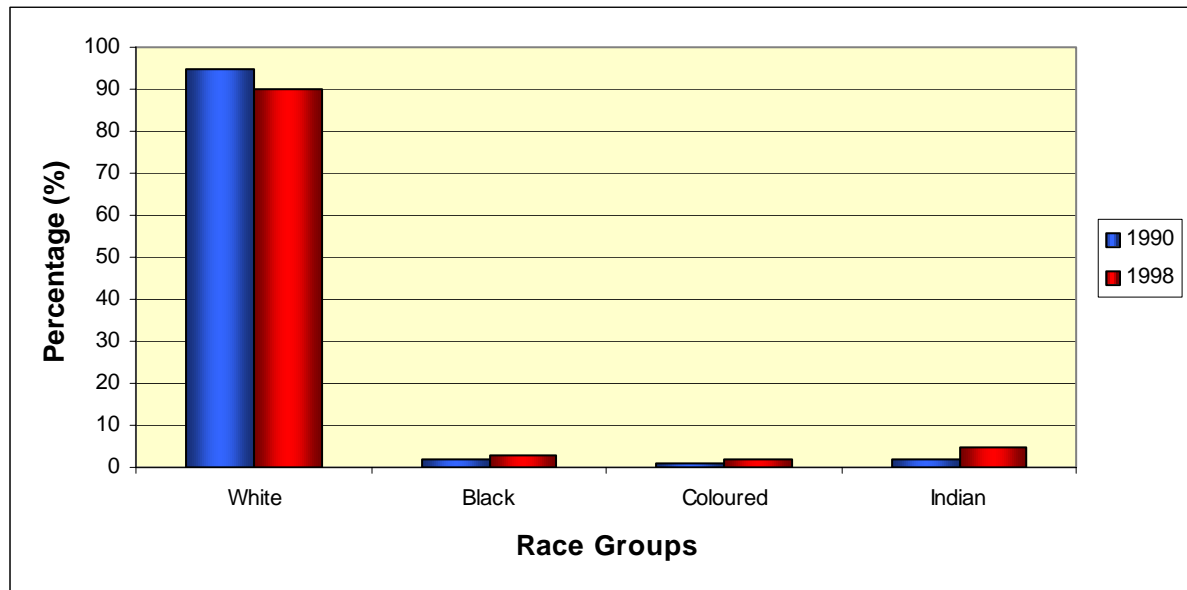


Figure 2.3 Scientific Publication by race for the period 1990-1998 (Government of South Africa, 2002).

In 1990, the white population produced approximately 95% of the scientific publication. The Black, Coloured and Indian race groups produced the other 5%. In 1998, the situation did not improve significantly. The figures illustrate the key concern, which is the low number of black learners passing Mathematics and Science at school level.

In 2000, out of a total full - time matric population of 489 900, only 20 243 African learners wrote mathematics on the Higher Grade and only 3 128 learners passed. In 2002, 3 300 black learners passed Mathematics on the Higher Grade and about 6 000 passed Science on the Higher Grade (Bisseker, 2003). Although the pass rates from 2001 to 2002 have improved in both subjects by 20% in Mathematics and Science, the actual numbers represent a pass rate of 23% for Mathematics and 22.4% for Science. Of particular interest is the variation of passes in Mathematics and Science across provinces amongst African learners.

Table 2.2 shows the total enrolment figures in Mathematics and Science for 2000 and the number of African learners taking the subject in each Grade. The table clearly reveals that a larger number of African learners are taking Mathematics and Science on the Standard Grade than on the Higher Grade. It is also

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disappointing to note that the number of learners passing these subjects is very low.

Table 2.2 Number of African learners across provinces that passed Mathematics and Science in 2000

Province	Mathematics						Physical Science					
	HG No of African Learners	Total Higher Grade Enrolment	HG No Passed	SG No of African Learners	Total Standard Grade Enrolment	SG No Passed	HG No of African Learners	Total Higher Grade Enrolment	HG No Passed	SG No of African Learners	Total Standard Grade Enrolment	SG Pass
Northern Cape	12	330	9	671	2 580	218	24	354	4	333	1 351	178
Free State	471	1685	115	12 066	15 203	2454	2098	3 797	619	5 146	6 506	2 639
Eastern Cape	362	1440	113	36 736	41 307	11101	1060	2 251	136	21 435	23 738	8 548
KwaZulu-Natal	5772	11325	746	40 367	52 750	10309	7108	13 208	1221	16 109	1 967	7 062
Mpumalanga	1381	2446	159	1 6451	18 923	3235	3567	4 866	264	7 048	8 476	2 730
Limpopo	7780	8389	1041	36884	38 262	5683	12902	13 592	1621	10 499	11 127	3 897
Gauteng	812	7332	329	20497	37 467	5478	1566	8 835	471	11 495	20 129	5 286
North West	3575	1880	595	12644	20 715	2200	5239	4 886	755	3 411	8 334	1 434
Western Cape	78	3693	21	3889	18 290	662	93	3 910	45	2 204	8 258	1 100
Totals	20 243		3 128	180 202		41 540	33 657		5 136	77 680		32 874

Source: (Bisseker, 2003)

HG = Higher Grade
SG = Standard Grade

It is plausible that the variation in enrolments and passes across provinces can be attributed to the availability of professionally qualified and competent Mathematics and Science educators especially in the rural areas where the majority of African learners attend school. In 1997, it was reported that although 85% of mathematics educators were professionally qualified, only 50% had specialised in mathematics in their training. Similarly, while 84% of science educators were professionally qualified, only 42% were qualified in science (DoE, 2001f).

The Teaching of Science subjects in schools

The teaching of science subjects is complex and the nature of work involves a lot of “finding out”. Science involves the conducting of experiments with the aid of the appropriate apparatus and chemicals. In the case of Biology for example, models of the human body are required and practical experiments are also carried out using test tubes and chemicals. If these are not made available to all schools, the task of teaching science subjects becomes problematic.

Science lessons are mostly practically orientated and teaching and learning is very much dependent on the quality of interaction and feedback between educator and learner. Black and Wiliam (1998) indicates that classroom activities such as CASS which is accompanied by on - going feedback, support and development can play dividends in terms of improving learner achievement in that formative assessment strategies can increase examination and test success. Further they indicate that to raise the standard of mathematics and science and to improve the quality of teaching in science classes, particular attention must be paid to the following:

- questions and instructions of assessment tasks must be clear. Questions and instructions must be designed to improve the learners thinking and reasoning skills; their deeper understanding of concepts, processes, laws and principles; and

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- learners should receive constructive feedback and guidance about how to improve in order to plan the next steps in their learning.

It is likely that the effective implementation of CASS in science subjects can make a difference to the teaching and learning of science subjects. However, this can only happen if educators are endowed with the appropriate qualifications, skills and training in the area of CASS.

To encourage and attract young learners to take the science courses at school, it is essential that proper guidance be given to learners. In addition learners must be made aware of the benefits of pursuing a career in the field of Mathematics and Science. But most of all, learners could be attracted to the subjects by the richness and excitement the science classroom has to offer. The manner in which CASS is conducted in the science classroom will impact on the motivation levels of learners. Improvement in the conduct of CASS will significantly improve learning in Mathematics and Science (Black & William, 1998). The main thrust is to develop, enhance and strengthen Mathematics and Sciences practices in the classroom.

The DoE Mathematics and Science Strategy

To promote learner interest in Mathematics and Science and to address the problem of quality teaching and learning the Department of Education has developed a Mathematics and Science strategy. The main aims of the strategy includes (DoE, 2001f, p. 14):

- (a) to raise participation and performance by historically disadvantaged learners in Grade 12 Mathematics and Physical science;
- (b) to provide high quality Mathematics, Science and Technology education for all learners taking the first General Education and Training Certificate and Further Education and Training Certificate; and

- (c) to increase and enhance the human resource capacity to deliver quality Mathematics, Science and Technology education.

The “100 schools project” initiated by the Department of Education entails paying special attention to the teaching and learning of Mathematics and Science in 100 schools that have been identified throughout the country on the basis of the lack of resources.

In the long term, if the education department wants to seriously address the low numbers of learners taking Mathematics and Science (Physical Science and Biology) and the poor performance of these learners, then it ought to increase the magnitude of its commitment and go beyond the 100 schools.

Against the rationale for the focus on Mathematics and Science sketched above, it is necessary to reflect on the current status of the most important exit examination in the schooling system namely the Senior Certificate examinations.

2.3 The current Senior Certificate Examination

The current Senior Certificate examinations are regulated in terms of Section 3(4) of the National Education Policy Act, 1996 (DoE, 2001d). The policy makes provision for the determination of a national education policy regarding curriculum frameworks, core syllabi and education programmes, learning standards, examination and the certification of qualifications. However, specific details regarding programme requirements are recorded in a *Résumé of Instructional Programmes in Schools*, Report 550 (DoE, 2001g).

The Grade 12 examinations (Senior Certificate examinations) are viewed by the public as the most important examination written by learners at the culmination of their schooling career. Learners perceive the success achieved in the Senior Certificate examination as a determinant of their future career prospects. The achievement of a good quality pass such as the Senior Certificate with endorsement is crucial, particularly if learners wish to enter Higher Education. A

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Senior Certificate with endorsement can only be obtained if a learner achieves a pass of 40% or more in four of the six subjects taken at the Higher Grade, providing the learner also passes two languages, namely, the language of teaching and learning (first language) and one other approved language (first or second language) (DoE, 2001g).

The Senior Certificate examinations currently serve as a measure of the effectiveness of public education in the schooling phase in South Africa. With the pressure on schools to perform in the Senior Certificate examinations, and the publishing of the names of schools that performed well to those that performed poorly, many schools have resorted to the weeding of over - age learners from their system so that the school pass rates could improve (DoE, 2002a). Research evidence shows that generally over - aged learners do not perform very well and this results in the lowering of a school's pass rate (DoE, 2002a).

Table 2.3 shows that the pass rates for the Senior Certificate examinations have steadily improved over the years, however, there has also been a steady decline in the Grade 12 - enrolment figures. The decrease in enrolments is partly due to the introduction of age - Grade norms in 1999, which reduced the number of over-age learners in the system and the "constriction" by some schools to discourage certain "at risk" learners from progressing from Grade 11 to Grade 12 (DoE, 2002a). According to the Department of Education, the increase in the pass rate is due to the conscious effort of educators to improve pass rates. The NFLP reports that numerous intervention programmes have been introduced that has made a significant difference in the culture of teaching and learning at schools (DoE, 2002a).

Table 2.3 Pass rates for the Senior Certificate examinations, 2000-2002

Year	No. of full-time learners who wrote	Overall pass rate	Learners passed without endorsement	Learners passed with endorsement
2000	489 941	57.9%	214 668 (43.9%)	68 626 (14.0%)
2001	449 371	61.7%	209 499 (46.6%)	67 707 (15.1%)
2002	443 821	68.9%	230 726 (52%)	75 048 (16.9%)

Source: (DoE, 2002a)

Although the overall pass rates have improved from 2000 to 2002, the quality of the results has not improved significantly. The number of learners who passed the Senior Certificate with endorsement only increased by 7 341 from 2001 to 2002 whereas the number of learners who obtained the Senior Certificate without endorsement increased by 21 227 learners during the same period. Thus a greater number of learners are obtaining the Senior Certificate without endorsement than with endorsement.

This means that only 16.9% of the 68.9% (which is 24.5% of the learners that passed) are able to enter Higher Education. However, the retention of these learners is problematic as many fail or drop out of university before the completion of their studies. Table 2.4 shows examples of statistics on enrolled and graduate students at universities by institution, population group and gender in 2000 (DoE, 2000b).

Table 2.4 Number of enrolled and graduate students at universities by institution and population groups in 2000

Institution	Enrolments					Graduates				
	African	Coloured	Indian	White	Total	African	Coloured	Indian	White	Total
University of Cape Town	4 667	2 350	1 274	9 163	17 454	861	496	230	2 144	3 731
University of Fort Hare	4 411	6	2	18	4 437	703	0	0	1	704
University of Zululand	5 092	26	88	134	5 340	908	2	15	32	957
University of Pretoria	34 281	2 225	1 329	21 317	59 152	4 284	129	189	4 644	9 246
University of South Africa	53 276	5 481	13 073	43 464	115 294	4 349	373	880	4 614	10 216
Totals	101 727	10 088	15 766	73 996	201 677	11 105	1 000	1 314	11 535	24 854

Source: (DoE, 2000b)

Table 2.4 shows that large numbers of students are not successfully completing their studies at Higher Education Institutions. Only 24 854 of a total of 201 677 students from the five universities were able to successfully complete their studies in the year 2000.

Academics have commented on the standard and quality of the Senior Certificate examinations, indicating that it does not fully prepare learners for Higher Education (Jansen, 2003). Hence the drop out rate at Universities is quite high. Some of the shortcomings of the Senior Certificate include (DoE, 1998a), that it:

- is not designed to create coherent qualifications for access to careers;
- does not provide any mechanism for redressing historical inequity;
- does not provide mechanisms for lateral movement;
- is based on the current list of school and technical college subjects, which are outdated and restrictive.

Other criticism of the Senior Certificate examinations is that it does not cater for the acquisition of values and skills needed to develop professionally. Despite achieving a matriculation with endorsement many learners are also unable to pursue their most preferred career choices due to the point system levelled against certain academic and prestigious career pathways such as Medicine, Chemical Engineering, Chartered Accountancy, etc. Research also indicates that the Senior Certificate is not entirely successful in terms of providing an effective tool for selection into Higher Education (HE) institutions (DoE, 1998a). Many HE institutions therefore devise their own entrance requirements and set entrance level examinations to suit the demands of the various learning pathways.

Prior to 2001, assessment at Grade 12 at most provincial education departments was based solely on the summative examination written at the end of the academic year. Although learners were assessed during the course of the year in aspects such as tests, classwork, homework, assignments and projects, these were not included as part of the final examination mark. The focus was on the acquisition of knowledge with very little attention paid to the development of critical thinking and problem solving abilities of learners. In many cases learners were

forced to study certain subjects because subjects were packaged and had to be taken as a group over a period of three years from Grades 10 to 12. This left no room for flexibility. The grouping of subjects into packages still exists and it prevents learners from choosing individual subjects to suit their needs.

At present public examinations at Grade 12 level are set and administered by the various provincial examining bodies. This means that the nature, format, standard and quality of the question papers differ from one provincial examining body to another. However, the national Department of Education sets question papers for the Senior Certificate examinations in six subjects, namely, Accounting, Biology, English Additional Language, History, Mathematics and Physical Science. Apart from the national subjects where there is uniformity across provinces in the standard and quality of the question papers, the assessment in the rest of the senior Certificate subjects varies from province to province since the syllabi are dependent on each province's interpretation of the core syllabus. The provincial examination question papers are set at provincial level by examiners appointed by each province.

The decision to introduce common examination question papers emanated from an investigation by the Cambridge International Examinations into the examinations systems of the various provincial examining bodies (DoE, 1999a). The request for this investigation was made in 1999, following the Mpumalanga incident where the marks of learners were deliberately inflated to increase the province's pass rates. This incident caused a scandal and the public began to question the integrity of the Senior Certificate examinations. The Minister of Education, Professor Kader Asmal made the following statement at a media conference in Johannesburg (DoE, 1999, p.1):

“When I became Minister of Education I committed myself to conducting an examination process whose integrity is beyond reproach. My decision to invite this credible international body, once again, bears testimony to my determination to clean up the examination process in particular and the education system in general. I therefore appeal to all those involved in the examination process to

conduct themselves in a manner that will enable us to deliver a high quality and credible examination.”

Soon after the release of the report by the Cambridge International Examination team, the Council of Education Ministers (CEM) took a decision to commence with the setting of common examination question papers. This decision was motivated by one of the recommendations made in the Cambridge report, which reads (DoE, 1999a, p. 2):

“As a next step towards rationalising present procedures for setting question papers in the same subject in each of the nine provinces, the establishment of a national question bank, probably based at the National Department of Examinations should be considered.”

The Cambridge exercise was soon followed by the International Benchmarking exercise, where the 1999 Senior Certificate examination question papers in five subjects, namely, English Additional Language, Biology, Mathematics, Physical Science and Accounting was gathered from the nine provincial examination bodies and the Independent Examinations Board (IEB) and sent to the Scottish Qualifications Authority (SQA) for international comparison and analysis. The recommendations that emerged from this exercise highlighted the need for question papers of a common standard and quality for all learners.

The setting of national question papers in the above - mentioned five subjects thus began in 2001. The obsession with improving the standard and quality of learning at Grade 12 resulted in the Investigation and Advice on a Single Examination System for NQF exit points (1 to 4) in schools and Colleges. This investigation was conducted in 2002. Here too, it became quite clear that the assessment system needed strengthening in terms of its processes to enhance the validity and reliability of examination results (DoE, 2002a). The concepts validity and reliability will be discussed in greater detail later in this chapter.

Pertinent to this study is the report’s recommendation on school - based assessment, which indicates that, “the national subjects should be charged with

the design of the common tasks for assessment, in collaboration with specialist expertise in this area” (DoE, 2002c). The report also states that appropriate in-service training, learning support materials and assessment tasks must be provided well in advance of implementation and that district officials and educational managers be trained to moderate and monitor SBA. In effect what this means is that there is a lack of attention paid to prepare educators, subject advisors and education managers on the effective implementation of SBA. The realities of OBE and the conduct of Outcomes - Based Assessment (OBA) within the OBE framework have not been adequately addressed.

However, to ensure that the Senior Certificate examinations results are fair and credible, it is necessary that all processes leading up to the final results are thoroughly interrogated and approved. This is the role of Umalusi.

2.4 The Role of Umalusi in the Quality Assurance of the Senior Certificate Examination

Prior to June 2002, Umalusi was referred to as the South African Certification Council (SAFCERT). SAFCERT was responsible for determining the credibility of the Senior Certificate examination and the issuing of the qualifications (certificates). The credibility of the Senior Certificate examination was enhanced by the appointment of external moderators by SAFCERT to moderate the examination question papers of all examining bodies. In effect, although the question papers were moderated, this in itself is no indication that the Senior Certificate examinations are credible. SAFCERT also monitored the writing of the examinations. However, these were carried out in a small sample of schools.

With the promulgation of the General and Further Education and Training Quality Assurance Act, No. 58 of 2001 (GENFETQA), the role of SAFCERT was to become greater by including many other responsibilities necessary for ensuring the credibility of the entire education system (Umalusi,, 2002e). It is insufficient to focus on the exit examination alone whilst the education system is not producing quality results prior to the Grade 12 examinations.

The core functions of Umalusi at the Senior Certificate level include the quality assurance of school-based assessment, the quality assurance of the external examination and the marking and capturing of marks. In terms of the first function, Umalusi is to monitor the implementation of CASS and verify the quality and standard of the assessment tasks. In terms of the second function, Umalusi is responsible for the external moderation of all the Senior Certificate question papers to ensure that they are of the correct standard and quality. Ensuring consistency in the standard and quality of question papers across examining bodies is a near impossible task. Moderators appointed by Umalusi have indicated that question papers from the different examining bodies arrive on their desks at different times. It is therefore not possible to compare question papers of different examining bodies, to check for consistency in the format of the paper, the nature and type of questions, the levels of difficulty of questions, the allocation of marks, etc. Moderators have admitted that each question paper is moderated in a vacuum.

The areas of focus during moderation is:

- syllabus coverage,
- the length of the question paper,
- the mark allocation of the question paper and whether it agrees with policy,
- the differentiation between the higher Grade and standard Grade (only if both the papers belonging to the same set are sent for moderation together);
- the type and levels of difficulty of questions within a question paper; and
- the weighting of the different types of questions.

In addition to the functions mentioned above, Umalusi plays a critical role in ensuring that the CASS scores of learners do not deviate drastically from their examination scores. This is done by effecting statistical moderation to all CASS and examination scores. This is perceived as an essential tool to address the validity and reliability of the CASS scores and to ensure that the quality and standard of the Senior Certificate examinations is not affected by the inclusion of the CASS marks (Umalusi, 2002a).

Although Umalusi supports the introduction of CASS into the Senior Certificate examination, it is nevertheless concerned that CASS is not implemented sufficiently well or effectively to ensure that the CASS marks awarded to learners are valid and reliable (SAFCERT, 2002b). A major observation made by Umalusi is that educators in general are poorly trained in assessment and are therefore poorly equipped to implement CASS satisfactorily.

A discussion on the role of assessment in a broad context is presented in the next section.

2.5 The role of Assessment

The term “assessment” in education is not a new concept. It is what educators have always been involved with. However, it has become more pronounced in South Africa since the introduction of OBE (Sieborger & Macintosh, 1998). Assessment in OBE is associated with change and improvement in the way learning takes place. For the learners, assessment must motivate them to improve on past performances. This can be achieved by using results positively (Sieborger & Macintosh, 1998). Assessment must be seen as an integral part of the learning process.

First the definition, purpose and objectives of assessment will be discussed in 2.5.1 followed by the reasons for the introduction of OBE in South Africa in 2.5.2 and 2.5.3 examines the formative role of CASS.

2.5.1 The definition, purposes and objectives of assessment

Definition of Assessment

In a broad sense the term assessment may be defined as “an ongoing process aimed at understanding and improving student learning. It involves making our expectations explicit and public; setting appropriate criteria and high standards for learning quality; systematically gathering, analysing, and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain, and improve performance”

(Angelo, 1995, p. 1). This definition implies that assessment has both a formative/diagnostic and summative function. In addition, the entire assessment process is seen as being transparent and learners are informed in advance of what is expected from them. In a narrower sense Van der Horst and McDonald (1997), define assessment as all those activities undertaken by educators and learners in making judgements about themselves. This provides information to be used as feedback to modify the teaching and learning activities in which they are engaged. However, the above definitions have a common thread and that is, it is aimed at improving learner performance.

According to an unpublished document by SAFCERT, titled, “External Moderation System for School - based assessment for the Senior Certificate” (SAFCERT, 2000, p. 2), assessment is defined as, “the process of identifying, gathering and interpreting information about a learner’s achievement in order to assist the learner’s development and improve the process of learning and teaching and provide information about a learner’s level of competence at the completion of a Grade, level or programme.”

The above definition includes the application of continuous formative assessment, feedback to the learner with the aim of improving learner development and performance, modification to the teaching and learning process and decision making about the learner’s level of competence. The follow - up and feedback given to learners is fundamental to the learning process.

Purposes of Assessment

Freeman and Lewis (1998), indicate that the two main purposes of assessment are to select or certify and to stimulate learning. In this context selection and certification is associated with the educator being judgmental and making decisions about the learner’s performance whereas assessment for learning adopts a more developmental approach with feedback being more important than the grading of the learner’s achievement. The point is that on the one hand the judgment is to select or certify, and at the other hand the judgment is aimed at feedback for improvement. In the current education system the emphasis is on the developmental aspect of learning, where learners are able to advance and make

planned progress in their learning. Assessment in OBE is ongoing, which means that a learner's progress will be monitored continuously (Van der Horst & McDonald, 1997). Ongoing assessment is also referred to as "Continuous Assessment (CASS)."

Objectives of Assessment

The Green Paper on Education (1998b) indicates that assessment has two distinct, but related objectives. These objectives are the same as mentioned by Freeman and Lewis (1998) above, wherein assessment is used to select or certify and has a summative function, and assessment used for developmental purposes, namely to enhance the formative function. The Green Paper adds that at the macro level, assessment must provide reliable and valid information regarding learner achievement and competency. This will ensure the legitimacy and currency of qualifications, especially exit qualifications such as the Senior Certificate examinations with future employers, with Higher Education institutions and the public in general.

Secondly, at the micro - level, assessment must be developmental and formative, to provide guidance to learners through appropriate evaluation and feedback. With meaningful feedback received from educators, learners must be able to make progress in their own learning. It is important at this stage to elaborate on the merits of formative assessment since although it is much talked about, very little is done to ensure that CASS is being implemented in a formative way.

Formative assessment gives the teacher and the learner information about whether the learning objectives or outcomes have been reached with the purpose of improving the learner's performance. The feedback to learners focuses on the areas of strengths and weaknesses and the potential of learners (Jones & Bray, 1986). Informing learners of their areas of weakness immediately after a task has been performed will enable them to correct themselves since the work is fresh in their minds. It is also important that the educator informs learners about their strengths and potential since it serves as a source of motivation. The more immediate the feedback to the learner, the more useful the information. The teacher too needs constant feedback on whether the teaching/learning outcomes

have been achieved (Jones & Bray, 1986). This will enable her/him to plan future lessons in such a way that she/he is mindful of whether the outcomes of the previous lesson/s have been achieved.

The opposite of formative assessment is *summative assessment*. Whilst formative assessment is developmental in nature and informs an educators planning, summative assessment is conducted at the end of a lesson, a unit or a course (Van der Horst & McDonald, 1997). Summative assessment also shows how much the learner has achieved by a certain stage (Sieborger & Macintosh, 1998) and usually takes place in the form of a test or an examination, where a learner demonstrates whether she/he is able to achieve the outcome/s of the content/skills being assessed.

Although a clear distinction is made between formative and summative assessment, summative assessment conducted during the course of the year may be included as part of the formative assessment. In this instance the summative components (tests and mid - year examinations) should play a more formative function since the feedback from these components can help to improve learner performance. On the other hand, the marks obtained through CASS (formative assessment) are added to the marks obtained by learners in the summative assessment. In other words CASS forms part of the summative assessment. Hence there is a dual function played by both formative and summative assessments.

Also of importance is the conduct of *formal assessment*, compared to assessment conducted in an informal way. Whilst formal assessment refers to assessment that is specially planned and is not part of the normal classroom teaching and is always announced to the learners before it takes place; *informal assessment* is assessment that is carried out as part of normal classroom teaching where learners are unaware that they are being assessed. Informal assessment activities include homework, the answering of questions in class during lessons, participation of learners during group sessions, oral and practical work, etc. (Sieborger & Macintosh, 1998). Formal activities include the writing of tests,

examinations, project work and assignments, where learners are aware of such assessments and are given adequate time to prepare for the assessment task.

The next section focuses on some of the reasons for adopting CASS in South Africa.

2.5.2 Why Outcomes - Based Assessment?

The shift from a content - based approach to an outcomes based approach to teaching and learning was introduced amid political pressure (Sieborger, 1997). It was seen as a logical and essential part of the transformation envisaged in new policies (DoE, 2000c). Sieborger (1997) makes the following statement about the reason for the introduction of OBE in South Africa, “a new curriculum had to be in place before the 1999 general election, as the government had to be seen to be delivering on its promises in education. According to Jeevanantham (1998), the introduction of OBE in South Africa is also in response to international trends in educational development. The aim of this new curriculum is to provide equity in terms of educational provision and to promote a more balanced view, by developing the learner’s critical thinking powers and their problem - solving abilities (Van der Horst & McDonald, 1997).

The new Outcomes - Based Assessment policy for the General Education and Training band for Grades R - 9 and Adult Basic Education and Training was introduced to schools in 1998. However, its implementation was later reviewed by a Ministerial Committee in 2000, when it was recommended that the curriculum needed strengthening and streamlining on the basis of its alignment to assessment, the need to improve teacher orientation and training, learning support materials and provincial support (DoE, 2002b). Subsequently in 2001, these revised National Curriculum Statements were sent for public comment and introduced to schools in 2002 as a streamlined and strengthened version of Curriculum 2005 affirming the commitment to OBE (DoE, 2002b).

The new curriculum and methods of assessment impacts on how educators teach and how they should be trained to be able to successfully implement the new

system. According to the report on the Norms and Standards for educators (Welch, 1999), the assessment practices of a programme must be applied and integrated. This means that the programme must lead to the application of knowledge and skills and assess the extent to which learners are able to integrate the knowledge and skills delivered through the different courses that constitute the programme (horizontal integration). The report adds that the assessment practices of a programme must be so designed as to permit the learners to demonstrate practical, foundational, and reflexive competence, and must assess the extent to which learners are able to integrate these competencies. Integrated and applied competencies must be ongoing, developmental, and contextualised. In the real life situation, the integration of theory and practice is important to the learning process.

The first document to be drafted to address curriculum and assessment policy issues in the Further Education and Training band (FET)³ is the National Curriculum Framework for Further Education and Training (DoE, 2000c). In this document, the Minister of Education, indicates that, “the integrated education and training will stimulate and empower learners to acquire and apply knowledge, skills and values to confidently and creatively respond to the challenges of the changing social, political and economical environment through lifelong learning” (DoE, 2000c).

Through the South African Qualifications Authority Act No. 58 of 1995, the NQF provides for an integrated FET system that will ensure, amongst others, the following (DoE, 2002d):

- nationally agreed upon outcomes
- a single system of qualifications
- articulation among various programmes, qualifications and providers
- accumulation and transfer of credits
- international comparability of qualifications

³ The FET band covers learning, teaching, assessment and qualifications of all learners in Grades 10-12 in the school system and N1-N3 in the Technical College system.

This framework also addresses issues on Assessment and Quality assurance. It stipulates that assessment and a system of quality assurance are fundamental to ensuring that FET programmes meet the needs of learners, communities, employers and society. Since curriculum and assessment cannot be separated, assessment at Grade 12 has also undergone fundamental changes.

Assessment of learning is an essential element of OBE where use is made of alternative forms of assessment such as practical work, portfolios, projects, investigations and the use of problem solving approaches for the purpose of grading and reporting (Van der Horst & McDonald, 1997; Black & Wiliam, 1998). The new assessment system deviates from the traditional content - based methods of assessment such as exams and tests. These traditional methods may not have given learners adequate and appropriate opportunities to reveal their knowledge, skills, values or attitudes (Van der Horst & McDonald, 1997). Through the adoption of OBE in South Africa, 7 critical outcomes and 5 developmental have been identified to promote an integrated approach to education and training. The critical outcomes require learners to be able to:

- identify and solve problems and make decisions, using critical and creative thinking;
- work effectively with others as members of a team, group, organization and community;
- organize and manage themselves and their activities responsibly and effectively;
- collect, analyse, organize and evaluate information critically;
- communicate effectively, using visual, symbolic and /or language skills in various modes;
- use science and technology effectively and critically and showing responsibility towards the environment and the health of others; and
- demonstrate an understanding of the world as a set of related systems by recognising that problem - solving contexts do not exist in isolation.

On the other hand, the developmental outcomes require learners to be able to:

- reflect on and explore a variety of strategies to learn more effectively;
- participate as responsible citizens in the life of local, national and global communities;
- be culturally and aesthetically sensitive across a range of social contexts;
- explore education and career opportunities; and
- develop entrepreneurial opportunities.

OBE is based on the philosophy that all learners can learn and achieve, the focus is on learning by doing, learning how to learn, learning through experience and using critical contextual information for analysis. Learners gradually become responsible for their own learning and progress, and are constantly motivated by feedback and positive comment on the value of their efforts (DoE, 2000a). The outcomes encourage a learner - centred and activity - based approach to education (DoE, 2002a). The focus is on changing the approach to teaching, learning and assessment.

According to the Department of Education (2001b) the inclusion of CASS at Grade 12 level is aligned to the principles of outcomes - based assessment. Ideally this type of assessment should:

- promote learning
- be adequate, comprehensive and authentic
- be continuous; and
- include a formative and summative component.

In terms of section 5 of the schools policy document, titled, *A Résumé of Instructional Programme in Schools, Report 550* (DoE, 2001g), Continuous Assessment must be a compulsory component of the final promotion marks at the end of Grade 12. This became policy in 2001 and is supported by research and development that indicates that CASS must be conducted in a formative and diagnostic manner (DoE: 2000d). This so-called 'formative assessment' aims at improving the quality of student learning through its constant feedback to the

learner regarding the achievement of the learning outcomes (Angelo and Cross, 1993). Formative assessment is aimed at improving learner performance. The formative role of CASS is discussed in 2.5.3.

The reasons for introducing CASS as part of the final promotion mark (which refers to the summative function of CASS) in South African schools is based on the following principles (DoE, 2000a):

- assessment is ongoing and therefore learners are compelled to work consistently and this will contribute to the culture of teaching and learning;
- learners will be assessed using different and appropriate assessment methodologies and this will provide a more valid assessment of the learners' performance;
- assessment will now take place in an authentic context, i.e. the learner will be assessed in a realistic situation which is integral to the learning process;
- assessment will feed back immediately into the learning process, thus promoting the formative role of assessment;
- assessment of the learner's performance (summative assessment) will now be carried out by the educator who works closely with the learner.

CASS was introduced to expand the education system from one that is content driven, where rote learning takes place with theory - based external examinations, to a system where the emphasis is on understanding and contextual application and where a multitude of assessment methodologies with the retention of equity, norms and standards are used to assess learners (DoE, 2003a). Learners will now be assessed on an ongoing basis with different assessment methodologies aimed at assessing different skills. The Department of Education stipulates that CASS at Grade 12 should comprise the following (DoE, 2000a):

- assessment of oral and practical work
- assessment of classroom based work

- class tests
- assignments, homework
- portfolios
- projects, and
- controlled tests and examinations including preparatory examinations.

Continuous assessment must be formative and developmental, if it is not, it loses its meaning. The next section examines the formative role of CASS.

2.5.3 The Formative Role of Continuous Assessment

Assessment in *Curriculum 2005* is intended to be continuous, formative and criterion - referenced (Cowie, 1996). This assessment checks, on an ongoing basis, whether the learning outcomes have been achieved through activities that are centered on the learner performing tasks or assignments that are teacher directed and facilitated to meet the expected criteria (Clarke, 1997). This so - called “formative assessment” aims at improving the quality of student learning through its constant feedback to the learner regarding the achievement of the learning outcomes (Angelo & Cross, 1993). Such assessment becomes formative assessment when the evidence is actually used to adapt the teaching work to meet the needs of learners (Black & Wiliam, 1998) and help shape the learner through the learning process (Van der Horst & McDonald, 1997).

Formative assessment is aimed at improving learner performance. Harlen and James (1997) (cited in Klenowski, 1999, p.39), indicate that "it is knowing about pupils existing ideas and skills, and recognising the point reached in development and the necessary steps to take is formative assessment. Formative assessment is integral to teaching, and "learning with understanding depends on it."

For the learner, formative assessment assists in the development of skills, understanding of content and the acquisition of values and attitudes (Clarke, 1997; Kahn & Volmink, 1999; Kahn, 2000). The learning outcomes are stated before a learning activity occurs and are used to measure achievement of the learner's performance in the activity against the specified criteria of achievement (Sieborger

& Macintosh, 1998). In this way the learner is focused on working towards the outcomes during the activity and is then able to measure her /his ability using the criteria (Kahn & Volmink, 1999).

For the teacher, formative assessment assists in informing planning, describing learning outcomes in terms of specified criteria, which makes assessment fair and honest (Johnson, 1998). Formative assessment in the context of the classroom requires that educators have a body of scientific knowledge and skills associated with the content to be taught and an understanding of how students are likely to learn it, a knowledge of the progression of ideas within the topic being taught and an ability to recognise where students are in their development (Sieborger & Macintosh, 1998). The individual teacher decides what to assess, how to assess, and how to respond to the information gained through the assessment (Angelo & Cross, 1993).

Harlen and James (cited in Klenowski, 1999, p.38) also add that, "formative and summative purposes of assessment have become confused in practice and that as a consequence assessment fails to have a truly formative role in learning." This implies that educators are treating all assessment as if it counts towards the summative aspect of the assessment. This could be the case if educators are unable to differentiate between the two types of assessment or if for example educators are focused on the completion of the syllabus rather than on ensuring that meaningful teaching and learning is taking place. Proper planning, guidance and knowledge about how to conduct assessment in a formative way needs to be addressed.

The next section examines the current status of CASS at Grade 12 level.

2.6 The current status of CASS at Grade 12 level

This section examines the phasing-in of CASS by the various provincial examining bodies (2.6.1) and the problems experienced at school and at classroom level (2.6.2)

2.6.1 The Phasing - in of CASS at Grade 12 level

Prior to 2001, assessment in most provinces at the Senior Certificate level was based on a single summative examination written as an external examination that was set and conducted at provincial level. A learner's promotion therefore depended on how well she/he performed in the external written examination. Marks accumulated throughout the year for other assessment tasks were not considered as part of the learner's promotion mark. However, certain provincial examining bodies, for example, Gauteng, Northern Cape and the Western Cape Department of Education, had, prior to 2001, already introduced CASS at Grade 12 level (DoE, 2001b).

Table 2.5 The phasing - in of CASS by provincial education departments

Year	Choice	Province	Chosen Method
1999	Pilot	Gauteng	CASS implemented and Statistical Moderation Pilot run
		Northern Cape	CASS implemented and Statistical Moderation Pilot run
		Western Cape	External Moderation of CASS marks
		Other Provinces	No CASS implementation
2000	Optional	Gauteng	Fully implemented
		Northern Cape	Fully implemented
		Western Cape	External Moderation of CASS marks
		Other Provinces	Adjust examination mark by 1.25% in all subjects
2001	Mandatory	For all provinces	Full implementation of CASS and Statistical Moderation

Source: (DoE, 2001b)

The phasing - in of CASS as a pilot by Gauteng, Northern Cape and Western Cape in 1999 enabled these provinces to gain more experience and prepare their educators for the implementation of CASS that became mandatory for all

provinces in 2001. The level of readiness to implement CASS in these provinces was therefore better than those provinces where CASS was being implemented for the first time in 2001. Provinces that implemented CASS for the first time in 2001 were the North West, Limpopo, Mpumalanga, KwaZulu - Natal, Free State and the Eastern Cape.

The majority of educators need guidance in CASS, due to the unfamiliarity with its implementation requirements and procedures. To help guide educators in the new format and structure of the national question papers, subject guidelines were prepared in each subject. National guidelines on CASS for these subjects were also developed. However, it must be indicated that not all schools were provided with these guideline documents, although they were made available to provincial examining bodies.

Towards the end of 2001, some schools were still making enquiries regarding where they could obtain the CASS guideline documents for the national subjects. Apart from these guideline documents in the six national subjects, there is no evidence of policy that provides details on what CASS is all about, how CASS should be conducted in the different subjects, what aspects of the syllabi should be examined for CASS, how the assessment should be conducted, how the evaluation of the evidence produced by the learner should be assessed and how the results should be interpreted and recorded.

The implementation of guideline documents

The National guideline document for the implementation of CASS at Grade 12 (DoE, 2000a), stipulates that before a provincial education department decides to adopt CASS the following key measures must be in place:

- clear guidelines on CASS be drafted per subject;
- educators are trained on the implementation of CASS; and
- appropriate moderation mechanisms are in place

The document also adds that the provincial education departments will be responsible for the implementation of CASS and this will include:

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- training teachers to use the manuals and guidelines provided;
- providing the necessary infrastructure and human resources to do face moderation. Face moderation entails personal (face to face) interaction between the moderator and the learner whereby the learner's portfolio (evidence of assessment) is examined and validated against the results achieved by the learner; and
- statistical moderation throughout the province. Statistical moderation refers to the statistical adjustment made to the CASS scores so that it does not deviate significantly from the examination scores (Umalusi, 2002a).

Although some provinces have taken the trouble of drawing up provincial guidelines to support educators in the implementation of CASS, other provincial examining bodies have yet to address issues adequately on the implementation of CASS. The North West Department of Education has developed a provincial guideline for educators on CASS. These guidelines are extremely important to ensure that all educators involved in the implementation of CASS at Grade 12 level, know and understand what is expected of them. The North West department has gone a step further and has recently promulgated policy in respect of the conduct, administration and management of assessment in the Senior Certificate within the province. This is what all provincial examining bodies should have done. In addition to this general policy, there should be a subject manual/policy in each of the senior certificate subjects.

The subject must provide clear direction on the following:

- number of tasks to be completed for the year;
- a breakdown of the tasks in terms of the topic/sections of the syllabus and the nature and type of tasks, for example, tests, assignments, practicals and projects so that CASS is integrated into the teaching and learning programme;
- the weighting and grading of the questions; and
- exemplars for each type of task together with the appropriate assessment criteria or rubric.

The provincial CASS guideline of the North West province reads, “to ensure that the CASS marks are compiled in a consistent manner throughout the province, the following guideline is supplied to educators” (North West Department of Education, 2001):

- CASS marks must be compiled using a number of evaluation methods that determine the learner’s progress continuously;
- CASS marks must be determined accurately in accordance with the learner’s performance and the provincial standard required for the specific subject. This process therefore also measures the ability of the educator to determine an accurate mark in accordance with the provincial standard expected for the specific subject;
- class tests that cover only a small part of the syllabus and where learners obtain high marks cannot be used for the CASS mark because this will increase the CASS mark unrealistically and bring the learner under a false impression as to the standard expected for the subject; and
- class tests covering larger parts of the syllabus, for example a module or learning unit, according to the expected standard, must be used for the calculation of the CASS mark.

A major criticism is the reference to “provincial standard” when in fact the standards that apply to one examining body should apply to all such examining bodies. The standard of the national question papers and the memorandums could be used as a benchmark to achieve national standards. All examining bodies should therefore work towards the attainment of national standards.

The problem of CASS implementation will now be discussed.

2.6.2 Problem of CASS Implementation at school and at classroom level

Much has been written in South Africa on schools where the necessary “ingredients” for successful policy implementation are lacking (DoE, 2000a; Malan, 2000; Kanjee et al., 2001). In spite of the evidence put forward over the last thirty years showing the powerful influence of assessment, particularly in high stakes examinations, it is still the most neglected aspect of curriculum policy (Pahad, 1998). Although this statement was made five years ago, the situation in terms of the implementation of assessment has not changed much.

In 1999, South African Democratic Teachers Union (SADTU) made the following comments regarding assessment and change:

The process of change, brings with it uncertainty and resistance. As curriculum 2005 is in the process of unfolding we need to voice our concern over the incapacity of the Department of Education to deliver this change effectively. Firm commitment from the Department of Education to capacitate teachers to deliver Outcomes Based Education via Curriculum 2005 is lacking (SADTU, 1999).

This statement was made as a result of the concerns raised by many educators who felt that the Department of Education should make provision for the training of educators to implement CASS and that the grooming of educators should be done well before the implementation date.

In 2002, the Report on the Investigation and Advice on a Single Examination and Assessment System states that, “even the most excellent educators find it difficult and challenging to undertake assessment on their own, and many inspired practitioners are not good at assessment” (Department of Education, 2002c).

The comments by Pahad (1998, p. 247) when she states that, “*there is very little practical help for teachers and other practitioners trying to assess learners within the new outcomes based curriculum*” are to be supported. Pahad indicates that whilst a general understanding of the need for a paradigm shift on assessment has

been acknowledged, the actual implementation is hampered by a lack of understanding of the complexity of the issues involved.

When CASS became policy in 2001, very little attention was paid to its implementation. Ideally, what should have been done prior to its implementation is that educators should have been trained to deal with the changed methodology of assessment according to the OBE approach. However, policymakers tend to assume that decisions to bring about change automatically result in changed policy or changed institutional behaviour. This accounts for a lack of planning of the implementation following upon the decision. At this stage it is important to also mention that CASS was promulgated as policy in August 2001, eight months after its implementation date. The policy document records the following:

“Continuous assessment must be a compulsory component of the promotion marks. The continuous assessment component must be at least 25 per cent, with a maximum of 50 per cent of the mark on the report card, or of the promotion mark” (DoE, 2001d).

Apart from the above - mentioned policy statement, there is no other policy to regulate the implementation of CASS. The decision to introduce CASS as policy was soon to be followed by the implementation itself. This left very little time for preparing educators to successfully manage the implementation process.

The introduction of CASS as policy also suggests that it will be implemented uniformly across all provincial examining bodies. This is however not the case. In practice, where educators are expected to perform the same functions, there will be marked differences in the manner in which these will be executed. The reason for this is simple. There is yet no clear policy, which provides consistency and coherence in each subject across the examining bodies. Diverging policies can only result in confusion amongst educators and learners. This became evident in a report by Umalusi addressed to the Minister of Education. The report indicates, “although the CASS policy/guideline documents are available at provincial and school level, and these have been used as the basis for the composition of the provincial policy, in certain provinces deviation from the national policy has been

noted as in the following instances, Gauteng (Mathematics), Limpopo (Physical Science), Eastern Cape (Mathematics), KwaZulu - Natal (Mathematics) (Umalusi, 2002a).

If this is the case, then one may argue that CASS is not being implemented uniformly across provinces. In addition, differing interpretations of policy concepts and definitions impact on the effectiveness with which educators are able to perform their functions. This becomes clearer when one looks at the practical implementation of CASS in the nine provinces. According to Umalusi (2002a), “educators tend to deviate from the provincial guideline document and this could be as a result of educators being unable to accurately interpret the document due to a lack of guidance and training”.

There is also a perception that the only reliable results in assessment are those that are achieved in the external examination - one cannot rely on teachers for accurate assessment (Oberholzer, 1999). This statement was made as a result of the discovery of huge disparities between the external written examination component and the internal oral component for the province as a whole and for five schools within KwaZulu - Natal. Oberholzer questions whether the difference of 28% between the two components is acceptable. She further asks, whether such a difference does not also indicate a difference in the standards applied in the two components. The comparison of the results achieved in the oral component against the achievement of the same candidates in the written examination raises some important questions about the reliability and validity of both the assessment and the assessment processes.

This brings to mind the situation experienced in the 2001 and 2002 Senior Certificate examination where huge differences were discovered between the marks obtained through school - based assessment and the marks obtained in the summative assessment at certain examination centers. In this regard, Umalusi claims that this may be partly attributed to the fact that there is great variance in the standard and suitability of CASS tasks assigned to learners amongst and within the various examining bodies (Umalusi, 2002a).

NAPTOSA is of the view that 'assessor standards' need to be included in the compulsory core learning categories for all future teacher qualifications, particularly for those in the schooling sector. The document adds further that many educators in the past (and certainly those who qualified prior to the early 1990's) were seldom taught about assessment. The motivation for expecting educators at Grade 12 level to be qualified assessors, is that CASS is part of the assessment towards awarding the qualification (FETC) and that, as such, this assessment is as important as the external summative assessment. Based on this premise, it is therefore essential that learner performances assessed in the classroom should be based on sound educational/assessment principles and should meet quality assurance requirements in terms of its fairness, validity and reliability.

It is without doubt that the effective implementation of CASS relies largely on the competence and professionalism of educators. The government's decision to implement a curriculum based on the tenets of OBE will therefore only be successful if teachers are adequately prepared for this challenge (Van der Horst & McDonald, 1997).

It is apposite to quote from a memorandum written by William Spady (1999, p. 3) to the Minister. The paragraph reads:

"As they now exist, high schools are the least Outcomes - Based institutions on the planet (except for Universities). They will need time to assimilate these ideas and models - in multiple stages of implementation and refinement. This cannot be accomplished in two - week training for teachers on how to use curriculum materials. It will take years, and you need a highly qualified design team to begin work on how to tackle that 'system change' challenge right now."

The statement is to be supported for the reason that it will take time for educators to digest the new approach. A series of workshops or training sessions is needed to cultivate assessment skills in educators, subject advisors and education managers.

2.7 Conclusion

Mass of research evidence indicates that OBE was introduced in South Africa as a result of both political pressure, the need for accountability and the need to participate in a global society (Sieborger, 1997; Jeevanantham, 1998). The sudden introduction of continuous assessment (CASS) in the FET band raises important questions on educator preparedness to deal with the challenges of its implementation. As indicated by Spady (1999) even a two - week training session is insufficient to adequately equip educators with the necessary knowledge and skills to meet the challenges of CASS.

Given the fact that the Mathematics and Science results in South Africa are generally poor (Howie, 2001), it is plausible that the effective implementation of CASS in these subjects may lead to significant learning gains (Black & William, 1998).

Since the integrity and credibility of examinations is always a matter of public concern and the fact that the results must show continued reliability and public acceptability, the adoption of statistical moderation and various quality assurance measures is currently the only mechanisms used to ensure the validity and reliability of the examination marks.

The next chapter therefore examines the moderation and quality assurance procedures adopted by the Department of Education and Umalusi to ensure the credibility of the Senior Certificate examinations.

CHAPTER 3

THE MODERATION AND QUALITY ASSURANCE OF THE SENIOR CERTIFICATE EXAMINATIONS

Overview of the chapter

This chapter examines the moderation and quality assurance measures adopted by the Departments of Education and Umalusi to ensure the integrity and credibility of the Senior Certificate examinations. The Senior Certificate examinations (also referred to as the 'matric' examination) is the first formal qualification awarded to learners after 12 years of formal schooling and has become one of the main focuses of attention for social and political comment (Oberholzer, 1998). The Government of South Africa in collaboration with the Ministry of Education must adopt suitable quality assurance measures to ensure that national standards for the awarding of a school exit qualification to a learner has been fully met.

Further, the result of the Senior Certificate examination is presently the only indicator of how well the South African education system is performing. Given the social, political and economic importance of the matric examination, it is also necessary that the examinations are of an acceptable standard and quality so that the results can be considered as fair, valid and reliable.

Since 25% of the Senior Certificate results are constituted from CASS, it is essential to reflect on how this component is compiled so that the extent of its fairness, validity and reliability can be endorsed.

3.1 Introduction

Moderation can be defined as “a quality assurance process of ensuring the validity of the assessment instruments, fairness of the assessment processes and reliability of the assessment decisions by all assessors, according to agreed standards” (SAFCERT, 2000). The word “assessors” refer to educators, examiners, moderators and verifiers involved in the moderation and quality

assurance of all aspects of the Senior Certificate examinations. Quality assurance on the other hand refers to structures and systems that operate from the school level up to national level to ensure that the degree of excellence, standard and quality that is specified is achieved (SAFCERT, 2000, p. 1). Moderation can be seen as one of the quality assurance measures adopted at various stages of the assessment process to ensure that the assessment has been conducted in line with agreed practices, so that the results can be declared as fair, reliable and valid (Umalusi, 2002b). Hence moderation is one aspect of quality assurance and is used to support quality assurance. Quality assurance in the school context is achieved through a process of moderation.

However, for moderation and any other quality assurance measures to take place there must be systems and structures established to handle the logistics of the task. Other quality assurance measures include the internal and external moderation of question papers, the moderation of the CASS marks, the verification of the CASS marks, the monitoring of the conduct of the examinations, the monitoring of the marking process and the auditing of the examination marks as well as the statistical moderation of the CASS marks and the standardisation of the examination marks (Umalusi, 2002b).

Section 3.2 presents a discussion on the above - mentioned moderation and other quality assurance measures and is followed by section 3.3 which shows how the Senior Certificate results are calculated. Section 3.4 looks at the principles of assessment, namely, fairness, validity and reliability, and section 3.5 examines the compilation of portfolios by learners and the evaluation of the portfolios by educators according to the agreed assessment criteria /rubrics.

3.2 Moderation and Quality Assurance of Assessment at the Senior Certificate level.

The moderation and quality assurance of the Senior Certificate examinations for public schools is the responsibility of the Departments of Education and Umalusi. The Departments of Education refer to the nine provincial education departments and the national department of education since collaboratively they are

responsible for the conduct of assessment at Grade 12 level. Whilst the provincial education departments are currently responsible for setting the majority of the Grade 12 examination question papers, the national department of education through the Chief Directorate: Public Examinations and Administration has since 2001 taken the responsibility for the setting of common question papers in five critical subjects namely, Accounting, Biology, English Additional Language, Mathematics and Physical Science. In 2003, a sixth subject, namely History was also examined at national level.

The departments of education are also regarded as assessment providers/provincial examining bodies and are required by the Umalusi Act to be registered with Umalusi (SAFCERT, 2002a). Umalusi is the independent quality assurance body that has been established in terms of the General and Further Education and Training Quality Assurance Act (58 of November 2001) to quality assurance the assessment processes leading to the issuing of certificates to learners at Grade 12 level (SAFCERT, 2002a). A number of quality assurance measures are adopted by both the examining bodies and Umalusi to ensure that the Senior Certificate examinations are of a high quality and of the acceptable standard, each of them being briefly discussed.

The internal and external moderation of examination question papers

In the current Senior Certificate examinations, the provincial examination question papers are set by a provincial examiner/s and are internally moderated to ensure that the assessment instrument is of the appropriate standard and meet the requirements as indicated in the provincial subject guidelines. However, since Grade 12 is the final exit level examination of the schooling phase, all examining bodies both public and private are obliged to submit their Grade 12 examination question papers to Umalusi for external moderation. To fulfill this function, Umalusi appoints subject specialists as external moderators to ensure that the question papers across examining bodies are of the appropriate standard and meets the requirements as stipulated in the subject guidelines and core syllabi.

However, a major concern is that the guidelines of the different examining bodies may not be the same although they are based on the interim core syllabus. The differences emerge in the manner in which the core syllabus is interpreted by the educators, examiners and moderators of the different examining bodies. Despite the external moderation of question papers by Umalusi, one cannot state with confidence that the examination question papers of all examining bodies are of the same standard and quality. Relating to this issue, Umalusi reported the following to the Minister of Education (SAFCERT, 2002b, p.15):

“Despite careful attention and diligence of competent and experienced examiners, moderators and markers, it is impossible to determine whether a question paper is actually of the required standard until it has been written and marked.”

Although, all the question papers are moderated by Umalusi, it also happens that, “papers get sent to the printers before they are sent for moderation” (DoE, 1998a, p. 26). This illustrates the negligence of examining bodies to comply with the regulations stipulated by Umalusi. There may also be instances where a question is asked in an examination paper that has not been taught in the classroom or is not covered by the syllabus. An example of such a situation is captured in the following marker’s comment (DoE, 1998a, p. 20):

“I came across many scripts where students claimed that they met books for the first time in the examination room. As a result of this, a number of candidates handed in their answer books without anything written on them. Most of the candidates wrote little notes at the end of their answers to say that they did not read the books, they did not understand, they were not taught and that they read books that were not prescribed.”

It is evident that it can be quite dangerous not to have the examination question papers internally and externally moderated before the conduct of the examination. The role of the Umalusi moderators is critical in this regard. For learners to be examined on aspects of the syllabus or books that they have not studied in class is totally unacceptably and unfair. Surely, examining bodies, educators, examiners and moderators must know the work to be covered and the books to be consulted

in preparing learners for tests and examinations? Assessment is unfair when learners do not know what is expected of them (McMillan, 2001). In instances like these it is the function of Umalusi to determine the correct measures to be taken to ensure that learners are not disadvantaged in any way.

On the other hand, the six common question papers set by the national Department of Education does ensure that there is consistency in the external assessment of these subjects across the provincial examining bodies. The setting of common question papers takes place through the appointment of a panel of examiners (4) who have had at least three years of experience in the setting of examination question papers at provincial level. Consistency in the setting of question papers is ensured through the development of national subject guidelines, which are disseminated to all public examining bodies for implementation. As with the provincial question papers, the national question papers are also internally and externally moderated, with the external moderation conducted by Umalusi to check that the question papers are of the appropriate standard and meets all the subject requirements as specified in the subject guideline documents.

The moderation of the CASS mark

It is highly unlikely that Grade 12 educators across the country in the different subjects are able to assess learners according to the same standards. Many reports and official documents have indicated that the implementation of CASS is problematic and that the results from CASS cannot be accepted as is (DoE, 1998a; Spady, 1999; DoE, 1999a; DoE, 2001b).

According to the report on the investigation into the Senior Certificate Examination by the Ministerial Committee (1998a), concern was raised about the introduction of CASS at Grade 12 level. This report recommended to the Minister that CASS should not be introduced at Grade 12 level until a monitoring mechanism is in place to monitor the relationship between internally and externally derived marks (DoE, 1998a). However, this recommendation was not followed through. During this period, it was indicated that some schools, for example, record a far higher average mark for CASS than their learners obtain for the external portion. These

inequitable results lead to a situation where certain learners are advantaged and others are disadvantaged depending on the school from which they come. Learners attending a school where the CASS marks are inflated will ultimately receive better marks than those learners coming from schools where the CASS marks are closely aligned to the examination marks (DoE, 2001b).

When CASS was officially adopted as part of the Senior Certificate results in 2001, it became necessary to adopt quality assurance measures that would enhance the fairness, validity and reliability of the CASS marks, especially since CASS forms part of the assessment of a learner's achievement at the school exit level and leads to a qualification that must be credible. Although examining bodies were required to establish systems and structures for the moderation of CASS at various levels, for example, at school, cluster, district and or provincial level, it has been established that the operation of these systems and structures are not fully functional and in some cases are non - existent (DoE, 2002c). Currently, the main concern about the moderation of CASS is that it is not being effectively handled at school, district and provincial level (Oberholzer, 1999). In this regard, Umalusi (2002a) indicates that each assessment body has a moderation plan, however, they fail to effectively implement the provincial moderation plans and this is attributed mainly to a lack of human resource capacity. In addition, Umalusi (2002a) also states that the absence of constructive comment and feedback from moderators to both educators and learners suggests that moderation is not being done with a view to improving the suitability, quality and standard of the assessment. If this is the situation, how can we be certain that the marks obtained by learners for CASS are accumulated in a fair, valid and reliable manner?

To eliminate problems relating to the fairness, validity and reliability of the CASS marks, it is essential that all examining bodies ensure that they have effective moderation systems in place and that moderation is implemented according to agreed principles and criteria so that the CASS marks can be accepted as fair, valid and reliable. In addition, moderation at school, cluster/district/regional level should be carried out by suitably, skilled and qualified assessors/moderators who are also subject specialists. In this way, problems relating to the assessment of the learner or the aspect of the work can be diagnosed and rectified immediately

rather than leaving the moderation to take place at the end of the academic year as is currently the practice. A strong recommendation from concerned departmental officials is that moderation should be an ongoing exercise. This would ensure that there is ongoing external check on the standards of assessment operating at the school. Further, there must be some control mechanism in place to evaluate the manner in which CASS is being conducted. This control mechanism could entail the submission of the learner's CASS marks together with their portfolios to an external official at the end of every school term. The aim of this exercise is to determine whether educators are implementing CASS and to check on the standard and quality of the CASS tasks.

It is envisaged that the adoption of such an approach would produce the following advantages:

- it is easier to moderate small amounts of work than moderating all the work at the end of the year;
- immediate feedback can be given to educators which will assist to remedy problems areas;
- learners who are performing poorly can be attended to;
- learner absenteeism can be detected; and
- poor standard and quality of CASS can be detected and remedied.

To ensure equity of the CASS marks, face moderation should be coupled with statistical moderation. Face moderation is the term used to describe the personal interaction between the moderator and the learner whose CASS marks are being verified. It provides an opportunity for the moderator to ask questions on the activities and tasks submitted as part of the CASS requirements. Face moderation could be conducted internally by the subject head at the school level and thereafter verified by an external moderator at district/cluster/provincial level. The purpose of face moderation is to ensure that the mark allocated to a learner for a particular task is fair, valid and reliable.

This rigorous exercise of moderation is considered necessary until all educators are familiar with the practicalities of CASS implementation and the perception of

what constitutes a good and acceptable standard (DoE, 2003c). Until such time Umalusi will continue to use statistical moderation to enhance the credibility of all CASS marks so that it can be included in the final mark for national certification purposes.

Verification of the CASS mark

Verification is a process of ensuring that moderation has been carried out efficiently and effectively by the examining body (Umalusi, 2002c). This verification exercise is carried out by Umalusi whose function it is to confirm that moderation did occur and that the CASS marks awarded to learners are fair, valid and reliable.

However, CASS verification is carried out on a very small scale with Umalusi sending out teams (2 persons per team) of verifiers to examining bodies at the end of the academic year. At present only the CASS marks of the six national subjects are verified, however, this is also not happening in all the provinces. This means that Umalusi may send a team of Mathematics verifiers to a particular examining body whilst they may send another team of History verifiers to another examining body. Although the marks of all six subjects are verified, they are not verified in all provinces. The reason for this is the lack of capacity at Umalusi to deal with the challenges of CASS implementation.

Monitoring the conduct of the examination, the marking process and the auditing of the examination mark

The conduct and administration of the Senior Certificate examination is regulated by the National Education Policy on the conduct of the Senior Certificate examinations (DoE, 2001d). Since it is the Minister's prerogative to determine norms and standards for the conduct of examinations, the policy document contains vital requirements that all examining bodies (both public and private) must comply with. The policy also provides the necessary policy direction and guidance on all issues relating to the examinations, namely, the drafting of examination timetables, the planning of the examinations, the registering of learners and examination centers, the appointment of invigilators and markers, the marking procedure to be used, the capturing of marks, dealing with irregularities,

the viewing of examination scripts by learners and the issue of security and confidentiality during the examination process (DoE, 2001d).

Despite the existence of clear policy on the conduct of examinations, there is a need for examining bodies to be monitored from time to time due to the incidents of irregularities and leakages associated with the Senior Certificate examinations of the past (DoE, 1999a). Apart from examining bodies monitoring the conduct of their own examinations; at a higher level, the national department of education and Umalusi also monitors the conduct of the Senior Certificate examinations of all examining bodies.

The purpose of this exercise is to verify that the examinations are being conducted in accordance with policy, however, besides this, the regular presence of monitors during the conduct of the examinations has created an awareness amongst examining bodies and the public sector of the need to ensure an incident free examination. The incidences of irregularities, for example, has drastically decreased over the past two years with the 2003 examinations recording no significant incidences.

The monitoring exercises by the national department of education are conducted long before the start of the examinations. The purpose of these ongoing monitoring exercises is to check on the security measures adopted by the examining bodies and the state of readiness of the examining bodies to conduct examinations. Just prior to the commencement of the examinations, the monitors compile a detailed report, which informs the Minister on the readiness of the various examining bodies to conduct the Senior Certificate examination. As an independent quality assurer, Umalusi also performs a similar function.

The national monitors and Umalusi carry out similar monitoring exercises during the writing, marking and the capturing of marks. During the writing of the examinations, aspects such as the seating arrangements, the display of the examination time - table, the number of invigilators and whether they have been trained, the storage of the examination question papers, the handling of irregularities and the conditions for the writing of the examinations are checked.

During the marking of the examination scripts, the national department of education and Umalusi quality assures a sample of marked scripts to ensure that the correct marking guidelines were followed and that the moderation of the marked scripts by the chief marker/deputy chief marker has taken place. In addition, the marks of a sample of 10% of the scripts are totaled to check if the calculations have been done correctly and this is then verified against the mark sheet where the marks have been captured.

The above measures are perceived by examining bodies as a means of support. The monitors are accorded much respect and are regarded in high esteem. Their presence at examination and marking centers adds credibility to the entire examination process.

Statistical moderation of CASS

Statistical moderation refers to the process where the CASS marks are statistically adjusted so that they do not deviate drastically from the adjusted examination marks of learners (SAFCERT, 2000). This function is performed by Umalusi. The rationale for the use of statistical moderation is based on evidence which indicates that the CASS marks supplied by many schools/examination centers often differ considerably from the learner's examination mark and vary considerably among schools/examination centers (SAFCERT, 2002a). Since these unstandardised (raw) marks do not give a true reflection of the learner's achievements in terms of the national/provincial norms, they must be standardised (DoE, 2001b). The argument provided by education officials for the use of statistical moderation is the following (DoE, 2003c, p. 6):

“we assume that our systems are not reliable enough yet to determine that assessments have been conducted and that all judgements are based on a common understanding of what constitutes a pass, a merit, a distinction and so on. Some teachers from their experience will be stricter than others, others will be more lenient, others may not have the necessary experience to know what an

acceptable standard is and yet others may not even conduct the assessments but still provide a mark”.

The above comments indicate the unreliability and instability of CASS at operational level at present. Given the fact that CASS is still in its transitional stages, it would be dangerous to accept all the CASS marks as is especially in circumstances where there is a lack of common understanding in the implementation of CASS across provinces or where the CASS marks are faked/manipulated by educators.

According to Umalusi the use of the statistical moderation is regarded as a credible practice and are reliable, cost effective and appropriate for South African conditions (SAFCERT, 2002b). Further, the report of the Ministerial Committee on Examinations also indicate that the statistical moderation of CASS will not only serve as a tool for training, but it will also help to eliminate major discrepancies between internal and external assessment (DoE, 1998a). However, Umalusi also agrees that the use of statistical moderation for CASS is not a permanent feature of the education system. The decision to do away with statistical moderation will therefore depend on the readiness of educators to conduct CASS in the proper manner.

Statistical moderation is currently applied per institution and per subject. (Umalusi, 2002a). The following formula is used in the statistical moderation of the CASS mark (DoE, 2001b, p. 6):

$$TC = \frac{SDE}{SDC} (C - MC) + ME + TF$$

with the symbols having the following meaning:

- TC = transformed (adjusted) mark for this learner
- C = unadjusted mark for this learner (raw marks)
- SDE = Standard deviation of the standardised examination marks for the specific subject at this specific school

- SDC = standard deviation of unadjusted CASS marks for the specific subject at this school
- ME = mean of standardised examination marks for the specific subject at this school
- MC = mean of unadjusted CASS marks for the subject at this school
- TF = tolerance factor - the gap between the standardised examination mark and the statistical moderated CASS mark. It is usually expressed as a percentage.

Below is an example of a diagrammatic graphical representation of linear transformation of the CASS mark for Biology standard Grade at a school for November 2000.

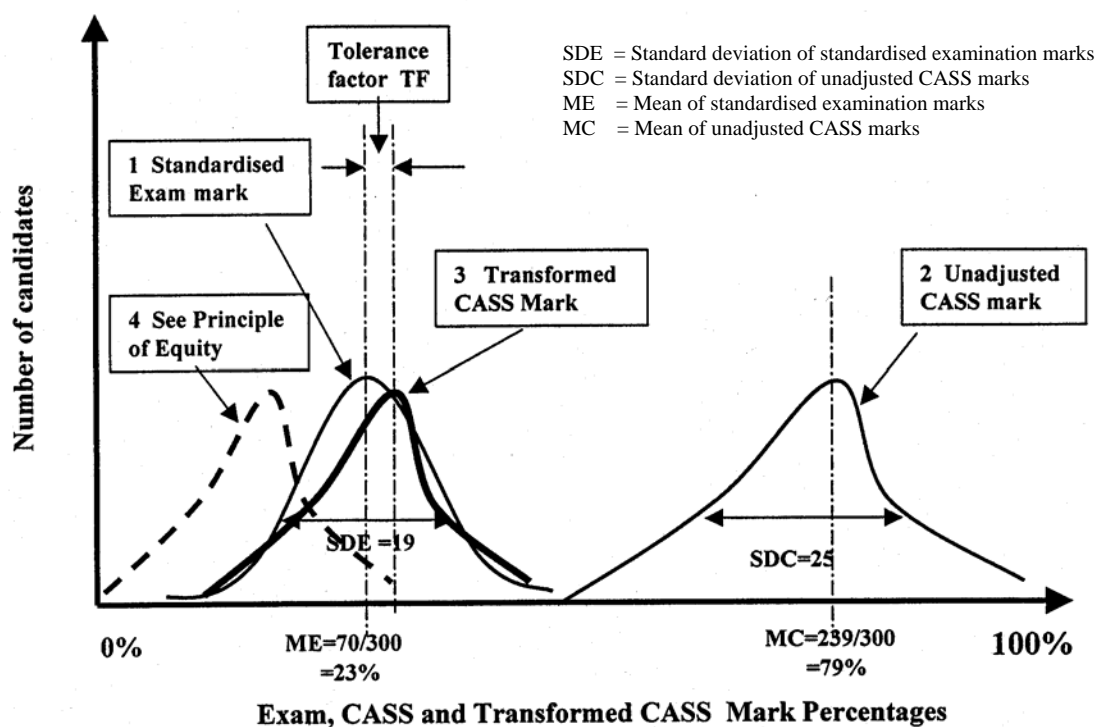


Figure 3.1 Diagrammatic graphical representation of linear transformation of the CASS mark for a specific subject at a specific school (DoE, 2001b, p. 9)

According to the Figure 3.3, the mean of the standardized (adjusted) examination score is 23%, whilst the mean of the unadjusted (raw) CASS mark is 79%. The difference between the mean of the standardised examination mark and the mean of the unadjusted CASS mark is 56% (79% less 23%). This is clearly a case where the CASS marks are too high. According to Department of Education (DoE, 2003, p.3), *“if a class worked hard through the year and realistic CASS marks are compiled, it will be reflected in a good average examination mark and a good CASS mark which will correlate with the examination mark.”* Based on this reasoning, the CASS mark of 79% must be adjusted so that the mean of the CASS marks are 5% above the mean of the examination mark for every subject at every school (DoE, 2003c, p. 3).

The 5% refers to the gap (degree of acceptability) between the standardised examination mark and the statistical moderated CASS mark. It is usually expressed as a percentage. To align the CASS marks to the standardised examination mark, the CASS mark must be transformed using the prescribed formula. In this case the transformed CASS mark will be 28%, where a tolerance factor of 5% is used.

According to the Department of Education (DoE, 2003c, p. 3), *“as the assessment and moderation capacities of the examining bodies improve, the emphasis on statistical moderation of CASS will gradually be reduced”*. The Department of Education and Umalusi indicates that the statistical moderation of CASS at this stage and perhaps over the next few years is absolutely essential until they are convinced that CASS can be implemented in a valid and reliable way (DoE, 2003c).

Standardisation of examination marks

The standardisation of the Grade 12 examination marks is a function of Umalusi that takes place immediately after the marking of all examination question papers. The main reason for the standardisation of results is due to the perception that the examination question papers differ in standard and quality and may produce different results across examining bodies (SAFCERT, 2002b). According to the Ministerial Committee on the Investigation into the Senior Certificate examination,

the moderation of standards across examining bodies is very limited and flawed (DoE, 1998a). If this is the perception of the Ministerial Committee, it does create a sense of unreliability in the general standard and quality of question papers.

Since the same criteria are applied to issue the Grade 12 qualification to all learners, there is a need to ensure equity and comparability in standards across examining bodies. This is then achieved through the standardisation of the examination marks to the norms of the previous five years. In effect, it means that the actual marks of learners are amended so that they are more or less consistent with the marks achieved by learners in the previous year (SAFCERT, 2002b).

According to Umalusi (2002b), the standardisation of the examination marks is based on the argument that the final results in each subject do not differ markedly from one year to the next. This is to be expected because changes in the ability of candidates or effectiveness of teaching and learning seldom result in significant changes in examination results within a short space of a year.

However, this perception of Umalusi is heavily criticised by departmental officials who believe that learners are treated unfairly. The argument is why should the examination marks of learners be standardised when Umalusi has already moderated the question papers, conducted an audit of the marks and verified the CASS marks. Umalusi also recognises that there is also a danger in the changing of learner's raw marks since the Constitution makes provision for learners to access their examination question papers to verify their marks. This may aggravate issues and may lead to legal confrontations (SAFCERT, 2002b).

In the 2002 and 2003 examination, for the provincial question papers, the raw scores of each examining body were standardised against the norm for each subject for each examining body (SAFCERT, 2002b). Norms are derived from the raw examination results for the previous 5 years (SAFCERT, 2002b), however in 2002 and 2003 a three-year norm was used instead of the five-year norm.

However, in the case of the six national subjects, namely, Accounting, Biology, English Additional Language, History, Mathematics and Physical Science, the raw

scores of all provinces in each of the six subjects were standardised against a common norm, which was calculated by averaging the raw marks of the past three years of all provinces. This procedure was followed to promote the principle of equity and fairness for the national subjects at all schools (DoE, 2001b).

In this regard, Umalusi (2002a) indicates that the standardisation process is based on the principle that when the standard of examinations (from one year to the next, from one subject to another or from one examining body to another) are equivalent, there are certain statistical mark distributions that should correspond. This statement is based on the assumption that learners with equal ability, who write different examination question papers will obtain equivalent results.

Calculation of the Final Promotion Marks

The learner's final promotion marks are calculated in the ratio of 75% for the external summative assessment and 25% for CASS. In each subject, the standardised examination mark is combined with the statistically moderated CASS mark to arrive at the final promotion marks as illustrated in Figure 3.2.

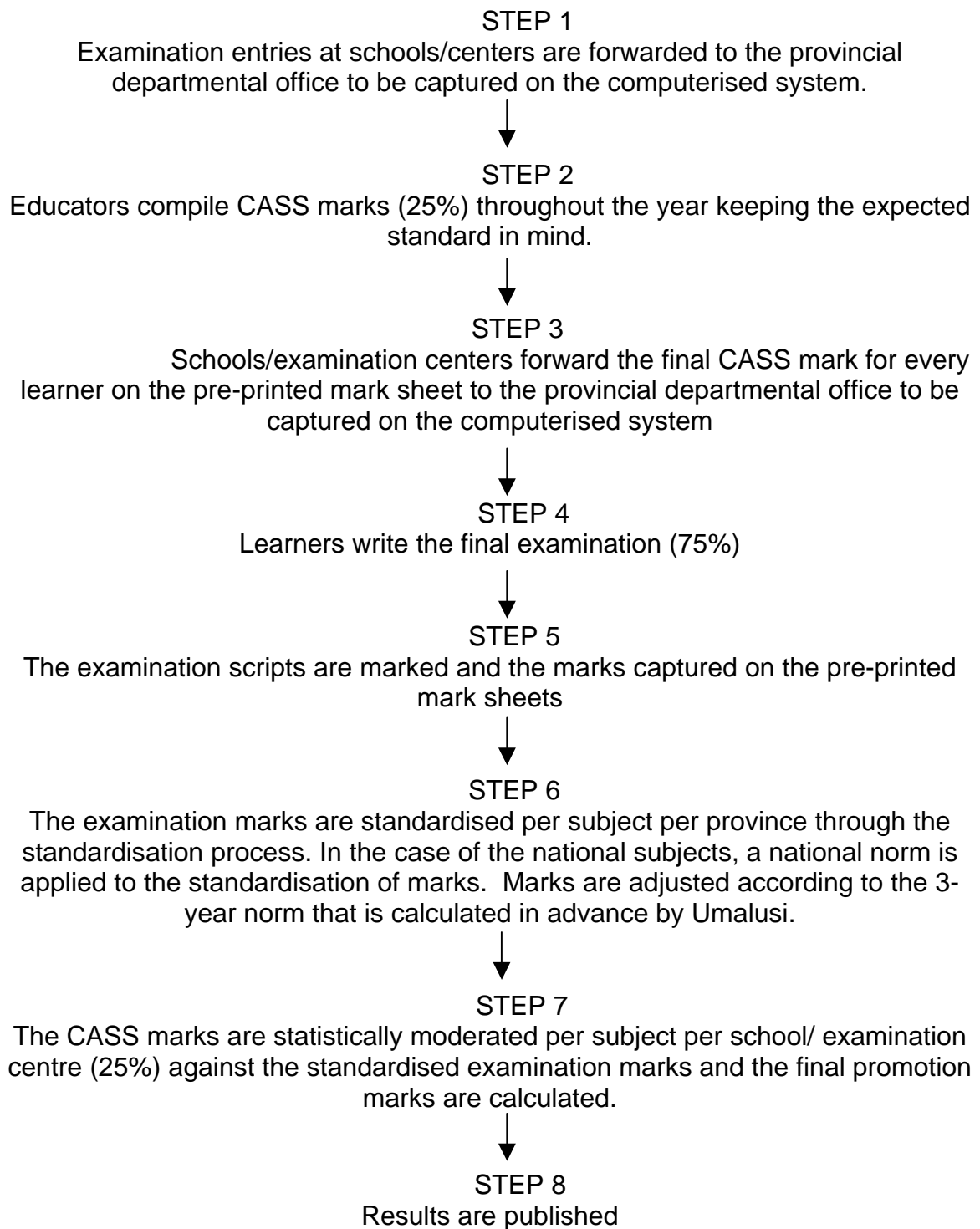


Figure 3.2 Calculation of the Grade 12 examination results (Adapted from DoE, 2001b).

3.3 Fairness, Validity and Reliability as Principles of Assessment

The practice of OBE in South Africa should be accompanied by a number of internationally recognised assessment principles that are critical to the successful implementation of CASS (DoE, 2002c). Although there are numerous principles that apply to assessment the three most important principles that will be dealt with in this section are fairness, validity and reliability. It is important that educators become familiar with these principles and are able to apply them in everyday teaching and learning so as to enhance the credibility of their assessment.

If educators are ignorant or are unable to understand, interpret and apply these principles in a meaningful and consistent way, assessment may be flawed. In the current Senior Certificate examinations, the marks obtained by learners for CASS must be fair, valid and reliable since it is used for selection into Higher education, certification, job placement and to maintain the credibility of the examinations. The following section deals with the principles of fairness, validity and reliability. Each principle will be dealt with separately.

Fairness

For assessment to be regarded as valid and reliable, it must firstly be conducted in a fair manner. According to McMillan (2001), fairness means a condition or situation in which assessments are not unduly influenced by factors unrelated to the learning objectives or standards that are being measured. From this perspective, the meaning of fairness can be illustrated by the following example. Two groups of learners were writing an examination of 3 hours duration. The temperature was 38°C. The one group wrote the examination in a classroom that was well ventilated, and which also had ceiling fans. Fresh, cold drinking water was placed on the tables in front of the room. The second group wrote their examination in a room that looked more like a garage with only two little windows. The ventilation was poor and there was no water available for the learners.

In the above example, it is clear that the first group was placed in a more favourable position compared to the second group. Although the conditions of good ventilation and fresh, cold water vs poor ventilation and the unavailability of

water has nothing to do with the actual assessment, the conditions under which the assessment is carried out is likely to affect the performance of the learners.

The dictionary defines the concept “fairness” as “sound”. This means that assessment must be meaningful and relevant to all learners alike and educators must be able to make sound inferences about what a student knows, understands and can do (McMillan, 2001; Gipps & Murphy, 1994). To ensure fairness in assessment an educator must take into account various factors, including but not restricted to the background and interests of the learner, the relevance of the curriculum, the socio - economic background, the language used to assess and the type of illustrations used for assessment. Research indicates that learners are better motivated to learn if what they are learning is related to their background and interests (cited in Mcmillan, 2001, p. 58). According to Gipps and Murphy, if the contents of a subject are aligned to the background and interests of a group of learners, the assessment will place these learners at an advantage compared to the group that does not have an interest in the subject. Hence, the second group will experience the assessment as less meaningful and this will impact on the achievement of these learners. In this context assessment is seen as being bias or unfair.

Also of interest and importance to this study is the definition provided by Sieborger and Macintosh (1998, p. 11). They define fairness as, “treating all learners in the same way. It does not necessarily mean that all learners are treated equally, but that the conditions of assessment are the same for all”. However, in the real situation, it is impossible to indicate that conditions for assessment are the same in all schools. In fact they are not.

The report on the Quality Assurance Indicator Project (DoE, 1999c), states that the effectiveness of teaching and learning was found to be related to certain minimum inputs such as textbooks and libraries. Of the 297 schools surveyed for this project (33 schools in each province), only 62% of primary learners and 48% of secondary learners had textbooks for all subjects. This means that 52% of the secondary school learners surveyed did not have access to all their resources. The lack of resources impacts on effective teaching and learning and disadvantages those

learners who do not have the necessary material to participate meaningfully in lessons.

Sieborger and Macintosh (1998, p. 13) indicate that the following five factors should be taken into account when trying to establish fairness:

- *The importance, length, size or weight of the assessment - does it match the amount of work which has been done?*

If an educator spends only 30 minutes of his teaching time dealing with a section of the syllabus that is very important and constitutes 40% of an examination question paper, the assessment can be regarded as unfair. The goal of assessment is not to trick learners, therefore educators must be clear about the knowledge and skills that learners need to acquire and understand so that they are able to use them in real life situations.

- *The choice of the assessment technique - does it match the way in which learners have been taught?*

An educator who has taught a particular topic using multiple choice questions but sets essay type questions in an examination is unfair.

- *The instructions and/or questions given to learners - do all learners understand what they are expected to do or answer?*

Instructions provided to learners must be clear, concise and unambiguous. Learners must understand what is expected of them. The language used must be easy to understand.

- *The method of administering the assessment - are the conditions appropriate; is there enough time; do learners have access to resources they need?*

This aspect is crucial to the assessment process. It raises questions such as whether learners have proper ventilation on a hot day (as illustrated

above); are there sufficient desks on which learners are able to write; are the necessary laboratory equipment available to conduct the research; is the time sufficient to complete the assessment; is there a library at the school where learners are able to gather information for their projects?

- *The method of marking - is it as objective as possible?*

This means that educators must be objective in their marking and free from bias. Making use of specially designed marking tools, assessment criteria or rubrics enhances objectivity. Although the use of assessment criteria or rubrics helps educators to evaluate the learner's work, they however do not guarantee that all educators will be consistent in their marking. Consistency can only be attained if there is common understanding amongst educators on the application of the criteria. Maintaining a sense of objectivity in marking is linked to educator professionalism and development. Educator professionalism can be defined as, "the capacity to make discretionary judgements in the interests of improved student outcomes and transformative educational change" (cited in Yung, 2002, p. 99). This means that educators must be able to use their knowledge and skills in the best possible way to make judgements about students learning. The opposite of objectivity is subjectivity. In this context subjectivity means that educators should not allow their own personal feelings and prejudices to get in the way of making sound judgements about student's achievements.

In addition to the above requirements, it is absolutely essential that the entire assessment process is fair. This would include aspects such as ensuring that learners are informed about the sections or topics to be covered in a particular lesson or test and that they are informed about the criteria to be used for the scoring of the assessment.

Validity

The American Educational Research Association, American Psychological Association and the National Council on Measurement in Education, defines validity as, “ a unitary concept that refers to the degree to which a certain inference from a test is appropriate and meaningful” (cited in Killen, 2003, p. 25). In other words validity always refers to the degree to which evidence supports the inferences that are made. Killen justifies this definition by indicating that the inferences or value judgements that educators make about the attainment of learning outcomes by their learners is supported by the evidence (the actual work or task) completed by the learner. The evidence from which the educator makes her/his inferences is what matters the most since it reflects on student learning and performance.

However, for a more unified definition of validity, Messick indicates that the appropriateness, meaningfulness and usefulness of score - based inferences depend also on the social consequences of the testing (cited in Stobart, 2003, p. 28). He states that social values cannot be ignored in considerations of validity. A third view is that validity should be looked at, as an integrated concept (Stobart, 2003). The integration would include the entire assessment process and not just the assessment instrument or the manner in which the assessment is scored.

For a national view on validity, the new South African qualifications framework requires assessment to be valid and authentic (Pahad, 1997). Authentic assessment presents learners with real - world challenges that require them to apply their relevant skills and knowledge (Guba & Lincoln, 1989).

A much narrower definition of validity is, "the extent to which the assessment measures what it is supposed to measure (content validity), or whether it does what it is meant to do" (Sieborger & Macintosh, 1998, p. 11). The following examples help to explain this definition of validity (Sieborger & Macintosh, 1998):

- an exercise is intended to assess how learners can apply what they have been taught, but most of the learners don't understand the instructions. The assessment therefore has little validity;

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- two classes have been set the same assessment activity, but they haven't covered the same work. For one class the assessment is valid, for the other it may not be; and
- learners are given a multiple - choice test, but they have not been tested in this way before and are confused. The test has not much validity as a result.

The various definitions recorded above indicate that the concept validity is much broader and includes other aspects of the assessment than just the content alone.

Reliability

Reliability refers to the consistency of the assessment and whether it will always give the same result or not. The following examples help to explain reliability in assessment (Sieborger & Macintosh, 1998, p. 12):

- a reliable assessment is one which can be repeated under the same conditions and which will give the same results. For example, if a learner gave a talk and a month later gave the same talk again in exactly the same way, he or she should receive the same result if the assessment is reliable;
- if an exercise is marked in a reliable way, it should be given the same marks, whether it is at the top of the pile or at the bottom, whether it is marked quickly or slowly, whether it is done by a girl or a boy, whether the teacher likes the learner or not, and whether or not it is marked by different markers.

Van der Horst and McDonald (1997) state that without fair, valid and reliable assessment procedures you will simply not know whether or not your learners have achieved the learning outcomes that were the focus of the programme, unit or lesson, and neither will the learners know whether they have learnt well.

3.4 Implementing CASS

To ensure that formative assessment is fair and honest the teacher and learner are required to collect work samples, records of systematic observation and tests in portfolios that can be moderated by other teachers (Pahad, 1997). The Maryland Assessment Consortium (1999, p. 1) define a portfolio as "a collection of

work, usually drawn from student's classroom work." However, in the South African context, a portfolio also includes tasks completed by learners at home. These may include amongst others, assignments, homework, projects and practical work. Portfolio's can be designed to assess student progress, effort, and/or achievement, and encourage students to reflect on their learning (Freeman & Lewis, 1998).

A portfolio becomes a portfolio assessment when (Sieborger & Macintosh, 1998):

- the assessment purpose is clearly defined;
- criteria or methods are made clear for determining what is compiled into the portfolio, by whom and when; and
- criteria for assessing either the collection or individual pieces of work are identified and used to make judgments about performance. These are made known to the learner in advance.

Sieborger and Macintosh (1998) add that in terms of evidence for assessment learners are given the responsibility of keeping a portfolio of everything that they have done in a course, learning programme or subject. In other words the portfolio is a collection of work, which serves as evidence in terms of the outcomes that the learner has achieved. The evidence is then used to make valid inferences about the assessment and provides a sound basis for the quality assurance of SBA results (Vandeyar & Killen, 2003). It forms the basis of the evidence that is used to make a decision on the results of the learner. The advantage of compiling a portfolio is that it gives learners some control over their assessment (Sieborger & Macintosh, 1998), meaning that learners are able to monitor their own progress and see how they can improve on previous performance. In the present system, it is imperative that the learner's portfolio is moderated at school, cluster/district and provincial level, with external moderation and verification being part of the process where the CASS marks are validated against the assessment criteria or rubric.

Assessment criteria can be defined as a set of performance statements against which a task may be evaluated (Freeman & Lewis, 1998). The assessment criteria make the link between the assessment and the learning outcomes-in other

words they operational the outcomes. In OBE, a learner's progress is measured against clear criteria, which have been stipulated prior to the learning process. Criterion referencing replaces norm referencing. This means that the learner's work would be measured in terms of his own progress and development and not as a norm where the learner's performance is assessed in comparison to other learners (DoE, 1995).

The use of explicit criteria is essential to both the assessor and the learner. For the learner, it assists her/him to focus time, effort and resources on what is required. For the assessor, clearly spelled out assessment criteria ensures effectiveness and efficiency, but most importantly, it improves the likelihood of reliability. Figure 3.3 illustrates the steps to be followed in assessing a portfolio.

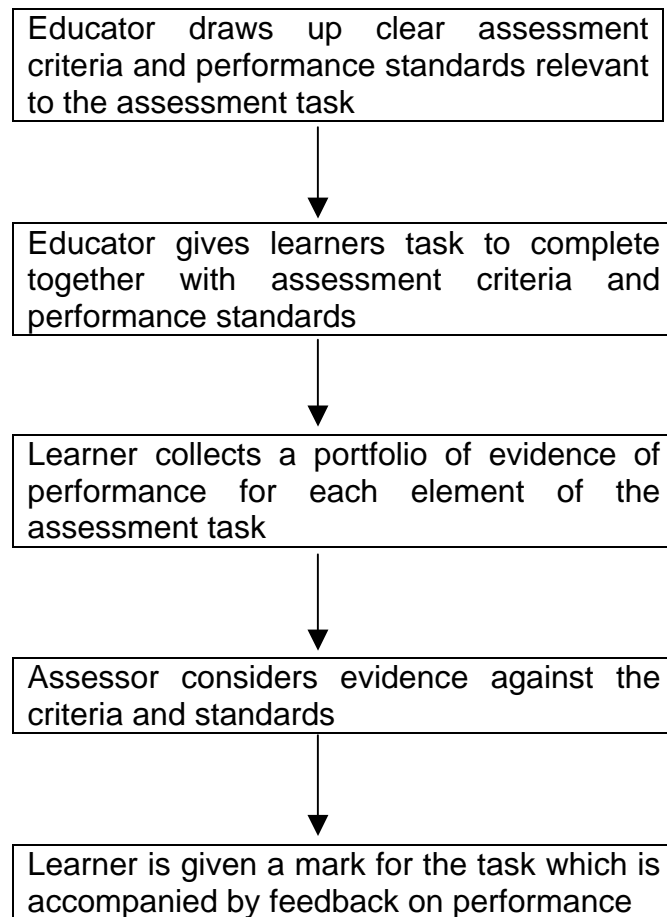


Figure 3.3 Assessing a portfolio against clear criteria and performance standards (Adapted from Freeman & Lewis, 1998)

Figure 3.3 illustrates the process of arriving at the CASS mark. When learners are given the assessment criteria and performance standards together with the CASS tasks, they are able to know what is expected of them. It is important that educators work out in advance their assessment criteria and performance standards so as to make the instructions clear to their learners.

A rubric can also be used to assess the work of a learner. A rubric is a scoring tool, which lists the criteria according to which a particular task will be assessed. They help to ensure that quality is defined and scoring is more objective. According to the Maryland Assessment Consortium (1999) a rubric consists of a fixed measurement scale (e.g., 4 point) and a list of criteria describing the characteristics of performance for each point score. Fischer & King (1995) indicate that the use of rubrics as a tool for scoring a task has the potential for placing the power and responsibility back onto the learners to help them know what is being asked of them and how to achieve it. Rubrics assist both educators and learners to know in advance what standards must be met and how it must be met.

In the South African context, the term rubric is used to illustrate the assessment criteria in table form. The advantages of using a rubric are illustrated in Table 3.1.

Table 3.1 The benefits of using rubrics in assessment for educators and learners

Teachers	Learners
<ul style="list-style-type: none"> • save time in providing feedback during marking 	<ul style="list-style-type: none"> • see what is important in their learning experiences
<ul style="list-style-type: none"> • can evaluate individual or team work 	<ul style="list-style-type: none"> • see how to meet the teacher's assessment expectations
<ul style="list-style-type: none"> • can allow co - teachers to evaluate learners' work comparably 	<ul style="list-style-type: none"> • see what the different levels of proficiency are
<ul style="list-style-type: none"> • can be adapted for use in similar tasks within the same Grade or other Grades 	<ul style="list-style-type: none"> • evaluate their own, and their peers' work
<ul style="list-style-type: none"> • can track performance of a learner over a period of time and determine those sections that need more work and practice 	

Source: (Fischer & King, 1995)

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Although the development of rubrics provide direction to educators in the assessing of the CASS tasks, many educators still need to be trained to use rubrics effectively. Subject area expertise is essential to grasp the correct interpretation of the “anchors” provided.

Despite the use of well - developed assessment criteria and rubrics to assess CASS, there is still a possibility that the assessment may be subjective. Research shows that school-based assessment can be unreliable, for example (DoE, 1999c, p. 20):

“Implementing assessment in an authentic context implies that there has to be a strong element of trust in the relationship between the learners and the system.”

The above statement is supported since the educator in most instances is the sole judge of a learner’s work and if the work is not moderated/verified by another person, it may be unreliable especially considering the subjective nature of the assessment. A case to be noted in this instance, is where a verifier appointed by Umalusi to verify the marks in Mathematics, in the Eastern Cape, discovered that 80% of the answers in the memorandum used by the educator to assess the learner’s work was incorrect (Umalusi, 2002c). This is indeed alarming. One can only conclude that the educator concerned lacks the knowledge and skills to teach and assess any work in Mathematics. This has and will have a disastrous impact on teaching and learning and ultimately on the fairness, validity and reliability of the CASS marks.

The fairness, validity and reliability of CASS can only be improved when teachers understand what skills they are assessing (assessment objectives/outcomes) and how they should assess them in order to recognise different levels of performance by candidates. This is however only possible if educators are properly trained in the area of assessment.

3.5 Conclusion

In conclusion, it is evident that whilst some examining bodies have more experience with CASS, other examining bodies have only commenced with CASS in 2001. This would undoubtedly present certain challenges for educators at Grade 12 level, especially where they have had little or no training. Evidence shows that there is the problem of varying CASS standards across examining bodies (DoE, 2003c). This is an area in which educators across provinces need training and support so that they are able to prepare tasks that are of the correct standard and quality. Another challenge facing educators is the ability to use the correct assessment criteria to evaluate the CASS tasks.

Although research shows that there are some quality assurance measures such as the use of face moderation by provincial examining bodies to ensure the fairness, validity and reliability of the CASS marks, this is being conducted on a limited scale and is implemented inconsistently across examining bodies. For this reason Umalusi, the quality assurance council has introduced the use of statistical moderation to enhance the credibility of all CASS marks. This measure will also address the discrepancies between the marks obtained through CASS and the marks obtained in the external assessment. According to Umalusi, it would be dangerous to accept all the CASS marks as is especially in circumstances where there is a lack of common understanding in the implementation of CASS or where the CASS marks are faked/manipulated by educators. To be able to understand the complex nature of CASS, a literature review on the implementation of OBA is presented in the next chapter (Chapter 4).

CHAPTER 4

Continuous Assessment: Learning from Literature

Overview of the Chapter

This chapter presents a review of some of the literature on continuous assessment as it relates to OBE and its implementation. This is followed by a review of literature relating to the research questions underpinning this study, namely, the problems and challenges experienced by Grade 12 Biology, Mathematics and Physical Science educators in the effective implementation of CASS, the kinds of support provided to educators to strengthen and to sustain the effective implementation of CASS and literature on the extent to which the CASS marks are fair, valid and reliable.

4.1 Introduction

The aim of this chapter is to summarize what is known about continuous assessment and to address its implications for South Africa.

Most of the literature on assessment was gathered from manual searches of existing policy documents of the Department of Education, education journals and books available from South African libraries. Many articles on assessment were retrieved via the Department of Education library and from colleagues at provincial and national departments of education. Documents and articles relating to the topic were also retrieved via electronic searches and website searches.

In terms of the structure of this chapter, section 4.2 examines some of the existing literature on continuous assessment as it relates to OBE and its implementation in the international and in the South African context. This serves as a prelude to the analysis of literature on the research questions. Section 4.3 presents the literature on the problems and challenges experienced by educators in the effective implementation of CASS and this is followed by literature on the kinds of support provided to educators to strengthen and to sustain the effective implementation of CASS. Section 4.4 examines to what extent the CASS marks are fair, valid and reliable.

4.2 OBA and its Implementation

Over the past few years, new approaches to examination and assessment have emerged in a number of countries (Yung, 2002). The manner in which a country runs its examination and assessment is determined by its educational policy, which guides educational practice. The word “practice” is synonymous with the word “implementation”. Implementation is defined differently by different scholars. Fullan (1994, p. 217) defines implementation as, “putting a change into practice”. This is a general definition of implementation. A better definition of the word implementation in the context of education policies is provided by Fowler (2000, p. 270), who indicates that implementation can be defined as “the stage of policy process in which a policy formally adopted by a government body is put into practice.” Fowler’s definition will be used to elaborate on issues relating to OBA and its implementation since it is most appropriate in the context of this study and because it relates directly to the process of policy implementation by government.

Internationally, governments have begun to take a keener interest in education with the intention of changing the curriculum and assessment so that it is aligned to the needs of the country and the skills required by the labour market (Johnson, 1998). In the United Kingdom (UK) for example, the school curriculum for vocational education has reinforced the move towards a more practical, vocationally oriented curriculum and the move towards more practical, school-based assessment (Wolf, 1995). The adoption of a practical and vocationally orientated curriculum signifies a shift from the academically focused curriculum which does not satisfy the ever - changing needs of the economy. The UK is not the only country that is adopting changes to its curriculum and assessment policy and practices. Other countries include, for example, Australia, Japan, USA, New Zealand, Hong Kong and South Africa.

In this regard a number of scholars agree that the current interest in OBE is to a very large extent, the result of community pressure for accountability in education (Killen, 1996; Towers, 1992). These scholars add that OBE is often more attractive to politicians and administrators than it is to teachers who are faced with the practicalities of implementing it. The development of national profiles (descriptions

of the progression of learning typically achieved by students during the compulsory years of schooling) in Australia is an indication of the emphasis placed on accountability. This means that schools are required to produce measurable “outputs” since public monies are invested in them (Killen, 1996). Similarly, in South Africa major emphasis is placed on the results of the Senior Certificate examinations. What is not considered is the quality of results of each learner and whether a Senior Certificate pass will enable a learner to pursue her/his preferred career of choice.

Many other reasons have been cited for the introduction of curriculum reform worldwide. Fataar (1999, p. 3) in his article titled, “School Curriculum Policy and Politics in South Africa” refers to the terms “compensatory legitimation”, meaning that, “the emphasis of many curriculum reforms on the symbolism of change and innovation, reflects the concerns of the decision - makers over the legitimacy of the decision making process, and is designed to contribute, in a compensatory fashion, to the restoration of that legitimacy”. In this regard Weiler argues that curriculum is one of the most important policy areas used by a state to deal with its legitimacy deficit (cited in Fataar, 1999, p. 4).

In this regard, one cannot ignore the point made by Jansen (1999) when he stated that South Africa found “external legitimation” through curriculum policy borrowing from international context (cited in Fataar, 1999, p. 20). The introduction of OBE in South Africa was as a result of the strong working relations and influence of Australia and New Zealand. Disappointingly, this “policy borrowing” took place without much foresight given to its implementation process. The consequences of this are discussed later in this chapter.

In Australia, the link between schooling reform and economic reform is expressed as follows (Brady, 1996, p. 26):

“The schooling industry is to produce people with skills and qualities needed in other industries to improve their performance, to adapt flexibly to changing needs and conditions, and to significantly increase the Gross National Product and reduce the national debt.”

Although this reason is acceptable, it is not holistic. Schools should offer much more than skills and qualities needed in industries. Carr and Claxton (2002), indicate that the fundamental purpose of education for the 21st century is not so much the transmission of particular bodies of knowledge, skill and understanding as facilitating the development of the capacity and the confidence to engage in lifelong learning. These scholars argue that in addition to the transmission of knowledge, skills and understanding, there is a need to facilitate the development of capacity and the confidence to engage in lifelong learning. What they mean is that the focus of education should also be on the development of aptitudes, attitudes and values that will equip young people to function well under conditions of complexity, uncertainty and individual responsibility, to help them become good real life citizens.

In the South African context, the principle of lifelong learning is embedded in the NQF. The NQF makes provision for the integration of education and training according to the principles of OBE. Contrary to the claims documented in policies and reports, much of the promises exist in theory only (DoE, 2002e). Much more attention needs to be given to the practicalities of its implementation.

The new approach to education and training demands that the schooling system must be designed in such a way that it prepares learners for integration into the world of work as well as develop their capacities to engage in lifelong learning. However, for any school to function effectively and meet the demands of a competitive and global society, its schooling system must be guided by a clear and coherent curriculum and assessment policy; the curriculum must be meaningful and appropriate to the needs of learners and the economy they serve; and the assessment methods must aim to improve the learners' understanding of the subject matter so that they are able to apply their knowledge in real life situations (DoE, 2002d). This shift however cannot be achieved without the cooperation and willingness of those in charge of the teaching and learning process, namely, the educators, subject advisors and senior education managers.

Also, for teaching and learning to be effective, educators who implement the new policy must be willing to accept change. Brady (1996) indicates that there is a

need for student and teacher involvement, and if teachers are to lead change rather than be led by it, it is important that they can commit themselves to the meaning that a particular innovation has for them and for their school. What he means is that educators and learners need to be part of the change process; they need to know the benefits of the new curriculum and assessment policy. This however can only be achieved if they have been made to feel part of the process through interaction, consultation and meaningful participation. Educators need to feel that they were consulted from the beginning and that their opinions and inputs have had some bearing to the new policy. This would, to some extent, have ensured their understanding and gained their commitment to the process.

Briscoe (1993) and Fischer (1994) (cited in Yung, 2002, p. 98) have discovered that there is growing evidence supporting the premise that teachers do have theories and belief systems, which play an important part in their cognition and behaviour in teaching. In studies of how teachers implemented new initiatives in the curriculum, it is found that when the philosophy of the curricular innovation is significantly different from the theories and beliefs held by the teachers, the challenge or demand on the teachers requires them to restructure their beliefs or to “domesticate” the curriculum in order to fit it into their belief system (cited in Yung, 2002, p. 98). Sometimes, such restructuring or domestication may be problematic or even “personally threatening”. In a situation like this, educators would opt for the easy way out by not participating in the innovation. Some educators may even leave the teaching profession (Towers, 1992).

When one examines the above literature, it becomes clear that there are lessons to be learnt from the experiences of other countries. Whilst there is a need for government to make schools accountable, there is also a need to focus on the quality of education provided by educators. However, the quality of education can only be improved if proper measures are taken by governments to ensure that educators understand the curriculum and assessment system adopted so that it can be effectively implemented.

4.3 Problems and Challenges associated with the implementation of CASS

Kifer (2001, p. vii) indicates that, “*educators face a complex array of questions and concerns that little in their background or previous experience has prepared them to address*”. This finding illustrates that the implementation of CASS is not without problems and challenges, especially given the fact that it is a fairly new and complex approach to education and training. Numerous studies indicate that the implementation of OBA even in well - developed countries is problematic (Towers, 1992; Steyn & Wilkinson, 1998). Towers (1992, p. 89) state that, “*some schools are well along the process, some are experimenting with it in selected classes, and others have barely begun the conversation*”.

The introduction of OBE in Minnesota by the State Department of Education was met with a combination of applause, apprehension, grumbling and consternation (Towers, 1992). As one teacher indicated, “I am working to understand the concept of outcomes-based education, let alone implement it” (Evans & King, 1991, p. 73). According to Worthen (cited in Combrinck, 2003, p. 60), “for OBA to be successful, authorities should make sure that concepts, terminologies and language are clearly explained and clarified”. Jansen (1997), (cited in Combrinck, 2003, p. 60), supports this view and states that the issue of language and terminology is a major problem in many countries and specifically in South Africa.

However, the implementation of OBA in Minnesota is critiqued by Horton (cited in Towers, 1992, p. 93) who indicates that OBE and OBA will require more time and effort from teachers, many of whom are stretched to the limits. He added that teachers are further required to individualize their instruction, plan for and carry out a variety of remediation and enrichment activities on a daily basis, create and administer an assortment of assessment tools, and keep extensive records of each student’s progress. Horton adds further, that several principals have told him that some of their best teachers were now considering leaving the education profession because of the impeding pressures and workload that OBE carries. He adds that, “*these are the truly conscientious teachers, the teachers who could not live with doing just an adequate job and they will be able to find higher paying jobs*

in the private sector with no trouble at all” (cited in Towers, 1992, p. 93). This is unfortunate since the education system needs experienced and seasoned teachers.

Guskey (1994) reports that teachers perceive two general types of time pressures. The first being that they are required to do more and teach more, without any increase in the amount of time allowed for planning or instruction. Secondly, most teachers believe that performance - based assessment would require a lot more time to administer and score. Whilst it is agreed that OBE and OBA have increased the workload of educators, arguably educators have not been provided adequate support and training to deal with these challenges (Combrinck, 2003).

Literature also reveals that the lack of facilities and resources to conduct assessment has an influence upon the amount and range of evidence of achievement (Johnson, 1998; Guskey, 1994; Singh cited in Combrinck, 2003, p. 52). According to Johnson (1998, p. 401), “the historically white schools were clearly much better resourced than schools catering for African or Coloured learners”. In a South African quality assurance study conducted by the Department of Education (1999c, p. vi), it is reported that, “the effectiveness of teaching and learning has been found to be related to certain minimum inputs such as textbooks and libraries.” This means that schools that are better resourced are in a position to deliver more effective teaching and assessment activities than schools that lack resources (DoE, 2001f).

In addition to the problems and challenges mentioned above Johnson (1998) in his study of whether teachers could develop a portfolio of evidence reported that many South African teachers had no history of developing portfolios of children’s work and the collection of evidence is particularly challenging. According to Baker (1994), one of the challenges facing educators in the development of portfolios is determining which forms of assessment are most useful for which educational purpose. Clearly, if educators have not been trained to implement OBA (CASS), they would certainly experience difficulty in the compilation of CASS tasks.

Another grey area in assessment and one that is related to the fairness, validity and reliability of results, is the evaluation of learner achievement. According to

Brady (1996), one of the major challenges relating to the assessment of learner achievement is that teachers need to be addressed more comprehensively on the strategies necessary to evaluate the achievement of outcomes. He adds that the link between curriculum and the assessment of outcomes is emerging as a real challenge.

Literature also shows that the implementation of CASS in large classes is a problem (Johnson, 1998; Singh cited in Combrinck, 2003, p. 52). In South Africa, the DoE reports that large class sizes are making the implementation of CASS difficult especially with respect to the assessment of projects and attending to the varying language requirements of learners (DoE, 2002a).

From the literature presented above it would seem that the implementation of CASS is not without problems and challenges. Some of the problems and challenges highlighted in the literature include the lack of understanding, knowledge and skills to undertake OBA. This is exacerbated by the perception that OBE and OBA increases the workload of educators, which places additional pressure on educators. It is also evident that the availability of resources also impacts on the effectiveness of CASS implementation. Research shows that the evaluation of learner achievement is an added challenge as was the problem of large class sizes.

The next section looks at the support provided to educators to strengthen and to sustain the effective implementation of CASS.

4.4 Support to Strengthen and to Sustain Effective Implementation

This section examines literature on the three aspects covered by the research question, “the kinds of support provided to educators to strengthen and to sustain the effective implementation of CASS” The first aspect examines literature on educators’ familiarity with the policy on CASS (OBA), the second aspect looks at the provision of training to effectively implement CASS and the third aspect examines how educators are supported to enable them to implement CASS effectively.

Educators familiarity with the policy on CASS

It must be noted that although this study refers to national and provincial subject policies on CASS, currently there are no national and provincial subject policies on CASS *per se* in South Africa; only CASS subject guideline documents. Subject guideline documents on CASS were developed by the National Department of Education in the six national subjects, namely, Accounting, Biology, English Additional Language, History, Mathematics and Physical Science. The CASS guideline documents for the other Grade 12 subjects were developed independently by each examining body. In the absence of national and provincial subject policies on CASS, the subject guidelines developed by the National Department of Education and by provincial education departments are interpreted by all examining bodies as “policy”.

Much has been written about policy implementation in education, where it has been indicated that, “successful implementation of a major innovation is a complex process involving a set of inter - related circumstances” (Gross et al. cited in Brady, 1996, p. 29). This would imply that it is not easy to introduce new policies and that a number of issues and variables must be considered prior thereto, if policy implementation is to be a success. In the case of CASS the challenge would be to ensure that educators are familiar and understand the policy so that they are able to effectively implement it in their classrooms.

Research has highlighted that one of the problems facing policymakers is that, “it is incredibly hard to make something happen, most especially across layers of governments and institutions” (McLaughlin cited in Brady, 1996, p. 29). This may be true especially in instances where educators are often satisfied with the status quo and perceive the demands of the new policy as difficult (Brady, 1996). Conversely, there are many educators who would welcome change and innovations (Gross et al. cited in Brady, 1996, p. 30). A review by Yung (2002) reveals that, “some teachers adopt a more passive role regarding policy interpretation and implementation while others adopt a more critical stance in interpreting the policy requirements, demonstrating a more proactive approach in its implementation”. The manner in which educators approach the new policy is fundamental to whether they will become familiar with it or not. If educators are not

familiar with the policy on CASS, then its implementation is bound to be problematic.

Research shows that for CASS to be implemented effectively, educators need to commit themselves to the policy and to its meaning in context (Brady, 1996). According to Brady if this can be achieved, half the battle is won. The next challenge would be to provide the necessary skills and training to ease the implementation of CASS. The level of educator commitment and dedication must therefore be seen as a condition that is fundamental to becoming familiar with the new policy.

Another important factor that must be considered in policy implementation is the amount of time allocated to educators to familiarise themselves with the policy. According to Towers (1992), “educators need more time and need to put in more effort.” This makes sense considering that a new policy like OBE must be fully understood before it is implemented. A lack of understanding may lead to potential conflict between policy and practice. According to Kendall (1999), any change of significance must be given a period of time, this can either be given in careful preparation, discussion, pilot projects, monitoring and checking so that full implementation takes a year or more.

In addition, research also indicates that new policies often confuse educators (Black & William, 1998). This would be especially true where policy implementation is rushed or where educators are not given an opportunity to be part of the policy process (Fataar, 1999). Fataar adds further, that in the South African context educators were subjected to a “crash course” and due to time constraints the process suffered from a lack of consultation between the stakeholders (educators) and their constituencies (provinces). This would then imply that the logistics of OBA was not properly worked through with educators and that the implementation was rushed into, without any forethought.

In 1999, a report by the Cambridge team who undertook an investigation of the nine provincial examining bodies reported that the implementation of CASS was problematic in three of the nine provinces that were offering CASS at Grade 12

level (DoE, 1999a). They further added that the composition and quality of CASS varied from province to province. This meant that there was no uniformity in the implementation of CASS across the five examining bodies. This could be attributed to the lack of policy to regulate CASS. The recommendations of the Cambridge team were that detailed subject manuals should be made available to guide teachers on what work to undertake for CASS and how to assess it. They further added that teachers who would be responsible for CASS also need to know the standards of the subject examined in the external examination since the external examination is the only benchmark available at present. Despite the recommendation for detailed subject guidelines to assist educators on how to conduct CASS and how to assess it, to date (April 2004), there are still no subject policies to regulate the implementation of CASS in the various subjects. This has resulted in inconsistencies in the implementation of CASS across provinces (SAFCERT, 2002a).

In this regard, Killen (1996) elaborates on the composition of learning programmes that are essential to help educators to understand what is expected of them in terms of the new assessment policy. He indicates that each learning programme should have a rationale (to explain why the programme exists), aims (to explain what the programme will achieve), objectives (to indicate what students are to learn), content statements (to indicate what broad areas of content will be used as vehicles for student learning), teaching strategy statements (to indicate how the learning activities will be organized), and assessment guidelines (to indicate how student learning will be assessed). These will serve as a meaningful guideline to teachers and learners and will assist to ease the implementation of OBE and OBA.

The literature on the familiarity with policy indicates that the successful implementation of CASS both internationally and locally requires a great deal of commitment and dedication from educators and their senior managers (meaning subject advisors and school principals). However, in the absence of clear and coherent policy to regulate CASS, educators are experiencing and will continue to experience difficulties in its implementation. In this respect, variations in the standard and quality of CASS have been identified.

For any new policy to be successfully implemented there must be meaningful interaction between policymakers and educators, subject advisors and school principals so that there is clarity and understanding about how to effectively implement CASS. Only when educators are familiar with the contents of the policy, can training and support be provided to enhance their understanding of the policy.

Provisioning of training to effectively implement CASS

Research has shown that educators need more time and professional training on how to adapt to this new form of assessment (Klenowski, 1999; Combrinck, 2003). It is expected that the more time and training provided to educators to clearly understand the basic concepts and terminology before commencing with the actual implementation of CASS would place educators in a better position to improve the quality of their interaction in the classroom (Black & Wiliam, 1998).

Klenowski (1999, p. 41) states, “if improvement in the understanding of concepts such as criterion - referenced assessment, feedback and the practice of formative and summative assessment is to occur, pre - service teachers in particular need to be taught these concepts and the language of assessment in their initial years of teacher development”. In his study of enriching pre - service teacher knowledge of assessment, Klenowski found that teachers had an impoverished understanding and practice of formative and criterion - referenced assessment, which needed to be addressed. Klenowski (1999, p. 40) states further, “to achieve high quality assessment in education, the need for high quality teachers is fundamental”.

In Hong Kong for example, to strengthen the element of assessment it was proposed that in initial teacher education the teaching of assessment be emphasised and that in - service courses focus on the latest developments in assessment types and techniques. Whilst it is essential to include the teaching of assessment in initial teacher education it is also crucial that all serving educators be subject to ongoing training in assessment since the move from a quantitative to a qualitative mode of assessment is a major change (Biggs, 1996 cited in Klenowski, 1999, p. 40).

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According to Guskey (1994, p. 53), "*the perception of little time coupled with lots of extra work, combined with inadequate experience, training and lack of materials appeared to keep most educators frozen in virtually the same instructional patterns they are used to*". His article refers specifically to performance - based assessment in Kentucky where he stresses that the need for training seemed especially critical since the realignment would involve an expansion both of what is taught and how it is taught. Guskey's finding was that in general, teachers were ill prepared to adapt their instructional practices to the new demands of a more authentic, performance - based assessment. He further added that, "the only training that most teachers had received was scattered, one - day staff development workshops".

In a study on assessment conducted by Combrinck (2003) involving Australia, New Zealand and America, it was found that the majority of teachers in New Zealand did not have sufficient training whilst in Australia, the teachers felt that they did not get enough training and support from the Department. In America, not all teachers received adequate training. An educator in London who has undergone professional training on formative assessment in science shares the following experiences (Black & Wiliam, 1998, p. 60):

"actually thinking about teaching has meant that I have been able to come up with ideas and strategies to cope with whatever has arisen and has contributed greatly to my professional development. I now think more about the content of the lesson. The influence has shifted from "what am I going to teach and what are the pupils going to do?" towards "how am I going to teach this and what are the pupils going to learn?"

According to Huberman and Miles (1984), large - scale change bearing innovations lived or died by the amount or quality of assistance that their users received once the change process was underway. The issue here is on the quality of assistance, support and training given to educators for them to be able to implement the change. Unfortunately, without the necessary training and support from subject advisors and educational managers, the implementation of CASS will

be problematic, both from a procedural perspective and from the perspective of the actual teaching and learning.

The above findings allude to the lack of skills and training in the area of assessment, which, if ignored, can result in serious setbacks in the effective implementation of CASS. On the other hand, when training is conducted in a serious manner with the aim of enhancing the professional development of educators, the rewards can be seen in the successful implementation of CASS.

How are educators supported to enable them to implement CASS effectively

According to Fischer and King (1995), a teacher's shift to OBA will not be a magical transformation that takes place overnight. They add that teachers' roles and responsibilities, moving from teacher - centered classrooms to one focused on student learning requires the integration of new instructional and assessment skills, which can best be accomplished over time. In view of this, educators would therefore need to be not only subject to ongoing training and preparation but also to continuous support to strengthen and to sustain the effective implementation of CASS in the classroom. Further, the monitoring of teachers progress, regular follow-ups and continuous support must be undertaken to weigh the effectiveness of the training programme.

From their research studies, King and Evans (1991) indicate that to ensure that the implementation of OBA in American schools is successful, extensive staff development is required, as is the ongoing monitoring of progress in the classroom. Without such efforts and support, it is likely that teachers will experience problems in the classroom (Brady, 1996). Brady states further that teachers need to be provided with ongoing support after initiation to ensure effective implementation. He suggests that this would provide a balance between the pressure to implement CASS and high quality assistance. Another interesting point made by Brady is that support to educators should be coupled with moderate pressure to enhance the implementation of CASS.

Yung (2002) in his study of teachers' professional consciousness as a determinant of teachers' practice in school - based assessment draws a distinction between technical support and professional support of educators. He argues that teachers who are expected to act according to prescriptions laid down through mandated policies would be more like "technicians", who merely need instrumental support as opposed to professionals who need a broader programme of professional development that would allow them to apply their knowledge through exercising their own judgement. In his research, Yung associates professional support with trust and empowerment, which lends itself to continuous quality improvement and professional development. According to Yung, the empowerment of teachers enables them to be regarded as professionals, exercising judgement and creativity, rather than as technicians, following directions.

Yung also argues that educators in China need more help, guidance and professional development than is currently the practice. He states that, "a major investment in the continuing professional development of teachers would be needed if demoralized teachers are to gain sufficient professional confidence to assert their professionalism in terms both of their critical reading of central policy texts and of their assumption of a more proactive role in educational reform."

In a study on assessment conducted by Combrinck (2003) involving Australia, New Zealand and America, a general finding was that teachers felt that they lacked support when implementing the new assessment policy. Combrinck (2003, p. 60) reports that, "*although Department officials in all three countries said they provided support, it seems that this was a major concern for all teachers.*"

Since support has been identified by research as a crucial aspect for ensuring success in CASS implementation, Brady (1996) advances the idea of decentralized support, indicating that it might facilitate constant teacher feedback which can improve implementation. In the South African situation, the monitoring and support of schools is supposed to be conducted by the district/regional offices (Bisseker, 2003). These offices are usually located within the local municipality. Bisseker states that according to the HSRC study (2001), "districts have a paucity of professional staff and virtually no computers, and because of opposition from

unions to school monitoring are unable to carry out their role with authority”. Bisseker indicates further that, “when districts don’t work, teachers don’t receive curriculum guidelines, textbooks and stationary. The inefficiency of the district level is the greatest obstacle to improving educational opportunities.”

In a quality assurance study involving 297 schools (33 in each of the nine provinces) conducted by the Department of Education (DoE, 1999c), many educators (62%) maintained that they were hardly visited by departmental officials either for support or training purposes.

According to Wolf, Calfee and Rudner (cited in Combrinck, 2003, p. 60), the implementation of outcomes based assessment increases the workload of teachers. In this context, Brady (1996) indicates that professional support could minimize the burden of the additional demands placed on teachers and they would be better prepared to handle the additional demands made on them. The respondents in the study conducted by Combrinck (2003) were also in agreement that a good support system for teachers would alleviate the problem of the workload. Fullan (cited in Brady, 1996, p. 32) indicates, “we cannot achieve high quality learning for all or nearly all students, until quality continuous development is attained for all or nearly all teachers”.

The reviewed literature shows that the ongoing high quality support of educators through advice, guidance and help is fundamental to ensuring that all educators are able to implement CASS with confidence. When ongoing support is not available to sustain what has been learnt, there is a likelihood of regression.

4.5 To what extent are the CASS marks fair, valid and reliable

This section examines literature on the third and last research question, namely, “the extent of the fairness, validity and reliability of the marks obtained through CASS”

Assessment of student learning is an essential element of OBE (Killen, 1996). Since assessment helps in decision making and to document student performance

the assessment must satisfy the principles of fairness, validity and reliability (McMillan, 2001). In the absence of fair, valid and reliable assessment, educators simply will not know whether or not their students have achieved the outcomes that were the focus of the programme and, more importantly, neither will the students (Killen, 1996).

Vandeyar and Killen (2003, p. 120), indicate that, *“when these assessment principles are understood they provide a clear framework for all major decisions that teachers need to make on assessment, however, when they are misunderstood or ignored, the resulting assessment practices are likely to result in the generation of worthless data”*.

Since this study is concerned with assessment at Grade 12 that leads to a qualification which is regarded as the gateway to future employment, it is crucial that the principles of assessment are well understood by educators and that all assessment practices incorporate the principles of a good assessment. A discussion on the principles of fairness, validity and reliability is presented.

Fairness

The word “fairness” in assessment can be described as, “an equitable treatment of those being assessed” (McMillan, 2001). In other words, fairness ensures for example that, “the assessment strategies are designed to ensure equal opportunities for success regardless of the individual learner’s age, gender, physical or other disability, culture, language, socio-economic background or geographic location” (Vandeyar & Killen, 2003). This implies that the performance of learners is not affected by the above factors, which are unrelated to the purpose of assessment (Mc Millan, 2001).

In practice, the principle of fairness as it relates to OBA in the Victorian curriculum (in Australia) is questionable since it is argued that, “the senior secondary curriculum has institutionalised inequality to the extent that the individual is no longer at the centre of educational outcomes; instead it is alleged that the outcomes can be accurately predicted for particular groups from year to year” (Timmins, 2003, p. 1). In South Africa, the very same sentiments are also echoed

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by concerned academics such as Professor Jansen (1997) (cited in Fataar, 1999, p.2). The argument is that since outcomes are predicted in advance of the teaching and learning programme, this constitutes unfairness because not all learners are able to learn at the same pace. In this instance, learners that are slow will lag behind, whilst other learners will advance to the achievement of new outcomes.

According to Vandeyar and Killen (2003), in the pre - OBE system in South Africa, the principle of fairness in assessment was lacking since most of the examinations were conducted “once off”, and for many students, assessment was conducted in a language other than their home language. They argue that assessment that is not conducted in one’s own home language can result in learners achieving marks that do not reflect their true abilities. However, despite recent attempts by the Department of Education to introduce teaching and learning in the various home languages, the project has not yet been successful because of its complex nature and the logistics of re - structuring teaching and learning. One can hardly expect an English speaking Mathematics teacher to suddenly teach mathematics in Afrikaans or any African language when she/he is not proficient in the language. Besides, the difficulty is that learners are not grouped according to the type of home language they speak. If they were, the logistics of catering for the different groups would be an enormous challenge.

Literature on the practice of school - based assessment by the Victorian Curriculum and Assessment Authority (Timmins, 2003, p. 4) indicate that firstly, “a minority of educators are involved in unfair practices regarding their assessments and secondly, that some of the common assessment tasks (CATs) provide a bias in favour of students from affluent backgrounds”. Regarding the first problem the Victorian Authority has identified that there are teachers who are over - assisting students. This has led to a situation where students were handing in CATs that were not entirely their own work. In this instance it also became difficult to identify how much of the final product was the student’s own. The second problem concerned the social inequalities between the disadvantaged groups and the advantaged groups which favoured the advantaged groups (Timmins, 2003).

Ideally, the assessment conditions and access to test preparation and resource materials should be the same for all students (McMillan, 2001).

Kifer (2001), also points out that poor and minority students do not get comparable experiences to wealthier and majority students. He states that, it would be unfair to compare the results of, for example, the poor students to that of the wealthier students unless it can be argued that there are common opportunities, comparable resources and that learning occurs in similar contexts.

To address the problem of unfairness in assessment, the Board of Studies in Victoria (Australia) introduced stronger measures for monitoring and supervising student's work and for detecting possible breaches of authentication whereby teachers were required to see the student's work at three stages in the development process and to document and record the features of the work in progress. Given the mandate that teachers must monitor students work on a regular basis, it was expected that there should be an improvement in the assessment process and in the authenticity of the assessment results.

From the research reviewed, one can state that the importance of fairness in assessment cannot be overlooked. In terms of this principle, all learners should be treated in an equitable manner, hence, the conduct of assessment must be fair to all learners irrespective of their socio - economic background, gender or race.

Validity

A narrow definition of the term validity as it applies to assessment would be, "the extent to which a test measures what it purports to measure" (Stobart, 2001, p. 27). However, this definition is limited to the content or substance of the test instrument and in present circumstances is considered insufficient (Killen, 2003). Researchers argue that the principle of validity as it relates to assessment should also include the consequences of an assessment (Messick cited in Stobart, 2001, p.28). In other words, the focus should also be on the evidence from which valid inferences can be made about learning (Killen, 2003).

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To ensure the validity of test scores, Killen (1996) reports that assessment must be made against predetermined standards (criteria), and that it should be made on an individual basis, after each student has had adequate time to learn. In the Victorian schools for example, teachers made use of “common statewide criteria” to evaluate the work of learners (Timmins, 2003). This was one of the measures taken to ensure the validity of the assessment scores since the scores of the senior exit examination was being used to determine entrance into tertiary institutions. Given the importance of the exit examination, the validity of the assessment decisions was considered essential.

The validity of examination results is always a matter of public concern (Riding, & Butterfield, 1990). In this regard Freeman and Lewis (1998) state that employers are complaining that students who leave university are unable to work in teams and use their initiative. The complaint here is about how students are assessed and whether the assessment matches with the capabilities of the learner. According to Freeman and Lewis, the employer’s assumption is that a university degree should prepare students for work, but their experience is that the courses do not in fact succeed in doing this. If this assumption is true, then the validity of the assessment is questionable. In a study conducted by Entwistle and Percy (cited in Freeman & Lewis, 1998, p. 27), lecturers agreed that one of the aims of higher education was to promote higher order intellectual activity and outcomes such as critical or creative thinking and conceptual understanding. However, on analysing the assessment given to students it was found that the assessment was merely requiring a detailed and accurate reproduction of course content. The gap between the stated aims and the actual performance required of learners in the assessment was therefore inconsistent. Hence the validity of the decisions made by the lecturer is considered invalid.

In another study conducted by Norwich and Kent (2002) concerning the assessment of personal and social development of pupils with special educational needs, one of the findings was that the assessment of learner’s personal and social development lacked validity. Although performance criteria was developed to produce a more valid assessment of the learners, between 25 - 35% of the sampled teachers believed that the provided descriptions missed out important

aspects of personal and social development (PSD). Hence a significant proportion of teachers did not believe that the results of the assessment provided an accurate summary of the PSD of the pupils they taught, which raised doubts about its validity. The main problem in this instance was that the descriptors used were either too broad or did not accurately represent the sequence of learning followed by the learners they taught. The study reported that validity could be improved if the descriptors used had a more sound basis.

In Kentucky (USA), the system of education was reformed by placing special emphasis on CASS through the implementation of performance-based assessment (Kifer, 2001). According to Kifer, the Kentucky government was of the opinion that the new assessment would improve learner achievement. The new assessment system was informed by the government's need to make schools accountable for their results. The law stipulated that schools were to produce improvements every two years. It was envisaged that the implementation of CASS would produce dramatic changes in curriculum and instruction in public schools and therefore to facilitate the implementation of CASS, educators were provided with exemplary assessment procedures, content standards and information about the new curricula, which would not only produce increasingly higher test scores but also drive desirable instructional practices (Kifer, 2001).

However, the weakness in the Kentucky system was that greater emphasis was placed on the accountability aspect whilst the implementation of CASS was neglected. Kifer indicates that the original intent to help teachers integrate assessment activities with instructional ones was ignored. The result was that the validity and reliability of the assessment was questionable because CASS consisted of practice tests, which were then used mainly for accountability purposes. In addition, emphasis was placed on multiple choice items whilst performance - based assessment was left out because it was considered unfit for accountability purposes.

However contrary to the beliefs of the Kentucky government, studies indicate that performance-based assessments are superior (Guskey, 1994). Guskey states that performance - based assessments are especially valuable if one wants to change

instruction in the direction of learners being able to solve problems and provide reasons. The value of performance-based assessment far exceeds the value of standardised testing.

Research on standardised tests conducted by Paris et al. in Canada on student (Grades 2 - 12) attitudes towards standardised tests used in mandated evaluations found a growing suspicion about the validity of test scores (cited in Ross et al., 1991, p. 85). Older students believed that tests did not measure the qualities of a good student. The results of the studies showed a growing conviction that parents and teachers did not care about the results. However, Lloyd - Jones et al. indicate that exams are also widely regarded as being objective and credible (cited in Freeman & Lewis, 1998, p. 178). The advantage of standardised tests (or examinations) is that the contents of the test or exam is the same for all learners and one can be sure that the results of the test or exam reflects the true ability of the learner. The use of standardised tests and examinations does have advantages especially if used to complement the internal CASS component.

According to Black and Wiliam (1998), one way to increase the validity of test scores is to involve learners in the identification of assessment goals and assessment criteria. These authors indicate that for effective learning to take place learners need to understand what is it they are trying to and want to achieve. They believe that understanding and commitment follows when learners have some part in deciding goals and identifying criteria for assessing progress. The communication of assessment criteria involves discussing them with learners using terms that they can understand, providing examples of how the criteria can be met in practice and engaging learners in peer-and self - assessment (Black & Wiliam, 1998).

By involving learners in the development of assessment goals and assessment criteria, Black and Wiliam are of the view that it gives pupils access to the big picture. In other words, learners know what is expected of them and how they are progressing in terms of achieving their goals. This increases the likelihood of the validity of the inferences made by teachers because of the active participation of learners.

It is also important that the assessment process adopted gives a clear indication of what students are learning. The more realistic the assessment procedures are, the clearer the picture teachers will have of what their students are learning. Gardner (cited in Killen, 1992, p. 7) states that traditional methods of assessment may not give students appropriate opportunities to reveal their knowledge or skills since the focus was on the reproduction of facts. However, in the context of OBE, the focus is on the acquisition of knowledge and skills that can be applied to solve problems.

Fischer and King (1995) state that authentic assessment is being implemented in response to the belief that national norm - referenced tests are invalid and /or incomplete measures by which to judge the achievement level of many students- especially minority students. The compilation of a portfolio by a learner is one way in which authentic assessment is conducted. For the portfolio system of authentic assessment to become valid, teachers, students and parents need to become familiar with the methods of assessing, evaluating, and recording data. As learners begin to share the responsibility of their own learning, they begin to understand how to help themselves learn (Fischer & King, 1995).

Fischer and King (1995) also add that the use of alternative assessment does not always guarantee the collection of accurate, unbiased data. This is especially true when the assessment content is orientated to topics and culture unfamiliar to the student or it seeks responses that are based on background knowledge achieved by those with an economic and educational advantage. Garcia and Pearson (cited in Ross et al., 2002, p. 86) argue that alternative assessment might be better for cultural minorities because they allow teachers (in portfolio assessment) to include items that reflect minority performance better and can be tailored to focus on issues that are more relevant to minority students. However, the results of formal and informal authentic assessment can be used to form a comprehensive picture of a student's overall progress.

According to Broadfoot (1996), there is a strong call for a strengthening of the validity of assessment in teaching and learning. Stobart (2001) indicates that the greatest threat to validity is inappropriate standards and poor pedagogical decisions. In terms of the former, the standards articulated in the level descriptors

should be appropriate to level of achievement. In terms of the latter, educators must be provided with sufficient information from which they are able to make decisions about learning.

The literature on the validity of assessment shows (Norwich & Kent, 2002; Kifer, 2001) that there is great concern about the validity of test and examination scores even in developing countries. It appears that the greatest challenge facing educators is the ability to make valid inferences about students' learning. Since the use of assessment criteria is vital in this regard, it is recommended that the assessment criteria used in the evaluation of tasks be of the appropriate standard and quality so that educators are able to make informed decisions about student learning that reflect their true abilities.

Reliability

McMillan (2001) defines reliability as the extent to which assessment scores are dependable and consistent. In other words, it is the extent to which any two teachers would reach the same conclusions even though they might be assessing different children in different schools and at different times (Norwick & Kent, 2002). The comparability of teacher ratings is important to ensure reliability of assessment.

The study conducted by Norwich and Kent (2002, p. 72) on “assessing of personal and social development of pupils with special educational needs”, found that the reliability of the assessment was questionable. The main reasons for the inconsistencies in the reliability of the assessment was that there was the lack of guidance accompanying the PSD level descriptors to help teachers to reach a common understanding of what the descriptions meant or what to look for as evidence of a level having being achieved. This lack of guidance leads to educators using a range of different sources of evidence in making their assessments. Norwich and Kent indicate, for example, that one teacher used general experience and memory of the pupil only, while another consulted colleagues, set up specific tasks and also referred to written records. It is clear that the different procedures adopted in the assessment of a learner would provide inconsistent results.

A study on the national curriculum assessment in England revealed that there were inconsistencies in the marking of teacher assessment and tests. Although the national curriculum tests are pre - tested and the mark scheme is made public, reliability problems have emerged. Research indicates that in 1998, key stage 2 science tests marking schemes were criticised for being too analytical so that divergent (i.e., questions that illicit different correct answers), but correct answers were not rewarded. However, when the marking scheme was later amended, the test results showed a dramatic increase in the results by as much as 9%. One of the cardinal concerns is that of the reliability in the marking of English. In 1997, over 53 000 scripts were reviewed. The main concern was in the clarity and consistency of the level descriptions.

According to Sainsbury and Sizmur (cited in Norwich & Kent, 2001, p. 36), “the level descriptors display a consistent degree of complexity, in which specific and general, concrete and abstract are always mixed.” They add that in order to achieve consistency, high levels of professionalism and training will be required for educators to be able to correctly interpret the descriptors.

Research on content specific performance tasks shows that inter - rater reliability is possible (Marzano, 1999). Inter - rater reliability refers to, “the extent to which independent raters agree on the scores assigned to students on the various proficiencies measured within performance assessments” (Marzano, 1999, p. 4). Studies conducted by Shavelson (1989) (cited in Marzano, 1999, p. 44) report that performance assessments in Mathematics and science can be scored in a highly reliable fashion. However, the reliability of assessment is dependent on the manner in which the assessment criteria (rubrics) are articulated. Marzano (1999, p. 48) state that, “*tasks that have rubrics written specific to the proficiencies assessed can be scored quite reliably, whereas tasks whose rubrics are very general cannot be scored reliably*”.

To improve the reliability of results Norwich & Kent (2001) emphasise that the following procedures must be instituted across schools:

Common procedures to be developed for assessing

This means that all educators should follow the same procedures in assessing their learners. Guidelines on how to assess should be formulated and given to all educators so that there is some kind of commonality in the manner in which assessment is conducted and scored.

Common understanding of terms amongst staff

Educators across schools need to be able to interpret the level descriptors uniformly so that there is common understanding of the terms used. The common interpretation and understanding will enable educators to assess the work in a consistent manner.

Joint processes of interpreting assessment evidence

To ensure that scores are consistent, it is advisable that the task be subject to more than one assessment so that the scores can be compared and verified to ensure reliability.

From the discussions above it is clear that reliability in assessment can only be achieved through the use of appropriate and specific assessment criteria (rubrics) that bears direct relevance to the task being assessed. However, what is also important is that educators across schools must be able to interpret and apply the criteria in a uniform manner thereby ensuring consistency in marking.

4.6 Conclusion

From the literature reviewed, it is evident that the implementation of OBA (CASS) even in developed countries such as Australia, New Zealand, America and Canada are problematic. The findings reveal that the main areas of concern are the inability of educators to understand the concepts and terminology associated with the new approach to assessment. This lack of understanding has impacted on

educators being unable to implement CASS effectively and efficiently in the classroom.

It comes as no surprise and the literature bears this out, that in those countries where OBA is problematic, educators have reported that they have not received sufficient training, and that support to implement CASS is lacking or not of the quality as it should be.

Literature on the fairness, validity and reliability of the marks obtained through OBA reveal that even in developed countries these principles are not fully met. As a result the validity and reliability of tests and examination results become questionable. In terms of fairness, it is suggested that all learners should be treated in an equitable and unbiased manner irrespective of their socio - economic background, race, language or gender. Where schools are not on an equal footing in terms of the facilities and resources available to conduct teaching and learning, it becomes clear that their results cannot be compared to learners in those schools where the provisioning is adequate. However, in practice in South Africa the results of schools offering Grade 12 are compared to each other. Although the provisioning of resources is an essential requirement, it is not adequately provided for in all schools.

Ensuring the validity of assessment is also problematic in certain developed countries such as Australia, Canada and Hong Kong. The literature shows that some of the main reasons for the lack of validity are that educators are unable to identify which assessment methods to use for which assessment purposes. The choice of assessment method must be linked to the outcome/s to be achieved. Another finding is that the assessment criteria are not always sound in terms of the outcome being assessed. This invariably results in invalid assessments. The challenge is for educators to be able to make valid decisions about students' learning that reflect their true abilities.

Literature reviewed on the reliability of assessment showed that there is a possibility of different markers awarding different scores to learners. This may be so where the assessment criteria are not clearly defined and interpreted in a

uniform way. To ensure consistency in marking, it is recommended that the assessment criteria must be specific to the task being assessed.

If one applies these findings from the literature to the South African context, it can be seen that much work needs to be done in South Africa to improve the implementation of CASS. The experiences of other developed countries are invaluable lessons from which we can learn. In South Africa, the introduction of CASS has been sudden rather than a gradual phased - in process, with sufficient time allocated to preparing educators, subject advisors and educational managers for the new curriculum and assessment processes (Sieborger, 1997).

The gradual phasing - in of OBE would have worked better had it been implemented as a pilot across all provinces in the first instance. Concurrently, continuous training and high quality professional development and support should have been provided to address problems and shortcomings in the delivery of learning programmes. Of paramount importance is the need to involve educators in the policy making process.

However, educators, subject advisors, senior managers and policymakers must show more commitment and dedication to the CASS process if they want to see any significant educational improvements. The fundamental concern is that if assessment is not conducted appropriately and effectively, the marks allocated to learners in their Grade 12 year may not be valid.

Given the overwhelming interest and hype about the Grade 12 results at the end of every year, and the fact that the quality assurance council has raised concerns about the validity and reliability of the Grade 12 CASS marks (Umalusi, 2002b), it is in the best interest of the Department of Education to adopt measures that would enhance the fairness, validity and reliability of the Grade 12 CASS marks. According to SAFCERT (2002a, p. 31), “educators in general are poorly trained in assessment and are thus poorly equipped to implement CASS satisfactorily”.

To be able to strengthen the fairness, validity and reliability of the CASS marks, more attention must be given to improve the development of assessment

instruments and the assessment process so that educators, subject advisors and educational managers are aware of their roles and responsibilities. Educators must also be trained on how to conduct CASS and how to assess CASS. Of particular importance is the development of suitable assessment criteria that are able to promote reliability in assessment. To improve the fairness, validity and reliability of the CASS marks across examining bodies, the promulgation of subject policy on CASS is essential. The role of high quality support and training must also be addressed without which educators will be unable to implement CASS effectively in the classroom. In the case of the Grade 12 results, if the CASS marks are not fair, valid and reliable they cannot be legitimately used for certification purposes.

Chapter 5 presents a summary of the problem statement and a discussion on the conceptual framework underpinning this study. The research design and methodology adopted in this study is discussed in detail.