The role of examinations as a tool for effective formative assessment practices

by

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PRETORIA

DECLARATION

I declare that the thesis, which I hereby submit for Philosophiae Doctor in Assessment and Quality Assurance at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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SUMMARY

The purpose of this study was to examine the extent to which common examinations are used as a tool for effective formative assessment practices in schools. The Department of Basic Education introduced common examinations in Mathematics Grade 11 with the aim of improving the quality of teaching and learning in schools through standardised assessments and to enhance learner performance. Yet the performance of Grade 11 learners in the mathematics common examinations, since its inception in 2015, has not improved. With reference to five selected schools, the findings in this study showed that formative assessments require an examination and assessment system that will not only adequately measure the capabilities, knowledge and skills of learners, but that will also drive a formative agenda in ensuring the mastering of skills and learner progress to ensure success in summative assessments. It is thus necessary for teachers to be able to make formative assessments more formal by specifying guidelines for where to use them and how to do them and by developing assessments suited for learners' individual needs (Coetzee, 2012).

This study supports the main proposition of constructivism *"that learning means constructing, creating, inventing and developing our knowledge…, it is about thinking and analysing and not memorising information… it focuses on in-depth-understanding, not regurgitating and repeating back"* (Marlowe & Page,2005, pp. 10-11). If common examinations and past examination question papers are to be used, they need not be used to drill learners on how to answer examination questions. Indeed, these examinations should be used to empower learners on how to answer questions from different perspectives to achieve learning outcomes.

Keywords: *Formative assessment tasks***,** *common examinations, constructivism, learner performance, standardised, summative assessment, quality.*

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TO WHOM IT MAY CONCERN

This is to confirm that the thesis "Exploring the Role of Examinations as a Tool for Effective Formative Assessment Practices in Schools" by Mary-Antoinette Dliwayo been proof read and edited by me for language usage.

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LIST OF ACRONYMS

ANA	:	Annual National Assessments
AFL	:	Assessment for Learning
AOL	:	Assessment of Learning
ATP	:	Annual Teaching Plan
CFA	:	Common Formative Assessment
CAPS	:	Curriculum and Assessment Policy Statements
CIF	:	Curriculum Information Forum
CAQDAS	:	Computer-Assisted Qualitative Data Analysis
DAT	:	District Assessment Team
DBE	:	Department of Basic Education
DHET	:	Department of Higher Education and Training
FET	:	Further Education and Training
GET	:	General Education and Training
HOD	:	Head of Department
HPL	:	How People Learn
ICT	:	Information Communication Technology
NSA	:	National Assessment System
NPA	:	National Protocol for Assessment
NSC	:	National Senior Certificate
PAT	:	Provincial Assessment Team
PLC		Professional Learning Communities
SAT	:	School Assessment Team
SBA		School Based Assessment
SSIP	*:*	*Secondary School Improvement Programme*
TIMSS	:	Trends in International Mathematics and Science Study
WAEC	:	West African Education Council

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1 CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 **OVERVIEW**

This study aims to explore the role of common examinations as a tool for effective formative assessment practices in schools. South Africa consists of nine provinces, of which Gauteng is the economic hub. Since 2012 the National Department of Education and the Gauteng Provincial Education Department introduced common examinations in Grades 10-11 as a quality promotion initiative in order to improve the credibility of internal tasks and tests. Public and ordinary schools, including subsidised independent schools, in the Gauteng Province administer the Mathematics, Physical Sciences, Economics and Accounting provincial and the national common examination question papers during the midyear and end of year examinations.

The common examinations are aligned to the assessment requirements delineated in the Curriculum and Assessment Policy Statements (CAPS) for Grades 10-12. The CAPS is a National policy which has replaced the Subject and Learning Area Statements, Learning since 2012 Programme Guidelines and Subject Assessment Guidelines for all the subjects listed in the National Curriculum Statement Grades R–12 (Department of Basic Education, 2012). Chapter 4 of CAPS accentuates the requirements of the formal and informal tasks that make up the stipulated programme of assessment for the year for all schools. For the Further Education and Training (FET) Phase (Grade10-12) formal school based assessment tasks contribute 25% to the final promotion mark while the examination component has a weighting of 75%. The purpose of informal assessments is to improve individual learning while formal tasks assess learner progress in a subject (Department of Basic Education, 2011). Common examination therefore forms part of the formative summative assessments and constitute 75% to the final results of the learners.

Therefore both the formal school based assessments and the June and November common examination can be regarded as the formal summative assessments. These assessments are compulsory unless a learner can provide valid reasons such as illness or death in the family in the event they are unable to present these formal summative assessments. The informal assessments are mainly in the form of classroom assessments such as homework, oral assessments, classwork, and group work and do not contribute to the final outcomes of the learners' performance; hence these informal assessments are not recorded for resulting.

This chapter describes the rationale for the study with a focus on the following fundamental sections: Section 1.2 describes the South African Assessment context and what common

examinations entail. Section 1.3 explains the aims and objectives of the study. Section 1.4 defines the problem statement; followed by Section 1.5 which elucidates the rationale for the study. Section 1.5 outlines the research questions that will direct this study.

1.2 **THE SOUTH AFRICAN ASSESSMENT LANDSCAPE**

The performance of learners in South African schools is always under the spotlight and more so due to the dire need for evidence of the steady improvement in the Grades 10-12 subject performance in critical subjects such as mathematics. Over the years, for example, the Gauteng average subject percentage in Grade 12 mathematics was 67.61% in 2016, 40.78% in 2017 and 41.94% in 2018. Since 1995 South African learners have been exposed to various tests to measure achievements in critical subjects. These assessments include but are not limited to the National examinations, School Based Assessments, Annual National Assessments (ANA), National, Provincial and District common examinations and international assessments such as Trends in International Mathematics and Science Study (TIMSS).

'The NSC Grades R-12 gives expression to the knowledge, skills and values worth learning in South African schools'(Department of Basic Education, 2011:4). The South African schooling system is divided into two phases comprising of the General Education and Training (GET) Phase and the Further Education and Training (FET) Phase.

In the GET phase learning areas are used to equip learners with the knowledge, skills and values in preparation for the FET Phase. A learning area is a field of knowledge skills and values which has unique characteristics and connections with other fields of knowledge and learning Areas. The GET is subdivided into three phases as follows:

- Foundation Phase; which ranges from Grade R-3 and covers four subjects. Assessment is 100 % formative and is integrated.
- Intermediate Phase; covers grades 4-7 with 6 subjects. Schools based assessment has a weighting of 75% and year-end examinations have a weighting of 25%
- Senior Phase; ranges from grades 8-9 and covers 9 subjects. School based assessment has a weighting of 40% and year-end examinations have a weighting of 60%.

The FET phase is a three year qualification which covers grades 10-12 leading to the attainment of the National Senior Certificate. Learners make subject choices from Grade 10 as per the *National Policy Pertaining to the Programme and promotion Requirements of the National Curriculum Statement grades R-12*. The internal examination comprises 25% school based assessment and 75 % external examinations of the final promotion mark. The South African assessment regime in the schooling sector is summarised in table 1-1 below.

Table 1-1: South African Assessment Landscape (Adapted from Department of Basic Education, 2018)

General Education and Training (GET) Phase (Grade R-9)	Further Education and Training (FET) Phase (Grades 10-12)
School Based Assessments (formal and Summative assessment tasks) - Formal Assessments- Cycle tests, projects, assignments etc. - Internal assessment tasks for the Foundation Phase in grade R-3 in Numeracy and Language	**School Based Assessments (formal and summative assessment tasks)** - Formal Assessments such cycle tests, assignments, research etc. - Language Oral Assessment Tasks - Practical Assessment Tasks
Daily Assessments tasks - Classwork, homework, group work etc.	**Daily Assessment tasks** - Classwork, homework, group work etc.
Summative examinations (June and November) - Internally set formal examinations in grades four, five and eight for all subjects - District and Provincial Common examinations in grades 6 and 9 in such as Natural Science, Mathematics, Economic and Management Sciences.	**Summative examinations (June and November)** - National and Provincial Common examinations in grades 10-11 in Mathematics, Physical in Sciences, Economics, Accounting and English First Additional Language - National Senior Certificate Examinations in Grade twelve for all subjects.

Table 1.1 shows that the South African assessment system is mainly examination focused with a disregard of formative assessment practices and an improvement in the quality of the tests and examinations that are set internally by the teachers at school level. The South African assessment system is examination driven and appears heavily reliant on the lower-order cognitive processes of recall and memorisation. Indications are, to date, that this approach is not leading to the desired achievement outcome. Marlowe (1998) emphasises that the examination driven system would require learners to recall through a process of recognition to indicate what they have memorised leading to non-achievement of the desired outcomes. For learners to learn effectively and improve achievements there is a need for greater emphasis on formative assessments by teachers in the classroom in order to prepare learners for both the formal summative SBA and examinations.

In the General Education and Training phase the ANA was used nationally to benchmark learner performance in mathematics/numeracy and languages within the Gauteng province

and across the country. Almost six million primary school learners sat for ANA in 2011 and the Grade 3 learners achieved an average of 35% for literacy and 28% for numeracy (Zenex, 2013, p.4). It is noteworthy that in 2015 the Grade 3 ANA results were still at 64% for Language and 65% for mathematics and the Grade 6 and 9 Mathematics results are still falling below the expected target (Department of Basic Education, 2015).

On the international front, South African learners participate in the TIMSS in Grade 4 and Grade 9 Mathematics and Science assessments. These assessments focus on measuring Mathematics proficiency and knowledge of learners at an advanced level. The TIMSS is aimed at analysing the extent of learner achievements in order to inform future policy initiatives. In addition the TIMSS assessment framework is aimed at providing remedial actions to improve learner performance (Arends, Winnaar & Mosimege, 2017). It is worth mentioning that the TIMSS assessment framework is linked to learning and how learners should be taught based on their contextual factors (Reddy, Visser, Winnaar, Arends, Juan, Prinsloo, & Isdale, 2016). The TIMSS 2015 assessment results show that the average mathematics achievement of South Africa was at 376 (below the TIMSS 500 centre point). This performance was found to be below the minimum competency level of 400 points. It is noteworthy that 61% of South African learners failed to display minimum competency in basic mathematics concepts required for Grade 5. Nationally the Gauteng Province was ranked second with the average scale score of 420 points (with 3.1% learners achieving at an advanced benchmark) (Reddy et al., 2016). The provincial performance rates can be attributed to contextual issues which include the disparity in learner aptitude and the type of schools the learners came from.

The common examinations are targeted at gateway subjects such as Mathematics, Physical Sciences, Accounting and Economics in Grade 10 and 11. The aim of the common examinations is to provide standardised assessments for all schools and to improve learner performance. Through these examinations it is also envisioned that the quality and the credibility of internal examinations will be enhanced and that all learners will be assessed fairly. Common examinations instruments therefore rely on the rigorous quality assurance process to maintain the reliability and validity of learner attainments. Hence, according to the Department of Basic Education (2016) no learner should be disadvantaged as a result of writing common question papers in Mathematics and Physical Sciences (Department of Basic Education, 2016.

Although these assessments are meant to advance learner attainment and to compare learner achievements across countries, the rationale of these assessments has not gone unchallenged by social partners. Since 2012 Teacher Unions have voiced concerns on the

use of the ANA and common examinations. These social partners call for an examination and assessment system that will not only adequately measure the capabilities, knowledge and skills of learners, but also equip teachers with the skills to set quality assessment tasks.

Therefore, in the interest of improving learner performance through the use of formative assessments, this study supports the TIMSS report recommendation that learners should be taught examination techniques to assist them when answering summative assessment questions. To achieve this, constant and consistent teacher training on practical classroom activities is necessary to provide fundamental concepts of realistic classroom activities (Arends et al., 2017).

The South African assessment regime is regulated by a myriad of policies which provide support in the conduct, administration and management of school assessment practices and final examinations. In 2011 the National Protocol for Assessment (NPA) was promulgated to regulate the management of schools based assessments and end of year examinations. The NPA defines assessment as a “process of collecting, analysing and interpreting information to assist teachers, parents and other stakeholders in making decisions about the progress of learners (Department of Basic Education, 2011a, p. 3). Assessment for learning is thus regarded as formative assessment and it is meant to monitor learning. Formal assessments include the use of examinations in order to track learner progress in all subject and grades.

Besides the NPA, the National Policy Pertaining to the Programme and Promotion Requirements of the National Senior Curriculum Statement Grades R-12 (NPPPPR) and the CAPS were issued to provide the norms and standards for the National Curriculum Statement Grade R-12 (Department of Basic Education, 2011a). The NPPPPR is thus necessary for the schools as it regulates the assessment programme, recording, reporting and promotion requirements for all Grades.

The National Senior Certificate (NSC) as regulated in the NPPPPR is a three- year qualification from Grade 10-12. A learner in the FET phase must choose to do either mathematics, which is compulsory or opt to take mathematical literacy as one of the seven subjects required to achieve the NSC qualification. In mathematics formal tasks are outlined in the formal programme of assessment and encompass tests, June examination, projects and investigations and the end of year examination. Formal tasks are marked and formally recorded by the teacher for progress and certification purposes (Department of Basic Education, 2011b).

Formal assessment tasks, specifically the June and the end of year examinations are set and moderated externally by the Provincial and National Department of Basic Education and

marked internally by teachers at school level. The Grade 11 mathematics common examinations are thus developed at a central place by appointed examination panels constituted of examiners, internal and external moderators. It is worth mentioning that schools have the option not to participate in these examinations. The June common examination is set at a Provincial level and the end of year common examination question papers are set at National level by the Department of Basic Education for Grade 10 and 11 in Mathematics and Physical Sciences. It is important that the questions that are set should be CAPS compliant and cover various cognitive levels in order to realize the objectives of the subject. According to the CAPS Mathematics paper 1 has a weighting of 150 marks and covers algebra and inequalities, patterns and theories, patterns and sequences, functions and graphs, differential calculus and probability. Paper 2 is set out of 150 marks and assesses statistics, analytical geometry, trigonometry, Euclidean geometry and measurements (Department of Basic Education, 2011a). These examination weightings assist teachers with appropriate content required to develop learners' mathematical understandings and prepare them for various career paths and the world of work.

The mathematics learner achievement in all formal assessment tasks is recorded and reported on a quarterly basis. The reports must include the internal assessment component and the examination component. The School Based Assessments contributes 25% to the final promotion mark of a learner. This component includes the June examination and is compulsory for every learner. On the other hand, the end of year examination has a weighting of 75%. Therefore a balance between the SBA and the examination marks should be managed and maintained during the teaching and learning process.

Table 1.2 summarises the mathematics grade 11 weighting for both school based assessments and end of year examinations.

Table 1-2: Mathematics assessment weightings in Grade 11 (Department of Education, 2011, p.54)

Term		School Based Assessment	Weighting %	SBA mark as a % (of promotion mark)	End -of -year examination	Promotion mark
SBA	1	Project / Investigation Test	20 10	25%	100%	100%
	2	Assignment/ Test Midyear examination	10 30			
	3	Test	10			
	4	Test Test	10 10			
		SBA mark	100			

Table 1.2 which depicts the requirements that learners should meet in order to be declared competent in a subject shows that the examination component contribute more to the final promotion of learners. Therefore, in order to improve learner performance, the schools' heavy reliance and preference of examinations needs to be demystified. It is for this reason that the implementers of the curriculum should infuse assessment for learning in their classroom assessment practices. Hence this study supports the view by Animasahun and Ogunniran (2014, p. 183) that "the role of teachers in accomplishing learning is to guide and direct learning to enable learners to achieve the goal of education." To increase learner content knowledge formative assessment consisting of mini tests, real life illustrative examples such as sketches, diagrams, graphs, tables, images and any other creative opportunities should form part of the formal programme of assessment (Arends et al., 2016).

1.3 AIMS AND OBJECTIVES OF THE STUDY

The aim of this study is to explore the role of common examinations as a tool for effective formative assessment practices in schools. Without discounting the significance of other formal tasks such as tests and assignments, the focus of this study will be on common examinations that are used in the Gauteng Province in Grade 11. For purposes of addressing the topic, this study selectively relied on the relevant Grade 11 mathematics learner performance statistics and reports, from the Gauteng Department of Basic Education, to highlight the patterns of learner performance in common examinations. Therefore, in addressing the benefits of the schools assessment practices emphasis is placed on finding a balance between formative and summative assessments. This study supports the views of formative assessment proponents such as Coetzee (2012) that if common assessments are viewed as part of formative assessments, teachers will be able to realise that assessment is key to any learning process. In addition, this study emphasises the need for teacher assessment literacy and development to ensure that they are

capacitated in developing their own assessment tasks instead of relying heavily on common examinations. In this way there are two foci framing common examinations in a formative role as a learning tool for learners and also framing the common examinations as formative assessment tools which teachers can use in their own learning process to develop more effective formative assessment tools.

The problems that will foreground the aims and objectives of study will now be discussed.

1.4 **PROBLEM STATEMENT**

Although common examinations are instituted in gateway subjects like mathematics as a quality promotion measure, the average percentage in these subjects is still below 60%, with most learners achieving at Level 1, meaning that most learners' average performance is between 0 – 29%. The performance data provides a clear indication of the limited use of formative assessments in classrooms and the teachers' inability to design, develop and administer assessment tasks in order to generate better outputs. This argument is backed by the assertion made by the proponent of formative assessment, Black and Wiliam (1998), when they state that:

> "*Firm evidence shows that formative assessment is an essential component of classroom work and that its development can raise the standard of achievement...*"

As mathematics is one of the gateway subjects and a requirement for the attainment of the NSC, it is evident that teachers need to integrate formative assessment with the learning and teaching in the classroom.

Hoadley and Muller (Cited in Van der Berg, 2015 p.2) argue that "testing lead to carrying managerialist ideologies, fostering unhealthy competition and inadvertently promoting formative pedagogies like 'teaching to the test." Recently the education systems has been driven by the performance testing through examinations and high pass percentages as a measurement of performance rather than on nurturing the link between formative and formal assessment practices. As a result of the demands from the Department of Basic Education, schools tend to unrealistically set high pass percentage targets with little regard to ensuring sound school assessment practices for the enrichment of learning. It is crucial for schools to comprehend that examinations are only intended to test the learners' knowledge and provide confirmation of the learners' ability to answer and perform certain tasks for the purposes of informing the teaching process. It is for this reason that assessments should be designed to ensure that all learners, across a wide range of contexts, acquire a variety of skills and

knowledge to enable them to further their education pathways successfully (Department of Education, 2000).

Table 1.3 summarises the average mathematics pass percentages of Grade 11 in 2015 and 2016 common examinations. As can be seen in Table 1.3, it can be argued that learners were not well prepared for the examinations, hence the below 40% performance in mathematics. Classroom environments that ought to build solid foundational mathematical skills and equip learners with basic concepts are necessary to improve learner performance. Madaus (1998) asserts that learners have to be purposefully taught, instead of teaching to the test. In doing so, learners will be equipped with the capability to respond to specific questions that will be included in the summative assessment. Classroom teaching must emphasise a solid foundation, which will form a basis for problem solving activities (Reddy et al., 2016).

Table 1-3: Average percentages in Mathematics (Gauteng Department of Education, 2015)

SUBJECT	Total wrote	Total Pass	Pass%	Level 1 (0 to 299)	Level 2 (30 to 399)	Level 3 (40 to 499)	Level 4 (50 to 599)	Level 5 (60 to 699)	Level 6 (70 to 799)	Level 7 (80 to 100)	Calculated Subject Ave%
MATH Grade 10	70790	33381	47.2	37410	13930	8727	4867	2953	1678	1226	31.5
MATH Grade 11	51205	29108	56.8	22098	10615	7566	4748	3010	1808	1363	34.7

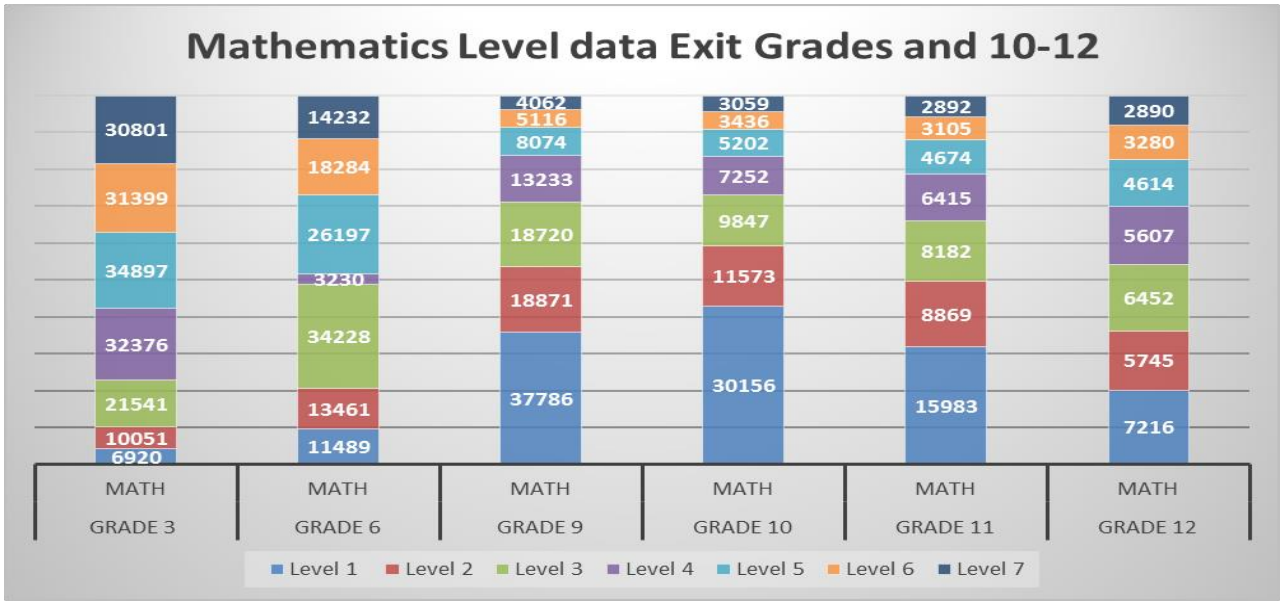

Figure 1-1: 2015 Mathematics Level Data (Gauteng Department of Education, 2015)

Figure 1.1 depicts that more learners across the grades performed between levels 1-3 in 2015. Consequently these learners were progressed to the next grades without meeting the minimum promotion requirements and then resort to subject changes. Hence, Stiggins (2005, p. 11) maintains that even though the formal assessment process helps in identifying learning problems, it does not help learners to find greater success.

As can be gleaned from the statistics in Table 1.4, in 2015 Grade 11 learners still only had a 40.79 % subject average in mathematics by the end of Term 1. Table 1.4 confirms the slow improvement in subject averages for mathematics across grades. Since 2009 Umalusi, the quality assurance body for education in South Africa, released diagnostic reports which indicate that most sections are not taught in class and learners generally perform badly in these sections in the examinations (Umalusi, 2009). As a result content gaps become discernible on the part of both learners and teachers. These performance rates can be attributed to lack of content knowledge required in the subject and to the lack of involvement on the part of teachers in developing these examinations (Gauteng Department of Education, 2016).

Table 1-4: Mathematics Subject Averages for Term 1 (Gauteng Department of Education, 2015)

Grade	3	6	9	10	11	12
Subject Average	62.7	54.91	37.98	35.97	40.79	47.41

Despite the fact that teachers have been trained on the implementation of the CAPS, they are still faced with challenges of integrating formative tasks into their daily teaching and assessment practices. The Annual Teaching Plans (ATP) and the Assessment plans are provided for sequencing and completing the content to be covered in every subject. These plans merely serve as an indication of some assessments on topics at different cognitive levels (Department of Basic Education, 2011a). The demand to meet the subject content requirements that are set in these plans provides little time for teachers to incorporate formative tasks in the classroom in order to instil learning. Hence, teachers rely heavily on the formal tasks as the only measurement of learner performance. Consequently, learners tend to perform poorly in formal assessments such as examinations as balanced assessments are rarely used in classrooms. It is thus necessary for teachers to be equipped with the skills to use formative assessments more formally by specifying guidelines for what and how to administer tasks and by developing assessments suited for learners' individual

needs (Coetzee, 2012). By using diverse formative assessment tasks teachers can be certain that learners are provided with a variety of opportunities to demonstrate their abilities.

Teachers have a role in any assessment by making deductions and judgements about learner performance (Harlem, 2004). Hence Johnson (2013) argues that assessments should be collaboratively designed so that teachers can have an understanding of the expected learning outcomes espoused in the curriculum. In Gauteng, common examinations are set by appointed examination panels. The reliance on contracted examination panels takes away the much needed skill and knowledge of setting quality assessment tasks and examinations on the part of school based teachers. Consequently the quality and standard of tasks set by the teachers remain a challenge (Umalusi, 2009). Teachers who are dependent on external tests are likely not to take time to increase their competence in using on-going assessment and to build confidence in making judgements (Harlem, 2004). Therefore an action research design was used as basis of this study to highlight the role of enabling teachers to use common examinations in conducting assessments for learning and improving achievements by learners (Hopkins, 2012).

1.5 **RATIONALE FOR THE STUDY**

The South African education system and its stakeholders have placed more attention on examinations as the main assessment that plays a summative role. A shift in focus is required for schools and the Department of Basic Education to determine how formal assessments, such as examinations, can be used to inform improvements in learner performance by incorporating them during formative assessments. Bearing in mind that all aspects that affect learner performance such as language barriers, foundational knowledge and psychosocial factors are equally significant, this study looks at how common examinations can be used as a tool that can effectively improve the day-to-day formative assessment practices in schools.

Most schools use the common examinations as a measurement for progressing or retaining learners based on the marks achieved, however they differ on the interventions employed to improve learner performance post the administration of these examinations. Schools need to pay attention to school level performance and indicate the consequences for that performance (Fuhrman & Elmore, 2004). Research in the South African education environment has shown that schools must specify types of intervention in order to deal with the plight of underperformance in examinations. The need for an integrated assessment framework that will encompass measures to inform how the teachers should use the correct assessment practices is one of the key features needed for ensuring that examination outcomes are used effectively (Van der Berg, Taylor, Gustafsson, Spaull & Armstrong,

2011). A study conducted in the South African province of KwaZulu Natal in 2003 showed that districts in this province developed their own assessment framework whereby common tests were used based on the performance of their learners (Schollar, 2006). This province also chose to keep assessments and workbooks that were generated by trained teachers to improve their daily assessment practices.

There have been considerable discourses by policy makers, reviewers, ministerial task teams (Department of Education, 2000) and other stakeholders such as Umalusi (2015), on the quality of assessment tasks developed in schools. Their general agreement is that there is a requirement for an education system, which is capable of setting quality standardised assessments. Hence, the use of common examinations as formative assessment tools to improve teaching, learning and learner performance remains vital for schools.

The certainty that standardised achievement tests will result in effective school assessments and that all learners will meet the standards to close the achievement gaps need to change (Stiggins, 2008). A balance of the assessment practices and the assurance for improving assessment literacy for all teachers is therefore necessary. The view that standardised common examinations are the solution should be replaced by viewing assessments as a process of gathering information to inform instructional design making (Stiggins, 2008). Similarly common examinations should be used formatively as assessment for learning.

As alluded in Section 1.2 the setting of these examinations is not managed by school based teachers therefore the skills required to set standardised tests are not transferred to teachers. This study seeks to encourage the use of formative assessments by school based teachers and to foster teacher collaboration in the development of common examinations.

1.6 **RESEARCH QUESTIONS**

The main question this study aims to answer is: *How can common examinations contribute to effective formative assessment practices in schools?*

To answer the main question it is necessary to define the meaning of common examinations and assessments within the context of the Gauteng Education Department. When investigating the role of examinations clarity of concepts such as performance and quality will be provided. The literature on assessment and its relatedness to performance is measureless. Some research streams centre on assessment for learning which focuses on a formative assessment system that benefits all levels (Stiggins & Chappius, 2012). On the other hand, some research streams look into assessment of learning which is summative in nature or refer to assessment as learning (Bennet & Gitomer, 2009). The former, a formative

assessment system, is explored by examining how common examinations can play a role as formative assessment tools. Common examinations, although conceptualised and designed by the Department of Basic Education as a summative assessment tool for formal assessment purposes, are framed in this study as a formative assessment tool in order to explore their effectiveness in using them in this way.

As a result of the broad scope of this study, the main question was divided into four specific sub-questions as outlined below:

Sub question 1 asks, *How best can formative and summative assessment plans be aligned to transform teacher assessments into high quality classroom assessments?*

In order to answer this research sub-question, this study evaluated the alignment of the intended assessments plans as outlined in the CAPS and the Annual Assessment Plans. Attention is given to highlighting the need to find a balance between assessment plans and the ATP that are utilised by teachers in schools. Therefore it was necessary to establish the extent to which the assessment plans provide guidance for assessing the Grade 11 mathematics curricula.

This question assumes that the assessment process is not only concerned with identifying which learners have done well in the summative assessment, but on how to use the assessment outcomes formatively to diagnose early warning signs and interventions to improve learning. It is thus important for teachers to understand that assessment plans are not mainly concerned with accountability and meeting the standards and the sufficiency of learning at particular periods (Stiggins, 2005). Conversely, teachers must be able to find a balance between formative and summative assessment plans. According to DuFour "For schools to take full advantage of the power of assessment on learning in a positive way, they must include common formative assessments in their arsenal" (DuFour, DuFour & Eaker, 2007 p.1).

Sub question 2 asks, *How can teachers be assisted to develop quality assessments in order to become competent experts of assessment standards?*

In order to answer this research question, focus will be on the teachers' assessment literacy and their ability to develop quality assessments and examinations. This research question rests on the assumption that assessments should be well thought out prior to being administered to the learners. Harlem (2004) contends that teachers should have access to literature which can help them to make judgements across a full range of learning goals. Therefore, teachers should be assisted to develop precise assessment tasks that would

balance formative and summative tasks in schools. In order to assist teachers it is necessary to interrogate what is happening in schools and to work with them in developing effective assessments according to the set standards espoused in the CAPS.

The action research design was chosen for this study since it takes a more empowering approach to assisting teachers in understanding and resolving problems they deem important (Stringer, 2004). By using action research, new awareness among teachers is created and enhanced approaches to the existing assessment practices are encouraged (Mahani & Molki, 2012). The actions used include assisting teachers to identify and create varied assessments such as mini-tests and assignments, to record the various stages of the assessments, conduct test and item analysis and create assessment awareness among participating teachers.

Sub question 3 asks, *How are common examinations effectively used by teachers as formative assessment tools to inform improved learner achievements?*

This sub question follows the actions taken by the participants in developing balanced assessments to inform their assessment practices. For the researcher to determine the effectiveness of the actions taken by teachers, it is necessary to observe how the identified enhancements are implemented by teachers. In investigating how effective the common examinations are used, the research considered how assessment practices are improved, how formative assessment is implemented at school level, and the nature of support provided by the districts to school with respect to strengthening formative assessments and how the province monitors the implementation of formative and summative assessment tasks.

Sub question 4 asks, *To what extent can common examination results be used effectively to improve instructional interventions and learner performance?*

This question attempts to indicate that formative common examinations results can be useful in identifying improvement measures to inform learner performance. To do this, the research followed an assessment for learning principle, as espoused by Stiggins (2005), which asserts that periodic formative assessments assist teachers to determine learner progress in terms of the standards mastered and reveals which learners needs additional support. The learner results were analysed to assist teachers to realise where they went wrong in the development of examination question papers and identify interventions for improvement. The common examination moderation findings (Appendix A) were examined through document reviews and confirmed during interviews with teachers and subject advisors. The objective of this question was to make teachers aware that they had the responsibility of analysing

summative assessment results to arrive at information about a wide range of learner competences in order to identify what learners know and are capable of doing at particular points (Harlem, 2004).

1.7 **STRUCTURE OF THE THESIS**

Chapter 2 will describe the assessment concepts such as Assessment for Learning and its benefits. A discussion of the South African assessment system and context will also ensue. This chapter will also highlight policy prescripts that direct the assessment in schools and their implications. An expansion on the purpose of common formative examinations will also be elucidated to indicate the level of teacher involvement in the assessment process. The quality promotion model such as the Common Formative Assessment model will be presented as a tool that could be used for the improvement of classroom assessments. Initiatives taken by the Gauteng Department of Education since the introduction of common examinations will also be explained in order to indicate the levels of buy-in from the consumers of these examinations.

Chapter 3 focuses on the literature review on common examinations, and formative assessment tools. The theoretical background provided through the review of literature was used to justify the need for the institutionalisation of assessment for learning principles in schools. For purposes of addressing the topic, a national and international trend was followed to provide a broader perspective on the use of common examinations as formative assessment tools and its benefits. Literature on quality assessment practices which involve teachers working collaboratively was also explored. An account of a detailed conceptual framework was provided by looking into the action research theory by looking into the use of common examinations as formative assessment tools. The need for teacher pre and in service training on task development and administration was also explored.

Chapter 4 discusses the research methodology that was pursued in this study. Action research design is identified to foreground this study as it supports teachers and learners to work collectively in developing their practices. Attention is paid to the main aim of action research design as a strategy for teachers to improve teaching, testing, implementing and reviewing their educational plans. Action research repetitive cycles of planning, action, observation and review are explored. This section also systematically outlines the research method and design that was used to answer the research questions. The technical aspects of the qualitative study which include sampling techniques and three data collection techniques of questionnaires, interviews and document analysis are discussed.

This chapter further expands on the research design and data analysis techniques that are exploited for the purposes of addressing the topic. The data analysis model as proposed by Creswell and Clark (2008) is explained in detail and aligned to each research question posed in the study. The methods and the supporting theoretical framework for selecting variables for exploring the use of common examinations as formative assessment tools are examined. The Mathematics Grade 11 common examination aim of improving learners' performance by providing standardised assessments was linked to the conceptual framework. The analysis of Grade 11 learner mid-year and end of year performance data in mathematics is used with specific reference to the four selected schools in two districts. Although quantifiable data in the form of the Grade 11 mathematics performance statistics is analysed, for purposes of this study the analysis of performance data was limited qualitative method only.

Chapter 5 focuses on data analysis and responds to the research questions. Analysis of narrative and textual data, diagrams, tables and graphs are undertaken using the constructive grounded theory which is explicated through the qualitative grounded theory and includes:

- Analysis of transcripts to identify themes and categories;
- Coding of data collected through interviews, questionnaires and document analysis to show meaning and links;
- Definition and categorisation of codes that emerged from the data;
- Developing emerging sub- themes through grouping of text into themes;
- Developing major themes emanating from the text segments;
- Consistency checks by using independent coders linked to the research objectives;
- Stakeholder checks using transcripts; and
- Using high level themes as main headings for the writing of findings.

A software programme, ATLAS.ti, which provides up to date multimedia processing, was identified for data analysis. Chapter 5's main aim was to analyse, triangulate and consolidate all collected data on the use of common examination as formative assessment tools and how these examinations contribute to an appraisal of learner progress and attainment (Madaus, 1998).

The chapter also discusses the research results emanating from the data that has been analysed based on the topic and the responses gathered on each research question. The descriptions of the significance of formative assessment tasks and assessment for learning strategies in classrooms are elucidated. The importance of teachers working collaboratively

in developing tasks will be discussed to indicate the significance of teacher accountability in the assessment of learners.

Chapter 6 recapitulates the researcher's reflections based on the key findings and the presentation of the conclusions drawn from the research. The matters drawn from Chapter 5 are discussed, based on the constructivist conceptual framework. The recommendations for the improvement of the school assessment practices leading to improvements in learner performance in South Africa are made. Chapter 6 further provides the reader with information on the action research cycles as part of teacher development on task development and use of common examinations as formative assessment tools in classrooms.

1.8 **CONCLUSION**

The South African assessment system is characterised by compliance with examinations and the related requirements as promulgated in various regulatory frameworks. The overreliance on examinations has surpassed the use of assessments in a formative manner. Currently the assessment practices in the schooling system rely on the extent to which the curriculum should be covered rather than on how profound the content has been exposed to the learners. Hence a shift from examination hype and the target orientation must be replaced by a focus on assessment for learning. This study purports that the Department of Basic Education should institutionalise an integrated assessment framework which will be inclusive of teacher development and learner centredness. Teacher assessment support needs to be in place to enhance teachers' knowledge and skills to conduct assessment for learning in their classrooms. Assessment for learning which encourages providing tasks and activities that elicit evidence of learning, providing feedback that moves learners forward and providing learners with the opportunity to take ownership of their own learning is necessary (Wiliam, 2008). This provision will assist in enhancing learner participation in assessment activities, improve performance and entrench learning.

2 CHAPTER TWO: UNDERSTANDING THE SOUTH AFRICAN ASSESSMENT SYSTEM AND CONTEXT

2.1 INTRODUCTION

The assessment of learners plays a pivotal role in the teaching and learning process. An understanding of the context in which teaching, learning and assessment takes place is crucial to the assessment of learners. To create the most effective assessment, teachers need to have an understanding of the targeted curricular objectives. The efforts taken by teachers to prepare learners for examinations should be measured against the intended outcomes. To do this, a high quality formative assessment must be administered in classrooms to provide teachers with credible evidence on the effect of their teaching and its effect on learner performance. Therefore, teachers should not only focus on the completion of the intended ATP and on preparing learners for examinations. Conversely, they need to teach, assess, interpret the results and adjust their teaching to suit the learning needs (Corwin & Ainsworth, 2015).

Madaus (1998) argues that if important decisions on learning are to be related to the test results then teachers will teach to the test. This view is supported by Ainsworth (2014) who contends that government departments tend to prescribe assessment tasks for schools to meet curricular objectives without looking at the learning needs of the learners. It is thus necessary for teachers to realise that the use of common examinations, which have tended to become high stakes tests, need not narrow their assessment practices to the disadvantage of the formative assessments in classrooms. Instructional preparation in schools should allow for constant formative assessments and not just pursue the drive to achieve high rankings for the sake of meeting accountability targets.

Assessment practices in South African schools are guided by the constitution which lays out the accountability for all government institutions (Scherman, Bosker & Howie. 2017). As schools have a role of aligning their teaching and assessment practices to the policy prescripts provided by the Department of Basic Education, teachers must also ensure that no child is left behind during the teaching and learning process. A concern in education today is improving learner performance in the national common examinations, especially in mathematics. To enhance the performance of learners, an integrated approach that proposes the collaboration of teachers at provincial, district and school level in developing assessment plans, tasks and quality improvement initiatives is therefore necessary.

This chapter describes the key assessment concepts and highlights policy prescripts that direct the assessment of learners in schools and their implications. Key to this chapter is the

role of common formative examinations for school and teacher involvement in the development and assessment tasks and examinations. The quality promotion initiatives such as the use of assessment structures to enhance teacher collaboration will also be explained in order to indicate its bearing on common examinations in schools.

2.2 DESCRIPTION OF KEY CONCEPTS

The following section describes the key concepts, which form part of the South African assessment system such as common examinations; common, formal, summative and formative assessments and assessment for learning. This chapter further describes the necessity of incorporating balanced assessments in classrooms so that no learner should be left behind during the assessment process. Since learning is determined by what teachers and learners do in the classroom, the role played by teachers, learners and peers is important (Black & Wiliam, 1998).

Both formative and summative assessments are an integral part of collecting of information about learning. The additional distinction between formative and summative assessment is necessary as each and every assessment has a purpose. Teachers must realise that formative assessments form part of the instructional process and can take the form of a research project (informal) or a mini class test (formal) (Department of Basic Education, 2011b). Therefore, when assessment for learning is used, both formal and formative assessment tasks will be incorporated.

2.2.1 Common Examinations

Examinations form part of an assessment programme in the education system since they contribute to the realisation of the specific objectives set out in the curriculum. According to Rasul and Bukhsh (2011), an examination is a process of testing the abilities of learners by measuring the learners' advancement towards the attainment of predetermined objectives in any area of the curriculum. Common examinations are designed to provide actual information on what learners know and do not know with regard to specific learning outcomes (Odden & Archibald, 2009).

The aim of common examinations is to provide examinations that are fair, reliable and valid. In the South African context, common examinations are summative and they are prepared by the Department of Basic Education at three levels of operation, which are, District, Provincial and National levels. These examinations play a two pronged role in the schooling context. Firstly, the midyear (or June examination) is part of the 25% school based assessment mark and has a higher weighting than the other internal assessments.

Secondly, end of year common examinations form part of the promotion and progression requirements of learners into the next grade and contribute 75% to the final promotion marks of learners (Department of Basic Education, 2011a). It is evident that learners at school level are exposed to high stake examinations, which carry high weightings twice in a year, thus teachers need to consider using these examinations formatively to encourage learning.

At a national level, the design and development of common examinations are done remotely by appointed panels of examiners who delineate the questions to be set according to the CAPS policy requirements. One of the targeted gateway subjects for these examinations is mathematics. Since these examinations are set and moderated at a national level, teachers at school level only play the role of administering the examination, marking the learner scripts, recording the scores and reporting the results to the learners and parents. Schmoker (2004) emphasises the significance of teachers grouping themselves to develop common formative assessments, set achievement goals and share and create lessons to improve results. The involvement of teachers in the common examination is merely implementation and compliance, since provincial common examinations are developed at a central place by a group of examination panels and subject experts. The outcomes of these examinations are then evaluated by the district subject specialists and Heads of Department (HODs) to determine the achievement of skills and knowledge and the effectiveness of teaching and learning in the classrooms.

2.2.2 Summative Assessments

External summative examinations have long been used to rank learners in terms of their performance as their purpose is to make judgements and to grade learner success. Garrison and Ehringhaus (2013) maintain that the purpose of summative assessments is to gauge learning in relation to content standards and to evaluate certain aspects of learning.

Summative assessments can be described as those assessments that summarise and report on what has been learned at a particular time, and can thus be named Assessment of Learning (AOL) (Iliya, 2014). These assessments are administered at regular intervals to ascertain what learners know and do not know. Stiggins (2005) alluded to the fact that summative assessments include tests that are administered after learning is believed to have occurred to determine whether learning did indeed occur. In the South African context summative assessments include common examinations, cycle tests, language oral assessments, practical examinations, midyear and end of year examinations.

Although summative assessments are seen as having a “bad” face as opposed to formative assessments which provide positive results, they provide learners, parents and teachers with

valued information about the learners' overall performance at significant points of learning (Iliya, 2014). For schools to improve learner performance, summative assessments should be viewed as tools to evaluate the effectiveness of the learning, curriculum improvement strategies and assist with alignment and learner placement in the next grades. When summative assessments are used successfully, teachers in the next grade or school should have sufficient learner information in order to keep track of learner performance. After the completion of summative assessments, the produced learner performance data should be useful for school evaluation and improvement purposes (Garrison & Ehringhaus, 2013).

By looking at summative assessment through the compliance lens only, little understanding can be gathered on the effect of these assessments on learning. Achieving good scores in summative assessments may not necessarily imply that learners have captured the gist of the learning content if the focus was on set target rather than on mastering the sections of work. However if a test presents a good item, that measure well one specific dimension then it is reasonable that the learners would have learned the content and would perform well. Even though summative assessments have overtaken formative assessments in terms of classroom grading and accountability, formative assessments should be used as a tool for school improvement and the enhancement of learners' knowledge (Stiggins, 2005).

2.2.3 Common formative Assessments

The term common formative assessment is suitable for purposes of addressing the topic of this study. As assessment is the centre of the teaching and learning processes, schools need to employ different forms of assessment in order to cater for diverse learning styles in classrooms. Formative assessments can be regarded as those assessments that are used in classrooms to promote learning (Stiggins, 2005). Black and William (1998) contend that formative assessments should be interpreted as encompassing all those activities undertaken by teachers, and/or by their learners, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. Common formative assessments comprise of short questions and writing tasks that are aligned to standards and are administered to all learners in a specific grade. Normally these assessments resemble an assortment of assessment items learners will face during examinations (Frey & Fisher, 2009).

It is crucial to improving learner achievement is to provide a combination of assessment items such as multiple choice, true/false, matching items and mini tests which include short and extended questions. According to Ainsworth (2006) common formative assessments are used to ensure the use of same assessments, resulting in same assessment comparison of

learners' growth. Most importantly, common formative assessments also provide developmental feedback to teachers to improve the learning outcomes.

In South African schools assessment processes are regulated in the CAPS and NPA policy documents. The NPA standardises the recording of the assessment tasks and reporting process while the CAPS provides, in addition to curriculum content to be covered, the weightings of school based assessments and the time allocated for each subject (Department of Basic Education, 2013). Although teachers are in possession of these policies, they still have to contend with unrealistic time frames, large scale curricular demands and limited resources. Hence most teachers fall short of integrating common formative assessment activities to the learning needs of the learners. A planned process in which teachers can adjust their teaching practice strategies in order to realise the learners' needs is necessary. It is for this reason that Ainsworth (2014) maintains that one of the most effective ways teachers can use formative assessments is by collaboratively creating formative assessment tasks to assess their learners' understanding of particular learning intentions within a curricular unit of study.

Proper implementation of common formative assessment relies on the professional development of teachers in order to equip them with an understanding of content standards, to improve their ability to develop assessment tasks, to align the assessment practices with teaching practices and to plan interventions for learners who continue to struggle with the learning content (Frey & Fisher, 2009).The Common Formative Assessment (CFA) model as proposed by Ainsworth (2014) presents a practical approach that could benefit teachers in achieving the objectives of turning classrooms into effective learning environments.

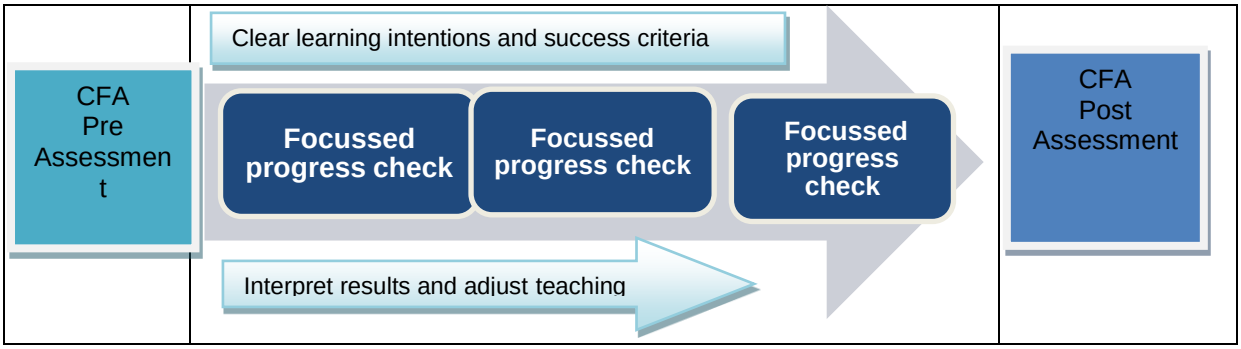

Figure 2-1: Common Formative Assessment Process (Ainsworth, 2014)

The Common Formative Assessment (CFA) model describes the best approach to evaluate the learner progress and attainment using formative assessments. This model suggests that assessment is a continuous process which involves the administration of pre-CFA to

determine where learners are in terms of their learning. Teachers need to develop and administer pre-assessment as a tool to quantify what was learned in the previous grades and how it was taught. Hence the use of a pre-test is necessary to establish the preliminary position of learners.

The pre-test should be followed by focused progress checks, which will involve interpreting results through question and item analysis to identify learning gaps. The causes of the learning gaps and under performance will then be diagnosed from the information gathered (Scherman et al., 2017). This progress check should result in modifying the teaching strategies. Guided teaching will then be based on the test results and findings which emanate from the question and item analysis reports to allow teachers to come up with focused intervention strategies. At this stage, the teacher should determine how the learners will be assisted in preparation of the next assessment and which teaching approach will be employed to improve learning. The post assessment should be administered to measure the effect of the intervention programmes and to decide which practices to adjust and which ones to modify. The post CFA process should also assist the teacher to establish if the gaps have been addressed.

From this model, it is evident that formative assessment is a complex process which needs time, cooperative efforts by those who are involved in the education of learners and repeated testing to determine if learners are ready for the next phases. This model can be set out as a practical tool for teachers during the assessment process. Teachers should always note that what learners know and what they can do remains more significant than the achievement marks in the examinations.

CFA assessments develop teacher knowledge about the assessment, improve teacher skills in developing assessment tasks and allow teachers to align the curriculum to the assessment practices and analyse learner performance in order to identify learners with learning problems (Frey & Fischer, 2009). Therefore, using common formative assessments in classrooms has benefits for both learners and teachers and is aligned to Assessment for Learning (AFL) principles as discussed in the next section.

2.2.4 Assessment for Learning

In order to increase learner performance in schools there is a need to make use of Assessment for Learning (AFL) in classrooms. AFL is a key process to classroom assessment practices; it includes establishing where learners are in the learning process, where they are going and how to get there (Wiliam, 2008). For purposes of this study

reference will be made to formative assessment to emphasise that learners need to keep on learning and to build their confidence to learn in useful ways (Stiggins, 2002) to improve learner achievements. Similar to common formative assessments which support the use of clear learning intentions and success criteria, AFL as advocated by Wiliam (2008) provides solutions to the improvement of learner performance by providing:

- Clearly articulated learning intentions to foster understanding;
- Interactive whole class teaching through the use of classroom discussions and assessment tasks;
- Feedback to learners;
- Collaborative, reciprocal and peer assessment; and
- Provides learners with opportunities to become owners of their own learning.

Stiggins (2008), in agreement with the use of AFL in classrooms, states that while examinations are necessary for accountability purposes, the reliance on these examinations does not always yield good results. In considering AFL principles, it is necessary for teachers not to regard assessment as a once off process; conversely assessment should take place on a continuous basis during the learning process. Those who are responsible for gathering information on learner achievement should note that all classroom assessments must inform instructional decisions (Stiggins, 2005). To achieve maximum outputs in the classroom, AFL calls for the involvement of three key decision makers these are teachers, learners and their peers. Linked to the CAF model explained in Section 2.2.3 above, pre-, peer/self and post-assessments should be incorporated into AFL in order to execute the roles of the decision makers as described in Table 2.1.

Table 2-1: Role players in the assessment process (Wiliam, 2008)

	Where learning is going	**Where the learner is**	**How to get there**
Teacher	Clarify and share learning intentions.	Craft effective discussions, tasks and activities to bring out evidence of learning.	Providing feedback that learners are progressing.
Peer	Understand and share learning Intentions.	Stimulate learners as a resource for one another.	
Learner	Understand learning intentions.	Activate learners as the owners on their own learning.	

Learning hinges on what teachers and learners do in the classroom (Black & Wiliam, 1998). As can be gleaned from Table 2.1, learners must be provided with the programme of assessment indicating the type and nature of assessments that will be carried out for each school term. The assessment programme must include all the assessment tasks, such as assignments, projects and tests. Teachers must be able to use their classroom experiences optimally and be able to develop quality assessment tasks. For teachers to be able to prepare and use improved approaches for formative assessment they need to be able to explore and reflect on their classroom practices, by focusing on their questioning styles and feedback mechanisms (Torrance & Pryor, 2001). By using AFL in their classrooms, teachers will be able to make choices and take accountability using new strategies and techniques. Teachers can put AFL into practice by sharing their learning intentions and using evidence of learning to adjust their teaching to accommodate learner needs (Wiliam, 2008).

The AFL process involves repeated peer assessment by learners in the same class so that they can evaluate one another towards the attainment of the set learning intentions. In addition individual learners must be occupied with self-assessment to enable them to define their own learning and pace themselves for the next learning and assessment programmes (Stiggins, 2005). After the completion of each assessment task, teachers must provide feedback to the learners so that in due course learners should be able to make progress in their learning and use their knowledge to make meaning, acquire skills of self- monitoring and identify the learning gaps and know how to move to the next steps (Earl, 2003).

2.2.5 Using Balanced Assessments to Maximise Learning

The teachers' task is to use balanced assessments in order to improve learning in classrooms. To be useful in improving learning and learner attainment, summative assessments should be interpreted and used formatively. This implies that summative assessment outcomes should inform the design and development of formative assessment tasks. It is therefore necessary for teachers to use summative assessments formatively as a means of continuously improving learners' progress. Teachers are obliged to be aware of the progress of their learners in order to adapt teaching to meet the learners' needs (Black & Wiliam, 1998). For teachers to be able to raise the test and examination performance of all learners, balanced assessments should be considered. Using balanced assessments implies that the assessment tasks must address all cognitive levels and accommodate the level 1-7 achievers (Table 2.2).

Table 2-2 Rating Codes and descriptions of competence percentage (Department of Basic Education, 2011a)

Code	Description	Percentage
7	Outstanding achievement	80-100
6	Meritorious achievement	70-79
5	Substantial achievement	60-69
4	Adequate achievement	40-59
3	Moderate achievement	40-49
2	Elementary achievement	30-39
1	Not achieved	0-29

These levels "describe the learner's performance in specific tasks and their achievement towards the achievement of knowledge" (Department of Basic Education, 2011a p. 56). Therefore assessment tasks should be acceptable in terms of learning aims they purport to address and they must provide opportunities for learners to communicate their ever developing understanding.

An inclusive classroom assessment program balances formative and summative assessments and teachers are able to determine where learners are in their learning in relation to the set targets and standards (Garrison & Ehringhaus, 2013). In the event that classroom assessments are not balanced as set out by the CAPS, learners may receive unrealistically high marks as compared to those received under examination conditions. Classroom assessments that are not monitored may produce negative results; such as teachers assessing only the sections they are comfortable with or awarding inappropriate scores to the learners. As a result learners may be provided with incongruous feedback on their learning progress.

For purposes of providing credible results and feedback to the system, school based assessment marks and the examination marks need to be comparable to avoid huge discrepancies. Formal internal assessment tasks such as assignments, projects or tests that are administered to the learners should prepare them for the end of term or year examinations. During the learning cycle, formative assessment must then be employed to enable teachers to make quick progress checks after each section of work is completed to ascertain what learners know and do not know (Corwin & Ainsworth, 2015). It is therefore necessary to balance formative assessments and summative assessments in order to address the teaching and learning gaps.

Relying on only one form of assessment does not provide a complete picture and information about learning and improvement for teachers. The answer to improving learning and performance lies in using balanced assessment in schools. Summative assessments are necessary for providing a summary of the learning process and formative assessments assist in monitoring learning. Key to balanced assessments is also the inclusion of peer- and self-assessment and the provision of feedback that can assist learners in achieving the learning goals (Harlem, 2004). Balanced assessments must include summative assessments which do not distort learning, but benefit all learners. Table 2.3 indicates the focal points of summative and formative assessments that teachers must be conversant with to avoid relying on one form of assessment only.

Table 2-3: Balancing formative and summative assessments (Taras, 2005)

Formative Assessments	Summative Assessments
Introductory guidelines are used to guide teaching and learning.	Management guidelines are used for compliance to examination requirements.
Conditions of learning are clarified according to specific weighed goals and are based on multi criteria that are defined according to the learning context.	Condition of learning, pedagogy and practice fixed on judgements which include all the evidence.
Assessment takes place in the classroom teaching in order to develop learning.	Assessment takes place after reaching a given point of curriculum delivery.
Focuses on both process and product; based on curricula targets that are used to inform learning.	Summative assessment tests to focus on the product based target setting that drives the curriculum.
Day-to-day assessments inform how judgements about the learner performance can be used to improve learner competence.	Once off examinations (summative only) to assess the quality of work before feedback is provided.
Feedback on learning provided by peer/self/oral /written assignments to indicate the existence of learning gaps and the actual level and quality of learners' performance in their work.	Feedback mainly in written form depending on the reliability of marks and the validity of the assessment instrument.

2.3 **THE PURPOSE OF ASSESSMENT IN SCHOOLS**

Chapter 4 of the CAPS document provides teachers with the prescribed assessment requirements in terms of the topics, when they should be presented, how they should be moderated, weighted, recorded and reported. Assessment is a cyclical process which involves teaching, assessment, analysis, re-teaching, re-testing and remediation. Assessment is therefore not an activity, but it is a process which teachers need to follow to assist learners during the learning process. According to the Department of Basic Education (2011b) an integrated assessment process must be carefully planned by developing and collecting evidence of learner performance, evaluating the learners, recording the findings to assist learners and to improve the process of teaching and learning. Therefore the assessment process should accommodate all types of learners by including assessment tasks that cover a wide range of cognitive levels, feedback mechanisms and intervention strategies.

Although teachers are provided with formal assessment programmes, classroom assessment practices still need to be improved. Currently teachers use the common examinations set by the districts and the province for summative and evaluative purposes only. The value of assessments used by teachers in their classrooms seems to be unrecognised and the focus is on using common standardised examinations. Harlem (2004) asserts that teachers are fast becoming more acquainted with the examination requirements than the real improvements in the quality of learning. Seeing that teachers must complete the syllabus according to the defined time frames and still assess learners, they need establish a clear assessment plan, share it with learners and keep a record of learner attainments. To guide teachers Hayward and Spenser (2010) place emphasis on Black and Wiliam's (1998) five formative assessment strategies that should serve as foundation for assessments in schools. These include:

- Clarifying and sharing learning intentions and criteria for success.
- Engineering effective classroom discussions and other learning tasks that elicit evidence of learner understanding.
- Providing feedback that moves learners forward.
- Activating learners as instructional resources for one another.
- Activating learners as owners of their own learning.

The purpose of assessment should be to provide learners with the same opportunities using the same assessment standards to enhance fairness. To keep track of learners' progress, teachers must provide extended opportunities for those learners who are not yet competent in a specific section of work as part of the formative assessment process. Hence the

purpose of assessment should be to increase learner enjoyment and motivation in the subjects they are enrolled for. To do this, Black and Wiliam (1998) advocate that teachers should ensure that:

- The extent and nature of formative work is not lacking and unrealistic for learners.
- The marking of assessment tasks does not result in the reinforcement of underachievement by being generous and not focused on a specific unit of work.
- Teaching to the test is avoided as summative assessment tasks and tests encourage rote and superficial learning.
- Overemphasised awarding of marks and underemphasised feedback are avoided.
- Assessment does not play a managerial role of recording marks and reporting only, instead the previous records of learner performance must be analysed in order to improve learning.

2.4 **POLICY IMPERATIVES**

This section elucidates on the legislative framework that guides the assessment in South Africa. The Constitution of the Republic of South Africa (Act No, 108 of 1996) provides a basis for curriculum transformation and development in South Africa (Department of Basic Education, 2002). There are a number of policies that have been introduced by the Department of Basic Education since 1996 to streamline the curriculum and assessment statements in order to transform teaching and learning. The Department appointed task teams to review policies as a result of teacher concerns with the implementation of the national policies and the added administrative duties such compilation of teacher files and the management of learner portfolio files (Department of Basic Education, 2013). The revised assessment policies are meant to provide clear guidelines to teachers during the teaching and assessment cycle (Appendix B) in terms of what needs to be taught, assessed and where interventions are required. The incorporation of policies into classroom activities therefore remains critical for the management, administration and conduct of examinations and assessment tasks from Grade R-12.

As part of the Department's initiative to improve school assessment practices, teachers and the HOD's should be acquainted with the following main assessment policies for effective management and implementation of the summative and formative assessment in their schools.

Table 2-4: Curriculum and Assessments Legislative Framework (Adapted from Department of Basic Education, 2013)

National Curriculum Statements Grades R-12		
Represents a policy statement for learning and teaching in South African schools. It is the curriculum that underpins the various programmes followed in each Grade from Grades R – 12. Provides 3 main policies, that is , CAPS, NPA, and NPPPPR.		
Curriculum and Assessment Policy Statements (CAPS) Streamlines curriculum and assessment to provide clear specifications on what is to be taught and asssessed on a termly basis for each approved school subject.	***National Protocol for Assessment (NPA) as amanded*** Standardises the recording and reporting processes for Grade s R – 12 within the framework . Provides information on learner performance analysis.	***National policy pertaining to the Programme, and promotion requirements (NPPPPR) for the NCS Grade R-12 as amended*** Prescribes the number of subjects and the promotion requirements for all Grades.

According to the Department of Basic Education (2000) the teacher should design and manage both formative and summative assessment in ways that are appropriate to the level and purpose of learning. However inconsistencies in the implementation of these policies in schools are a colossal challenge as the teachers' interpretation is controlled by their unique school contexts. It is therefore necessary for teachers to be made aware of the main contributors in policy implementation. Harlem (2004) provides the following policy guidelines to assist teachers with the use of the assessment policies to help improve learner performance.

- Teachers must be aware that the selection of assessment methods must take cognisance of the principles of reliability and validity.
- Teachers must be able distinguish between formative and summative assessment tasks as specified in policy prescripts.
- Teacher capacity development to address the challenges embedded in the assessment policies must form part of the assessment process.
- Teachers also need to understand the learning goals and to associate assessment tasks within the curriculum in order to apply the assessment criteria.
- The moderation of assessment tasks and learner evidence of work must assist teachers in understanding the learning gaps that are related to the assessment criteria.
- Teachers should be conversant with the challenges related to their assessments in terms of quality of the tasks and how they are compliant to policy.
- Assessment should be fair to all learners.

The Department of Basic Education "envisage teachers who are qualified, competent, dedicated and caring and who will be able to fulfil the various roles outlined in the Norms and

Standards for Educators of 2000" (Department of Basic Education, 2000). Therefore teachers should not rigidly focus on policy application to satisfy the managerial and administrative requirements of the Department of Basic Education. Conversely teacher should be empowered to understand policy implications through assessment structures and teacher communities to increase teacher collaboration and participation in the assessment processes.

2.5 THE TEACHER LEARNING COMMUNITIES AND STRUCTURES

Teachers at all levels have an important role to play to contribute to the improvement of education (Department of Basic Education, 2002). As the main contributors of transformation, teachers need to come up with innovative assessment practices to increase learner performance through participation and collaboration in professional communities and structures.

Since the introduction of common examinations the involvement of teachers in the setting of quality assessment tasks has been at the centre of the discourses by teacher unions, Umalusi and the Department of Basic Education. Black and Wiliam (1998) posit that when a group of teachers meet and work collaboratively they can improve their feedback strategies, marking and how to handle peer, self and formative assessment tasks. Whilst there is the need to strengthen the use of formative assessment tasks, the training of teachers in the development of quality assessment tasks across schools also remains pivotal. Teacher support by the subject advisors through cluster meetings is not receiving attentions due to the lack of time and heavy workloads on the part of teachers. It is for this reason that the DBE in collaboration with the Department of Higher Education and Training (DHET) introduced the Professional Learning Communities (PLC) in 2011 to allow teachers who are teaching the same subject to work together in the development of teaching, learning and assessment guidelines, to address common challenges and to develop programmes for the advancement of their subjects.

As part of the quality promotion initiatives in Gauteng, assessment teams have been instituted at school, district and provincial levels to manage the assessment issues and to share assessment related materials (Gauteng Department of Education, 2001). The assessment teams address both curriculum and assessment programmes, they include the Curriculum Information Forums (CIF), Provincial Assessment Team (PAT), District Assessment Team (DAT) and the School Assessment Team (SAT). It is worth mentioning that these structures are part of the curriculum support structures and meet on monthly basis to ensure that assessment policies are implemented, monitored at school, district and provincial levels.

Black and Wiliam (2008) place emphasis on creating effective classroom discussions during tasks development, clarifying understanding and sharing of learning intentions to stimulate learning among teachers. Therefore the assessment structures must assist teachers to reflect on their experiences in an organised manner, to create knowledge and to bring about improvements in their classroom assessment practices. Through these assessment structures teachers will continuously be developed to be acquainted with new advancements in assessment and curriculum. Improving teacher quality is thus important as part of supporting teachers to change what they normally do in their classroom to effective classroom practices.

The PAT, DAT and SAT structures are aligned to the outcomes of the teaching and learning process in order to bring improvements to assessment practices in schools. The Logic Model as proposed by Leahy, Leusner and Lyon (in Black & Wiliam, 2008) provides key steps which could be useful for these structures for the realisation of the teaching and learning outcomes.

Table 2-5 : Logic Model: Steps for teacher structures in achieving learner outcomes (Source Black and Wiliam, 2008)

<table>
<tr><th>Teacher Learning Communities outcomes</th><th colspan="2">Teacher outcomes</th><th>Learner outcomes</th></tr>
<tr><td rowspan="5">Introductory assessment for learning leaders' workshop.
On-going support from partners, peers and materials.
On-going monthly meetings that support and hold teachers accountable to make changes in their classrooms</td><td>Teachers elicit evidence of learner understanding.</td><td>Teachers use evidence of learning to adapt instruction to immediate learning needs.</td><td rowspan="5">Improved learning</td></tr>
<tr><td>Teachers identify and share learning intentions for success with their learners.</td><td>Learners are more engaged with the lesson, content and activities.</td></tr>
<tr><td>Teachers create opportunities for learners to take ownership of their own learning.</td><td>Learners support each other and take responsibility for their own learning within the shared framework.</td></tr>
<tr><td>Teachers provide structure and create opportunities to activate learning resources for one another.</td><td rowspan="2">Learners act on feedback to improve assignments</td></tr>
<tr><td>Teachers provide learners with feedback that identifies what they need to do to improve</td></tr>
</table>

The logic model is useful as a solution for the teacher learning communities to strengthen teacher collaboration and address the classroom assessment challenges. By partaking in the teacher learning communities, teachers would be able to jointly identify improvement strategies such as setting common formative tasks, analysing learner performance and providing developmental feedback to their learners. In addition teachers would have a platform to share their experiences on a monthly basis and build a collective knowledge base needed for improving learning. The greatest benefit of the teacher learning communities is the provision of a platform for struggling teachers to be re-professionalised and re-skilled on how to teach and assess.

2.6 **CONCLUSION**

Education and learning are shaped by formative and summative assessment and the interface between them. The need to understand the relationship between these forms of assessment will provide teachers with the knowledge of how learners learn. Adams and Baker (2004 p.:4) maintain that “the priority in assessment is to promote assessment for learning; it is significant both as a process and as an outcome of educational assessment, internal or external.” For teachers to realise the intended outcomes of a lesson and to accomplish significant learning achievements in their subjects, their innovations must include the strengthening of formative assessment practices in classrooms. In an ideal school, teachers often prepare for their lessons, conduct assessments and check if learning has taken place. As such, learners are expected to gain understanding and knowledge from these lessons.

The teacher at some point needs to stop and analyse the results to determine if they are yielding satisfactory results and come up with innovations and adjustments to recover the performance of learners. It is for this reason that common formative assessments and the use of AFL principles are crucial to ensure that effective teaching and learning processes take place in schools.

3 CHAPTER THREE: LITERATURE REVIEW

3.1 **INTRODUCTION**

The South African schooling assessment system is fast becoming examination orientated in the exit grades of the General Education and Training (GET) and Further Education and Training (FET) phases. This orientation is as result of the Department of Basic Education's introduction of standardised assessments in the form of common examinations for grades 3, 6, 9, 10 and 11. These common examinations are set and moderated remotely by external examiners and administered by teachers in schools. The rationale for these examinations is to ensure that the examination question papers, for critical subjects like Mathematics, English First Additional Language, Economics and Accounting, are of good quality.

There has been a considerable discourse, by policy makers, reviewers, ministerial task teams (Department of Education, 2000) and other stakeholders such as Umalusi (2015) on the quality of assessment tasks developed in schools. These stakeholders agree on having an education system which is capable of providing quality standardised assessments. In addition a number of studies have been carried out on the quality of teacher assessments in education by proponents of assessment such as Animosahung and Ogunniran (2014), Van der Berg, Spaull, Willis, Gustafsson and Kotzé (2016), Johnson (2013), Stiggins (2005), Hopkins (2003) and van Staden and Motsamai (2017) on the significance of formative assessments in improving learning. The use of common examinations as formative assessment tools to improve teaching, learning and learner performance is an area that needs further exploration in South African schools.

When examinations are placed at the centre point of the assessment process, teachers tend to regard internal school based assessments as less important. As a result, there are fewer initiatives geared towards the improvement of formative assessment practices and increasing the standard of assessments (William, 1998). This study assumes that teachers should be supported during the assessment process instead of replacing teacher assessment tasks with ready-made common examinations. A shift in focus is thus required to encourage the incorporation of formal assessments into formative assessment practices for the improvement of learner performance. In this sense, common examinations that are used as formative assessment tools have the potential to effectively improve teacher assessment preparations in schools.

This chapter focuses in the literature review on common examinations as formative assessment tools. While Chapter 2 looked at the policy prescripts regarding the assessments and examinations, this chapter focuses on the theoretical perspectives on the

how common examinations can be used effectively as formative assessment tools. The theoretical background provided through the review of literature will be useful in justifying the need for the institutionalisation of assessment for learning principles in schools. For purposes of addressing the topic, national and international trends will be followed to provide a broader perspective and understanding the assessment systems in South Africa, especially the use of common examinations as formative assessment tools and its benefits. Literature on quality assessment practices, which involve teachers working collaboratively, will also be explored. An account of a detailed conceptual framework will be provided by looking into constructivism theory and the Action Research model and its effect on common examinations as formative assessment tools. The need for pre- and in service training of teachers on task development and administration will also be explored.

3.2 PERSPECTIVES ON EXAMINATIONS AND ASSESSMENT

3.2.1 Introduction

Studies on different types of assessments and examinations have been carried out by many proponents of school assessments. The study by Rasul and Bukhsh (2011) on learner performance during examinations, SQA (2009) on different types of assessments and their purposes and Johnson (2013) on the benefits of common assessments, highlights the significance of teacher assessment practices on learner performance. These studies highlight the significance of formative assessments and summative examinations and their effect on teacher assessment practices. A variety of assessments are used in the South African education system and other countries, including common examinations, depending on their purpose. Other assessments include psychological tests which aim at measuring traits such as intelligence, spelling gaps or concentration; however, these are not used in South African schools. Diagnostic tests play a role in the education system as they are mainly subject specific and focus on aspects of learning that have not been mastered by learners.

In the South African context the Annual National Assessments (ANA) involving more than six million learners were conducted from 2011 to 2014 with the aim of identifying possible risks to quality teaching and learning, and identifying data-driven interventions based on credible assessment measures. As evidenced by Taylor (2013) the purpose of ANA was two pronged, that is, for universal and verification purposes. The universal ANA was intent on affording teachers with improved assessments, identifying schools that need assistance and those that are performing well and to inform parents about the performance of their learners. The ANA also had a universal role of providing national and provincial perspectives on

learner performance and the analysis thereof. This assessment also provided systemic evaluations with a more diagnostic interpretation of learner achievement (Department of Basic Education, 2014).

ANA unleashed a new assessment form for primary schools by introducing a census type of external assessment for learners in all public schools. Although the ANA results provided a situated context for better understanding of learner performance at lower levels, teachers on the ground tended to focus on teaching to the ANA, disregarding the set annual teaching and assessment plans. Hence the uncertainties from social partners emerged leading to the ultimate suspension of these assessments in 2015. Key to the complaints tabled by social partners was that the ANA added to the myriad of assessments that learners must complete and the administrative burdens for the teachers. In addition, these assessments did not allow teachers to become active participants during the assessment process. Instead they became powerless participants of the assessment process (OECD, 2005). Hence the call for the review of the ANA was put forward by the teacher unions which necessitated the Department of Basic Education to consider developing an integrated assessment framework.

It is necessary to look at the positive effects of the ANA on teaching and learning. The ANA provided standardised assessments which could be used to assess learners using common tests. Research in the South African education environment has shown that schools need specific types of initiatives and programmes to deal with the plight of underperformance in examinations (Makhatho & Mji, 2006). The need for an educational assessment framework that will encompass measures to inform the teachers' use of correct assessment practices is thus one of the key features for ensuring that examination outcomes are used effectively (Van der Berg, Spaull, Gustafsson, Taylor & Armstrong, 2016).

Mid-year and end of year examinations are another form of assessment that is used in South African schools to rank learners based on their performance. Rasul and Bukhsh (2011) regard examinations as integral to an education system since they are useful in measuring learner progress based on pre-set objectives. Traditionally such tests or examinations have been administered once or twice a year to evaluate learner abilities and achievements in specific subjects. Examinations are also termed summative assessments and they are useful in measuring the competencies of learners in answering questions under compulsory conditions with fixed starting and finishing times, strict invigilation and the security of examination materials.

Examinations as a form of assessment are mainly accountability based and do not add value to improving the quality of teaching. Royce Sadler (2012) refers to examinations that are set on monitoring improvements and progress of the teaching and learning process. They are

largely used for monitoring purposes and they are intent on achieving the targets set by the Department of Basic Education. These assessments have a negative effect on teaching as they are administered within short teaching periods, they are time consuming, replace teaching and do not take the learning contexts into account (SQA, 2009).

Examinations are used for promotional purposes and they are administered according to a public examination time table which is aligned to the completion of the curriculum across all schools (Johnson, 2013). Of note is that examinations only test the efficiency of an education system, completion of the curriculum and what learners can do rather than what they know (Rasul & Bukhsh, 2011). The results of such testing tend to leave some of the learners behind with little opportunities for remediation. Hence Hopkins (2003) states that the results of summative assessments should indicate the consequences of school learning in the best possible way.

Examinations can be set by individual subject teachers in their schools or by a group of teachers or examiners who specialise in the subjects to be examined. The latter are generally known as common examinations and they are used to examine learners at particular points of their learning. According to DuFour, DuFour & Eaker (2007) common examinations have benefits compared to assessments that are developed by teachers in isolation. Common examinations are developed by teachers who work together to determine that learning has taken place. Examinations that are developed by a team of teachers are more useful, hence the OECD (2005) supports the notion of teachers taking part in the assessment processes consistent with their teaching and learning contexts.

Common examinations have been deemed insignificant by teachers as well as by teacher unions. Most teachers believe that common assessments restrict their ability to differentiate teaching in their schools (DuFour, DuFour & Eaker, 2007). On the same note, Umalusi (2012) indicated that the introduction of common assessments, in the past three years, culminated in over reliance on item banks and exemplars on the part of teachers and learners.

In order to dispel the misconceptions about the role of common examinations, it is important that these ‘assessments should be collaboratively developed for teachers to have an understanding of what the expected learning outcome for their learners is and a greater understanding of the curriculum (Johnson, 2013). One of the most interesting features in education would be the shift in assessment practices towards the use of common formal examinations alongside school based formative assessments for purposes of standardising assessments across schools. However, to many schools, the role of common examinations

in improving the performance of learners is often misunderstood. Bransford, Brown and Cocking (2000, p. 23) emphasise the necessity for teachers to know that formative assessments can assist them in understanding the learners' preconceptions and where learners are in the 'developmental corridor'.

Examinations highlight serious limitations as a result of teachers selecting inappropriate patterns and styles of question and allocating subjective marks resulting in inaccurate measurement of performance. This finding by the SQA (2009) report on assessments shows the need for improving teaching by not just relying on assessments that are put in place for accountability and certification purposes. Bransford, Brown and Cocking (2000) suggest that assessment for purposes of accountability must test learners' deep understanding rather than surface knowledge. Hopkins (2003) alludes that examination systems have a tendency of having adverse effects on learners and their performance. These effects could be as a result of schools placing more value on examinations than on what has been taught and learnt. Consequently, when schools pay such attention to examinations, they run the risk of negatively affecting learner performance and they also provide inadequate models of assessment to the teachers.

It is for this reason that teachers should be able to design and develop common examinations that are meaningful for the learners. Black and Wiliam (2013, p. 3) state that "in order to better understand learning, teachers need to consider learner information about the test they take, observation notes and the communication that takes place between the teacher and the learner." Teachers should then be able to select and use appropriate assessment tools and instruments to determine what learners have learnt at a particular time. Hence assessments that are used in schools should allow teachers to generate, interpret, communicate and use the assessment data available to determine where leaners are in terms of learning outcomes (Iliya, 2014).

3.2.2 International perspectives

South Africa participates in a number of international assessment programmes aimed at assessing systemic performance against a number of measures. The Minister of Basic Education pointed out that the TIMSS, Progress in International Reading Literacy Study (PIRLS) and the Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ) provide reliable independent measures to monitor learner performance in critical subjects to assess the health of the education system (Department of Basic Education, 2016). On the international front, benchmarking common assessments in mathematics and science are carried out using TIMSS for Grade 5 and 9. These assessments are also used

to evaluate educational achievements and to compare learner achievements across participating countries. Administered in four year cycles, these assessments provide comprehensive reports on mathematics and science internationally (Martin, Mullis & Foy, 2015).

TIMSS is developed using a large pool of assessment items which are translated into samples of items as questions for the learners. In addition TIMSS relies on common items and achievement scales to compare learner progress and to link different sets of assessment results. It is important to note that learners are assessed on a common measurement in order to obtain overall results (Martin, Mullis & Foy, 2015). Assessments such as TIMSS have a positive role to play as they contribute to the improvement of learning as benchmarking tools. The improvement in learner performance as a result of participating in the TIMSS from 2003-2015 cannot be left unnoticed. The results showed the improvement of up to 87 points for mathematics and raised achievement standards of learners who are at the lower levels of performance by attaining 550 points. However there is a need for further interventions on learning inputs that need to be put in place for the improvement of the results of learners who scored between 325 and 400 points as there is prospect for enhancements for this group (Department of Basic Education, 2015).

The latest TIMSS 2015 results provided schools with credible independent assessment results, and provide the Department of Basic Education an example of an internationally rigorous process of assessment development, administration, data capturing and analysis using a representative sample based on universal assessments that are comparable between provinces. The results have also provided the Department of Basic Education with an overview of the educational needs of various sub-groups of learners based on their language, geographical position, quintile status and socio-economic backgrounds with the aim of raising the standard of poor communities (Department of Basic Education, 2016).

By participating in TIMSS, the strengths and weaknesses of the education system are brought forward with a view to identifying curriculum improvement initiatives in mathematics. On the international front, Bulgaria has shown a change of heart from unwillingness to participate in the TIMSS study in 2011 Grade 4 and Grade 8 cycle. For Bulgaria TIMSS 2015 confirmed that mathematics needed attention as it was in a critical state. TIMSS 2015 results for Bulgaria also revealed positive elements such as building experts in assessment, evaluation, educational research and testing (Corner, 2015, p.:23). In addition, TIMSS provides teachers with an opportunity to take part in cutting–edge assessments that are of high quality, internationally recognised and inform classroom practice to raise mathematics standards (Department of Basic Education, 2016).

A consideration of assessment and examination practices from countries such as Gambia, Ghana, and Pakistan is necessary to understand how performance is enhanced by making use of examinations. The rationale behind using examples from these countries is to provide a global view on the use of examinations, their effect on learner performance and to indicate the over reliance on summative tasks instead of formative assessment tasks. The findings would highlight how education systems in other countries consist of examinations which are used as measurements of learning based on awarding of grades, performance levels and weightings to indicate learning at the cost of the inclusion of critically important formative assessment tasks.

The education system in Pakistan originated from the British system which introduced external final examinations known as matriculation at the end of the high school year. The matriculation examinations are conducted in universities. Similar to the South African education system, matriculation is regarded as a key requirement for entry into employment and higher education. Matriculation in Pakistan therefore controls the curriculum and teaching process. Consequently, inadequacies in teaching, learning and infrastructure led to unfair assessment practices such as question paper leakages, subjective marking and incorrect marking of scripts as examples of some of the examination irregularities that were found. Learners who fail in these examinations do not get exposed to remediation, leading to high dropout rates. As performance is measured by examination results, only 50 out of 100 learners who enter these examinations pass. The main goal of education in Pakistan is thus passing examinations at the cost of the formative assessment of knowledge and the learning process (Khattak, 2012).

The nature of examinations in Pakistan is mainly based on textbooks and testing of the knowledge component. Rasul and Bukhsh (2011) indicate that examinations in Pakistan aim to evaluate the learners' fitness to be promoted to the next class. Furthermore, Khattak (2012) indicates that assessment used in Pakistanian schools is sporadic, subjective and provides little feedback for improvement. In an effort to strengthen the examination and assessment system and to move away from the system being result focused, multiple assessment tools were explored in Pakistan. The need to make use of balanced assessments which linked formative assessments and the summative high stakes examinations became necessary. In addition, the education system in Pakistan introduced what is known as a composite scheme of examinations which split the examinations into two parts, whereby learners have to write standardised tests of their subjects at the end of grade eleven, and then they write these tests again for the second parts at the end of grade twelve.

Although the examination approach in Pakistan improved the examinations deficits such as rote learning, overreliance on past question papers and subjective marking, challenges still

remained. It is important that when common examinations are used, they should be used to evaluate the learner performance and provide feedback to the system (Khattak, 2012). The National Assessment System (NAS) is among many approaches used in Pakistan to correct, monitor and assess examinations. The objective of these national assessments is to identify and improve curriculum gaps as a means to evaluate the education system through the analysis of learner performance data against the set learning outcomes (Khattak, 2012).

An assessment system used in West Africa indicates reliance on examinations for promoting learners to the next grades. Anglophone West African countries such as Gambia, Ghana, and Nigeria rely on examinations which are set by the West African Examination Council (WAEC). In 2002, the Gambian education system introduced a compulsory curriculum which used a certificate examination system after the learners' secondary school career. In addition, the National Assessment Test is used to monitor learning and teaching standards but not for promotional purposes (WENR, 2015). Midyear and final year examinations are also used for different cohorts of learners who are in the final part of their secondary education schooling career. A similar approach is followed in other West African countries under the WAEC such as Ghana, Liberia and Nigeria. The education department in these countries also conducts examinations at the end of the senior secondary school year set by the WAEC. Learners are assessed internally and externally using performance based examinations (WENR, 2015). The examination results obtained by the learners from classwork and examinations are used for grading purposes.

Therefore the use of teacher assessments that are formative and at the same time contributing to summative examinations is essential to collect and collate information for reporting or providing recommendations for decision makers (Royce Sadler, 2012). For sustained improvements in the teaching and learning environment, feedback must be provided after each examination. Research in formative assessment by Lipnevich and Smith (2009) indicates that the use of feedback, after examinations have been taken, is essential in order to provide teachers with assessment interventions.

3.3 **THE ROLE PLAYED BY SCHOOL BASED ASSESSMENT**

In South African schools, formal and informal internal assessments are used to assist learners in gaining knowledge, skills and to enhance learning opportunities (Department of Basic Education, 2011a). Internal assessments include assessment activities, instruments or programmes that are planned, controlled, developed, administered, marked, recorded and reported by teachers at school level. The School Based Assessment (SBA) component is mandatory and contributes 25% to the final marks of learners. Therefore all learners must comply with the internal assessment requirements linked to the National Senior Certificate

(Umalusi, 2013:16). Figure 3.1 shows how assessments should be organised and should be both formative and summative.

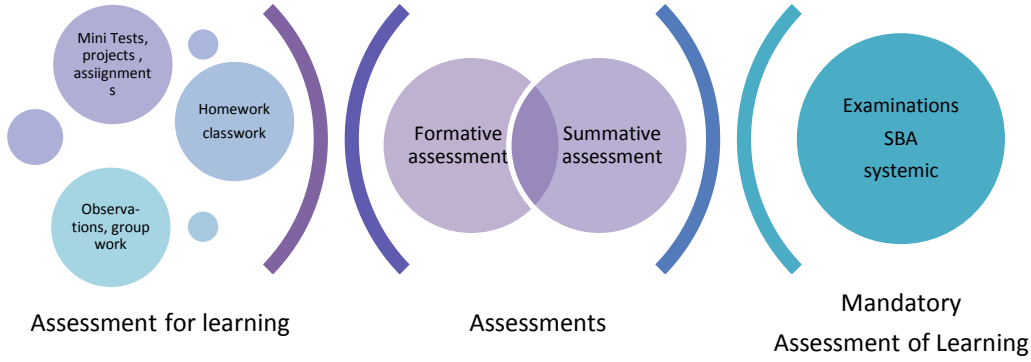

Figure 3-1: Formative and Summative Assessments

Currently emphasis is placed on the summative assessments made up of the examination and SBA. Formative assessments are regarded as informal assessment activities and the marks generated from these tasks are not recorded and they do not contribute to the final results of learners. Therefore, it can be stated that all the assessments that are used in schools are accountability tests and examinations provided in the CAPS. The administration of formal assessment tasks is closely monitored by the district and province to ensure that they are completed as per the annual assessment plan.

Any assessment activity, instrument or programme where the design, development and implementation is initiated, directed and coordinated by the Provincial Education Department and the Department of Basic Education either collectively or individually is referred to as external examination (Department of Basic Education, 2016). As mentioned in paragraph 2.2.1 common examinations that are administered in Grade 11 form part of the School Based Assessment (SBA) and they are used as final examinations to promote learners to the next grades. The June common examinations, in particular, form part of the 25% required for SBA. For example, in mathematics, the SBA marks entail midyear examinations which must be administered for all learners (Department of Basic Education, 2011a). The end of year examination, in Grade 11 mathematics, therefore counts for 75% of the final promotion mark. Table 3.1 summarises the Grade 11 mathematics SBA weightings.

Table 3-1: Weightings of SBA Adapted from Mathematics CAPS (Department of Basic Education: 2011a)

SBA task	Weighting	SBA mark	SBA mark as a percentage of promotion mark
Project/investigation	20	= 100	25%
Test	10		
Assignment/Test	10		
Mid-year Examination	*30*		
Test	10		
Test	10		
Test	10		

It is evident from Table 3.1 that the June common examination has a higher weighting when compared to other SBA tasks. This difference shows that the SBA's are mainly summative in nature and they are compulsory for every learner. Without an SBA mark the learners' final results are deemed incomplete. It is necessary for teachers to customise the SBA tasks by using past common examination questions as formative assessments to acclimatise learners to the examination questioning styles for improved learner performance. Accordingly, in order to maximise learning, the June examination should not be viewed in isolation from the other SBA tasks.

While examinations are set remotely by appointed examination panels for subjects such as mathematics, SBA may be developed by the Department of Basic Education and some at school level by teachers, being moderated by the subject Head of Departments. The quality of school based tasks therefore has to be comparable since they are not standardised across schools. It is important that formative assessments must be aligned to the summative assessment plans to transform teacher assessments into high quality classroom assessments. By integrating formative assessment plans into summative assessment plans, teachers can succeed in addressing the learners' content competencies, skills and knowledge (Departments of Basic Education, 2011b). Those skills and knowledge that cannot be assessed during formal examinations must be identified and assessed on a continuous basis. Hence baseline assessment tasks must be conducted to ensure that appropriate assessment tasks that address the learning gaps are prepared and administered.

Since the SBA tasks are set by teachers at school level and form part of the learners' final marks they are subjected to quality control measures. Umalusi, the quality assurance body

for schools, in conjunction with the Department of Basic Education ensure that all SBA's are externally moderated to ensure that they are of good quality, credible, fair, valid and reliable. The quality control measures include moderating tasks, marks, monitoring and support to assist teachers in developing quality assignments (Department of Basic Education, 2011b).

By placing more attention on the administrative requirement of SBA tasks, schools tend to focus on the compliance part of assessments, leaving little room for the improvement of teacher assessment practices. Hoadley and Muller (Cited in van der Berg, 2015, p. 2) argue that such assessment practices "lead to carrying managerialist ideologies, fostering unhealthy competition and inadvertently promoting deformative pedagogies like 'teaching to the test'." It is for this reason that assessment for learning, as advocated by proponents of assessment, should take a central role in classroom assessment practices to enable teachers to get learners where they need to be in terms of their learning. Hopkins (2004) states that assessment for learning is critical in assisting teachers to adapt their teaching to improve learner performance.

SBA as part of teachers' assessment initiatives must also be dependable. Assessments that are reliable (assessing what needs to be assessed well) and valid (assessments that correspond with the constructs such as knowledge or skill being assessed) are deemed dependable. Teacher made assessments are crucial in providing a platform for teachers to make dependable and professional judgements on learner evidence (Harlem, 2004). Similarly with SBA, teachers must ensure the validity and the reliability of both formative and summative assessment tasks by playing a role in the development of internal assessments and examinations.

3.4 TEACHERS' ROLES IN DEVELOPING ASSESSMENT TASKS

3.4.1 Introduction

Research in education has shown the link between teachers' assessment knowledge and improved learner performance (Khoza, 2016). Harlem (2004) upholds the idea that teachers should have pathways to become assessment literate which can help them to make accurate judgements across a full range of learning goals. It is therefore important for teachers to understand that assessment plans are not only concerned with accountability with regard to meeting the standards and the sufficiency of learning at particular periods (Stiggins, 2005).The key question that must be addressed is whether improved teacher assessment literacy will result in quality classroom assessment practices and improved learner performance?

3.4.2 Teacher Assessment Literacy

Education researchers such as Taylor and Maholwane (2015) and van der Berg, Gustafsson, Spaull and Armstrong, (2011) indicate that weak teacher quality and low motivation and lack of self-reflection on assessment practices amongst educators in South African schools continue to challenge teachers' assessment practices. In addition to the argument, the Minister of Basic Education, Angie Motshekga, emphasised that "in-order to effectively deliver the curriculum the correct teacher teaching the correct subject in front of classes are crucial" (Department of Basic Education, 2014). Teachers need to be assisted to develop quality assessments in order to become competent experts of assessment standards. Quality assessments in this case mean items that are relevant to the learning aims and are clear to the learners (Black & Wiliam, 1998). Hence the need for teachers to create learner centred classrooms to cater for the individual learner progress through the use of appropriate tasks.

In recent years, teachers' ability to develop and administer credible and quality assessments has been highlighted by the DBE and Umalusi. The report by Umalusi (2015) on the Quality Assurance of the National Senior Certificate concluded that the quality of more than half of the subjects that were moderated partially met or did not meet the requirements hence the quality of Grade 11 tasks was compromised and poorly constructed. Amongst the reasons for the low quality of assessment tasks is the unfamiliarity of teachers on the distinctions of what constitutes different types of assessment tasks (Umalusi, 2017).

A study by Willis, Adie and Klenowski (2013) emphasises the significance of teacher assessment literacy in order to deal with assessment challenges. These authors view assessment literacy as a forceful social exercise which is context reliant and engages teachers in expressing and negotiating classroom knowledge with learners.

According to Hopkins (2004) teachers need to develop an understanding of their subjects so that they are able to assist learners to understand what they are learning. Teachers need to be attentive to the knowledge, skills and attitudes that learners bring to the classroom (Bransford, Brown & Cocking, 2000). In this way the teachers can become change agents through the use of common formative classroom assessment practices. For teachers to become active professional change agents, they need to shift from compliance monitoring of outcomes to becoming visionary curriculum implementers (Long & Dunne, 2016). To do this, teachers need to know how learners learn by creating quality dialogue with them in order to prepare for effective classroom assessments.

In order to circumvent the gap created by weak teacher assessment knowledge, Van der Berg et al. (2011) suggest an institutional structure that would promote good teaching, attract and retain good teachers. Therefore what is needed is an assessment structure that would be used to encourage policy implementation and to build the capacity of teachers in achieving a common goal of improving learner performance. Hence Van der Berg (2011) makes reference to the McKinsey report (2007) which refers to mediating layers which include, among others, the communication and information sharing between teachers.

In this sense teacher assessment literacy can be enhanced when teachers work collaboratively with their subject advisors and experts to improve their subject and assessment knowledge. Assessment management structures, which are regarded as professional bodies for consultation are thus used in Gauteng. The Provincial Assessment Team (PAT), the District Assessment Team (DAT), the Cluster Assessment Team (CAT) and the School Assessment Team (SAT) form the quality assurance bodies for ensuring that assessment policies are implemented, properly managed and monitored at the various levels of operation (Gauteng Department of Basic Education, 2001). This structural approach for monitoring learner performance and achievement includes class visits, review of learner performance by grade and subject, discussions on learner performance and the creation of communication channels for teachers (Gauteng Department of Basic Education, 2001). Despite these strategies, implementation is still lacking. These strategies have been put in place since 2001; nonetheless we know there are schools where the mediations mentioned here do not happen.

According to the Department of Basic Education and Department of Higher Education (2011, p. 1) “a plan to improve the quality of teacher education and development in order to improve the quality of teaching and learning is necessary.” This reviewed teacher development plan would improve the current strategies such as three day workshops and induction of novice teachers to improving teacher assessment practices in schools. Wiliam (2008) argues that the problem is not about the lack of knowledge among teachers, but rather it is the lack of understanding how to conduct assessment for learning. Teacher collaborative efforts and transfer of skills through joint development of common formative assessment tasks are therefore necessary to avoid weak teacher assessment knowledge. For Taylor (cited in Scherman, Bosker & Howie, 2017) collaboration within teacher communities and the formation of “professional networks of knowledge transfer” is critical in improving teachers’ practices.

3.5 **COMMON EXAMINATIONS AS FORMATIVE ASSESSMENT TASKS**

The use of assessments date back to 1967, as envisioned by Michael Scriven who brought forward the difference between summative and formative assessments, and in 1971, when Benjamin Bloom, Thomas Hastings, and George Madaus espoused the distinction between forms of assessment (Stiggins, 2005). Bransford, Brown and Cocking (2000) maintain that formative assessments are not once-off events. Instead, formative assessments can be regarded as assessments that are used in classrooms to promote learning (Stiggins, 2005). Black and William (1998) contend that formative assessments should be interpreted as encompassing all those activities undertaken by teachers, and by their learners, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. These assessments include classroom based and large scale assessments, external tests and examinations (Iliya, 2014). Van Der Nest, Long and Engelbrecht (2018) suggest a model which embodies three components of assessment; that is, systemic assessment for monitoring purposes, classroom based assessment which is formative and professional development, referred to as assessment for learning. According to DuFour, DuFour and Eaker (2007 p. 1) “For schools to take full advantage of the power of assessment on learning in a positive way, they must include common formative assessments in their arsenal.” These proponents agree that assessment for learning should be at the centre of every classroom.

Both formative and summative assessments are vital in improving learner performance in schools (Braun, Kanjee, Bettinger & Kremer, 2006). Using common examinations as formative assessment tools can be achieved through what Stiggins (2005) termed ‘frequent testing’. Different types of formative assessments can be administered to learners. These include long cycle assessments across teaching units on a termly basis, medium cycle assessments within and between teaching units and short cycle assessments within and between lessons (Wiliam, 2008). These assessments include teacher developed or externally set tasks such as projects, assignments, written and practical tasks. The development of these assessments would be based on set standards and previous learner performances. After the assessment process, the judgments that would be arrived at will then be communicated to the learner through reporting and feedback.

Stiggins (2005) and Hopkins (2003) promote the use of formative assessments in order to improve classroom assessment practices and to improve learner performance. Key to carrying out assessment for learning processes to assist teachers in using common examination as effective formative assessment tools, is to delineate where learners are in the learning cycle, where they need to be and how they to ought get there.

For common examinations to be used as effective formative assessments, specific assessment tools must be developed to allow teachers to test their dependability in improving learning. One of the strategies that can be followed is to trial examinations during the developmental phase with a representative sample of learners so that individual scores can be compared (Iliya, 2014). By using preparatory examinations, which form part of formative assessments, the teacher can better prepare learners for the external common examinations. These preparatory examinations are used in term three to prepare learners for the final examination in term four. In addition, the teacher can conduct short term tests in order to gain information on whether specified learning outcomes were realised after a specific teaching unit. Specific items will then be assessed in relation to the curriculum to determine if learner performance is linked to what was supposed to be taught and achieved by learners (Iliya, 2014).

3.6 **SUMMARY OF LITERATURE REVIEW**

The arguments highlighted in this chapter provided a theoretical background on assessment practices that should take place in classrooms to improve learner performance. The literature on both the local and internal perspectives provides insights on how the South African assessment SBA and examination exercises can be directed to enhance learner performance. The information from advocates of assessments such as Iliya (2014), Wiliam (2014); Black and Wiliam (1998 and 2013) and Khattak (2012) showed that while summative assessment tasks, such as common examinations do not result in improved learning, formative assessment supports teachers in assisting learners to get where they need to be in the learning cycle, that is, to understand the set learning outcomes leading to improved performance. When teachers work collaboratively, learners can be provided with the much needed support such as focusing on learning goals, making goals unambiguous and using formative and summative assessments as part of classroom assessment practices (Iliya, 2014; Braun & Kanjee, 2006).

In addition to teacher collaborative structures, the discourses further showed that teachers need to understand what assessment entails in order to bring about changes in classroom assessments. Teacher assessment literacy, as highlighted in this chapter, showed that high quality teaching relies on both competent and motivated teachers (Maholwane & Taylor, 2015). Teacher quality can make a difference in classrooms; however what determines this *quality is advanced teacher knowledge, pedagogical content knowledge and further teacher development (Wiliam, 2008).

The next section discusses the conceptual framework that will form the basis for this research.

3.7 CONCEPTUAL FRAMEWORK

This study claims that common examinations can contribute to effective assessment practices when they are used as formative assessments tools in schools. Those schools that rely solely on common examinations, without incorporating them into their formative assessment tasks, run the risk of lower learner attainment and teachers who are unable to design quality tasks. Overreliance on common examinations, may result in a teacher who simply administers the examinations without understanding why, when, where and how they might add value to the learning process (Bransford & Cocking, 2000 p. 27). Of significance is to integrate the structure of common examinations within the formative classroom assessment tasks.

Figure 3.2 explains how common examinations are currently implemented in South African schools. It can be deduced, from Figure 3.2 that summative common examinations, when mainly used administratively, may lead to teaching to the test for accountability purposes only. Teachers who use common assessments as summative assessments tend to focus on the learners' proficiency in answering the questions and on performing a task (Rasul & Bukhsh, 2011). When common examinations are used in this way it can be assumed that they will be fulfilling an administrative purpose only. Assessment tools, such as common examinations, are standards by which teachers are held accountable; unless new assessments tools are aligned to teaching and learning practices, they are likely to be supported by schools (Bransford, Brown & Cocking, 2000).

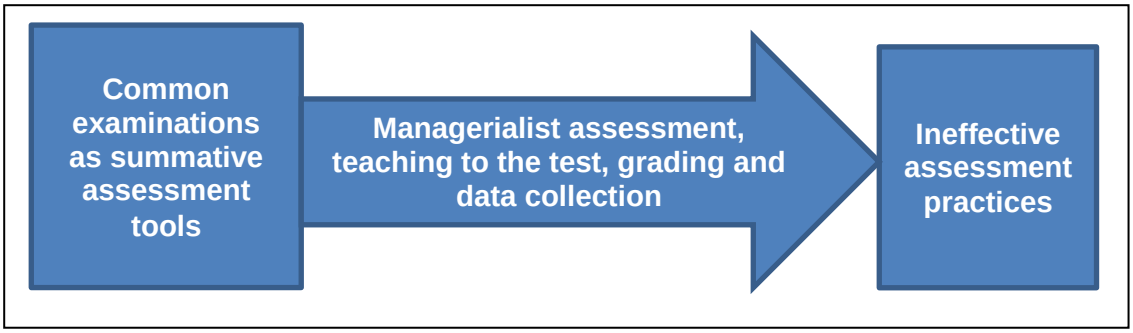

Figure 3-2: The current role of common assessment in South Africa

Assuming that learning is an active process which allows learners to construct their own learning during an assessment process, it is necessary to relate these two variables and confirm that common examinations can indeed be used as effective formative assessment tools (Regoniel, 2005). Figure 3.3 illustrates an alternative perception on common examinations and suggests that these examinations should fit the context by providing specific information in a timely and understandable manner (Stiggins, 2008).

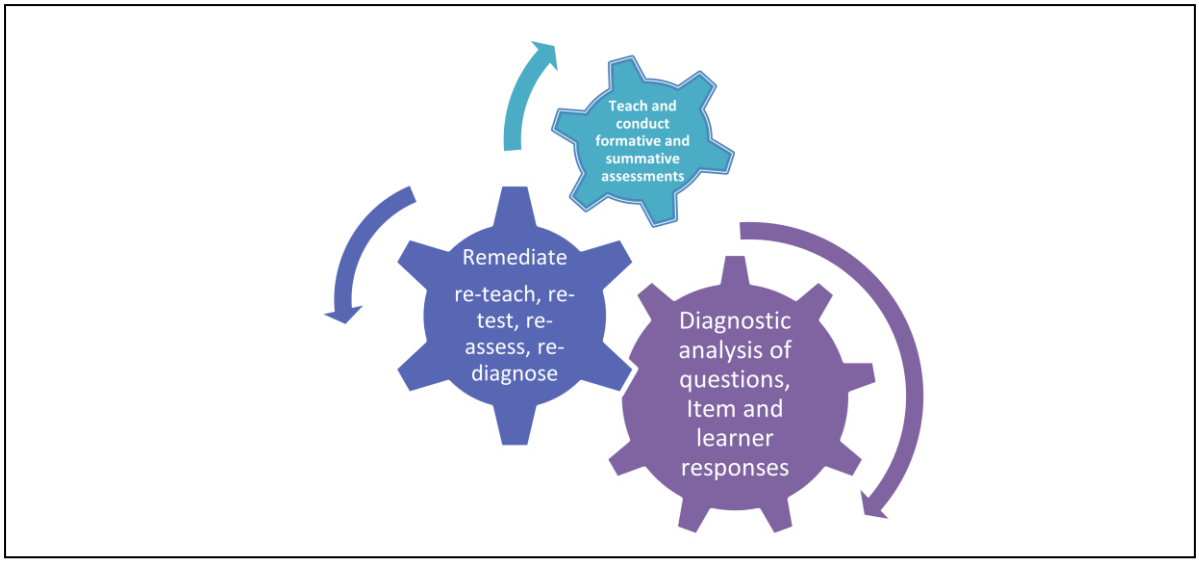

Figure 3-3: Common examinations when formative assessment tools are included (Gauteng Department of Education, 2016)

This figure, which is aligned to the Teach, Assess, Remediate and Diagnose model followed in the Gauteng Province (Appendix C), attempts to elucidate that good assessment practices are inextricably linked to good subject pedagogical content knowledge and effective learning. Teachers need to carry out their assessment practices with competence and confidence to support learning (Stiggins, 2008). Therefore, the development of teachers' knowledge and understanding of assessment has to be linked with development of their understanding and knowledge of what constitutes balanced assessments.

Several studies (Davies & Le Mahieu, 2003; Harlem, 2004; Johnson, 2013; Stiggins, 2005) have assented to the idea that assessments are central to improving teaching and learning in schools. As teachers are using periodic (mid-year and end of year) common examinations in their schools, these examinations should indicate and relate to school assessment practices in the best possible way. Given that the common assessment process is necessary, it is also crucial to bring to light that there is a need for changes in school assessment practices by involving teachers and making them self-confident in order to improve classroom assessments. Teacher involvement in this instance means that teachers should work collaboratively to develop the best methods to assess their learners and divide the responsibilities among themselves to diagnose and remediate learners. This idea is in agreement with DuFour, DuFour and Eaker (2007) who states that team developed common formative assessment tools are one of the most powerful motivators for stimulating teachers to consider changes in their practice.

This study suggests that teachers must be involved in the development and assessment of learners' work to improve the assessment tools available in their practices. The central argument is that while the system prepares common examinations on behalf of teachers, these assessments can be used effectively as formative assessment tools in order to improve classroom assessment practices. It is against this background that this study considers it necessary to make known the constructivist discourses that relate to assessments in the classroom. Constructivism will be elucidated through a model espoused by Bransford, Brown and Cocking (2000) known as 'How People Learn'. This model considers the following key areas as the main elements for effective teaching and learning; that is, learner centredness, knowledge centredness, assessment centredness and community centredness.

Before substantiating on this model, it is vital to describe the constructivist learning theory and its perspectives on assessment.

3.8 **CONSTRUCTIVISM AS A LEARNING THEORY**

Conceptual frameworks serve as a basis for understanding the interrelatedness of ideas, observations, concepts and knowledge (Svinicki, 2010). The constructivist learning theory has been used widely by educationists, psychologists and curriculum developers in educational research with an intention to improve learning. This learning theory is regarded as one of the dominant and influential theory in mathematics education (Ben-Ari, 2001; Marlow & Page, 2005):

> *The main proposition of constructivism is that learning means constructing, creating, inventing and developing our knowledge…, it is about thinking and analysing and not memorising information… it focuses on in-depth-understanding, not regurgitating and repeating back* (Marlowe & Page, 2005, pp. 10-11).

For purposes of addressing the aim of this study, it is important to look at constructivism in the context of Grade 11 mathematics common examinations and explain how it can provide a theoretical basis for deliberating on their usefulness as formative assessment tools. The significance of learning in the assessment process is key in any constructivist learning environment. Learners need to be guided to self-regulation and self-evaluation through the formative assessment process. In order to involve learners within the assessment process, learners should be encouraged to become co-constructors of knowledge by giving them opportunities to engage with different types of tasks and assessment instruments such as

rubrics (Wiliam, 2013). One of the fundamental discourses in education today is that the summative assessment results have not been sufficiently valid for the purposes they are intended for (Shay, 2008). Therefore, the central role of this study is to guide teachers in enhancing teaching, learning and quality assurance through the use of common examinations in an effective way. Hence the focus will be to guide teachers in enhancing the quality of learning through formative assessments practices.

Constructivism provides teachers with the necessary tools that can be put into action to assess learners and how they learn consistently with best practices (Richardson, 2007). According to this theory learners construct their own knowledge and understanding on the basis of what they learn and constructivist teachers encourage learners to constantly assess how the activity is helping them to gain understanding. Teaching and assessment practices which emanate from the constructivist theory are supposed to be more successful than the traditional teaching method as this theory clearly elucidates the knowledge construction process (Ben-Ari, 2001). As common examinations are fast becoming popular as tools that aim to standardise assessments in schools, their outcomes should benefit schools in a positive way. These examinations should be seen as an assessment tool that involves learners in the assessment process to assist them to think about their own learning and to share their opinions (Davies & Le Mahieu, 2003). Consequently, effective testing should afford learners the opportunity to demonstrate relevant skills and understanding and assist the teacher in diagnosing learner shortcomings (Department of Basic Education, 2014). For this reason, the current study focuses on the role of the teacher, specifically in using common examinations as a way of enhancing the learning process of learners to ensure improved learning outcomes.

The constructivist principles that are pertinent to this research and the development of teachers as effective assessors include learning as an active process, learning that relies on prior knowledge, learning that is enhanced by social interaction and the development of meaningful learning through active tasks (Richardson & Catorland, 2007). In using these constructivist descriptions, common examinations could be valuable as they assess the same curriculum based on similar standards. If it is permissible for schools to assess whatever and however they deem fit, schools will be unable to enhance learning and social interaction. Davies and Le Mahieu, (2003) place emphasis on learning how to learn, learning how to assess and learning to engage with assessment materials and assessment understandings to change learning and improve performance.

3.9 **CONSTRUCTIVIST PERSPECTIVES ON ASSESSMENT**

The central ideas in constructivism with regard to assessment is to determine the reason why teachers assess, what is being assessed in classrooms and what the assessment propositions are (Shay, 2008). Similarly, these questions can be asked with regard to the common examinations that are used by the Department of Basic Education in South African schools today.

Proponents of constructivism such as Marlowe and Page, (2005) and Sayer (in Shay, 2008) have called for a shift in the assessment paradigm and argue for assessments that are realistic. According to constructivism, assessments should be realistic, raise self-awareness on the part of the teachers, assist learners to internalise and understand the expectation set for the common examinations and enhance the quality of assessments (Shay, 2008). Assessments should foster collaboration in the construction of meaning and knowledge. In constructivist classrooms, teachers assist learners to monitor themselves, to monitor their own progress, to establish learning criteria and to design remedial plans. Assessments that are viewed through a constructivist lens show that learning should be developmental and assessments should be embedded in and be driven by instruction (Marlowe & Page; 2005).

For this study it is necessary to argue that both formative and summative assessments should permeate in constructive planning of teaching, learning and assessment. Booyse (2016 p. 12) states that “planning should include strategies to ensure that learners understand the goals they are pursuing and the criteria that will be applied in assessing their work”. In line with the research questions, this study will look into how the teachers’ assessment plans are translated into formative tasks (sub question 1). The teachers’ plans should provide the teacher and the learners with information about development leading to the accomplishment of learning goals. The remaining research questions will be unfolded through the use of constructivist assumptions on formative assessments. These will include looking into the development of formative common assessment by teachers as part of the social constructivist approach (sub-question 2), the constructivist view on contextual instructional assessment practices (sub-question 3) and the evaluation of assessment goals (sub-question 4).

3.10 **APPLYING CONSTRUCTIVISM IN CLASSROOMS**

Drawing from the Bransford, Brown and Cocking (2000) model called 'How People Learn' (HPL) the researcher aims to show that common assessment tools can be used effectively to construct knowledge and enhance active learning.

Figure 3.4 below explains how research is related to teachers' actions in their classrooms. According to Bransford, Brown and Cocking's (2000) HPL theory, teachers are encouraged to improve their practice by the findings emanating from research. The HPL model encourages the teachers' development of education material, teachers' pre-service and in-service, research, improving classroom practices and the use of policies for the improvement of the cumulative knowledge base (Bransford, Brown and Cocking, 2000). Furthermore this model takes into consideration the public, which includes parents' and teachers' ideas about learning and teaching and their own experiences.

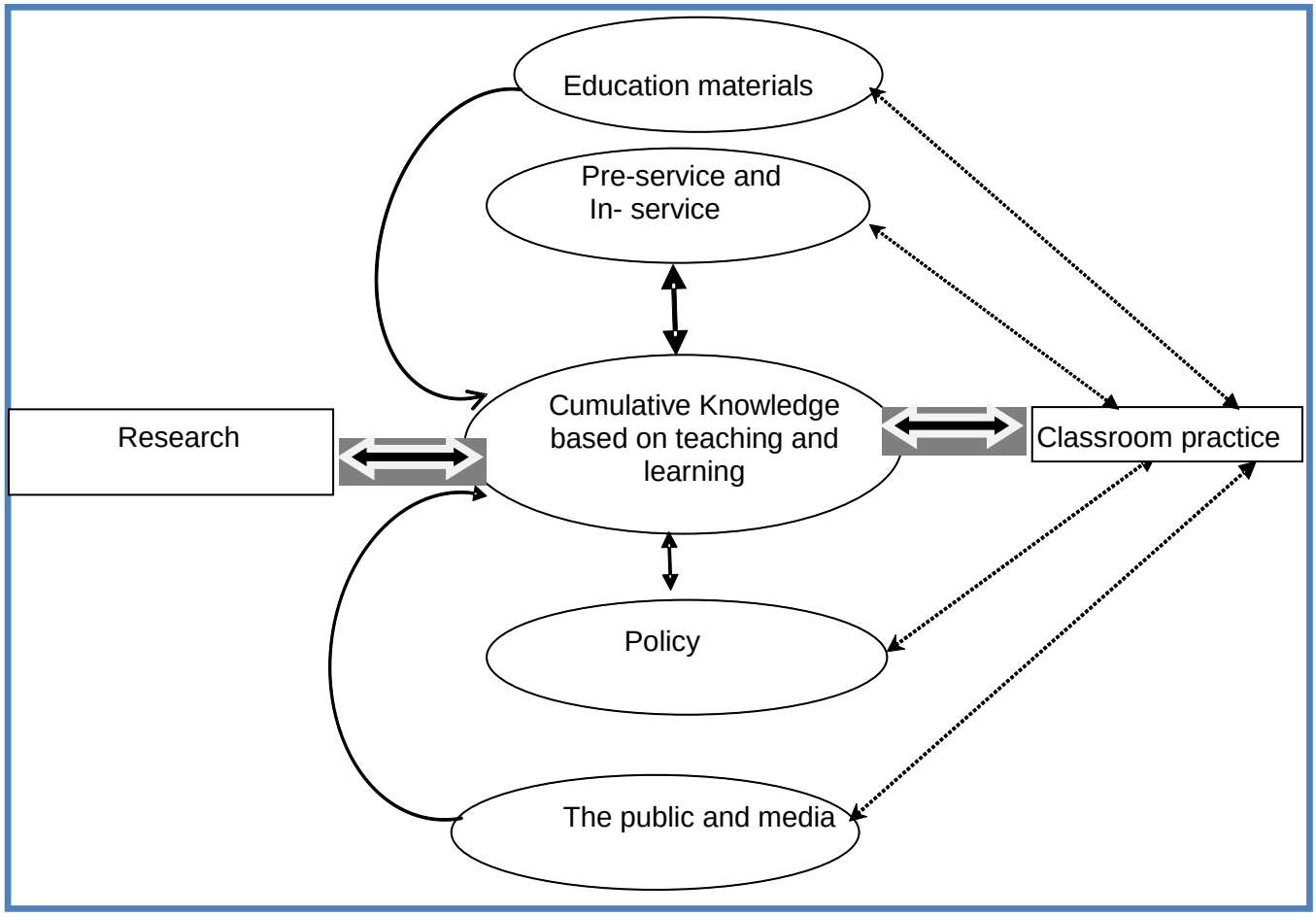

Figure 3-4: Paths through which research inform to classroom practice

The HPL model ushers in new possibilities for improving all aspects of classroom practice including assessments. For assessment outcomes to reach the desired levels of supporting

learning, the model can be implemented in schools as explicated in Figure 3.4. The highlight of Figure 3.4 is the use of assessment in classrooms with a view to show an inseparable link between four key areas in classroom assessment; that is, the learner, knowledge, assessment and community centredness.

Figure 3.4 explains the link between the research questions in understanding the possible relationships among various issues that are essential in ensuring effective classroom assessments; such as, the use of assessment results to identify gaps in learning. Hence, this study claims that assisting teachers to set effective assessments and them working collaboratively to set quality tasks can result in improved learning and performance.

3.11 **CONCLUSION**

New approaches to assessment may be required for schools to realise the benefits of common examination as formative assessment tools. Teacher knowledge and information need to be developed to a point where formative assessment practices are entrenched in classrooms. Having identified the components of the conceptual framework, this chapter provided elements that would work if schools need to improve their learning and learner performance. The key to any assessment practice is to strike a balance between the formative and summative assessment tasks in schools. Today schools need teachers who are able to practice quality assessments to improve learning. Therefore, mainstreaming formative assessment tasks into the schools' daily assessment practices may help teachers to realise the learning outcomes and identify interventions that would ensure that assessments contribute to learning.

4 CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

This study focuses on the role of examinations as effective formative assessment tools for schools. For the purposes of this study, common assessments, as described in previous chapters, are used. Since the introduction of common examinations as a means to standardise assessments across schools, learner performance has been in the spotlight. Equally, the teachers' ability to set quality assessment tasks remains one of the key discourses by teacher unions and stakeholders such as Umalusi and the Department of Basic Education. To this end, this study's line of argument is to accentuate the need for the Grade 11 mathematics teachers to be well-informed on how common examinations can be used formatively to improve their classroom assessment practices.

This chapter starts with a description of the research paradigm that underpins this study. The philosophical discourses underlying qualitative research, that is, its epistemological position (foundation) and technical basis (appropriateness of the methods) are discussed. The section on action research explains the rationale for using this model to improve teacher collaborative assessment endeavours. Attention is based on action research theory as a strategy for teachers to improve teaching, testing, implementation and review of their educational plans. Action research theory is thus selected to form a basis for this study as it supports the view of teachers and learners working collectively in improving teaching and learning.

This study follows a qualitative research design which is descriptive in nature. To answer the research questions, the technical aspects of the qualitative study, the scope and the sampling techniques are discussed. The next sections will thoroughly sketch the research design and methodology which includes data analysis, methodological norms and ethical considerations. Thereafter an association between the research questions, methodologies and the related qualitative methods such as questionnaire, interviews, observation and document analysis are considered. The chapter concludes with a consideration of methodological norms and ethical deliberations related to the action cycles.

4.2 RESEARCH PARADIGM

This section systematically outlines the research paradigm in relation to the research topic. While the constituents of qualitative research vary from author to author, there is general agreement about its basic perspectives, epistemology, ontology and methodology. Epistemology is a theory of knowledge embedded in the theoretical perspective which

informs research (Creswell, 2003). Carter and Little (2007) supported by Volsoo (2011) agree that epistemology guides the methodological choices; guides how knowledge is socially constructed, allows the researcher to experience real life from a natural setting and it is the foundation of any study of society that is concerned with what knowledge is and how it is constructed. Becker (2010) sums up the objective of epistemology succinctly by stating that epistemology is concerned with "ought to's" rather than "is's".

The discussions that follow will indicate the need to pursue the qualitative research paradigm and the connection between the epistemology, methodology and methods used.

4.2.1 Ontological and Epistemological Reflections

Essentially epistemology, methodology and method play a significant role in qualitative research. Epistemology in this sense refers to the nature of knowledge and its justification. According to Carter and Little (2007), while methodology justifies the methods which produce data and knowledge created from data analysis, epistemology modifies and justifies the knowledge that is created. Figure 4.1 below shows the relation between epistemology, methodology and method in a qualitative study.

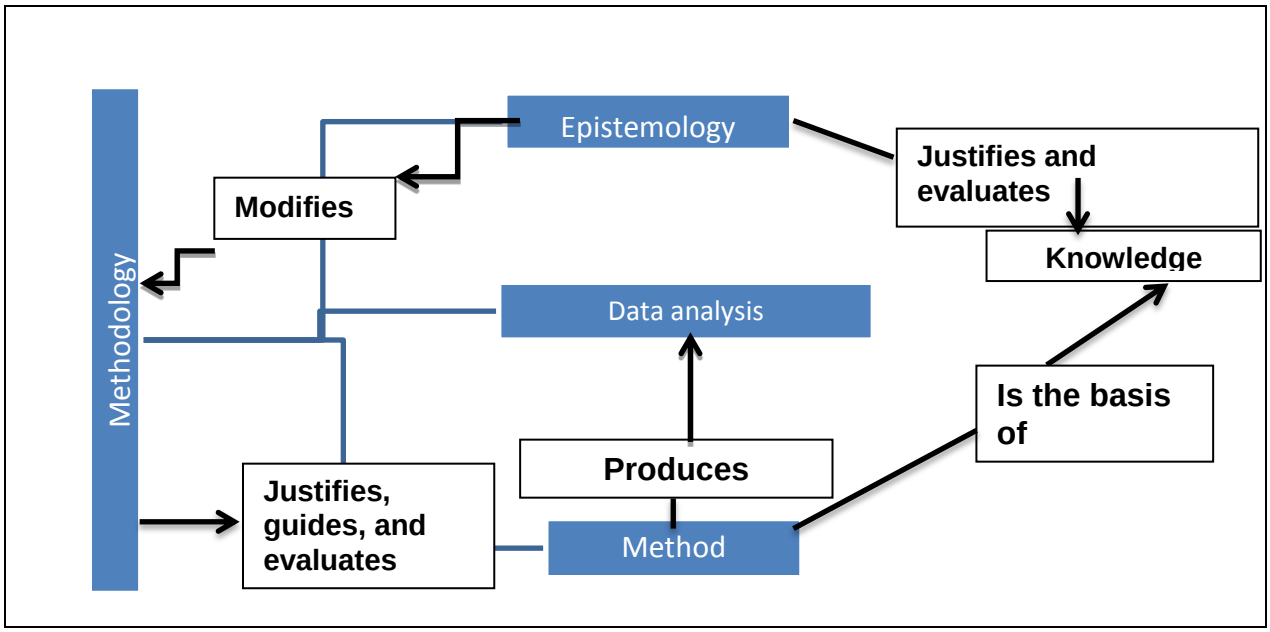

Figure 4-1: The relationship between epistemology, methodology and method in qualitative research (Carter and Little, 2007)

As epistemology is regarded as a theory of knowledge which attempts to explore issues under investigation, it allows the researcher to pose questions on how the truth can be known and what relation exists between the knower and what is known (Vasilachis, 2009). The researcher discovers the truth by becoming the primary instrument of data collection.

Therefore the researcher immerses him/herself in the area being researched and attempts to interpret phenomena in terms of the meaning provided by participants (Mgutshini, 2015). An epistemological underpinning of qualitative research is that it allows the researcher to view the world from the perspective of the participants and to gain contextual understanding of the environment being researched. Thomas (2003) emphasises that the purpose of qualitative research is to take the subjects' perspective into account and develop data by engaging him/herself into the social setting.

Epistemological reflection is another key element of qualitative research that allows the researcher to justify and evaluate what is known. Reflection highlights the flexible nature of a qualitative study. A consideration of the theoretical methodological framework should be undertaken when the researcher is facing challenges, especially when what he/she intend to know is exceptional and the desired results cannot be achieved. It is for this reason that these reflections are done so that the researcher does not rely on one scientific discipline alone in finding the truth. According to Vasilachis (2009 p. 3) "epistemological reflection is what enables researchers to explicate diverse paradigms which gives different answers to the question raised by epistemology."

Action research methodology, outlined in Section 4.3, is used to rationalise this qualitative research. Research methodology validates methods, and methods results in knowledge, therefore methodologies provide epistemic information (Cater & Little, 2007). The action research methodology analyses the assumptions made about the topic and provides the researcher with a complete strategy for expressing, articulating, analysing and evaluating the methods to be used. To dispel the contradiction in social sciences, such as education, it is necessary for the researcher using qualitative research to know that research methodology sheds light on limitations and resources available to evaluate the research methods. It is therefore important for the researcher to rely on participants that have knowledge about the subject being studied in order to explore issues about the problem on hand (Vasilachis, 2009).

Research methods imply the actions and practicalities of research which include sampling, data collection, analysis and reporting (Carter & Little, 2007). The method makes epistemology visible and impacts on the relationship between the researcher and the participants. A discussion on the research methods is provided in Section 4.5.

4.2.2 Rationale for Using Qualitative Research

For purposes of this study the research questions will be answered through the qualitative research approach. The choice of qualitative research for this study is based on the idea that this research paradigm is flexible, as it is allows the researcher to discover and reflect on issues about the problem in terms of the meaning people bring to them (Thomas, 2003). Flexibility in qualitative research process allows the researcher to explore ideas in an iterative manner and to refine those ideas throughout the process in a recursive manner (Crescentini & Mainardi, 2009). Qualitative research provides a human perspective and extensive textual descriptions of how people experience the matter that is being researched. The qualitative approach and action research design complement each other as they are both suited in gaining specific information about the opinions and social contexts of participants (Family Health International, 2006).

In this study the research question will be used to drive the design and methods. Since qualitative research is naturalistic and assumes that reality is diverse and interrelated it connects the researcher with the reality (Khan, 2014). The researcher's ideas about reality (ontology) and the nature of knowledge (epistemology) are reflected in the knowledge that is gained though the interaction between the researcher and teachers' experiences. Agreeing with this assumption is Thomas (2003) who suggests that the philosophical position of a qualitative study is based on understanding the mutually shaping influences and interacting realities and experiences of both the researcher and the participants. The interrelationships between the perceptions of the participants and their natural setting thus remain important in this study.

Qualitative research methods, according to the Family Health Institute (FHI, 2006), are scientific in nature and useful in assisting the researcher to:

- Answer the research question;
- Collect evidence;
- Provide findings that are not pre-emptive; and
- Gather findings that surpass the limitations of study.

As the qualitative research paradigm is mainly exploratory in nature, action research design and its recursive cycles (explained in Section 4.3.1) is used to undertake in-depth relational collaboration with those involved in the study.

4.3 **RESEARCH DESIGN: ACTION RESEARCH THEORY**

A number of studies have been conducted on action research since its introduction as a scholarly paradigm. Hopkins (Cited in Gay & Arasian, 2003 p.15) indicates that "action research is most appropriate for participants who recognise the existence of the shortcomings in their educational activities and would take an initial stance with regard to the problem, formulate a plan, carry out an intervention, evaluate the outcomes and develop further strategies in an iterative manner." For this reason action research theory is selected for delineating the role of formative assessment tasks in improving teacher assessment practices and learner performance in schools. The proliferation of classroom improvement strategies in schools should be fore-grounded by an understanding of the classroom context for change to be realised. This argument is supported by the following viewpoint:

> *…the importance placed upon the improvement of understanding as well as practice and upon the improvement of the situation in which the practice takes place as well as the practice itself, points to the appropriateness of the action research as a school improvement strategy…the importance of schools identifying their own problems and having knowledge of the alternative models suggest that changes in knowledge and understanding are important to school improvement as are changes in practices* (Grundy, 1994 p. 27).

To improve classroom assessment practices, key factors such as action learning, classroom action research and participatory approaches are necessary. Therefore teachers need to understand that action research is useful in recognising the challenges related to assessments and the improvement intervention strategies. Hence action research assumes that theories should be expressed as actions since theory alone has little power to create change and improvements (Reason & Bradbury, 2004). Given that teachers are faced with the challenge of ensuring that learners must perform well during examinations, action research is relevant as it integrates educational plans with teaching, testing, improvement and review approaches (Mahani &Molki, 2012).

The sections that follow explain the action research cycles and processes as a strategy for teachers to improve teaching, learning and assessment practices in schools.

4.3.1 Action Research Repetitive Cycles and Process

Young, Rapp and Murphy (2010) provide the most effective cycles of introducing action research in classrooms. Action research, as espoused by these authors, encourages assessment for learning and allows the teacher to see beyond the face of learning outcomes

in their efforts to assist learners to achieve desired results. Action research also encourages teachers to work collaboratively and to share their conceptual values in a participatory manner. Through action research, teachers have an opportunity to systematically reflect on the teaching and learning process rather than relying on the theory of learning alone. The four iterative action research cycles include action and reflection which are strategic steps concerned with developing understanding and carrying out action. These steps are retrospectively and prospectively related to the planning and observation steps (Grundy, 1994). Figure 4.2 illustrates how the action research steps are reciprocally related to one another.

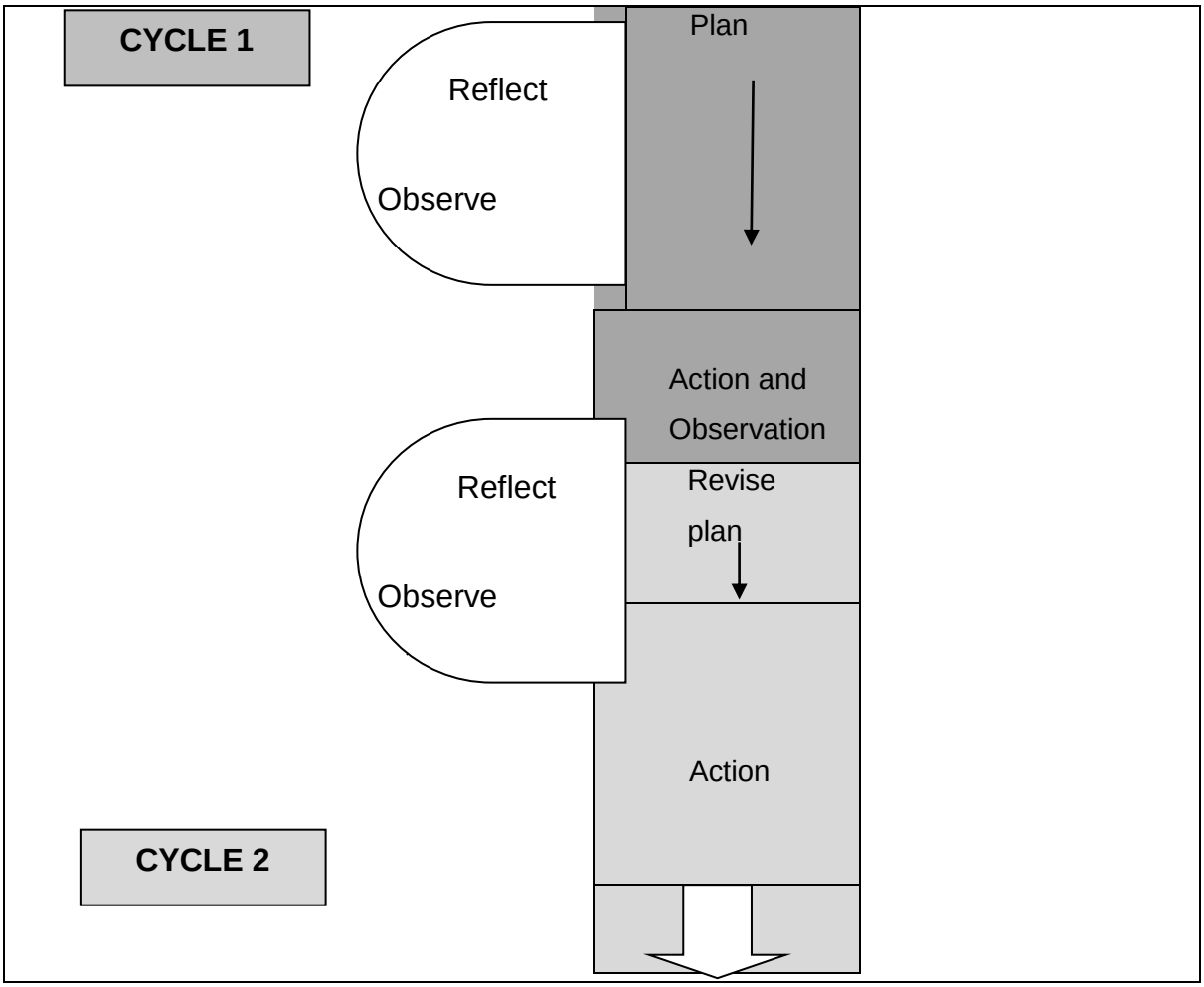

Figure 4-2: Illustration of the Action Research Cycles (Adapted from Young, Rapp and Murphy, 2010).

According to Grundy (1994) action cycles are important in bridging the gap between the traditional methods and new actions as they can be applied at any time. Action research encourages teachers to develop professionally and to improve their understanding of their practice. Since this approach is a natural process it has the potential of advancing teacher collaboration to improve their teaching practice in that it is seen as a practical tool which can

be used in exploring their practices, monitor their interventions and to bring about shifts in the teaching and learning environment .

4.3.2 Implementing Action Research in Classrooms

Classroom action research is a method of finding out what works best in classrooms so that teachers can improve learning (Saggu, 2016). This means that action research at school level can assist teachers to systematically plan their teaching and assessment activities. In order to achieve the desired results in classrooms, a change in the teaching and assessment practices is necessary. To do this, teachers need to take cognisance of elements of action research starting with by identifying what needs to be planned for effective learning and assessment to take place, followed by continuous action and observation of all classroom assessment elements and lastly exercising a critical reflection and analysis of what learners learnt in their different contexts (Young, Rapp & Murphy, 2010).

The main purpose of following this research design was to bring about possible ways of improving the assessment practices, in particular the use of common examinations formatively, in schools. In addition the aim was to make teachers realise that assessment should not be a once-off process, used mainly at the end of the learning, but should be integral to the teaching and learning throughout the learning process (SAQA, 2005).

Action research involve the repetitive cycles of planning, action, reflection, observation and review. The following sub-sections summarises how the action research cycles, were explored with the participants.

4.3.2.1 Stage 1: Planning

During this stage teachers should identify and define the plan for improving learner performance. The plan should address the gaps that emanate from the execution of teaching and assessment plans and the quality and type of formative and summative classrooms assessments.

(i) Understanding the CAPS and the school annual assessment plans

This stage starts with the development of plan which should be aligned to the teaching and classroom assessment activities. In the South African context these plans include the CAPS compliant Annual Teaching (ATP) and Assessment Plans which constitute formative as well as formal tests. Specific focus for purposes of this study was on the Grade 11 mathematics

examinations and how they fit into the annual assessment plans. In attempting to establish how teachers planned for instruction and assessment, it became necessary to gather information with the Grade 11 mathematics teacher, subject advisors and the assessment senior education specialists at the research sites.

The planning stage was critical in determining the integration of the Grade 11 mathematics ATP with the assessment plans by teachers. The importance of common examinations such as the alignment of formative assessment tasks to the sections in the examination was further elaborated through interviews and the questionnaire. To further explain the use of teaching and assessment plans, a questionnaire for teachers was used to collect information on the implementation of CAPS aligned plans to deal with classroom assessments. Teacher interviews enabled the researcher to triangulate data collected through the questionnaire and document analysis by inquiring how the assessment plans were incorporated into the daily teaching plans.

The information gathered using questionnaires was useful in addressing sub-question 1 (*How best can formative and summative assessment plans be aligned to transform teacher assessments into high quality classroom assessments?)* and sub-question 4 (*To what extent can common examination results be used effectively to improve instructional interventions and learner performance?*). The interrogation of the annual teaching plan, assessment and assessment framework (Appendix D, E and F), through document analysis, assisted me to understand how teachers prepare their learners for summative assessments using formative assessments and past common examination questions. The results gathered would be useful for teachers to plan on how common examinations can be used formatively within the existing annual teaching and annual assessment plans.

(ii) Developing the formative assessment plans using past examination papers, new assessment items, analysis grids and question banks.

Action research requires teachers to meet to ensure that all participants agree on the number of formative assessments to be administered based on the assigned units in the ATP. This sub-section paid attention to sub-question 2 (*How can teachers be assisted to develop quality assessments in order to become competent experts of assessment standards?*) of this study.

For maximum participation the Grade 11 mathematics teachers and subject advisors from selected schools were encouraged to participate in the meetings to highlight their involvement in the development of assessment plans. These participants were encouraged to attend by allowing them to choose the most suitable times and venues. Furthermore they were provided with resource in the form of digital lessons and the training presentations for

future reference. The purpose of the meeting was to peruse the assessment plans and to find out how they are aligned with the annual teaching plans. In addition, teachers were encouraged to collaboratively select formative assessment activities and integrate them into the assessment plans. This stage required continuous meetings between participants from the five sampled school in the two districts.

4.3.2.2 Stage 2: Action

According to the action research model, once the plans developed, they should be put into action and the relevant activities should be observed by the researcher. During this stage teachers, as constructers of knowledge, must participate collaboratively with other teachers to prepare formative assessment tasks related to what has been taught and what is going to be assessed. This action research stage aligns itself with conceptual framework explained in Chapter 3. According to Bransford, Brown and Cocking's (1999 p.:248) HPL theory, teachers are encouraged to improve their practice by the findings emanating from research on education materials and the administration of educational programmes using national policies.

(i) Strengthening teacher assessment practices

At this stage of the action research it became necessary to convene teachers and subject advisors with the objective of encouraging them to learn from what works and what does not work in classroom assessment. This realisation resulted from the interpretation of the moderation reports (Appendix A) which highlighted the need for continuous support for teachers as they were faced with multiple challenges in their classroom environments. As a result a presentation was prepared for teachers on formative assessments and assessment for learning principles that would likely enhance the teachers' classroom assessment practices. Three workshops were conducted with the participating teachers and subject advisors. The workshops were linked to the conceptual framework, discussed in Chapter 3, and concentrated on the key steps set out in Table 4.1 that shows the main steps which were mediated with the teachers and subject advisors and how they connect to the conceptual framework.

Table 4-1: How to strengthen classroom practices (Source: Popham, 2003)

Steps on how to strengthen classroom assessment practices	Action research cycle	Link to conceptual framework
a. **Identifying and unearthing the priority standards and creating assessment plans.** b. **Writing the learning outcomes as learner success criteria.**	**Planning**	**The role of assessment materials in teaching and learning.** **Theme: knowledge centredness**
c. **Determining the big ideas and essential areas and type of question that need to be used during formative assessment.**	**Planning**	**The role of policy in teaching and learning.** **Theme: knowledge centredness**
d. **Creating the pre-assessment questions to be used during the assessment process; diagnose learning challenges.** e. **Evaluating and revising assessment questions for quality using established guidelines.**	**Action**	**Improving classroom practices** **Theme: assessment centredness and learner centredness**
f. **Developing and discussing the marking guidelines to accommodate alternative responses.** g. **Plan quick progress checks to match with the learning progressions.**	**Reflection** **Observation**	**Research on teaching and learning** **Theme: knowledge centredness and learner centredness**
h. **Determine the learning progressions and instructional sequence through the analysis of learner performance data.**	**Review**	**Involve the public including media** **Theme: community centredness**

(ii) Development of formative assessment tasks

This action requires participating teachers to make a contribution of questions from past question papers and newly developed questions for the development of enhanced question and question banks. Currently the Gauteng Department of Education uses the various databases of question banks which provide different categories of questions for subject.

(iii) Ensuring the quality of formative assessment instruments

This stage required the HODs and subject advisors to moderate the assessment tasks to ensure that the assessment instruments were CAPS compliant and error free. In addition their action would involve the interrogation of the marking guideline which was to be used to grade the learner responses. All the participating teachers pronounced that the recommendations and feedback generated from the moderation of assessment tasks were incorporated into the assessment tasks before they were administered to the learners.

(v) The administration of formative assessment tasks in classrooms

During this stage the moderated and approved assessment tasks should be administered either as cycle tests or assignments. The learning objectives should be carefully crafted for the learners. The administration of short cycle assessments within and between lessons should assist in determining their effect on classroom practice and learner engagement (Wiliam, 2008).

4.3.2.3 Stage 3: Observation

(i) Observing teachers in action in classrooms

Observation in action research supports the idea of involving teachers as researchers and not replacing their practitioners thinking with expert knowledge (Gay & Airasian, 2003). Schools are regarded as vehicles of education delivery where improvements are manifested. Observations should be carried out to produce robust qualitative data on the teachers' use of common formative assessments in classrooms. The observations provide useful information on the choices of assessment tasks and the efforts made by the teachers to improve their teaching and assessment practices.

As this stage addresses sub question 4 (*To what extent can common examination results be used effectively to improve instructional interventions and learner performance?)* the observation of teachers during the implementation of the action plans and administration of assessment tasks were carried out at MS and KD schools. The researcher ensured that the time and dates of the observation of teacher assessment practices were staggered so that these participating schools would be accommodated. Three of the participating schools (MV, MH, and TL) could not be observed as during this stage they had started with their internal examinations.

(ii) Analysis of learner evidence of performance: question, item and error analysis

This stage involves the analysis of learner performance for probable causes of challenges and to identify mathematical concepts that were not taught or understood by the learners. The discrepancy between the common examination marks which are summative in nature, and the formative assessment task marks, is determined by Umalusi to ensure the balance between these tasks. The common examination results were obtained from the district subject advisors who were responsible for the five participating schools. It was encouraging to infer that both the schools and districts analysed the common assessment results and these were submitted to the district on a quarterly basis.

4.3.2.4 Stage 4: Reflection

(i)Teacher reflection on using common examinations as formative assessments

Bransford, Brown and Cocking (in Wiliam, 2008) argue that teachers need to reflect on their experiences in a systematic manner that shapes their accessible knowledge base in order to learn from their mistakes. Participating teachers were encouraged to make adjustments to their plans and interventions in response to the areas where learners were found to be lacking. It was important for teachers to reflect on what learners gained during the assessment process in relation to the implementation of the repetitive cycles by addressing:

- What informed the assessments plans used by teachers in their classrooms;
- What kinds of learning did the assessment promote;
- How the formative use of assessment tasks penned out; and
- Establishing where learners were in their in their learning, where they were going, and what needed to be done to get them there (Hayward & Spencer, 2010).

4.4 **SCOPE OF THE RESEARCH**

The topic and the research questions set for this study, referred to in Section 4.4.2, are aligned to the scope of enquiry and the data gathering methods. According to Richards (2006), the scope of the research should be defined by choosing the best sample and the setting. In defining the scope, the research objectives and flexibility when gathering and analysing data should be upheld. The scope was limited to the schools which participated in the provincial and national Grade 11 mathematics common examinations. The school setting in terms of accessibility and proximity was considered when gathering information on the topic under investigation. The researcher considered the following matters to address the scope and setting for the study:

- The time factor in relation to the teaching and assessment plans at each school;
- Participants' views and the school assessment environment;
- Impact of teacher unions in terms of schools' participation in common examinations;
- Teacher involvement in developing assessments; and
- The schools' quintile status and type.

Scoping for change as alluded to by Richards (2006) was considered. As scoping is a process, the researcher used the questionnaire, interviews and observation as methods of obtaining the participants' perceptions on what happens during classroom assessment processes and how improvements can be implemented. Action research cycles, alluded to in Section 4.3, were considered during the meetings between teachers and the researcher.

4.4.1 Sampling

The sample in this study was purposively selected from five schools that participated in the Grade 11 mathematics provincial common examinations. The five sampled schools were selected in terms of size, location and overall performance in Grade 11 mathematics common examinations. The selected school are located in the two districts that fall within the Gauteng Department of Education. A non-probability sampling method was used with particular reference to a purposive sampling procedure. Through the purposive sampling procedure, the researcher's prior knowledge and judgment about the sample plays a vital role in selecting the respondents (Fairfax, 2003). For the selection of participants, it was necessary for the researcher to make use of the 2014-2016 learner performance data in order to come up with the relevant sample. The selected schools' three year records of performance were used during document review and analysis.

The sampling procedure followed in this study was linked to the Departments' strategy of enhancing mathematics participation and performance in schools to encourage teacher collaboration as shown in (Appendix G). Teacher collaboration is based on the idea that teachers should share resources, educational experiences and assist one another in improving learner performance in their schools.

4.4.2 Research Questions in a Qualitative Study

For every qualitative study, the methodological choices must be linked to research question and be supported the by qualitative arguments (Crescentini & Mainardi, 2009). The definition of research questions in a qualitative study is not a once off process, it is a recursive process which must be explicit and clear in order to describe and validate the topic. The constructivist idea that assessment should be formative rather than summative and its purpose should be to improve the quality of learning, not to provide evidence for evaluating or grading learners is unfolded by the five questions listed in Table 4.2 (IQST, 2009).

Table 4-2: Linking research questions, conceptual framework and data

Research Question	Conceptual Framework	Data collection method
Main Question How can common examinations contribute to effective formative assessment practices in schools?	Learners construct their own knowledge and understanding on the basis of what they learn and constructivist teachers encourage learners by constantly assessing how the activities are helping them to gain understanding. On the basis of this question, the researcher will seek to understand what is being assessed in classrooms, how assessment is conducted and the contribution of common examinations in schools.	i. Questionnaire ii. Teacher interviews (one-on-one) iii. Focused group interviews iv. Document analysis v. Observation
Sub-question 1 How best can formative and summative assessment plans be aligned to transform teacher assessments into high quality classroom assessments?	Booyse (2016 p. 12) states that "planning should include strategies to ensure that learners understand the goals they are pursuing and the criteria that will be applied in assessing their work." Since knowledge construction is a process (Ben-Ari, 2001) the teaching and assessment plans will be interrogated.	
Sub-question 2 How can teachers be assisted to develop quality assessments in order to become competent experts of assessment standards?	**Social constructivist approach.** Teachers' pre-service and in-service will be necessary to equip teachers with an ability to understand what the propositions of assessments entail (Shay, 2008). This study will follow on the constructivist approach of looking at assessments to raise self-awareness on the part of the teachers, assist learners to internalise and understand the expectation set for the common examinations and enhance the quality of assessments.	
Sub-question 3 How are common examinations effectively used by teachers as formative assessment tools to inform improved learner's achievements?	**Contextual instructional assessment practices.** Learning is enhanced by social interaction and the development of meaningful learning through active tasks (Richardson, 2007). Constructivists place emphasis on learning and on the formative purpose of assessment as part of the teaching and learning process (Shay, 2008).	

Sub question 4 To what extent can common examination results be used effectively to improve instructional interventions and learner performance?	Supporters of constructivism, Davies and Le Mahieu, (2003), place emphasis on learning how to learn, learning how to assess and learning by engaging with assessment materials and assessment understandings to change learning and improve performance. Therefore this sub-question will be used to evaluate assessment goals based on cumulative knowledge on teaching and learning gained from common formative assessments.	• Document analysis and observation

4.5 DATA COLLECTION, ORGANISATION AND ANALYSIS

The plan for the collection of information must take the goals, theoretical frames and research question of the study into account (Crescentini & Mainardi, 2009). The methodological choices in this study are related to the information that the researcher intends to gather as alluded to in Sections 4.3 - 4.4. Hence, care was taken to ensure that there is a relation and coherence between the research questions and the data collection methods (Appendix H).

4.5.1 Data Collection Methods

Research methods involve different strategies of inquiry starting from making assumptions to design, data collection and analysis (Thomas, 2003). Since the qualitative research method is naturalistic, it attempts to make meaning of what participants experience in their environments. Therefore various data collection methods such as participant observation, interviews, questionnaires and document analysis are considered (Appendix H). These qualitative research methods are flexible and inductive in nature as they allow the researcher to provide a better understanding of the mutually shaping issues and interacting realities (Thomas, 2003). By engaging in multiple data collection methods the research involved several participants' interpretation of data at different times and allocation. In order to arrive at convergence among multiple sources of information and arrive at crystallisation of the study, data collected through these multiple methods should be triangulated (Golafshani, 2003).

Data collection took place over a period of six months from April – September 2018. Data was collected at the participating schools and districts, with the assistance of the mathematics Head of Departments, teachers, subject advisors and district assessment officials. Permission to conduct research was obtained from the Gauteng Department of Education. Consent forms (Appendix i) were signed by the participants before the commencement of the data collection process.

(i) Questionnaire

Wisker (2011) contends that questionnaires are the most logical and simple manner of collecting information from respondents due to the frequency of their use in all contexts. The structured questionnaire was administered with the Grade 11 mathematics teachers, head of departments and two mathematics district subject advisors in the selected schools and

districts. Permission was sought from the district directors of the Gauteng Department of Education and the school principals to administer the questionnaires with the participating teachers and district officials.

A questionnaire was developed for teachers as well for the districts officials to gain different views on the use of common examinations as part of formative assessments in schools. Well-structured questions were carefully selected to avoid leading and confusing the participants. The questionnaire attempted to determine the teachers' understanding of assessment processes, the number of assessment that were planned per term, the levels of learner performance in these assessments and what the teachers' actions involved to assist learners to perform optimally. In addition the questionnaire was used to gather the teacher perceptions and concerns on the common formative assessment approach.

The questionnaire was emailed to the teachers at MH, TL, and MV and they were hand delivered to KD and MS schools after the first meeting with the participating schools had been conducted. The participating teachers responded to the questionnaire in a succinct and clear-cut manner by providing direct responses which needed further validation through face to face and group interviews. The questionnaire data was transcribed directly from the completed form for each topic and per participant. This process assisted me to obtain the different perspectives of the participants on particular focus areas in the questionnaire. The responses to the questionnaires were coded for analysis purposes after they had been completed.

(ii) Interviews

Interviews allow face to face conversation with the respondents (Wisker, 2011). According to Thomas (2011 p. 331) an interview is a social relationship designed to exchange information between the participant and the researcher. The interviews are selected for this study in order to explore the research topic from the perspective of the participants. Two types of interviews were used, that is, individual and focus group interviews. These interviews were used with the participating teachers, assessment officials and the mathematics subject specialists from District A and B and the provincial subject specialist (Table 4.4). These interviews took the form of open ended questions and portrayed a low degree of structure and focus on particular circumstances related to school assessment practices.

Charmaz (2015) maintains that interviews should be negotiated with the participants to allow for detailed exploration of a subject with those who have appropriate experience. To acquire relevant information, negotiations were undertaken with the mathematics specialist and

teachers to meet after their working hours at neutral places for the face to face and group interviews.

Face to face interviews with the teachers were conducted at the school offices of MH, TL and MV, and for TL and KD schools they took place at a neutral location. The interview lasted for between sixty minutes and seventy five minutes and provided illuminating information as the participants were probed on the questions posed. The interviews were audio recorded using a cell phone and notes were also taken as a backup; this assisted during the transcribing stage. In both interviews care was taken to avoid using the real names of the schools, districts or teachers, hence pseudonyms were used.

(iii) Individual interviews

To enhance the data accuracy and transferability of findings gathered through the questionnaire, individual interviews were carried out at the sampled schools with the Grade 11 mathematics teachers and heads of department. These interviews were to confirm or refute the themes gathered through the questionnaire (Shilkin, 2005). The individual interviews were semi-structured in nature and provided the interviewer with a chance to give the participants opportunities to provide more information on the research topic. Hence open ended questions were used to determine the standard of common examinations set at districts and provincial levels, the role of teachers in setting questions, performance analysis, the action plans taken by teachers after analysis, the alignment of common examinations and the school based formative assessment tasks and how the results of these examinations are used in schools. The choice of individual interviews was useful as it provided ideas that participants would not have thought about and provided in a group interviews.

(iv) Focus group interviews

According to Family Health International (FHI, 2006, p. 2) “focus groups are effective in eliciting data and in generating broad overviews of issues of concern to groups.” Since the purpose of this study was to establish the role of common examinations as formative assessment tools, it was necessary to conduct interviews with the district and provincial subject advisors in Districts A and B. In District A teachers also joined the group interview to share their viewpoints on common examinations. These focus group interviews were more semi-structured and provided rich data through group interaction.

The group interview provided information that corroborated the information already gathered through the questionnaire and teacher face to face interviews. This type of interview provided an additional opportunity to unpack complex issues that could have been missed in individual interviews. Interviewees were prompted to respond to questions through the use of open ended questions. The questions probed teachers to explain the assessment plans and their experiences on the implementation of common examinations. The participants provided their understanding and experiences on common examinations from the school, district and provincial point of view and practices.

(v) Observation

Proponents of qualitative research such as Creswell (2009), Khan (2014) and Carter and Little (2007) support the use of observation as a data collection method. Observation is ideal when the researcher intends to scrutinise a multifaceted social interaction and when direct information on an issue at hand is sought. While interviews, questionnaires and document analysis provide systematically collected data and are more scientific, observation provided the researcher with empirical leverage over what was investigated. The observation and interpretations of participants were crucial as it allowed the researcher to explore perceptions regarding common formative assessment tools.

Unstructured observation, which is aligned to the constructivist paradigm of co-construction of knowledge (Mulhall, 2003), was used to understand teachers' classroom assessment practices. The researcher carried out observation of teachers in their classrooms as they engaged with the learners during classroom assessment processes. The teachers were observed as they conducted their assessment practices in classrooms to ascertain the extent to which common examinations were used as formative assessment tools and how they implemented the action research cycles. In addition observation allowed the researcher to observe how learners learned, how they understood the tasks presented to them, how they dealt with the challenges experienced and how the teacher supported the learners during formative assessments.

The intention was to conduct observations in four schools; however the teachers at MH and MS schools pulled out of the observation stating that the time was not convenient as learners were starting with their end of year examinations.

Non- participant observations provided information on the real classroom situations at the level of the schools. Furthermore the observations were supplemented with the face to face meetings with the teachers.

(vi) Document analysis

Document analysis refers to the various procedures that are used to analyse and interpret data generated from the evaluation of documents and records (Annum, 2016). This method was useful when collecting relevant documentary evidence to support and validate data. In this data collection method was useful for corroboration of data collected through questionnaires and interviews. This exercise was beneficial in pulling out relevant parts that could be considered as facts to validate the research purpose (Annum, 2016). Permission to use the assessment records was obtained from the district directors and participating schools (Appendix I).

The approach that was followed in analysing the documents was more interpretative in nature to obtain an understanding of the phenomena of interest. The choice of the interpretative approach was based on the rationale that it is hermeneutic in nature thus allowing the researcher to observe and interpret the information, about phenomena, in order to make sense of the interdependent meaning of parts and the whole that they form. Hence documents such as the annual teaching plans, assessment frameworks, recording sheets and moderation records were analysed in order to gain an overall perspectives of the assessment process followed in schools.

Document analysis involved analysing documents such as the teacher workload (appendix F), guiding frameworks (Appendix F) and the mark recording sheets showing learner marks for all the school terms to understand the performance patterns. In addition the overall 2016-2018 learners' performance data were scrutinised see how learners performed in common examinations. The moderation reports (Appendix 8) were also analysed to determine the reason for the performance, the areas of concern and recommendation for improvements and remediation made by the moderators.

Document analysis was useful for this study in that it did not interrupt the research plan as it was based on the information that already existed in schools and districts and it was collected from different time periods. The documents provided useful background data which was useful for corroboration and for further exploration in an expensive manner.

4.5.2 Data Analysis and Organisation

Common examinations are used in schools for various reasons, it is essential to select appropriate methods of data analysis so that data is handled carefully and the conclusions drawn can be corroborated. Bogdan and Bilken (as cited in Simon, 2011) describe qualitative data analysis as a process of "working with the data, organising them, breaking them into manageable units, coding them, synthesising them and searching for patterns."

The inductive grounded theory posits that the aim of qualitative study is to generate a theory rather than to describe a theory and that theory generation is an ever-developing process (Simon, 2011). Charmaz (As cited in Khan, 2014) agrees that grounded theory is based on inductive data analysis strategies. Proponents of grounded theory such as Glaser and Strauss (1990), Corbin and Straus (1990), Paton and Guba (as cited in Simon, 2011) argue that the qualitative theories may be generalised to several situations as they deal with human realities. The main aim of grounded theory is to generate a theory from data in relation to the research questions. Table 4.3 below explicates how the data collection and analysis methods relate to the research questions:

Table 4-3: Data collection and analysis methods

Research Question	Data collection method	Type	Data to be collected	Data analysis	Software
Sub question 2: How can teachers be assisted to develop quality assessments in order to become competent experts of assessment standards?	**Questionnaire**	**Questionnaire focussing on assessment practices, actions, interactions involving mathematics teachers.**	**Teachers views on:** **- developing assessment tasks.** **-significance of common examination set at an external level.** **-measures that can be used to transform classroom assessments.**	**Analysis of narrative and textual data, Tables, graphs using the general inductive approach (Thomas:2003), will include** a. **Reading of transcripts to identify themes and categories** b. **Develop coding frame and categories** c. **Emerging themes developed through grouping of text into themes** d. **develop major themes** e. **Interview and**	ATLAS.ti which provides up to date multimedia processing was used.
Sub question 1: how best can formative and summative assessment plans are aligned to transform teacher assessments into high quality classroom assessments?	**Interviews**	**Focussed group - focus on collecting data from individuals who have shared purpose and experience. Question format will be open ended**	○ **Role of teachers and learners in the assessment process** ○ **Implementation of assessment plans into the annual teaching plan** ○ **Assessment**		

Sub question 3: how effectively are common examinations used by teachers as formative assessment tools to inform improved learner achievements?		**One- on- one interviews** **Purpose to confirm or refute data collected during focused group interviews** - **Observation**	**types used in schools** ○ **Use of alternative classroom assessments** ○ **Support given to learners during the assessment process**	**questionnaire text coded according segments** f. **Document analysis data coded to illustrate meaning and links between, e.g. Assessment and performance.** g. **Consistency checks by using independent coders linked to research objectives** h. **Stakeholder checks using interview transcripts** i. **High level themes will be used as main headings for findings.**	
Sub-question 4: to what extent can common examinations results be used effectively to improve instructional interventions and learner performance?	**Document analysis**	**Document analysis of learner performance data will assist in identifying how the results are used in schools to improve learner performance in relation to the interview and questionnaire data**	○ **Learner performance data** ○ **Excerpts from common examinations** ○ **Examples of learner responses** ○ **Statistical moderation reports** ○ **Teacher interaction with learners in classroom**		
	Observation.	**Observation focus: collect data during extended time in the field**			

Qualitative research requires logical interpretation of what is collected and analysed and to make use of collective statements among the different categories of data. According to Khan (2014) qualitative research is a systematic and logical approach to indicate and describe the

participants' daily experiences and to give meaning to them. The data analysis process involved organising and sorting the questionnaire data, teacher and focus group interview data, observation field notes and documents review data. This model of the data analysis process was an interactive process that involves several phases that constantly impacted upon each other. Figure 4.3 presents the data organisation process that ensued for this study.

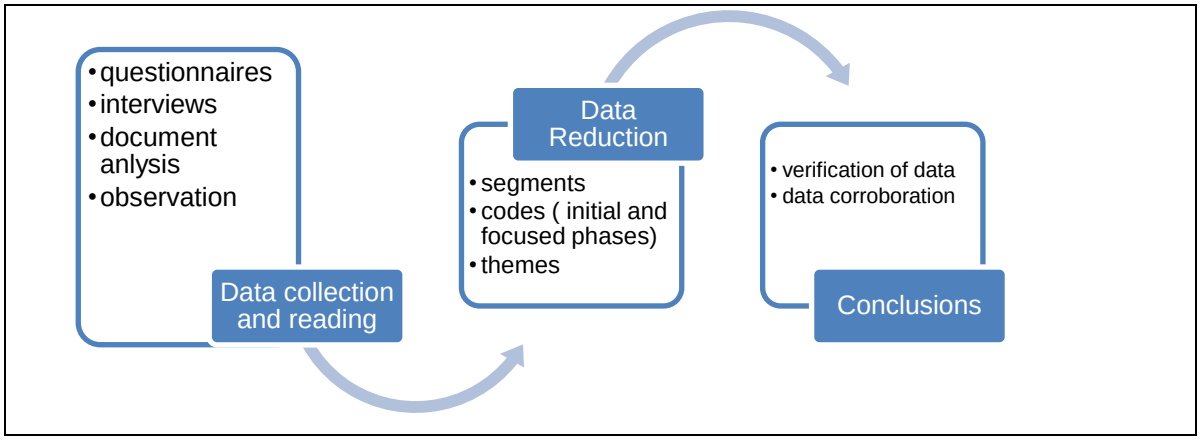

Figure 4-3 Data organisation process

Data organisation involved creating codes and themes qualitatively and counting the number of times they occurred in the text (Creswell, 2009). To do this the 2018 ATLAS.ti version 8.3.17.0 computer software, also known as the Computer-Assisted Qualitative Data Analysis (CAQDAS) was used to aid in this task. The CAQDAS was useful for reviewing, sorting, sifting and visualising the data according to themes (Archer, Janse van Vuuren and van der Walt: 2017).

Coding means categorising data according to short descriptions to summarise the information gathered (Charmaz, 2015). Following the inductive coding strategy which points to two phases of coding, that is; initial phase and focused selective phase, the transcripts containing all the data that was attained from the questionnaire, interviews, observation and document analysis was saved onto the ATLAS.ti software as a project.

During the initial coding phase each segment of data text was selected to create and define codes according to specific topics. The transcripts were then read several times to establish themes and categories. This line-by-line coding resulted in seventy eight codes and four emerging themes that were aligned to the conceptual framework. The codes were further linked to a code group and colour coded according to similar topics.

During the focused selective coding phase the initial seventy eight codes were sorted, synthesised and organised into nineteen codes and were linked to the four main themes as shown in Figure 5.1. The codes were further refined according to the Axial coding approach where the circumstances, connections and results were identified by creating network groups through the ATLAS.ti (Appendix J).

Data collected from questionnaires, interviews, observation and document analysis on school assessment practices was transcribed for analysis purposes. Care was taken to avoid bias in the analysis of findings. To do this, codes were used in order to distinguish elements for analysis and to group them together into themes, for example, the themes such as the role of common examinations in classrooms, teachers' roles in developing formative assessments and outcomes of implementing common examinations. Improvement plans and action taken by teachers after the analysis of results were highlighted. The following model was useful when the data was transcribed.

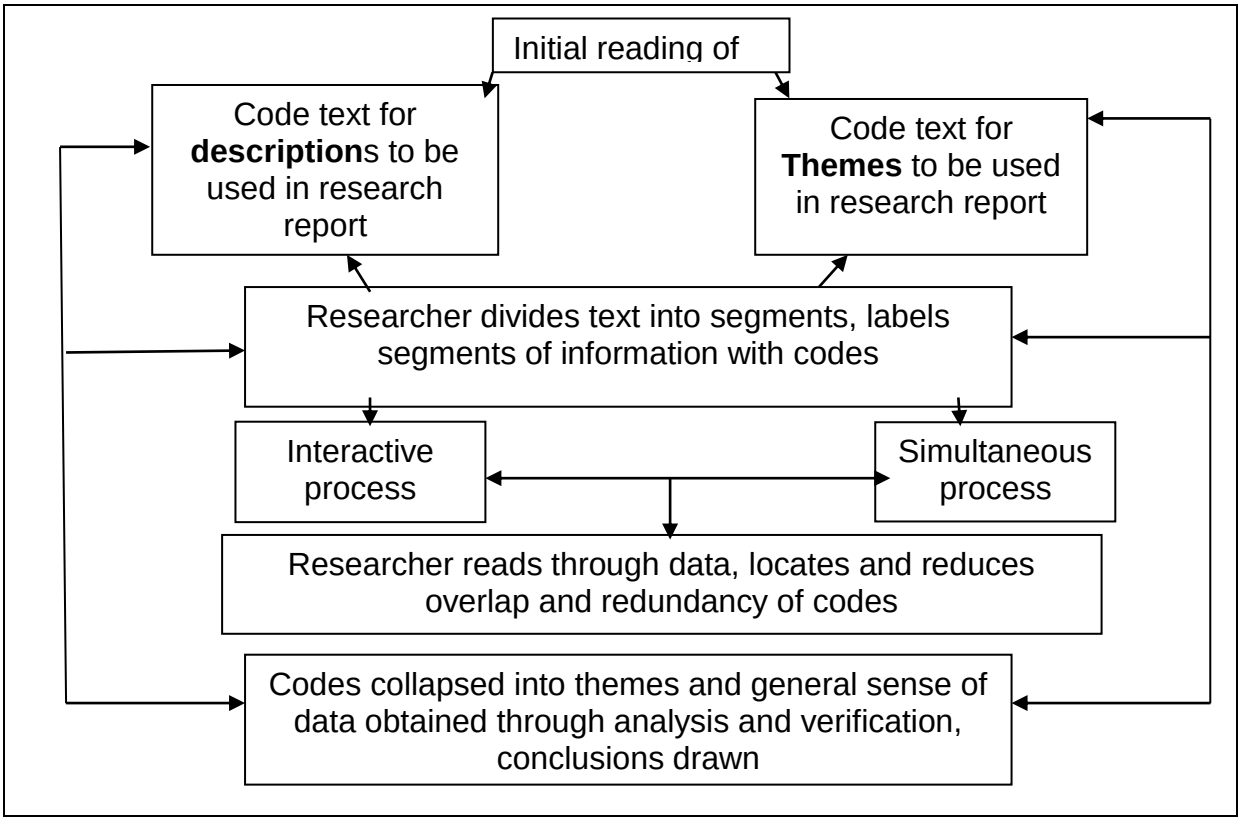

Figure 4-4: Data organisation and analysis (Creswell and Clark, 2008)

Conclusions that were drawn from the model discussed were verified by considering all the stages of data collection, organisation and analysis to confirm all assumptions through

continuous checks of data and the recording of texts in order to align the content with the research topic (Wisker, 2011).

4.6 METHODICAL NORMS IN QUALITATIVE RESEARCH

Qualitative research assists the researcher to understand phenomena in context bound settings (Golafshani, 2003). It is notable that advocates of qualitative research such as Shenton (2004), Khan (2014), Morse, Barret, Magon, Olson and Spiers (2002) have accepted qualitative constructs of credibility, transferability, dependability and confirmability to ensure rigour in a qualitative inquiry. In addressing the methodological norms, the researcher attempted to show that a true depiction of phenomena under investigation was being presented.

4.6.1 Ensuring Trustworthiness

Trustworthiness is maintained to confirm the believability of data and analysis through its main constituents of reliability and validity. Reliability and validity are the two main concepts that form part of a qualitative study. Since reliability and validity are not easily measured in a qualitative study, Shenton (2004) promotes three key constructs that are transferability, credibility and dependability in addressing these key elements of trustworthiness. Given that in a qualitative paradigm a true picture of what is investigated must be maintained trustworthiness, credibility, confirmability, dependability and transferability become important.

Ensuring reliability included attempting to provide evidence that if the study was repeated utilising the same methods and sample, similar results would be achieved. Since this study used overlapping methods, that is questionnaires, interviews and observation, these methods were beneficial in ensuring the credibility of the study. It was necessary to triangulate data collected through these data collection methods to balance for their respective shortcoming and to exploit their individual benefits in an effort to improve the credibility and dependability of the study (Shenton, 2004).

Trustworthiness in this study is linked to the constructivism view that the teacher should not discount the learners existing knowledge and that he or she must assess the learners and guide them (Ben-Ari, 2001). Morse et al. (2002) suggest approaches to be considered to achieve trustworthiness which include continued collaboration and tenacious observation. To achieve this, the researcher must be responsive and adaptable to the changing

circumstances, sensitive and be able to spell out and summarise issues. As this study was conducted in different selected schools, it was necessary that sufficient details of the assessment practices were gathered in order to justify the trustworthiness of the findings.

Following on these constructs the terms transferability and credibility were used to refer to external and internal validity.

(i) Credibility

Golafshani (2003) states that credibility depends on the researcher's ability to explain that his/her explorations are credible. The researcher is the main instrument in data collection. By aiming for credibility, the research questions are addressed in an attempt to find congruence between the findings and reality. In a qualitative study validity and reliability are not viewed separately, rather they are encompassed in the term credibility. Therefore credibility addresses internal validity (Shenton, 2004).

To ensure credibility of the study, interaction with the recording, filed notes and transcripts are done to show alignments between findings and interpretation. For this study the researcher ensured credibility by adopting the following strategies:

- Consultation of appropriate documents such as learner performance records in sample schools.
- Conducting preliminary visits to the sample schools to gain adequate understanding of the setting and to gain the trust of the participants.
- Sampling a range of participants such as mathematics teachers, HODs, school assessment team coordinators and subject advisors to partake in the study.
- Triangulation by using data collection methods such as questionnaires, interviews and observation. The suggestion by Shenton (2004) to use documents mentioned by participants during interviews or focus groups to explore issues under investigation was followed.

Credibility relates to how congruent the findings will be with reality (Shenton, 2004). In integrating credibility to this study, it was necessary to ensure familiarity with the samples and aspects being studied prior to the commencement of the data collection process. To do this the researcher engaged with the participating teachers and subject advisors' schools by means of frequent briefing discussions in order to gain their trust. Care was taken to avoid being totally immersed with the culture of the school to avoid flouting the researchers' professional judgement. As an official who works for the Gauteng Department of Education I

have to take extra care in ensuring that my role does not create biases towards enforcing or discouraging the use of common examinations in schools. From the outset I needed to clarify that I am conducting this study in a personal capacity and not on behalf of the Department of Education.

(ii) Transferability

Transferability, which is analogous to external validity, implies that research results are generalisable to a wider population (Shenton, 2004). Bearing in mind that reliability is difficult to prove in a qualitative study; the research ensured that the selected schools' contextual information of the sample being studied was provided to assist in transferring data to their situations. Descriptions of common examinations and how their results were used in selected schools to inform their interventions were made available to assist in the external validation of information provided in the research findings.

(iii) Dependability

Dependability closely corresponds with reliability described earlier in 4.6.1, and was employed to enhance the consistency of data.

4.7 **ETHICAL GUIDELINES FOR A QUALITATIVE STUDY**

(i) Voluntary participation

The voluntary participation principle requires participants not to be forced into taking part in any research. Participants are requested to give full consent prior to taking part in the study. To achieve this, letters of informed consent to the Grade 11 mathematics teachers, Head of Department for mathematics and the school principals were prepared and issued. The principal was requested to give permission for the teachers to take part and to use to the Mathematics learner performance data.

Participating teachers and district officials were also assured that when disseminating the research findings, results would be reported in a way that protected their anonymity. Good ground work, involving visiting the selected schools, securing a safe venue and talking to volunteers with the assistance of the district assessment officials and subject advisors, was done before beginning with the research in the selected schools in order win the confidence of volunteers.

(ii) Institutional consent

Letters of consent and forms were submitted to the institutions that fall under the Gauteng Department of Education in the selected District A and B, and the five sampled schools including the consent form from the University of Pretoria.

(iii) Informed consent

Obtaining informed consent is not only a matter of completing forms; it was clarified for participants what they were signing up for before the data collection process commenced. In order to obtain buy-in for the purpose of the study, potential risks and benefits of the study were also explained to the participants. The Grade 11 mathematics teachers, Heads of Departments, District Subject Advisors and assessment officials were informed that they will be participating in focus group, individual interviews, completing a questionnaire and that they will be observed during the conduct of formative assessments in their classrooms. These participants were notified that their involvement is not compulsory.

Informed consent documents were written in a language that was non-technical so that it could be accessible to all participants. The personal details of participants were secured and their privacy was respected at all times. Participants' approval on the use of devices such as a tape and video recorder was also sought prior to the commencement of the research.

This study involved officials who were deemed competent and knowledgeable about the subject mathematics and the components to be assessed. Sensitive topics or questions that could intimidate the participants were avoided to minimise potential risks e.g. when collecting information about teacher assessment literacy, care was taken not to undermine their competence, experiences or qualifications. Therefore the protection of participants, through the informed consent form, was used as a basis for enhancing interactions during the research.

(iv) Safety

The intent of this study was to enhance the freedom of participants more than the advancement of the researcher's career. Therefore information that could jeopardise the position of the participants within the Department of Education was avoided e.g. participants were assured that the research was not done on behalf of the Department of Education as there were disengagements in many schools against the common examinations during the

time of the research. So, for example, one school withdrew from the study as a result of the standoff by unions on common examinations.

Since the researcher was not aware of what data would be uncovered during the interviews, verbal consent was sought not to disclose information that might cause unintended harm. In schools where the research continued, participants were requested to refrain from being scornful of the poor performance of other participating schools or disclosing personal information about others. Predictable risks included lack of detailed data and information from schools, poor time management, unavailability of and withdrawal of participants and delays in submitting responses.

(v) Confidentiality

Considering that confidentiality is difficult to uphold in research, the researcher advocated that a relationship based on mutual respect and trust should be maintained so that participants could share information without the risk of harm. The researcher used pseudonyms as an approach to maintaining the confidentiality of the sampled participants. Table 4.4 provides a description of pseudonyms that were allocated to the participants

Table 4-4: Pseudonyms of participants

	Districts and Groups	**District official**	**Schools**	**Teachers**
Pseudonyms	District A		MS school	1-M1-MS
	District B		TL school	1-M3-TL
	Group A (GRA)	1-M02-DAO	KD school	1-M4-KD
	Group B (GRB)	1-MO1-DAO	MH school	1-M5-MH
			MV school	1-M6-MV

(vi) Transcript Validity

The transcript process is critical for data analysis in a qualitative research. In order to ensure that transcript validly represented what was said, participants were requested to provide comments on the teacher interviews, questionnaires and all related data that was gathered through observation and document reviews. Participants were afforded an opportunity to edit or clarify the information provided during the data collection process. By requesting comments from participants the omitted information or materials was added.

(vii) Data storage

The voice recorders, field notes and all related documents used during data collection are safely kept by the researcher. All the collected information was typed using the researchers' computer (lap top). Upon completion of the study the documents and all the data that would have been collected will be kept as per the requirements of the University of Pretoria Science, Maths and Technology Education Department.

4.8 **CONCLUSION**

This chapter paid attention to the epistemological and ontological paradigms that underpin this study. The importance of action research for teachers and their classroom assessment practices was also discussed. Of significance was the research design that underpins this study. The repetitive action research cycles that are useful for improved classroom practices were explained. The stages that support the study were also discussed with specific reference to the application of action research cycles in collaboration with participants. The research methods related to the qualitative research were deliberated in relation to the research questions. The research instruments used for interviews, questionnaires, observation and document analysis were discussed. In Chapter 5 the findings, data analysis and interpretations will be presented.

5 CHAPTER FIVE: DATA ANALYSIS, FINDINGS AND INTERPRETATIONS

5.1 **INTRODUCTION**

The aim of this chapter is to outline the findings emanating from data collected through the teacher questionnaire, face to face and group interviews, observation and document analysis. The presentation and interpretation of the data collected provide clarity on the participants' experiences and their view points with regard to the use of common examinations as formative assessment tools to enhance their classroom assessment practices.

The findings that will be presented address the main research question which states: *To what extent could common examinations contribute to effective formative assessment practices in schools?*

The fundamental elements of the 'How People Learn' (HPL) model, as espoused by Bransford, Brown and Cocking (1999), is used to explain the finding and the interpretations as illustrated in Figure 5.1 below. Therefore I will explain the findings in relation to the components of the HPL model, as illustrated in Figure 5.1 by referring to:

- The evidence provided by data linked to each component of the HPL model across the methods.
- How the themes connect to the conceptual framework.
- The viewpoints of those who took part in the workshops as part of the attempts made by this study for teachers to develop their formative use of common examinations.

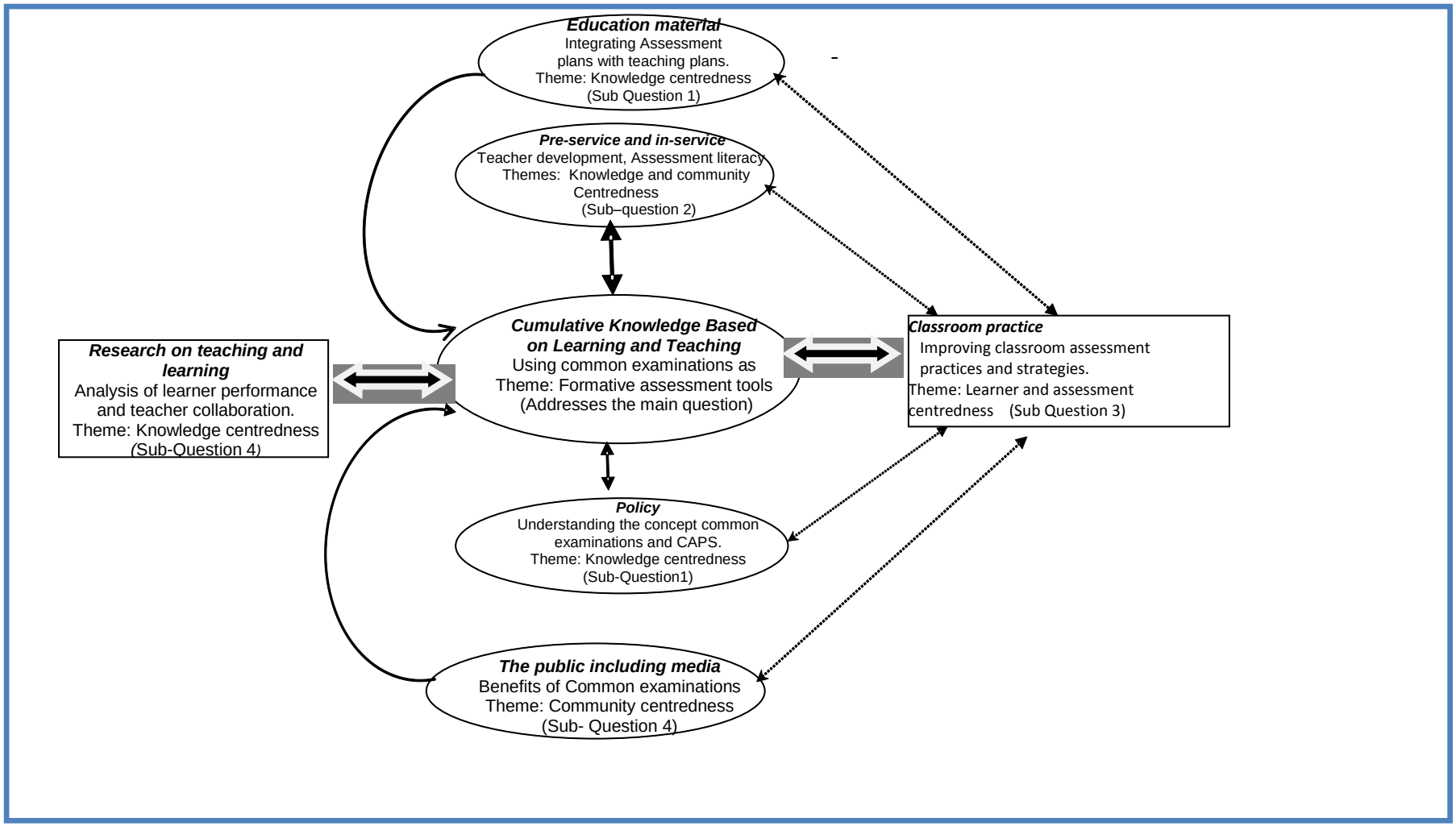

Figure 5-1: Linking the conceptual framework with the findings of the study

To align the discussions with the conceptual framework outlined in Chapter 3, this chapter is divided into three parts to present the findings as follows:

Part 1 discusses the participant characteristics with Section 5.2 delineating (i) the sample, (ii) background of the sample, (iii) teacher quality and assessment knowledge, and (iv) the relationship between mathematics participation and performance in the sampled schools.

Part 2 looks at the data collected from the participants, analysis and interpretation based on the themes, which emerged in a particular section. In Section 5.3 the data analysis approach is explained and Section 5.4 focuses on the themes emerging from the findings. Section 5.5. looks at the interpretation of the findings with specific attention placed on conceptual framework under the sub-sections 5.5.1, the role of education materials and policy implications; followed by 5.5.2, the role of policy; 5.5.3 which looks at improving classroom assessment practices on learning; then 5.5.4 explains the significance of teacher pre- and in-service with reference to teacher development and assessment literacy; 5.5.5 gives an explanation on the role of research on teaching and learning and lastly 5.4.5 looks into the role of common examinations and the benefits of using common formative assessments for the public.

Part 3 discusses how the action research design cycles of planning, action, observation and reflection are incorporated into the schools. Section 5.6 will pay attention to the teachers' experiences with action research with a focus on the workshop that was conducted with the participants. The action research cycles of planning, action, observation and reflection will be explained in relation to the themes identified in this study. Attention is paid to the planning stage of how the ATP and the assessment plans can be used as part of the formative assessment practices. Furthermore explanations of the actions taken by the teachers to implement the knowledge gained from the workshop will be unfolded, which will be followed by a section on how observation of the teachers in action evolved and how they were implementing the common examinations as formative assessment tools. The last section of Part 3 provides the participants' and the researcher's reflections on action research.

5.2 **PART 1: PARTICIPANT CHARACTERISTICS**

5.2.1 Sample, Background and Mathematics Participation

(i) Sample

The participants were selected based on a purposive sampling method. They were teachers who were actively engaged in teaching mathematics in Grade 11 in the Gauteng Province. In addition the study involved mathematics district and provincial subject specialists and the district assessment officials who provide curriculum support and guidance to schools and the teachers who were responsible for teaching mathematics in Grade 11.

To ensure that the information elicited would be consistent, the participants that were selected had to be participating in the provincial and national common examinations. It is important to note that it is not compulsory for schools in the Gauteng Province to participate in the provincial and national common examinations. This criterion seemed suitable for establishing the extent to which common examinations were used as formative assessment tools in those schools that opted to write common examinations. Therefore the teachers and Head of Departments from the five participating schools and the officials from two districts were invited to take part in the study based on their (a) commitment to using common examinations, (b) involvement in teaching mathematics in the Further Education and Training Phase, in particular Grade 11 and (c) willingness to share how formative assessments were used in their schools to improve learning.

Upon gaining permission from the Gauteng Department of Education Research Unit to collect data from the selected schools, I approached the directors to gain access to the targeted schools. It was necessary for me to carefully approach the schools to obtain buy-in from the principals since there were stoppages of common examinations in the province by the teacher unions during the time of data collection[ii]. Hence the district assessment officials assisted me to gain access to the sampled schools by organising initial meetings with the principals.

I had intended to sample twelve schools and two districts (six schools per district); however the attained sample was five schools in the two districts. In District A, three schools participated fully, two potential schools agreed to participate but withdrew stating non-participation in common examinations. One school did not respond to the invitation for participation. In District B two schools participated fully and four schools did not respond. Extreme cases of political interference resulted in the attained sample, as not all selected schools showed interest due to fear of intimidation from the

social partners, meaning teacher unions. The non-participation of these schools did not affect the results of the study. Tables 5.1 and 5.2, A and B illustrate a summary of the intended and attained sample.

Table 5-1: Intended sample

Districts	Schools	Comment
Two Districts	Twelve schools (Six schools per district)	Sample consideration was based on size of school, location and performance in common examinations.

Table 5-2: Attained sample

Districts	Schools		Comment
Two Districts	Five schools	Three In District A	• Two schools withdrew due to non-participation in common examinations. • One school conceded to partake but later showed no interest.
		Two in District B	• Non participation in common examinations due to stoppages by teacher unions in four schools.

To achieve the objectives of the study I extensively explored the attained sample. First a questionnaire was issued to the selected teachers, followed by the teacher face to face interviews and the group interviews with the district subject advisors, then observations were made at schools and finally document analysis was done until I became certain that the data that was collected had reached saturation. Therefore the attained sample generated a rich set of data and the need for further participants was eliminated.

(i) Background of the sample

The study was conducted in two out of fifteen districts in the Gauteng Province. The introduction of the common examination in Gauteng schools was informed by a three year agreement between the Gauteng Department of Education and the teacher unions which were regulated by Assessment Guideline 5/2015. This agreement on common examinations was on the proviso that the transfer of skills on the setting of quality assessment tasks would be put in place for teachers. The selection of the research sites was thus informed by the involvement of the schools in the provincial and national common examinations.

The research sites were public schools located in the urban areas, four of which are what is commonly known as township schools and one was a former model C school[iii]. Schools in Gauteng

are categorised according to quintiles. All schools that are ranked Quintile 1-3 are no fee paying schools and the ones in quintiles 4 and 5 are well off and well-resourced schools that may apply to be classified as no fee paying schools. It is important to note that some no fee paying schools have benefitted from the improvement initiatives such as the ICT in education project thus gaining access to digital equipment to assist in teaching and learning (Department of Education, 2018). These schools produce quality passes in Grade 12 despite their classification when compared to quintiles 4 and 5. Table 5.3 presents a brief description of the participants.

Table 5-3: Biographical information of participants

	District/ group pseudonym	No. and Gender	Position	District composition	District size
District Level	**District A** **GROUP A (GRA)**	1 Senior education Specialist (SES) 1 Female SES 1 Female SES 1 Female SES 1 Female SES	- Mathematics Subject Advisors	Consist mainly of township schools	67 schools
		1 Male SES	- District Assessment Official (DAO)		
	District B **GROUP B (GRB)**	1 Male HOD 1 Male HOD 1 Male teacher 1 Male teacher	- HOD - Teachers	Consists of township and ex-model C schools	48 schools
		1 Male Deputy Education Specialist 1 Male SES	- Mathematics subject Advisor - DAO		
SCHOOL Level	**School / teacher Pseudonym**	**no. and Gender**	**Position**	**District location**	**Quintile Ranking**
	School: KD Teacher: 1-M4-KD	1 Male	HOD	District A	3
	School: MH Teacher: 1-M5-MH	1 Male	Deputy Principal	District A	5
	School: MV Teacher: 1-M6-MV	1 Male	Deputy Principal	District A	5
	School: TL Teacher: 1-M3-TL	1 Male	Post level 1 Teacher	District B	3

The information presented in Table 5.3 shows the pseudonyms that will henceforth be used when reference is made to the teachers, schools and districts that participated in the study. In addition the nature of participants who contributed to the research is described in terms of gender, professional level and school ranking and location. This information is important for the reader to understand the

type of participants who contributed to this study; therefore the following sections provide a brief description of each school.

- TL is a quintile 3 no-fee paying school and is classified as an ICT School with well-resourced ICT equipment such as smart boards and teacher laptops which are used for content delivery and the assessment of learners. The school participated in the common examinations as part of their improvement strategy to administer standardised assessments and learner performance. The Grade 12 pass percentages have been 90% on average since 2015.
- MH is a quintile 5 former Model C school and is a fee paying school with adequate resources such as textbooks, a library, computer laboratory and not more than forty learners in a class. The number of learners in the school is manageable compared to the other sampled school and their Grade 12 pass is above 93%.
- KD is a school where most learners came from the surrounding townships. The school has less than thirty classrooms, thus the learner teacher ratio is at 1:65 as opposed to 1:35 which implies that overcrowding is a challenge. The school is classified as a quintile 3 school with a feeding scheme allocated by the Department of Education. There are no resources such as a library in this school; however the school performance in Grade 12 since 2014 is above 85%.
- MV is a school situated in a township and it is classified as a quintile 3 and a fee-paying school. The school performance in mathematics is below 45%, hence their involvement in the Secondary School Improvement Programme (SSIP) during Saturdays, holidays, mornings and afternoon classes to improve their mathematics performance. The school receives support from the district subject advisor on curriculum and assessment. The performance of the schools in Grade 12 has been above 70% on average since 2014.
- MS is a quintile 5 full Information Computer Technology (ICT) school with adequate resources. The school mathematics educators are supported by the HOD and the district officials. The school is supported by the district officials in terms of curriculum and assessment matters and their Grade 12 pass percentage has been above 96% since 2014.
- District A, with 67 secondary schools, has two mathematics subject advisors whose roles were to provide curriculum support and one assessment official who is responsible for all assessment matters such as monitoring the conduct of common examinations, mediations of policies, data analysis and providing support to schools.
- In District B there are 48 secondary schools with one mathematics subject specialist who is responsible for supporting FET teachers on curriculum and assessment matters at school level. They also have an assessment official with similar roles as the one in District A.

The sampled schools had a mathematics teacher and three out of five teachers were at the HOD level and two were post level one teachers. With regard to district support the five schools had strong professional support structures.

(ii) Teacher quality and assessment knowledge

During face to face interviews the participating teachers were given an opportunity to explain their assessment background and knowledge. The teachers who participated in the study indicated that they received training at university level. Their training in the main focused on content and how to teach mathematics. Assessment was part of their teacher training. Only the teachers at MH and KD schools completed an accredited assessor course and had relevant experience in assessment. Table 5.4 summarises the teacher qualifications.

Table 1-1: Teachers' Qualifications

	TL	MH	MS	KD	MV
Qualifications	Diploma Honours in Education	Master in education	5 year BSC in mathematics	Diploma Honours in Education	Master in education
Assessor Training	No formal training as an Assessor	Accredited Assessor course	No formal training as an Assessor	University training in Assessment	No formal training as an Assessor

The teacher at MS school has recently been appointed as the Grade 11 mathematics teacher with two years' experience in the school. The teachers at TL and KD schools were responsible for teaching Grade 10 to 12 mathematics and also taught Grade 12 learners from various schools during school holidays and weekends as part of the School Support Improvement Programme (SSIP). The teachers from MV and MH schools were at the HOD and deputy principal level respectively with more than ten years teaching experience.

The group interviews were conducted mainly with the mathematics subject advisors at district level whose qualifications ranged from a Bachelor's Degree in Education to an MSc qualification. The groups were asked to explain the correlation between the teachers' assessment background, experience qualifications and the learners' readiness for common examinations. This question is based on the constructivist approach which argues that knowledge centredness focuses on what is taught, why it is taught and what must be mastered (Donavan & Bransford, 2005).

In GRA the subject advisors argued that teacher experience and qualifications are inextricably linked to teacher commitment and use of innovative ways of assessing learners to improve learner performance. The group conceded the fact that there is a close correlation between the teachers' knowledge and how they teach towards the achievement of the set outcomes. The subject advisors in GRA also argued that there must be willingness on the part of the teachers to learn as qualifications sometimes do not translate into good results. From this argument it can be presumed that teaching and learning should be organised and designed according to the learning environments, content knowledge and assessment and feedback strategies. According to GRA's district official "*the significant predictions of how well the learners will perform in common examinations lies in the balance between the professional status of mathematics teachers, teacher commitment and experience."*

GRB agreed that there is a strong correlation between assessment knowledge and teacher qualifications. The group also argued that teachers may be experienced but lack the content knowledge in mathematics. Hence there is need to develop teachers to develop quality assessment tasks. One subject advisor in group B stated that *"It is not always experience that counts in teaching and learning. If I am qualified to teach mathematics, I will be better equipped to teach and assess it. I may be experienced but not know the content, which research has shown with most South African maths teachers."*

(iii) The relationship between mathematics participation and performance in sampled schools

Corresponding with the introduction of the basket of performance in 2016 by the Department of Basic Education, mathematics is one of the critical gateway subjects in terms of increasing the number of learners who opt to take it in the FET Phase. The basket takes into account more factors than just the pass rate to categorise the schools' performance. Factors such as flow through, pass rate, bachelor rate, distinction rate, mathematics participation, physical science participation and mathematics pass form part of the basket. The number of learners who take mathematics as one of the seven subjects in Grade 11 and 12 are examined to determine the interventions and improvement strategies that are used as early as Grade 11.

It was thus necessary for this study to peruse learner participation and pass percentage in Grade 12 to determine the association of Grade 11 common examinations on the throughput rate. Document analysis of the 2018 technical report became indispensable in showing the percentage of learners who pass mathematics in Grade 12. In 2018 the mathematics participation in District A was 3.52 %

with a 7.45 % pass and in Districts B the mathematics participation was at 3.98% with a pass percentage of 6.57 % in Grade 12 (Gauteng Department of Education, 2018).

It can be assumed that there are fewer learners who are promoted or progressed in Grade 11 as the mathematics numbers start to dwindle in Grade 12. This decline is more likely due to the poor performance in the national common examinations, learners changing mathematics to mathematical literacy, Multiple Examination Opportunities (MEO) for progressed learners who opt not to write mathematics in their first year in matric, fewer interventions in Grade 11 compared to Grade 12, teachers paying more attention to exit grades such as Grade 12 or lack of basic and foundational mathematical knowledge and skills on the part of the learners. It is interesting to note that according to the policy on subject changes, a learner may change one subject at the end Grade 11. To illustrate this point, it is important look at Table 5.5 which shows the participation rate and performance in Grade 11 and 12 mathematics at the sampled schools.

Table 1-2: Participants' Grade 11-12 Mathematics performance and enrolment data (Gauteng Department of Education, 2016; 2017; 2018)

SCHOOL	FEE PAYING	MATHEMATICSMATHEMATICS ENROLMENTS IN GRADE 11 AND GRADE 12				MATHEMATICSMATHEMATICS PERFORMANCE IN GRADE 11 AND GRADE 12		
		GRADE	2016	2017	2018	2016	2017	2018
KD	YES	11	60	66	35	63%	58%	50%
		12	55	75	40	74%	55%	83%
TL	NO	11	45	57	53	28,3%	35%	29%
		12	36	45	48	67.9%	65%	76.6%
MS	YES	11	45	21	214	47.1	16.6	19.1
		12	30	75	50	47.1	38.4	30.7
MV	NO	11	148	53	100	16.2	22.6	19.7
		12	82	81	53	18.2	16.2	23.8
MH	YES	11	178	178	170	84.27	73.50	70.59
		12		**145**	**149**		**80.69**	**85.23**

Table 5.5 shows that, when the Grade 12 results are compared to the Grade 11 results, there are more learners who are failing in Grade 11 than Grade 12. Mathematics enrolment, in the schools where performance was poor, drops drastically in Grade 12. From the analysis of the data presented in Table 5.5, it can be gleaned that from 2016-2018 the mathematics participation in all the five selected schools dropped and the performance in Grade 11 is lower when compared to Grade 12. The highest performance in Grade 11 was noted at MH school with an average of 74% and the lowest at MV school with an average of 19%. The vast difference between Grade 11 and 12 performances in these schools is interesting; for example, although MH school had high

mathematics participation the performance was also good. The assumption that can be drawn is that at MH school the teachers are using formative assessments effectively to prepare the learners twice in eight days cycle after the completion of a section of work (as indicate by the Teacher 1-M5-MH during the interviews).

When looking at these findings, it can be deduced that the objectives of the intervention strategies highlighted by the teachers do not yield the expected output. During the interviews the teachers mentioned strategies such as extra classes, their involvement in the projects such as the Secondary School Improvement Programme and using past common examination question papers for revision and group work as formative assessments. The assumption that can be made is that teachers at these schools need to be adequately assisted on how to integrate formative assessment tasks with the common examination in preparing learners for the final examinations. In addition it can be stated that learner support is not enough to afford them a chance to express their understanding before the examinations and after the feedback is provided.

1.1 PART 2: FINDINGS, ANALYSIS AND INTERPRETATIONS

1.1.1 DATA ANALYSIS

Data was interpreted and analysed systematically through the inductive grounded theory as explained in Chapter 4, Section 4.5.2. The grounded theory approach provided specific procedures which enabled the researcher to commence with analysis as soon as the first data was collected from the questionnaires. The latter was used as background to the interviews, observation and ultimately the document review processes. The codes that emerged as the data was analysed were used to produce meaningful empirical findings which resulted in generic explanations. In accordance with the grounded theory, data analysis was done by developing codes and themes in order to generate a theory based on the research questions and perspectives of the participants.

1.1.2 THEMES EMERGING FROM THE DATA ANALYSIS

Following the data coding process, themes emerged from the raw data. Four themes would direct the discussions identified; that is, assessment centredness, learner centredness, knowledge centredness and community centredness in accordance with the conceptual framework illustrated in Figure 5.1. The four themes are aligned to the conceptual framework which was formulated in Chapter 3 to guide the analysis. These themes are constructed on the argument that assessment

and learning are intractably linked therefore, to reiterate, assessment is not a once off event but a continuous process. This study further purports that assessment drives teaching and it endows teachers with the necessary information on how learning should continue, to respect learning and the curriculum requirements (Marlowe, 1998, p. 61). During data analysis patterns and interactions among the themes were established in order to explain the participants perspectives on the extent to which common examinations were used as formative assessment tools in their classrooms.

The next sections will present the findings in relation to each sub question, the conceptual framework and the identified themes.

1.1.3 INTERPRETATION OF THE FINDINGS

1.1.3.1 The role of education materials on teaching and learning

The discussions in this section are linked to the participants' perspectives on the role of education materials and policy on their practices and responds to sub-question one which states: *How best can formative and summative assessment plans be aligned to transform teacher assessments into high quality classroom assessments?*

The findings are extrapolated from the questionnaire and face to face interviews that were conducted with the teachers and the group interviews with the district

. The district subject advisors' views are juxtaposed with the perceptions of sample teacher to show how the education materials such as assessment and Annual Teaching Plans (ATP), CAPS and subject guidelines are mediated, perceived and implemented in schools.

(i) Integrating assessment plans into classrooms

One of the key roles of the district subject advisors is to guide and support the teachers in the implementation of the CAPS aligned subject assessment and teaching plans. In the group interviews the subject advisors were asked to explain how they ensured that the formative and summative assessment plans were aligned in schools. In explaining how teachers are assisted with the integration of assessment plans into their assessment practices, the DSA in District A indicated that they ensure that plans are aligned with the ATP and the formal tasks. As they prepared the assessment programme, the subject advisors in this district, highlighted the significance of ensuring that all the topics were covered and formed part of the ATP and the subject guidelines. The

assessment tasks such as investigation and data analysis were cited as examples of the tasks that were included in the assessment plans that were provided to the teachers.

In District B the subject advisors highlighted that the assessment plans should not only focus on formal assessment tasks. The subject advisors from GRB felt "*that 'non-routine' exercises should form part of the assessment plans to narrow the gap between formative and summative assessments."* In their experiences they indicated that knowledge questions were ignored in the assessment plans. The views from the two districts showed that formative assessment tasks were not used effectively as emphasis was placed on the schools compliance with the assessment plans and their alignment to the annual teaching plans. In addition it can also be mentioned that the teachers are simply provided with the assessment plans without involving them in the preparation of these.

In order to establish how the school perceive and implement the plans that are provided by the district, a questionnaire and face-to-face interviews were conducted with the sampled teachers. The teachers were asked to explain how formative and summative assessment plans are aligned to transform teacher assessments into high quality classroom assessments. This question was asked in order to determine how the teaching and assessment plans are integrated to ensure that what is taught gets assessed. The teachers provided contrasting views on the implementation and applicability of teaching and assessment plans in their classroom practices. During the face to face interviews one teacher from TL school deliberated that the assessment plans provide details of what is going to be assessed in a given period of time. He indicated that the assessment plans must be linked with the learners' understanding of the content and inform the support that is needed by both the teachers and the learners. During planning the teacher at TL school focuses on what learners need to know as he encourages them to read ahead in preparation for the lessons. This approach is reinforced with weekly tests, homework and classwork that are formative in nature. The teachers at TL school stated that he follows "*a teach-assess-teach approach in order to make the learners know the mathematical aspects*."

Another teacher from MV school argued that the lesson plan does not adequately prepare learners to master the mathematical skills as they focus on what the teacher expects rather than the reality they face in class. He further mentioned that the assessment and teaching plans are not related to the expectations set out in the common examinations. Therefore the teachers need to strategically select mathematics topics and examples to enhance learning when they plan their assessments. The views of the teacher was that *"it is difficult to stick to the plans hence we try to have a*

consolidation section in each of the topics where we take items from common examination and past papers towards the end of the section."

According to a teacher at MS school, lesson planning places the learners at the centre by starting with what the learners know and ensuring that his lessons are based on what the learners respond to. In planning for the lessons, he is faced with a task of ensuring that the intended outcomes are achieved on one hand and on the other hand time management is crucial to ensure that the learners understand the lesson. According to teacher 1-M7-MS, "*the school has different learners some understand the lesson very fast, some do not respond to the best of their abilities and some are struggling."* Thus in his lesson plans he develops the objectives and the assessment activities taking into account that learners are not the same. This teacher also plans for back-up activities for solving mathematical problems, marking of learner books and for learner support. To integrate the common examinations into his instructional and assessment sequence he uses past June and preparatory examination question papers for practise, taking into account the time aspect as allocated in the teaching plans.

Teacher 1-M4-KD's lesson plans starts with the drafting of the scheme of work and he regards the plan as a guideline on how to teach and proceed with the lesson under the classroom conditions. His lesson plans start by conducting a pre-test to ascertain the learners' pre-knowledge. He tests the learners on what they know by making use of baseline assessments which will inform him on what they already know or do not know. The baseline assessments help him to identify the concepts that will form part of the examination. The teacher at KD school mentioned that "*whatever is taught is based on what is going to be examined*." Concepts that are used in common examinations are taken into account when planning for the lessons. The teacher also uses past examination question papers to prepare the learners for the examinations.

Teacher 1-M5-MH takes time into consideration when he plans for his lessons. He integrates the common examinations into tests by ensuring that the test items cover all the content topics. The common examinations are thus integrated into the tests to make sure that the test items cover the entire content topics to enable learners to have a thorough understanding of mathematics and how to apply their knowledge. As planning takes place, the sections of work are consolidated according to content topics and the common examination items and past question papers are merged towards the end of each section of work. The challenge at MH is that not all learners have a solid foundation in mathematics; hence learning takes place on a superficial basis of just knowing the content. In addition to this challenge, teacher 1-M5-MH pronounced that *"In order to apply that content the teacher needs to have a solid and thorough understanding of the origins and how maths plans are*

developed, this is a challenge for the school." During planning, the sections of each content topic must be consolidated to integrate the items from common examinations' past question papers into teaching. The common examination questions should be incorporated into the content topics during teaching. As the mathematics HOD at his school, the teacher also encourages his teachers to use formative assessments on a regular basis. The main challenge in doing this is time; there is a need to manage the work load of the teachers to incorporate marking and to teach the huge content within the limited time frames. Teachers need to prepare thoroughly within the provided time frames since the scope of the curriculum is broad and in too much depth to deliver. Thus according to the teacher at MH school "we *comply with what needs to be done*."

The arguments highlighted by the participating teachers show that assessment and teaching plans are not viewed and implemented seamlessly based on the teachers' understanding and experience at particular points in time. In all the sampled schools assessment plans form part of the lesson plans as the assessment tasks are incorporated into the teaching and learning. It is also necessary to point out that the teachers seem to be teaching to the test as most of the plans are directed towards the complete coverage of the ATP. In addition it can be stated that the district subject advisors also expect the teachers to implement what is prescribed in the CAPS and assessment plans rather than what is found to be appropriate at a particular time and place.

(ii) Linking ATP compliance to classroom assessment practices

The ATP outlines the intended curriculum and the weightings for each unit of work. The teaching and learning pace is organised according to the ATP. The common examinations are therefore set in relation to the content that should be covered as per the ATP. The Department of Basic Education maintains that the application of the ATP should be flexible and schools may use the provincial ATP or develop their own ATP which is congruent with the CAPS. The Provincial ATP is thus regarded as a guideline for teachers.

In responding to how the common examinations are used at his school, the teacher from MS school highlighted the impact of time on completing the ATP. In support, all the participating teachers cited the rigidity of the ATP as it does not give them ample time to teach and to assess formatively. One teacher enunciated that "*the time allocated to teach challenging concepts such as the Euclidian Geometry in Grade 11 and 12 is very limited*, t*herefore both the teacher and the learners are compelled to move at the pace of the ATP*." The teachers associated the learners' aptitude to learn a concept with the amount of time allocated to it. Meaning that the actual teaching of certain concepts may not tally with what is in the intended curriculum, for an example one teacher stated that a "a

theorem lesson which is planned for thirty minutes could take longer to complete than what the ATP prescribes."

The common utterances from the participating teachers were that learners needed time to understand routine, to make sense of the new information and ask for further explanation and to think mathematically. To circumvent these challenges these teachers highlighted that they made use of extra lessons to cover the expected content and to administer homework and class work as formative assessments. The teachers also pronounced that there should a correlation between the common examinations and the ATP that is set for the subject. They hasten to cover the ATP with the intention to prepare learners for the common examinations. When this rush occurs, learning and the transmission of knowledge is compromised.

1.1.3.2 The role of policy on teaching and learning

Teachers are faced with complex policy demands which require effective implementation of the curriculum and assessments in the classrooms. This complexity suggests that there is a need for teachers to understand the intricacies of polices such as the CAPS rather that manage it. As alluded in Chapter 1 and 3, the CAPS and related assessment policies form the foundation of the teachers' instructional and assessment practices. This study recognised that in their efforts to achieve the learning outcomes that are spelled out in policy prescripts, teachers are faced with a task of maintaining a balance between accountability and improvement of learning. Hence it became necessary during the face to face interviews to establish how teachers plan for instructional and assessment sequence within a unit of study in preparation for the common examinations. The response from TL indicated the teacher complies with the CAPS in order to adequately prepare the learners for the common examinations. In his response the teacher stated that "*common examinations are linked to CAPS compliance which is used as the bible."* The CAPS and the textbooks are thus used as the main reference materials that are linked to the teaching and assessment plans.

At MH school it was recognised that the teachers adhere to the CAPS requirements when they prepare the formal tests. At this school the teachers strive to stick to the CAPS so that the assessments should be comprehensive to cover all the major topics. For these teachers it is important to align their assessments to CAPS to match the standard of the previous common examinations. From the interviews it was deducted that the teachers relied on the CAPS to ensure optimal curriculum coverage.

Although the CAPS document is not prescriptive with regard to sequencing and pacing of the content, the competing demands of the CAPS were relayed by the teacher such as ensuring that content coverage within the provided time frames per term. Teachers felt that they were duty-bound to stick to the CAPS and they felt that it was rigid, hence some teachers, who may be lacking in content knowledge, were likely to omit and ignore certain topics to finish the syllabus. This compulsion shows that the teachers are likely to assess the quantity of work which is prescribed in the CAPS rather that the quality of learning. This practice was noted from the teacher at TL school who stated that '*If you are a week behind on the ATP it is crime, you can be called to the principal's office, complying is paramount*." It was evident that these teachers' commitment to policy underestimated the implementation of assessment for learning in schools as they were more concerned with the formal assessment tasks that were prescribed in the CAPS. They should rather be innovative and introduce a variety of formative activities to enhance learning.

(iii) Understanding the concept common examination

This study sought to understand the teachers' perceptions of what the concept common examinations entailed during the face to face interviews. The concept common examinations is likely to be limited to assessments that are set by the Department of Basic Education and not any form of assessment set by teachers who are teaching the same subject. Ainsworth (2015) refers to common assessments as a process that consists of teachers determining the knowledge and skills that learners must acquire during the learning process.

The teachers explained their perceptions of the concept common examination based on their experiences and perceptions. The teachers regarded common examinations as the assessments that were standardised and fair for all learners. The assessments are viewed in relation to the performance of the learners. The view of teacher 1-M3-TL was that "*these are examinations that are prepared by examiners at either District/Provincial or National level and they reflect the level and knowledge and skills that are expected at each level or grade*." From this viewpoint it is evident that the teacher regards the common examinations as question papers that are prepared by the district and provincial examination panels which suggest that he is a passive recipient of the question papers. The emphasis on teacher collaboration in the design and development of common assessments was not brought forward as the teacher felt that these examinations determined whether the learners could meet the levels and targets that were set by the province or district.

The participating teachers in general agreed that the main purpose of common examinations is to bring commonality in what is being assessed across schools. It was recognised that the common

examinations are viewed as a compliance measure instead of an assessment tool. One teacher regarded these examinations "*as benchmarks to measure learners' understanding*." Some viewed the common examinations "*as tools that will prepare learners for Grade 12 in terms of becoming acquainted with the manner in which questions will be phrased and the standard concepts they need to master in order to improve the National Senior Certificated results*." The conceptions of those participating are limited to the summative assessments as they link the common examinations to the exit grade results rather than seeing them as tools that can be used in a formative manner to improve learning.

Where school based common examinations were mentioned, the teachers questioned their quality and fairness in terms of the content coverage and the difficulty levels of teacher developed tasks. One of the participants mentioned that *"Common examinations are linked to the culture of teaching and learning in the school and the teacher knowledge of the CAPS is linked to the assessment practices.*" It was realised that there are teachers who lack content knowledge; hence they tend to set easy questions and resort to simplicity where the questions are pitched at lower levels. It became evident that there were limited participative efforts created to allow teachers to set their own common assessment tasks and to share teaching and assessment principles to enhance their assessment practices.

To improve the quality of assessment practices in schools, the participating teachers considered common examinations as a necessary tool to identify the content gaps and to monitor the progress of the learners. As a consequence it was discovered that all teachers in the selected schools relied on past question papers as a way of maintaining the quality of the assessment tasks. Although common examinations are seen as tools to improve the quality of assessments, teaching and learning in schools, it seems to be imposed on teachers. Instead of allowing teachers to be interactive and flexible with this kind of assessments they are not involved in the development of these assessments (as alluded to in Chapter 1).

1.1.3.3 Improving classroom practice

This section addresses sub question 3 which states: *How are common examinations effectively used by teachers as formative assessment tools to inform improved learner achievements?*

In assessment centred classrooms, learners are given an opportunity to make learning visible and to construct their own knowledge and understanding on the basis of what they have learnt (Bransford, Brown & Cocking, 1999). The constructivist learning theory suggests that teachers must assist

learners to monitor themselves, their progress and to set up the principles for learning and for the quality of work and to formulate remedial plans.

(i) Improving the quality of assessment instruments in schools

The teachers at the sampled schools used different methods to enhance the quality of assessment instruments. The common thread in the quality assurance processes mentioned by the teachers included pre- and post-moderation of internal assessment instruments by the subject head of department and the teachers. In order to strengthen the quality of assessment instruments the teachers added that the senior teachers, who specialise in mathematics, work closely with the HODs who are not competent in mathematics. The moderation process includes the quality assurance of marks, evaluation of the difficulty level of each question and ensuring that the assessment tasks are balanced in terms of the cognitive levels. In addition the teachers mentioned the significance of CAPS aligned topics to ascertain which concepts should be included in the school based test.

An essential element of the quality assurance process mentioned by the participating teachers was that the moderation of questions was done in order to minimise aspects that could hamper learner performance**.** In creating assessment instruments that require learners to recall and recognise skills, the assessment tasks are restructured to become part of instruction and align directly with the learning process. After the quality assurance of the assessment instruments, feedback is provided to the teachers to either make improvements or to administer the approved assessment instrument. It can be argued that teachers need to see assessment as a process of gathering and discussing information using multiple sources in order to establish what learners know, understand and do with their learning experiences.

The teachers were asked to explain how they ensured that the school based assessment matched the quality of common assessments. The teachers at KD school emphasised that *"teachers must be involved in setting the examination questions in order to manage the mismatch in the quality of internal and external assessment instruments*." Items that form part of the question banks must be considered when setting the common examinations in order to manage the mismatch between the school and district assessment instruments. In all the schools it was established that teachers use past common examination question papers as part of internal assessments to maintain the quality in assessments*.* It can thus be pointed out that there is overdependence on past common examination question papers instead of in school developed formative tasks. Even though the teachers make use of past question papers there is no modification of the questions in order to assist learners to deal with problems which will require them to acquire knowledge and skills.

At MS school the teacher stated that school based tasks that are developed at his school are quality assured by the district subject advisor as he does not have the skills and experience to set balanced assessments. The teacher stated that "*informal tests assist the learners and empower them to face the final common examinations*." By introducing quality assured formative assessments in his class the teacher explained that the learners would be able to answer the mid-year and end of year common examination questions. The teacher from MH school mentioned that in order to improve the balance of school based assessment and common examination processes in schools "*the examinations should cover the content that was communicated to schools*." This assertion implied that there was a disconnection on what was taught and examined in the common examinations and that formative assessment tasks that are currently used in schools were not linked to what was examined in the summative assessments. In addition it is evident from these findings that teachers need to make a clear distinction between the different forms of assessment that are used in schools.

(ii) School assessment practices and strategies

The participating schools employ different strategies in mathematics to improve classroom teaching and learning. These assessment strategies still need to be linked to the learning outcomes so that teachers can identify areas for improvement. This study found that schools tend to focus their attention on summative assessment tasks with little attention placed on developing the abilities of learners to become successful. While the teachers rely on classwork, homework, projects and assignments, group work and presentations to assess learners, teachers must also manage the time allocated in the ATP.

In the interviews the participating schools were asked to explain how their assessments prepared learner for common examinations. At TL the teacher uses group work where learners are arranged according to their abilities to assist one another. The stronger learners assist the weaker ones and they discuss specific topics during the afternoon classes. In addition the teacher uses afternoon classes and demonstration of answers on the smart board. The teachers at TL and MH schools noted that they followed a learner centred approach and they encourage learners to work collaboratively by including their expectations in the assessment tasks. The leaner centred approach that was referred to included encouraging them to study so that they could perform well in the assessments that were given. Past examination question papers are given to the learners on a weekly basis and they are given an opportunity to present and explain their answers in class.

The teacher at KD school uses formative assessment tasks such as short tests, homework, and group work and reporting. He indicated that 90% of his learners take part in the assessment

activities .This participation rate is an indication of a possible lack of interest on the part of the learners and the teachers not making the assessment plans available to the learners and parents which could lead to a lack of parental support, hence support was limited to the classroom. Therefore learners were encouraged to solve mathematical problems in class instead of giving them homework. The teacher pointed out that he had to move with the ATP to cover all sections of work. In addition extra classes were used to catch up and achieve the targeted pass rate. It is evident that the learners need to be engaged in class to obtain optimum participation and to avoid over burdening them with homework and formal school based assessments. These interventions also indicated the inability of teachers to complete the syllabus within the time allocated in the CAPS.

At MH school it was interesting to hear the teacher mention how the formative assessments were incorporated into the summative assessments whereas the teachers at the other participating schools did not articulate a clear assessment approach. Instead teachers at these schools only mentioned various assessment activities that were given to learners. Teacher 1-M5-MH stated that "*informal assessments such as multiple choice questions are developed from items that enable the teachers to obtain quick results*." He distinguished between formal and formative assessments and stated that "*multiple choice questions are mainly informal the actual tests items are set on a bigger scale*." The informal assessment approach at this school was not viewed as the routine of giving a task before the test. Rather it was integrated within the topics that were taught at particular points. The school also relied on previous mathematics question papers to cover the syllabus and to cover a wide scope of work to mimic the provincial and national common examination questions.

In addition, mathematical concepts in the syllabus are divided into smaller topics to make the learners understand the work. However, teacher 1-M5-MH indicated that *"the challenge that we face is the lack of skills and creativity on the part of the teachers to set quality questions, hence I advise teachers to use past question papers which defeats the purpose of teaching, assessment and learning*." According to him teachers need time, skills and creativity to create new assessment items and tasks. For schools to use the common examinations as formative assessment tools multiple strategies need to be employed such as structuring the assessment tasks based on existing knowledge, coupled with the capacity building of teachers on how to develop their own assessment tasks. It is discernible that schools regard interventions such as extra classes as part of enhancing assessment strategies, while underrating the extent and depth of improving learning and performance. If the teachers are using a myriad of assessment strategies such as tests, homework and classwork then assessment can be seen as formative and yielding positive results. This finding suggests that these teachers must be assisted on how to use common examinations optimally without simply using past question papers as formative tasks.

(iii) The effective use of common examinations in schools

Face to face and group interviews were conducted with the subject advisors and teachers to establish how common examinations are used formatively to support and provide feedback which will result in improved learning. All the participants indicated that the common examinations are incorporated into the day to day school based assessment tasks to entrench learning. In the main teachers make use of past common examinations question papers and memoranda to deal with specific questions. These question papers are obtainable through the internet and from the schools' repository of past papers. It was notable that only one school integrated the past questions into the topics, meaning that the question papers were contextualised to the learning environment. During the interviews it was argued that teachers should be able to use continuous assessments to determine learner progress rather than relying on the examinations only for summative evaluation. There should be an internal coherent system of assessment which incorporates the administration of standardised examinations at the same time and so improving the learner results.

In order to sustain common examinations as a strategy to enhance the Grade 11 learner performance in mathematics, the participating subject advisor listed contextual issues that affect the performance of learners in common examinations. Their arguments were directed at issued such as "*interference from the teacher unions that are not in support of the common examinations, teacher unwillingness to participate fearing being exposed by the outcomes, the lack of adequate content knowledge on the part of teachers and the difficulty levels of common examination is very high thus disadvantaging learners.*" The participants mentioned that school set papers were easier as the teachers set what they had taught and the content they were au fait with.

The subject advisors added that the common examinations directed the teaching and ensured that the entire intended curriculum was covered. The groups advocated for the rotation of examination panels for more teacher empowerment in order to sustain the use of common examinations in schools. One of the subject advisors stated that "*It is not necessarily easy for learners to learn the conventional mathematics concepts that are to be examined in the common examination*." Another subject advisor added that "*Learners must be assisted to understand the underlying mathematics concepts so that they do not generalise their knowledge when they operate in a more formal level.*" Worth noting was the concern raised by the DSA in GRB that *"Teachers are not using common assessments to improve learning. If common assessments were to be administered continuously in most activities, teachers may do diagnostic analysis but they do not have time to implement because of the time these assessments take."*

(iv) Aligning formative assessment tasks to common examinations

Formative assessments determine the progress that the learners are making during the learning process and it informs planning and future learning. In trying to establish the extent to which the participating teachers administered formative assessments in their schools it was evident that they were not conducted in similar modes. At TL school they were used daily whereas at MH school the teacher used formative assessments once or twice in eight days cycle after the completion of a section of work. In KD school formative assessments are frequently used and they form part of the formal teaching and assessment plans. The deduction that can be drawn from these findings is that schools differ in the extent to which they put formative assessments into practice in their schools. Therefore the manner and extent to which formative assessments are conducted in schools reflect the reality of how knowledge is constructed by both teachers and learners. These findings point to the probability that teachers lack the time and skills needed to integrate common examinations with formative assessments to allow learners to learn mathematics sections of work or topics from multiple perspectives. As a consequence it was noticeable that teachers were unable to appropriately employ well designed assessment activities to transform common examinations into formative assessment tools.

(v) Accommodating learners' preconceptions

The teacher at TL school assumed that although the common examinations were standardised, they did not cater for the learners' prior learning especially for the ones who were slow in learning. Although the common examinations were linked to the classroom assessments, to a certain extent, learners were exposed to limited forms of assessment prior to the writing of these examinations. To address the learner's preconceptions, the teacher at TL school used diagnostic teaching through questioning and reflections on previous assessments. During the observation it was noted the learners were given opportunities to ask questions and to provide responses on the section on probability and to recall what was taught in the previous lessons. Attention was placed on the cycle test questions, learner performance and giving learners' corrective feedback. The teacher engaged with the learners by focusing on the challenges the learners experienced, what they knew and could do well. The questions that were asked by the teacher were pitched at different levels starting from low order to high order questions to cater for all the learners.

Though the teacher attempted to accommodate all the learners, very few learners could comprehend the feedback that was given by the teacher. Some of the learners interacted with their

own scripts (self-assessment) and those of their own peers while others were not responsive. Therefore, the learners' understanding of the probability could not be measured during the observation, a post test was necessary to establish if the learners mastered the section of work. During the observation at the two schools, teachers were able to deal with the learner gaps during the class discussions. For example at MS school learners were asked what they remembered from the previous lessons to link their knowledge with the cycle test. The evidence from the learner scripts showed that the teacher had identified the challenges and learning gaps. He also reminded the learners that the section on probability was done in Grade 10. If these teachers constantly monitor whether learners have attained and can apply the concepts that were assessed in a formal task through remediation, the learners comprehension of topics and mathematics would be improved

(vi) Learners familiarity with examination questioning style

One of the main ingredients in learning is the provision of continuous assessment tasks and learner participation. The assessment practices in schools need to be responsive and relevant to what was taught and what is going to be assessed in the examinations. Learner centred environments need to be sensitive to the social practices of the learners in relation to classroom learning. Participant 1-M3-TL's experience with his learners is that there is a lack of interest in the assessment tasks that are provided as not all learners participate in learning and assessments. To familiarise learners with the assessment and examination questioning styles, teachers need to become constant companions of the learners. Common examinations, which require learners to have grasped the mathematics content, when encountered for the first time, can be challenging due to the unfamiliarity with the style of questioning in the examination. With much practice during classroom assessment activities the examination questions can be recognisable to the learners.

1.1.3.4 Pre- service and in-service: teacher development

The elucidations in this section are based on the knowledge centredness approach which draws attention to the value of teacher knowledge interchange and teacher assessment literacy. The explanations in this section will address sub question 2 which reads, *How can teachers be assisted to develop quality assessments in order to become competent experts of assessment standards?*

Knowledge centred classroom have a bearing on both the teacher and the learners. For the teachers to create classrooms that instil knowledge and skills to the learners they need to possess well organised bodies of knowledge to assist learners to become well-informed and assisted to

construct their own knowledge. Teachers need to master the system as the implementation of new assessment systems relies on the knowledge of the new approaches and comprehensive training in assessment. Hence the need for pre-service and in-service teacher development that goes beyond the teachers' understanding and skills of assessment is necessary.

Teacher Development for the Enhancement of Assessment Literacy among Teachers

This study explored the teachers' assessment knowledge and how it impinges on the outcomes of education as whole. Document analysis of the 2017 Umalusi reports was done which indicated that the common tasks prepared by the DBE and provinces impeded the expertise and growth of teachers, thus hindering capacity building. This finding was further backed by interviews where it became necessary for the researcher to explain the concept [iv]assessment literacy to the teachers, for example the teacher at TL school indicated that "*I am hearing this for the first time*." After explanations were provided the teacher who heads mathematics at KD school echoed a similar sentiment by stating that "90*% of the teachers at this school are not skilled in setting standardised question papers as they tend to give learners what they think will make them pass and avoid challenging questions as their main objective is to make the learners to pass".* The concern on teachers' assessment literacy was found in all five the schools that took part in the study.

The underlying argument from these teachers was that what gets taught needs to be assessed. To do this the participants consented that for teachers to become competent in setting the assessment tasks training at college or any other institution was crucial. The participants' opinions on the teacher assessment literacy highlighted a number of underlying issues that impinged on their daily assessment practices in the classroom. One of the critical matters that were raised was that teachers lacked subject content knowledge; hence they tended to administer straightforward questions. The teachers also linked assessment literacy with the ability of teachers to set quality questions which covered the different cognitive levels in mathematics. Added to this, teachers stated the need for support from the school management teams, in particular the HODs who should assist teachers with assessment task development, moderation and marking. One of the teachers' opinions was that "*we are not really trained in setting quality assessments, memoranda discussions and moderation of tasks, these things remains pivotal*." Another critical element which was echoed by the teachers was that they needed to be acquainted with CAPS aligned assessment grids in order to ensure that the questions covered all the cognitive levels. Document analysis of the moderators' reports found congruence with the teachers' viewpoints as one of the recommendations was that teachers needed to be provided and acquainted with the weighting grid in order to analyse learner performance data.

These findings show that teachers are faced with a myriad of difficulties which directly affect their assessment practices. To triangulate the findings, the subject advisors were interviewed to determine the nature of support which was provided for the teachers. The subject advisors argued that teachers' assessment knowledge was related to the teachers' use of innovative ways of assessing learners to improve their performance. The groups conceded the fact that there was a close association between the teachers' knowledge and the outcomes of the common examinations. Emphasis was placed on the willingness on the part of the teachers to learn as qualifications sometimes did not translate into good results. From the GRA's argument it can be deduced that the significant predictions of how well the learners will perform in common examinations lies in the balance between the professional development of mathematics teachers, teacher commitment and experience.

The subject advisors were asked how skills transfer with the teachers is carried out to ensure the development of quality assessment tasks. Different approaches were noted. In GRA the subject advisors indicated that they conducted three days workshops with the teachers on how to teach and assess in mathematics. The workshops included how to set questions that covered the different cognitive levels and the teachers were encouraged to share their skills, question papers and how to use the examination guidelines. GRB, which was constituted of both teachers and subject advisors, stated that the subject advisors set the assessment tasks for the teachers and the mathematics HODs were mainly tasked to moderate the assessment tasks that were set by the teachers.

1.1.3.5 Research on teaching and learning

The discussions which ensued attempted to address sub question 4 which asks, *To what extent can common examination results be used effectively to improve instructional interventions and learner performance?* The explorations in this section are founded on the premise that teachers must constantly monitor learning and evaluate their own practices to ensure that the learners may learn successfully. Learner and assessment centred classrooms refer to environments that pay careful attention to the knowledge, skills, attitudes and beliefs the learners bring to the educational setting. Teaching practices in such environments should be culturally responsive, appropriate and relevant and include diagnostic teaching, discovering what learners know, dispelling learner misconceptions and giving learners opportunities to readjust their ideas. To establish how research informs teaching and learning the teacher questionnaire, interviews, document analysis of learner performance data and observation became necessary.

(i) Analysis of learner performance data

During the interviews the groups of subject advisors were asked to explain the extent to which the common examination results were used to improve teaching and learner performance. In the group interviews, the subject advisors provided a myriad of intervention strategies that were used after the analysis of learner performance data. Emphasis was placed on using analytical moderation and diagnostic analysis of learner results to identify learning gaps, instead of merely doing corrections with the learners in class. In addition the subject advisors mentioned that they encouraged teachers to make discussions with the learners in order to identify challenges that were faced in the classrooms. The interventions such as using pre- and post-assessment activities were mentioned as approaches to diagnose areas of weaknesses and to identify improvement strategies.

In the questionnaire responses the teachers at 1-M3-TL and 1-M6-MV indicated that they used common examination for analysis of learner performance in order to identify and correct learning gaps. Teacher 1-M3-TL said "*learners' misunderstandings and misconceptions in specific topics are addressed through common examinations and more time is allocated for remediation*" The teachers in these schools built on the learners' existing knowledge to identify informal problem solving strategies to advance learner understandings. The analysis of learner results at MV school zooms into specific topics to see which areas are challenging to the learners.

In an attempt establish if the analysis of learner results is done, the participating teachers and districts subject advisors mentioned question, item and statistical analysis as practices which are done in most schools. These participants indicated that diagnostic analysis is linked to learner performance to identify top and low achievers, problematic content areas, conceptual and procedural challenges faced by the learners, performance levels, problem solving and intervention strategies. The learners' results are analysed statistically by the HOD according to the achievement levels and the class averages to identify challenges. The teachers mentioned that item analysis is used to provide appropriate feedback to the learners. It was also noted that the school targets are analysed to encourage learners to improve their levels of performance. To do this analysis the teacher said "*I check if the levels are adequately covered and if level four questions and problem solving skills are included in the assessment task."* Document analysis of learner performance data showed that learners' performance was still poor as the learners were faced with insurmountable conceptual and procedural gaps in mathematics. In GRB the subject advisor expressed the viewpoint that such challenge could be eliminated when "*Common examination results can be effectively used because the teacher won't then assess what they have taught but the topic as whole.* We *have a tendency of*

assessing what we have taught (similar questions) and leave application which most teachers do not teach."

In order to verify the information collected during interviews, unstructured observations were conducted to see if what the teachers said correlated with their classroom activities. The purpose of observations was to see if the assessment results were used to review assessment practices. At MS school it was noted that the teacher identified the need for intervention in areas which posed challenges for the learners such as calculating angles and definitions of mathematical terms. It was evident that the teacher explored past examination question papers as classwork to allow the learners to rework the problems on the multiplication law of probability. The use of identified interventions to address learners' understanding of important sections of work is critical in formative assessments. For example, in the observations at KD it was noticed that the teacher was aware that learners were not able to calculate angles and they did not know mathematical terminology. To remediate the situation, the teacher made use of simple examples to entrench learning. The teacher indicated that by integrating formative assessments into his lesson he was able to see the need for frequent assessment in order to make the learning visible and to guide both the teacher and the learners. These explorations by the teachers showed that:

- Repeated use of class activities gave learners the opportunity to rework the exercise until they got it correct.
- Explanation of high level concepts provided linkages between the classwork exercises and the examination questions.
- Demonstrating mathematical concepts and how the cycle test questions related to the lesson on the smart board allowed visual learners to learn more reflexively.
- Using past examination questions during the lesson accommodated the 'read and write learners' who prefer to read information for themselves.

(ii) The effect of formative assessment on common examination performance

The common examinations as introduced by the Department of Basic Education were aimed at ensuring that the learners became competent in the subjects they were learning. The assessment centred lens emphasises the importance of providing frequent chances through formative assessment tasks to make learners thinking visible and to guide both the teacher and the learner during the learning process. The participating teachers repeatedly articulated that they made use of past common examination question papers and other assessment tasks in their classrooms and during revision as formative assessments, in addition to using past question papers. The teachers

mentioned a variety of interventions such as extra classes to improve learning and to prepare learners for these examinations. As a consequence it became necessary for this study to determine their relationship with the common examinations performance.

According to the teachers' experiences, common examinations provided learners with a high level of competence for them to achieve higher grades and to excel in the examinations. Although the teachers pronounced that they made use of standardised past examination common examinations to address a wide scope of concepts during internal assessments, the learner performance data showed that their effect on learner performance was minimal. The teacher from MH contends that the common examination results tend to be lower than that of the internal assessments. From the deductions of the document analysis of the learner performance data, it is evident that the learners' performance, in four of the five sampled schools, did not improve in common examinations despite the use of informal assessments in schools and intervention strategies to improve the performance of the learners.

Table 5.6 shows the general performance of some schools in district B including two of the five sampled schools.

Table 1-3 : Grade 11 2018 Mathematics level data District B (Gauteng Department of Education, 2018)

School	Total wrote Examinations	Level 1 (Total 0 to 29.9)	Level 2 (Total 30 to 39.9)	Level 3 (Total 40 to 49.9)	Level 4 (Total 50 to 59.9)	Level 5 (Total 60 to 69.9)	Level 6 (Total 70 to 79.9)	Level 7 (Total 80 to 100)	Cal Examination Subject Average
A	51	35	9	2	2	1	1	1	24.3
B	55	8	11	15	6	6	4	5	47.6
C	24	0	4	3	4	3	3	7	64
D	160	141	7	7	3	2	0	0	18
E	53	19	17	8	4	2	2	1	33.9
F	10	8	2	0	0	0	0	0	18.4
G	1	1	0	0	0	0	0	0	14.4
H	32	15	6	4	7	0	0	0	30.7
I	43	16	8	10	5	3	1	0	34.6
J	47	20	9	6	6	2	3	1	34.7
K	27	4	11	7	2	1	1	1	40.2
L	33	4	8	10	7	1	2	1	44.3
M	57	42	6	6	2	1	0	0	21.9
N	28	13	8	3	3	1	0	0	29.4
O	120	11	18	28	25	15	12	11	51.9
P	168	10	13	30	33	33	29	20	58.3
TOTAL	**858**	**312**	**137**	**139**	**109**	**71**	**57**	**28**	

Table 5.6 illustrates the 2018 learner performance in mathematics from District B. Of the 15 schools out of 55 secondary schools in district B, their examination subject average ranged from 18% to 58.3%. Out of 858 sampled learners, 312 achieved at level 1, 137 at level 2, 139 at level 3, 109 at level 4, 71 at level 5, 57 at level 6 and 28 at 7. From the analysis, it can be deducted that most learners are not performing well in the examinations, possibly as a result of not having been taught adequately, limited use of formative assessment tasks and teachers' lack of assessment and content knowledge. In addition, this performance could be attributed to no application of mathematical skills and the key strands such as procedural knowledge to mastering mathematics.

All the participating schools indicated varying attitudes toward common examinations. Some of the learners consider common examinations as being too difficult, some are unsettled and scared of the examinations, some look forward to writing them and others experience high anxieties when they are

about to write the common examinations. Although the teachers in the study are aware that summative assessments like common examinations demand learners to recall and recognise what they have learnt through memorisation, it seems that learners are not well prepared through formative assessment activities.

Another aspect that was explored was to check the correlation between the common examinations and the school based assessment marks. In the group interviews the subject advisors indicated that there was no correlation between the performances of learners in common examinations and the internal assessment results and that the school based assessment marks were very high compared to the examination marks, as the internal assessments were not written under controlled condition. Table 5.7 shows the discrepancy between the internal assessment and common examination marks.

Table 1-4: Comparing the Grade 11 SBA and Examinations Marks in Mathematics (Gauteng Department of Education, 2018)

SBA YEAR MARK										EXAMINATION MARK									
School	Level 1 (Total 0 to 29.9)	Level 2 (Total 30 to 39.9)	Level 3 (Total 40 to 49.9)	Level 4 (Total 50 to 59.9)	Level 5 (Total 60 to 69.9)	Level 6 (Total 70 to 79.9)	Level 7 (Total 80 to 100)	Cal Test Subject	Pass %	School	Level 1 (Total 0 to 29.9)	Level 2 (Total 30 to 39.9)	Level 3 (Total 40 to 49.9)	Level 4 (Total 50 to 59.9)	Level 5 (Total 60 to 69.9)	Level 6 (Total 70 to 79.9)	Level 7 (Total 80 to 100)	Cal SBA Average	Pass %
A	2	2	7	2	0	0	0	39.8	84.6	A	11	1	1	0	0	0	0	18.2	15.4
B	4	2	3	3	6	4	7	59.9	86.2	B	0	2	6	7	6	6	2	59.6	100.0
C	1	2	6	22	14	15	2	60.4	98.4	C	19	16	10	5	7	3	2	38.6	66.1
D	1	4	6	2	2	0	1	46.6	93.8	D	12	1	2	0	0	0	1	24.1	25.0
E	0	1	2	3	0	1	1	56.4	100.0	E	5	1	1	1	0	0	0	25.7	100.0
F	1	1	6	6	11	12	17	69.9	98.1	F	4	7	9	11	#	4	7	55.3	92.5
G	2	0	3	1	3	1	1	52.2	81.8	G	3	3	1	2	1	1	0	39.9	81.8
H	12	12	13	2	1	1	0	34.4	70.7	H	36	3	0	0	2	0	0	18.3	12.2
I	11	5	13	11	18	9	4	52.0	84.5	I	16	13	11	16	7	6	2	43.9	77.5
J	4	8	7	8	5	2	4	50.3	89.5	J	4	8	7	8	5	2	4	50.3	89.5
K	9	2	0	0	0	0	0	18.0	18.2	K	9	2	0	0	0	0	0	18.0	18.2
L	0	2	3	0	0	0	0	44.4	100.0	L	2	1	1	1	0	0	0	32.4	60.0
M	58	41	23	19	8	4	1	33.8	62.3	M	109	29	9	4	2	1	0	22.0	29.2
N	1	16	15	7	5	1	0	44.6	97.8	N	29	6	6	0	3	1	0	25.7	97.8
O	23	1	0	0	0	0	0	15.2	100.0	O	24	0	0	0	0	0	0	14.4	0.0
P	3	5	1	5	2	6	9	61.8	90.3	P	18	3	3	5	0	2		29.6	41.9
Q	44	17	14	4	1	0	0	26.5	45.0	Q	73	4	0	3	0	0	0	16.9	8.8

The analysis of the examination and SBA learner performance data shows that the learners performed better in SBA than in the examination. For example, in school C the SBA average was at 98.4% compared to the examination mark which was at 66.1%. This discrepancy shows that poorly

designed and implemented formative assessment instruments and guidelines provided more flexibility on the part of the teacher and very little opportunities to advance learner skills for learning to learn. A number of factors can be attributed to this incongruity. These include but are not limited to:

- Limited use of formative assessment activities that entrench learning;
- Poor assessment practices at school level and no teachers' development on how to set quality assessment tasks;
- Lack of content knowledge on the part of both teachers and learners;
- Use of summative SBA as formative assessment tasks;
- No use of a wide range of assessment instruments for different purpose; and
- No established classroom cultures that encourage interaction with the learners to improve learning.

GRB confirmed that learner performance in internal formative assessments depends on the conditions under which the tasks are administered. Where there is no control in the administration of internal formative assessments, the outcomes will differ. However, when internal assessments are written under controlled conditions there will be a correlation between the examination (external) and formative assessment (internal) results. The continued reference to informal assessments as assessments that are administered under controlled conditions showed lack of understanding of the difference between formal (AFL) and informal (AOL) internal assessments. The reference by the participants to controlled conditions showed the teachers' fixation on an examination driven system, rather than on how formative assessments (AFL) is aligned to summative assessment tasks.

(iii) Teacher approaches to learner support

Teachers need to investigate and explore innovative approaches on how to support and encourage learners to seek more explanations and make sense of the new concepts that are presented to them. In order to realize how the teachers provide support to the learners, they were asked to explain how the diverse needs of the learners were accommodated during classroom assessments. The teacher in TL school stated that *"learners are encouraged to work together in group using common examination questions and they are grouped according to their abilities to assist the ones who are struggling*."

One of the measures that were observed in the two schools was the provision of feedback to the learners. The feedback that was given to the learners focused on making the learners understand

the procedures for solving mathematical problems on probability. It was observed that learners who engaged in self-expression as they solved mathematical problems developed conceptual understanding better than learners who solved the same problem but did not engage in self-expression. The teacher at MS school used what is known as reciprocal teaching by explaining more and giving learners feedback as he was solving the problems to make them understand the section on probability. Learners were invited to explain and to give answers during the feedback session.

The approach that was explored at KD school was that the teacher administered different types of assessment during the lesson, first the marked cycle test scripts were returned to the learners with corrective feedback given as part of remediation. Secondly the teacher used past examination question papers to show the connection with the cycle test through oral questions and demonstrations. These assessments were integrated with the lesson, thus it can be stated that an assessment centred approach was followed to some extent.

The learner performance data presented in Table 5.7 shows that the teacher support strategies and the actual classroom assessment practices gathered indicate that there was a missing element in the efforts of teachers to develop credible evidence of learner progress. It is clear that teacher professional development on how to effectively use formative assessments to enhance their classroom practices was necessary.

1.1.3.6 The role of common formative assessments for the public

This section discusses the finding on how community centredness forms part of the assessment practices in schools. Assessment, knowledge and learner centredness form an integral part of community centred environments where learning and learners should be placed at the centre and every child matters. In community centred environments learners and teachers are constantly in search of knowledge and they are free to make mistakes with the intention of improving to learn. Education and learning environments are shaped by the interactions between them, understanding these environments is critical in providing significant signals about how learners learn to become successful. Therefore the integration of different assessment approaches, in this case formative and summative, in schools should benefit the communities they are intended for.

The sub-sections will attempt to respond to sub question 4 which states: *To what extent can common examination results be used effectively to improve instructional interventions and learner performance?*

(i) The implications of common examinations on learning

The teachers who took part in the study were asked to express their opinions on how the common examination results are used to improve teaching, learning and performance in their schools. Since these examinations were introduced to improve learning, their ramifications should be far reaching and lead to an improvement in mathematics learning and teacher assessment practices. The participants at the selected school regarded these examinations as instruments that guided them on the syllabus completion to recognise the topics which needed to be covered during instruction and also to evaluate the relevance of the textbooks that were used. These teachers analysed the outcomes of the June examination to identify the learners who did not achieve well and to identify of the means of assisting such learners. For example, at MH school the assessment results were analysed according to the performance level data to pinpoint the sections that posed problems for the learners. Generally, the teachers made use of the common examination results to check their preparedness, to evaluate the teaching strategies and to identify specific methods of teaching problematic sections of work. This approach is more knowledge centred as it has a bearing on teaching and learning.

Given that the common examination question papers are regarded as difficult for the learners, as indicated in item 8 on the moderation report (Table 5.8) below, past question papers are used as formative assessments during remediation to prepare learners for the examination.

An interesting aspect is that the teachers linked poor learner performances in relation to the common examinations by pointing out the topics that were examined were not as per the intended syllabus coverage. As a result the teachers tend to hasten the completion of the syllabus to ensure that every the topic is covered. In this case the formative assessment element of employing different teaching methods and different approaches to assessing learner comprehension was not practised. If the quality of teaching is measured by the learners' performance in an examination, the teachers are more likely to teach learners to the test, meaning that the learners are prepared for the examination through memorisation of the model questions and answers. In this case the impact of common examinations on learning will remain minimal.

(ii) Teacher collaboration

Teachers perceive collaboration as a practice whereby teachers assemble to set assessment tasks and discuss how the topics in mathematics should be taught. This community centred strategy is a way social interaction in the acquisition of skills and knowledge would be able to strengthen teacher classroom practices. For teachers to master their subjects in terms of content and how they should

conduct assessment they need to have knowledge of the new approaches and training in assessment. During the face to face interviews the participants cited the need for teacher collaboration at Professional Learning communities (PLC) to allow them to share questions and assessment methods. The PLC is a collaborative structure that has been established by the Department of Basic Education and Department of Higher Education (2011) to afford teachers the opportunities to take the lead in increasing collaboration, improve teacher classroom practices and to improve learner performance. The PLC meetings take place every two weeks between teachers from different schools. Initiatives such as these may be linked to the constructivist view point that teachers should not teach and assess in the traditional way of delivering instruction to learners only; rather they should work collaboratively with others to plan assessments

In order to strengthen teacher collaboration, the clustering of schools within close proximity has become crucial in improving teaching and assessment practices. Clusters are made up of five to ten schools within the same vicinity under the guidance of the district subject advisor who provides support to the teachers. Teachers from MH and KD mentioned clusters as one of the strategies which are used to improve teacher assessment practices. Cluster moderation of Grade 11 mathematics provides teachers with feedback on the quality of the question papers and the marking. Through document analysis, the subject advisors provided the reports that were normally mediated with the teachers at various structures such as SAT. Table 5.8 provides an example of the report that is used to improve common examinations in Grade 11.

Table 1-5: 2017 Mathematics Grade 11 common examination moderation report (Department of Education, 2017)

FINDINGS	CHALLENGES	RECOMMENDATIONS
1. Question paper fairness	P1 Q 1.2.3 and 3.2 – not in CAPS so it frustrated the learners as they are not the content. The concept of completing the square was assessed repeatedly in P1 Q 1.3 and Q 6.2. P2 Q 3.3 – was not clear and it confused the learners as the other parts were not connected to the main question.	There is a need for professional training on moderation and assessment for teachers in the educational department.
2. Marking and moderation at school level.	Marking guideline was not always followed. School moderation is not properly done in most of the schools (60%).	Schools to participate in cluster and district moderation. Educators should be given enough time to mark and moderate at school. Pressure on marking and moderation at school level should be avoided.
3.Standard of the paper in terms of cognitive levels	There were many questions at level 1 – 3 in both papers. The weighting grid was not issued by the examiners panel.	The examination panel must submit the weighting grid with their papers for validation of the standard of the paper.
4. Mathematical language used on the question papers.	The mathematical language used on the question papers was not correct. P1 - Q 5.1 and 5.6 (Derive was used instead of determine)	Question papers should at least be moderated twice externally, the Provincial Mathematics coordinator should be part of the team setting these papers to monitor the standard and the correct usage of mathematical language.
5. CAPS and examination guideline documents	Questions P 1 Q 1.2.3 and 3.2 were not according to CAPS and examination guideline	Moderators should undergo thorough training before they set the papers.
6. Memorandum discussions	Not all schools attended the memoranda discussions. Approximately (80%) attended.	Memorandum discussions should be scheduled during school hours not in the afternoon.
7. Transfer and conversion of marks	There are few cases where marks were changed from 1 or 2 marks.	Marks were correctly transferred from the learners' script to the mark sheet.
8. Learners' performance	Learners were not adequately prepared for the examination because the questions that were supposed to give them marks were not answered to the optimal expectation e.g. P1 Q 1.2.1; 1.2.2; 2.1 3.1.1; 3.1.2 and Q 5.	Learners should be taught the study skills and how to prepare for examination.

The document review of the moderation reports clearly indicates that teachers are not involved in the setting and pre moderation of examination question papers and they could not provide feedback to the learners. Since cluster meetings are not regulated and functional in all districts it means not all teachers attend the cluster meeting as reported under number 6 in Table 5.8.

During the interviews the teachers were also asked to indicate how often they participate in team teaching and collaborative assessment task development. The general observation is that most of them do not work collaboratively. Where teacher collaboration happens, in terms of teaching and developing tasks, it is at PLCs and sometimes in clusters. At MH the teachers introduced what they referred to as grade planning where topics were identified; they allocate teaching days and draw the time table in line with the syllabus coverage to pace teaching. Other than the planning meetings, collaboration is not practiced.

At KD school the teachers sometimes exchange the learners from different classes to assist them in understanding specific sections of work. Although peer question papers are encouraged the teacher at KD school felt that they did not match common examination standards as some topics were excluded from the cluster papers to accommodate the schools that have not covered the expected curriculum.

To enhance teacher collaboration among the participating teachers, a workshop was organised by the researcher in an attempt to bring teachers together to learn how to plan and develop assessment tasks and to analyse and review their strategies. The workshop was conducted with the teachers at school level and the subject advisors at district level. As this study was based on the action research design alluded to in Chapter 4, the teachers were introduced to the action research cycles of planning, action, reflection, observation and review. The contribution by the teachers indicated that if teachers are given the opportunity to work collaboratively the likelihood is that they will improve their practices and professionalism. Teachers needed the assistance from the subject advisors, one teacher during the workshop echoed that "*I need the subject advisor to show me how to apply maths concepts as I don't even understand what the content of maths 24 is, is it part of pre-instructional knowledge or what?"*

It is clear that the teachers need to develop strategies to improve collaboration as not all of them attend cluster meetings which are held in the afternoons. The discussion with the participants during the workshop highlighted the need to improve teacher assessment knowledge and to establish school based PLCs in order to enhance their classroom practices and learner performance. As action research encourages teacher collaboration, teachers need to take advantage of this structure to implement the action research cycles. One subject advisor states that "*I will be training my PLC leaders to capacitate them in making the PLCs functional*." Another subject advisor said "*the materials will be used at the beginning of the year not now."* This finding indicates that there is a need to change the mind-set of subject advisors towards the realisation that teacher collaborative

exercises should be continuous and not just meetings to mediate subject policy and accounting sessions for teachers.

If the teachers constantly meet to share assessment ideas and questions at structures such as the school based PLC and clusters, then teacher collaboration would be strengthened and teachers will develop the required skills to prepare appropriate questions that will be used during formative assessments.

(iii) Teacher involvement in setting common examinations

The involvement of teachers in the development, administration, and marking of the common examinations remains critical. Generally all the teachers who participated in the study are not involved in the design and development of the common examination question papers at district and provincial levels. The teachers' involvement was found to be mainly technical and limited to checking if the question papers were error free, ensuring that the question papers were printed for all the learners, monitoring the marking process, compliance to deadlines and the moderation of the scripts. According to teacher 1-M7-MS "*teachers are not given any chance to develop assessment tasks, they are merely given the questions by the district official*." He regards this as a setback in terms of the developing and refining the teachers' skills in setting quality question papers.

The lack of teacher professional development was found to be common across the participating schools. The teacher at MH school argued that since the introduction of common examinations, he noticed that they were set from a particular school of thought based on how the marks were allocated and that some of the question were not aligned to curriculum policy. He further alluded to the fact the manner in which the common examinations were set led to teachers teaching to the examinations due to their biasness. Teacher M-M5-MH gave an example of how the question on exponents are set, he contends that "*the examiners tend to write powers of positive exponents as a mathematical problem rather than a changing theorem*." This statement implies that teachers are not provided with well-designed assessment instruments with structured question papers to enable them to become systematic in their assessment practices.

The teachers also highlighted the non-involvement of teachers in standard setting sessions to discuss how marking should be done. The review of the moderation reports showed that 80% of the teachers attended the marking guidelines discussion meetings, hence marking was a challenge for some schools. In addition the teachers indicated that method marking disadvantages learners without calculators. If teachers lacked a lucid pedagogical approach to marking learners' work, they may provide scanty feedback that provide little benefit and send the wrong message to the learners.

These findings highlight the need to create awareness among the teachers through conversations with curriculum experts in symposiums and roadshows to explain the expectation of the provincial and national common examinations. The teachers who work collaboratively are able to focus their attention on the gaps in knowledge and subject specialisations. By setting the common tests the teachers would have the opportunity to share questions and agree on the marking guidelines and common answers.

(iv) Benefits of common examinations for schools

In the teacher face to face interviews teachers were asked to explain how common examinations provided learning opportunities in their schools. Teacher 1-M3-TL mentioned that the main benefit of common examinations was that they provided a benchmark of what learners should be assessed on. In his views the common examinations *"are beneficial for both the teacher and the learner, the teacher can improve the teaching methods and the learners will know what is expected in the examinations*."

Teacher 1-M4-KD regarded the common examinations as not biased in the sense that they are set externally and not by the school. His view on school based assessments was that they prepared and assessed learners on what was actually covered in the syllabus, whereas common examinations provided challenging questions and assessed learners on a wide scope in preparation for the final examinations. On the basis of this teacher's views it can be stated that there was a need to make teachers aware that assessments should connect with learning. The teachers regarded participating in common examinations as an opportunity to address the departments' expectations on specific achievement skills. The common examinations were viewed as an assessment tool that was used to mainly achieve the department's expectations. One teacher stated that "*the Grade 10 and 11 common examination question papers measures the school preparedness in line with the demands of the Provincial education departments and the DBE."* Consequently this assertions draw attention to a disjuncture between the expectations of the department and learner achievement. As can be gleaned from Table 6.4, some learners are not coping with the common examinations since they are not able to achieve at the level of excellence and they do not get proficient in mathematics.

The teachers highlighted that the common examination sharpens the mind of the teacher and guide them on how to assist learners to meet the demands of the examination at different levels. In addition they felt that in order to yield benefits, quality and standardised assessments such as common examinations should be introduced as early as grade 00 (grade R). This opinion shows that the schools pay little attention to ensuring that formative assessments are used to advance learners'

comprehension of the topics and their ability to apply the understanding during formal examinations. If the common examinations are viewed positively, as was the case in all schools, the end results should show improved performance and not discount the deeper learning that formative assessments are meant to represent.

1.2 PART 3: INCORPORATING THE ACTION RESEARCH CYCLES OF PLANNING, ACTION, OBSERVATION AND REFLECTIONS IN SCHOOLS.

The discussions in this section relate to how the participants were introduced to the action research as part of teacher professional development and strengthening of information sharing through teacher collaboration. The views of the participants that were collected during the developmental workshop on the role of strengthening teacher assessment practices are central to this section. The central purpose of this section is to present how the teachers engaged in action research with a focus on their challenges, experiences and expectations of using common examinations formatively in their classrooms. This section responds to the main research question which states: *To what extent could common examinations contribute to effective formative assessment practices in schools?*

In accordance with the conceptual framework explained Figure 5.1, emphasis will be placed on addressing how cumulative knowledge based on learning and teaching is realised. The findings are generated from the workshop, document review of moderation reports and the observation that was carried out with teachers, subject advisors and mathematics heads of departments in the selected schools.

The findings generated from the workshop, document review and classroom observation were used to arrive at the conclusion as discussed in Chapter 6. As an official who is responsible for assessment processes in the Provincial Education Department, I felt it necessary to conduct research with the teachers to investigate the extent to which common examinations are used as a formative assessment tool to improve the assessment practices in schools. In my engagement with the moderators and the learner evidence of work presented by schools, I became concerned with improving the capacity of teachers to develop quality assessment tasks. In interrogating the evidence gathered by the moderators' findings, gaps in teaching and learning became evident and the need for teacher support to improve their assessment knowledge became necessary. My continued engagements with the teachers through school support visits showed that there was a need to cascade moderators' findings and recommendations through the involvement of the subject

advisors using action research. I came to understand the benefits of action in the course of my research to assist teachers to develop further in their own school environments and classrooms. Therefore, in my attempt to introduce teachers to action research, I was attracted to the cyclical process of planning, action, observation and reflection. Figure 5.2 below extrapolates how the action research cyclical stages may be used in schools by teachers and district subject advisors to improve their formative assessment practices.

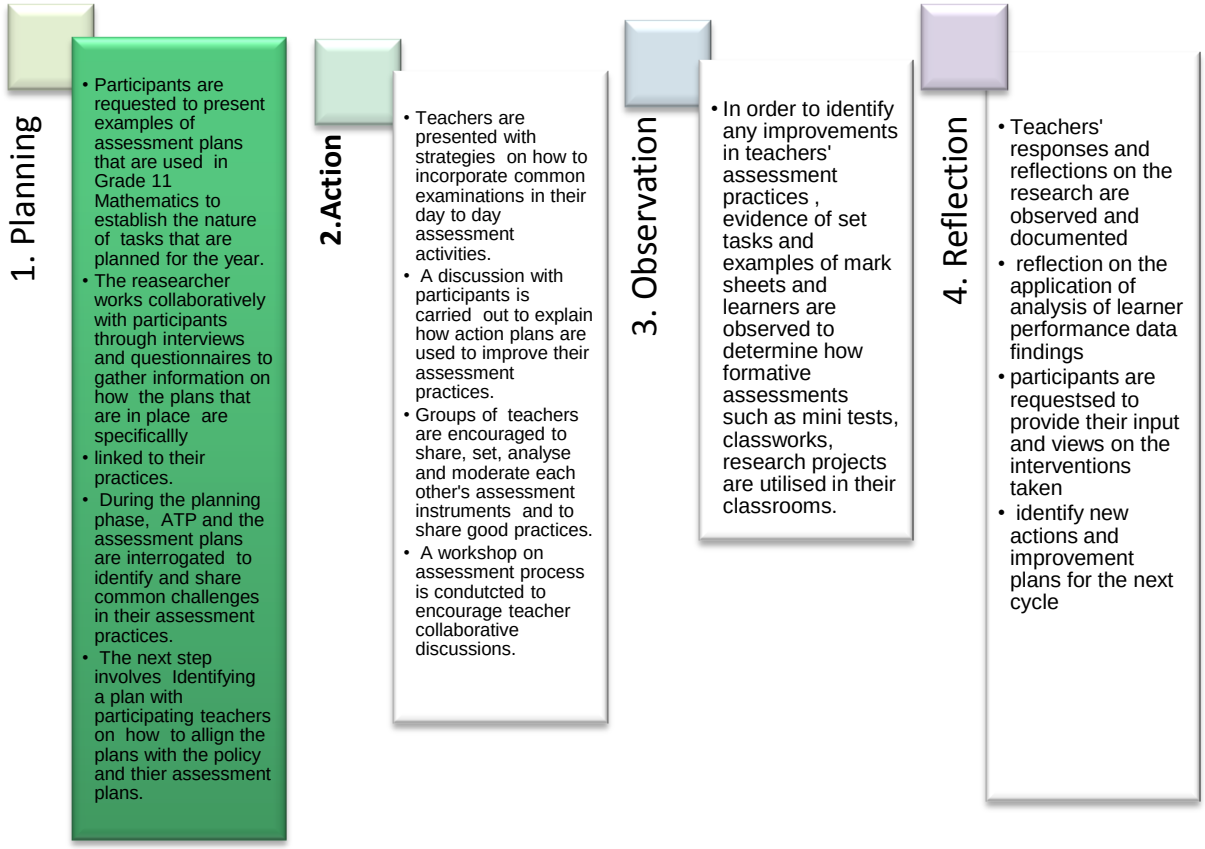

Figure 1-1: Putting action research repetitive cycles into practice

a. Planning

Action research as a process of improving teacher assessment should be viewed as a continuous practice and not a once off incident. Rather, planning is a constant process which should be initialised with the preparation of teaching and assessment plans. The evidence collected through the interviews and questionnaires showed that teachers are presented with readymade teaching and assessments plans to ensure that the following routine activities are completed within the stipulated period:

- Teaching specific sections of work;

- Presenting and assisting learners with the completion of the prescribed school based assessment tasks such as cycle tests and assignments;
- Conducting and administering the mid-year and end of year examinations in June and November; annually
- Providing feedback to learners; and
- Recording and reporting of learner achievements.

These findings, from the interviews in particular, showed that teachers needed to be exposed to new modes of professional development that would enable them to improve their assessment practices through effective implementation of the teaching and assessment plans. As a consequence, a workshop on strengthening teacher assessment practices was organised with the purpose of allowing teachers, subject advisors and HODs to interrogate the teaching and assessment plans so that they could own them and modify them to suit to their schools settings. The discussions on action research were met with enthusiasm from the participants as the planning was explained to them so that they could make it work to their own benefit.

As action research aims at understanding teacher practice and how teachers articulate their practice in relation to the entire system, there was a need to explain how policy linked with the actual implementation of the assessment plans. The discussion on the plans and the development of learning outcomes was linked to the policy to show the teachers that their interpretation of the plans was critical in improving their practices. For example, reference was made to the National Protocol for Assessment (NPA) to make teachers aware that they had to take action by going through assessment policies prior to the implementation of the teaching and assessment plans. I then explained assessment for learning in relation to the following excerpt taken from the NPA "*Informal (assessment for learning) or daily assessment is the monitoring and enhancing of learners' progress"* (Department of Basic Education, 2011a*).* I explained this line to show the participants that the NPA policy allows for the integration of formative assessment plans in classrooms and to show the teachers that they can enhance their practice by engaging in discussion with the peers to gain understanding of the plans in relation to policy.

On the same note summative assessment was explained in relation to the NPA for the participants to understand that their own plans may include different types of assessment.

During the workshop the participants were able to identify incongruities between the ATP and the assessment plan and their practices as they identified aspects that were taken for granted in

implementing the plans. One teacher indicated that "*when we use the assessments we take the assessments criteria for granted and think that the assessment plans are fair*" This statement is an indication that teachers are not adequately taken through actual implementation of the plans during their training, and if implementation is done, not all areas that relate to their unique school practices are taken into account. When teachers were asked during the workshop to deliberate on "*how do you currently determine the learning outcomes for a unit of work in your subject*," the teachers from KD raised concerns with regard to the pressures from the district officials when it comes to the implementation of the outcomes that dare in the teaching plans. The teachers felt that they had to adhere to the plans in order to meet the departmental deadlines. Therefore teachers were made to realise that they should be able to bring about change from within their schools and at the same time address the mandates of the Department of Basic Education.

In the workshop with the subject advisors, a particular participant indicated that "*I think that there must be alignment between the assessment plan, assessment criteria, the examination guidelines, the ATP, activities and the formal activities by looking at the items in the examination guidelines to make sure that there is synergy between the activities and the guidelines."* The subject advisors' views on the plans showed that they had a better understanding of how the plans should be implemented compared to the teachers. The subject advisors understood that the plans must be aligned to the guidelines and the bigger topics should be broken down into smaller units of work to ensure maximum implementation. This finding provides a clear indication that the time allocated for engagement with the teachers is not adequate and that the teachers and the district officials do not naturally establish action research in their clusters and PLCs to improve their interpretation of the teaching and assessment plans.

b. Action through a developmental workshop

The question that was posed to the participants during the workshops was "*Are your own classroom practices as good as they can be?"* It was interesting to note uncertainty on the part of the teachers as most of them were not sure what the gauge of effective classroom practice could be.

In order to encourage the participating teachers, assessment officials and subject advisors to take action they were presented with the guidelines on how to enhance the classroom assessment practices through a number of steps. The presentation focused on the following key points:

a. Identify the assessment outcomes and supporting policies

The three groups of participants who attended the workshops were encouraged to identify the assessment criteria through the interrogation of the assessment policies. Emphasis was placed on the following guiding curriculum and assessment documents:

- CAPS parameters that should be applicable in order operationalise the NCS.
- The National Protocol for Assessment was explained and the participants were shown areas that directly referred to clauses in the NPA such as "*Classroom assessment should provide an indication of learner achievement in the most effective and efficient manner by ensuring that adequate evidence of achievement is collected using various forms of assessment"* (Department of Basic Education, 2011b).
- NPPPPR
- Umalusi Directives
- ATP and Assessment plans.
- Assessment standards – must describe the level and depth of achievement required based on provided outcomes.

The rational for foregrounding the discussion with policy imperatives was to create a sense of ownership on the part of the teachers of the policies in order to improve their cumulative assessment knowledge.

b. Unwrap the assessment outcomes and plans

At this start of the presentation reference was made to the formal assessment programme that teachers are using in school, and the teachers were made aware that it is not inclusive of the formative tasks. As a starting point, teachers were asked to incorporate the formative assessment plan into the required summative assessment plan in order to balance their assessments. The discussion with the participants also focused on how teachers could engineer effective classrooms through formative assessments that would lead to the realisation of the learning outcomes.

An explanation of the ways in which the assessment plans should be unwrapped to ensure that all learners are accommodated during the assessment process was made. In the discussions the teachers in group B were in consensus on how the formative assessments could improve learning, as one of them explained that "*one learner's confidence was raised in class through engagement, she is now in group two of learners who are performing well.'"*

c. Determine the big ideas and essential questions

The participants were taken through the essential elements on how to assess each learning unit of work. The teachers were assisted to realise that:

- If the learning unit seems too big they should break it down into two smaller ones;
- If the learning unit seems too small, combine it with another small one; and
- Limit the total number of learning units for each learning outcome only to those that are *essential* for the learner's understanding.

d. Create the assessments tasks and marking guidelines and revise the question for quality.

The discussion that ensued around this point was based on the question that was posed to the participants which stated "*what kind of quality checks do you use to evaluate your assessments?"*

The participants had differing response which centres around the moderation of the assessment tasks. The district subject advisors group pronounced that they prepare and moderate the assessment tasks, while the teachers mentioned that the HoD at the level of the school moderates the assessment tasks before they are administered with the learners. Suggestions for creating and reviewing of the assessment tasks were suggested to the participants as a means of implementing action research at the schools in the following way:

- Plan quick progress checks with other teachers
- Check the questions and marking guidelines against the analysis grid for weightings, topics and CAPS relevance
- Check if the past question papers have been contextualised to the teaching and learning environment
- As a group, check if the assessments tasks correspond with the ATP and the assessment plan.

e. Determine the learning progression and instructional sequence

At this part of the presentation the teachers and subject advisors were appraised on how to build on cumulative knowledge to advance teaching and learning. The key points centred on included:

- Explaining what constitutes learning progressions–the participants understood that these are the smaller, sequenced “building blocks” of instruction that lead learners to understand the learning intentions.
- Clarifying to the participants that the learning progressions will assist the teachers to know where and when to adjust teaching to match the assessments.

The benefits of providing the quick progress checks were also illuminated with the participating teachers. As part of their actions teachers were encouraged to collaboratively share information on how they performed:

- Quick, informal, ungraded checks for learners’ understanding immediately after each learning progression.
- Quick progress checks used to provide immediate feedback to other educators.
- How feedback assisted learners’ understanding of the learning units and what teachers needed to focus on instructionally.

f. Influence of feedback on learner achievement

At this stage of the workshop the teachers were provided with a question which read “*Describe to the colleague next to you how you provide feedback to your learners after an assessment task.”*

The teachers provided differing strategies. So for example at KD school the teachers highlighted the use of corrections which were provided after the learners had been marked “*to show them where they had gone wrong in their responses.”* The teachers in District B mentioned corrections of assessment tasks with the learners, providing past question papers to link with the assessment that were administered and asking learners who performed well to explain the correct responses to the other learners in class. It was interesting to note that none of the groups referred to sharing the feedback with the other teachers who were teaching the same subject in their schools. This lack of collegial sharing is perhaps an indication that the teachers at school level are more committed to completing the prescribed tasks, record them and move on to the next section of work than meaningful engagement and improvement to ensure progress in the next sections of work. The use of the school based PLC was thus not explored enough to foster team teaching and teacher collaboration.

Participants were informed that the essence of formative assessment is to provide immediate feedback to both teachers and learners since:

- Feedback to teachers will inform them about how they need to modify their teaching.
- Feedback to learners will assist them to learn how to self-regulate and be motivated to engage in further learning.
- Feedback from assessments and quick progress checks shows learners how well they are progressing in their understanding of the targeted learning intentions, and where they need to go next.

c. Observation how action research unfolded in the selected schools.

In order to identify any improvements in teachers' assessment practices, evidence of set tasks and examples of mark sheets and learner workbooks were analysed during the visit to the schools. The purpose of the observation was to determine how the guidelines provided in the workshops were implemented by the teachers in their classrooms. Furthermore, the purpose of the observation was to obtain clarity on how the formative assessments such as mini tests, classwork, and research projects were utilised as part of classrooms assessment.

In both TL and KD schools, where the observations were conducted, the teachers were teaching fifty or more learners in their classroom. There appeared to be different approaches that were exercised by the teachers in these schools to improve teaching and learning. During the observation at TL school the teacher referred to the outcomes of the lesson before starting the lesson. He further provided definitions of mathematical concepts, for example "*we need to know what the definition of NS is, if you lose the definition of the concept you will face proble*ms "a In delivering his lessons, the teacher constantly asked questions on probability and demonstrated the solution on the smart board.

The teacher took the learners step by step through the learning process to get them to learn the concepts on probability. Reference was made to previous lessons and it was observed that learners were encouraged to engage in effective discussions to determine where they were in terms of learning. The indication was that the teacher from TL school saw merits in attempting to introduce some of the action research guiding principles, like the teach-assess-interpreting –adjusting model that was shared during the workshop. To safeguard continuity, as a departmental official, I committed to engage with the teacher on an on-going basis to assist him in improving his assessment practices.

Three visits were made to KD school in an attempt to observe how formative assessments were put in place at this school. Field notes were kept and an observation instrument was completed to note precise areas of the classroom assessment practices. During the first visit the teachers were not ready to be observed in class stating that *"learners in Grade 10 and 11 are writing their end of term cycle test so they are not available*." During the second visit the teacher stated "*I am done with the syllabi for all my classes last term I am therefore right now busy with revision, I ask for a period from one of my teacher who is not yet through with the syllabi*."

When observations were made during the revision period the teacher focused on the summative assessment that was going to be written. At KD school the teacher relied on the traditional chalk and talk approach as the school had no smart boards. He used the past examination papers to show the learners how the question will be asked. At this stage it was found that the teacher relied heavily on past common examination question papers that were used as part of summative assessment.

These finding show the challenges that teachers are faced with in being innovative in their schools as they have to comply with the required departmental guidelines. Hence at KD school action research could not be instituted effectively as teachers were more concerned with the forthcoming examinations. Although the HOD and the teacher shared an office, it was interesting to note that they could not make time to share or exchange knowledge or ideas before going to class in efforts to improve their classroom practices. The teachers at this school still need further engagements in order to ensure that action research undertakings are firmly grounded in their school as part of formative assessment practice. To encourage the teacher collaboration, teacher 1-M4-KD is now part of the teacher moderators who are responsible for the quality assurance of school based and internal assessment in his district. As a moderator the teachers have the opportunity to quality assure the learner evidence of work from different schools in his district, prepare reports on the findings of the moderation process, collaborate with other teachers who are teaching the same subjects and also to share ideas for the improvement of learner performance and teacher assessment practices.

d. Reflections on the integration of action research into school practices

This section provides the teachers' and the researcher's reflections on the action research based on the experiences and findings that emerged from the workshop and the observations that were conducted at the selected schools.

Teacher reflections will be explained in a two pronged manner, firstly how they used the cumulative knowledge gained from the analysis of the learners' responses and how they intended to close the gaps that were identified. Secondly the teacher reflection will be extrapolated from the follow up conversation with the teachers after the workshop. In order to tie the interview findings on the analysis of learner data and the actual practice at the schools together, the subject advisors provided more illumination than the teachers.

In my conversation with the teachers, an interesting reflection emerged from one of the subject advisors who explained how she assisted one of the schools after the analysis of learner performance was done. When the analysis of the results for the June examination in 2017 was done, the subject advisors reflected that *"I have a case study of a school that did not perform well in the June common examination, the they were at 55% by the previous year in 2016 the results stood at 82%, the results dropped to 55%, in term 1 of the following year the results dropped to 84%, taught by the same teacher, so I went back to verify and found that there were serious problems, the marks that were recorded in the learner books were not the same as the ones in the learner books, this means that the teacher recorded the marks before she marked.* Another subject advisor echoed that "*analysis of learner results is very important. When learners write the June examination I took the scripts and realised that out of 84 learners, 19 learners were sitting at 20%, meaning that 65 out of 84 learners were at level 1, so analysis of learner results is very important."*

These sentiments show that the common examination performance does not tally with the performance in daily classroom assessments. Realistic expectations that achievements are improved on is therefore unlikely. As a result, the subject advisors resort to preparing activities for teachers and monitor the implementation through the school visits. Another subject advisor reflected that "*where implementation was not done, you can see the difference because the examination would be something new that the learners never came across as teachers were exposing them to low order questions, just to satisfy the district official, that there are activities in the learner books."*

These reflections show that the subject advisors' actions resemble the action research guidelines of planning, action, observation and reflection, yet they seemed oblivious of what they were doing. This reflection shows that there seemed to be a separation of education research and teacher practice which created impediments to the application of action research in their institutional practices. The study found further evidence that teachers only met when the subject advisors convened the meetings as they had to ensure syllabus completion, and that teaching and learning are not disrupted in their schools. The likelihood is that the teachers are still not ready and prepared enough

to take action on their own with external assistance from the subject advisors or the provincial education department. If the teachers were to meet frequently and share ideas and best practices it may be possible that they would be able to interpret and implement the assessment plans more effectively.

In reflection on the execution of action research and the guidelines that were presented to the workshop, the teachers and the subject advisors welcomed the propositions on how to use the plans effectively in their schools. The teachers reflected on the workshop by indicating that it was beneficial to their practice and professional development. The teaching and assessment resource materials which contained assessment questions, examination exemplars and revision materials that I provided to the teachers also proved to be beneficial as they were used to improve teaching and learning. The teacher at KD school said that *"the resource material was very helpful and we are still using it*." This view was supported by teacher 1-M3-TL who stated that "*the resource materials were indeed helpful especially when revising*." The teachers from district B were interested in developing their own plans, as a team of these teachers consented to the following actions:

- Conduct regular meeting on Saturdays to plan and share ideas.
- Develop and review their plan individually and share them during their meetings.
- Engage in conversations with one another on the school assessment plans and share best practices.
- Use the presentation guidelines to develop assessment tasks jointly.

The subject advisors from District A welcomed the guidelines on how to strengthen the assessment plans and agreed that "*we will make the presentation better and use it for implementation with the teachers*." The subject advisors requested to make use of the presentation in their subject meetings and recognised the need to contextualise it to their environments. These reflections indicate that there was a need for the capacitating of teachers to enhance teacher support. These remarks suggest that once teachers engage in continuous collaborative gatherings, they are most likely to gain knowledge which can be used as possible solutions to their daily classroom assessment challenges.

On the realisation of the action research propositions in terms of my reflection as the researcher, I found that the teachers needed more engagements to enable them to become practitioners who would be able to bring about change in their classroom assessment practices. In reflection on how the teachers used their cumulative knowledge to enable them to use common examinations

effectively as formative assessment tools, there seemed to be willingness on their part to bring about improvements. The implied indications that emerged from my engagement with the participants at school and district level are that there is acceptance of the need for interventions to remedy the shortcomings in the assessment practices in schools. The assumptions that can be made are that teachers and subject advisors are not provided with ample time to engage and establish structures that would encourage action research. Hence the strengthening of the functionality of the structures such as the school assessments teams, PLC's and clusters are critical in assisting teachers to enquire about and reflect on their own assessment practices. The social partners, such as teacher unions, are calling for the capacitation of teachers in the development of quality assessment tasks rather than using the ready-made common examinations. The findings showed that the participating teachers were not at ease to discuss the gains or the challenges gathered from the common examination in the structures such as PLC or cluster lest they be intimidated for their participation in these examinations.

By engaging and repeating the action research cycles, teachers may be able to improve the intervention highlighted during the teacher interviews and in the questionnaires, such as extra classes and use of a various forms of assessments. Teachers may be provided with time to plan together and to use team teaching instead of forcing them to rigidly comply with the ATP and assessment plans. In my observation of teachers in class, it was evident that action research would not take place spontaneously without support from the Department of Basic Education. As a researcher I provided teachers with incentives in the form of digital formative assessments and lessons to motivate them to carry out action research in their schools. In my follow up with the teachers they echoed that "*the resource you provided was very helpful, we are still using it, thank you so much*…*we are looking forward to even better results in mathematics this year."*

1.3 **CONCLUSION**

This chapter described the participants' experiences in using common examinations and formative assessment tools to improve their assessment practices. The rationale behind utilising formative assessment tasks in preparing learners for the summative assessments were explained from the perspective of the teachers' experiences and comprehension of the implications of assessment for learning principles. The deductions made from this study indicate the possibility of teachers using formative assessment in their classrooms is minimal. Hence learning should be based on existing knowledge and scaffolded to develop further proficiency (Scherman et al, 2017). The interpretations made are not prescriptive but highlight the need for the Department of Basic Education to develop

an integrated assessment framework for schools which will improve the implementation of assessment for learning in the classrooms. The envisaged integrated assessment framework would assist teachers to improve the alignment of common examination with formative assessments and ensure that the common examinations are authentic, address the expectations of the learners and assist in improving the quality of teacher assessments.

Central to the research findings was the discussion on the HPL model which incorporates key ingredients in the learning environment, that is, learner, knowledge, assessment and community centredness. It is necessary for schools to integrate these elements in their school assessment strategies so that the aspects of formative assessment and diagnostic information can be used to inform learning and teaching. Therefore the findings from this study must inform classroom practice and assist in improving the standard of assessment in mathematics and direct existing and planned interventions. The overarching observation in the discussions was the need for professional development of teachers and the use of common formative assessments to inculcate the same method on mathematics concepts for all learners across schools.

6 CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This study was undertaken to explore the use of common examinations as a tool for effective assessment practices in schools. The rationale was to explore the possibility of teachers drawing on the common examination best practices to enrich teaching, learning and assessment in schools. To achieve the objectives of the research, five schools that participated in the Grade 11 Mathematics Provincial and National common examinations were purposively selected to take part in the study.

The CAPS Chapter 4 imperatives emphasise the implementation of informal (Assessment for Learning) and formal (Assessment of Learning) assessments and the provision of feedback to the learners to improve learning and teaching (Department of Education, 2011). Even though the CAPS prescribe these types of assessments, the South African assessment system is heavily reliant on compliance to the formal assessments, that is, formal summative SBA and examinations. As a result insufficient attention is given to assessment for learning. According to Umalusi (2018) this strong reliance on summative assessments in the schooling sector emanates from the inability of teachers to use different kinds of assessment tasks.

The intention of this chapter is to explain how the research objectives, questions and the findings emanating from the findings inform the conclusions of this study. The next sections will unfold as follows: Section 6.2, the summary of the research process; Section 6.3, conclusions drawn from the findings; Section 6.4, reflections on the study, in particular attention is placed on the reflections on the research design and the conceptual framework; Section 6.5 looks at the research recommendations and Section 6.6 focuses on concluding remarks.

6.2 Summary of the Research Process

The main research question for this study reads:
To what extent could common examinations contribute to effective formative assessment practices in schools?

The research process was directed towards the realisation of the objectives of the study in relation to the conceptual framework (explained in Chapter 3 and 5). Hence the following sub-questions were explored to determine:

a. The effect of annual teaching and assessment plans on teacher assessment practices;
b. The extent to which common examinations are used formatively and how the teachers' assessment knowledge informs their creativity in developing quality assessment tasks;
c. How teachers are supported through collaboration and development to promote learning, critical thinking and problem solving in the classrooms ; and
d. How learner performance data is used to improve learner engagement, support in and improvement strategies.

To achieve these objectives, it became necessary to collect the data through questionnaires, interviews, observation and document analysis from five selected schools and two districts involving fifteen participants. The participants' responses were carefully sorted and analysed to locate their bearing on the research questions. During the initial data collection, the questionnaire was used to obtain biographical information about the participants, their involvement in common examinations, understanding and use of assessment plans to inform formative assessment and the nature of learner support employed in their schools. The questionnaire data was supplemented by face to face interviews, focus group interviews and observation to corroborate what had been gathered from the questionnaire. Relevant qualitative research criteria, alluded to in Chapter 4, were considered to maintain trustworthiness with the participants.

The examination of the findings revealed that there was consensus among the sampled teachers on the need to be trained and involved in the drawing up of quality assessment tasks. At this point of the research it was imperative to bring in empirical intervention for the enrichment of the teacher assessment practices through collaboration and action research. The action research design which promotes the cyclical process of planning, action, observation, reflection and review is regarded as a way for teachers to inquire and improve their practice (Hagevik, Aydeniz & Rowell, 2012). This research design aims at refining teacher practices and comprehension of the situation in which their practice takes place. With a view to augment the teachers' ability to develop quality assessments and encourage them to identify the problems and seek solutions, a workshop was organised with the participants. This workshop with the teachers and subject advisors was to share ideas, assessment tasks and transfer skills that they would use in their classrooms. The assessments workshops were organised by the researcher with the teachers and subject advisors and it yielded high interest on the part of participants. The workshops were conducted with three teachers from KD and MV

schools, six teachers from MS and TL schools at the venue of their choice, and six subject advisors from District A and B at the District office. The workshops were held after school and lasted for two hours. The electronic lessons and assessment tasks were shared among teachers to boost their question banks. A collaborative presentation which addressed the cyclical process of action research was prepared for the teachers with the key points of discussion as set out in Table 6.1.

Table 6-1: Integrating action research into teacher practices

Examples of participants deliberations during the workshop	Recommendation for improvement	Action Research cycle
Teacher from TL stated *"officials from the district put pressure on us during visits, they are interested in the ATP and the maths 24 tool which is not linked to our teaching and what the learners are learning"*	- **Determine and write the learning outcomes as learner success criteria for a unit of work.** - **Unwrap the outcomes and creating a plan.** - **Communicate the learning outcomes and plans with the learners.**	**Planning**
Teacher from TL asked "*what are you saying about SBA, is it part of summative assessment?"*	- **Manage mismatch between internal (formative) and external (summative) assessments** - **Create the pre and post-assessment questions to form part of formative assessment** - **Construct the marking guidelines**	**Action**
The subject advisor in group a stated *"teachers swop questions, discuss the memorandum, use examination guidelines to see what they should assess and moderate the questions"*	- **Evaluate and revise assessment questions for quality using established guidelines (moderation)**	**Reflection**
Teacher from MS stated "*subject advisor do not come back to check how the teachers are progressing and why the learners are lagging behind, if they come they want to see what has been covered in the ATP."*	- **Conduct quick progress checks to coincide with the learning progressions** - **Determine the learning progressions and instructional sequence**	**Observation**
Another teacher from TL commented that "we *have more than fifty learners in a classroom; it is difficult to mark within ten days, so when feedback is given learners have already forgotten what was assessed."*	- **Conduct analysis of learner results to determine the learning progressions and instructional sequence**	**Review**

Table 6.1 puts emphasis on the key areas that formed the basis of the workshop. The key areas of focus are put together with the action research cycles to highlight how they could be implemented by the teachers to address their challenges when they go back to their schools. The table further shows

the teacher's reactions and deliberations during the workshop, which led the researcher to provide suggestions for improvement of the areas that were raised during the discussions. This shows that even though the district subject advisors and teachers are interested in bringing about improvements in learner performance, they are not working on the same wavelength to realise the outcomes. While teachers need support to improve learning, subject advisors monitor and support teacher compliance to completing the ATP.

Furthermore, the HPL model which forms the theoretical underpinnings of this study, learner, assessment, knowledge and community centredness, were explained to inspire teachers to integrate these into their practices. One district official indicated that she was going take action by improving on what she was currently doing with the teachers *"I am going to use this during model in my content meetings with teachers where they will sit in groups to create assessments according to the level descriptors, discuss challenges and share skills, they will bring laptops, swop questions, complete the assessment grid and moderate the questions."* The participants were eager to adjust their assessment strategies on the basis of what they have gained from the workshop. However the teachers still felt that the district subject advisors needed to support them more, especially during school visits. On the basis of the materials that was shared, these teachers consented that the "*document is good because it is giving us the autonomy and independence to create our tasks and administer thi*s." This shows teachers' commitment to enhancing their assessment practices.

During the workshop the teachers were encouraged to implement the steps on developing quality assessment tasks to improve their assessment preparations. When follow up was made during observation, at TL the teacher incorporated some of the action research into his lesson, such as conducting quick progress checks with the learners *"let's revisit the content we did in Grade 10 when we calculate probability…, what we talked about yesterday is very important and you must understand what complementary events are…"*

It was also satisfying to note the commitment from the MS and TL teachers who partnered and started to meet on Saturdays to share ideas and teach learners jointly. In their reflection the subject advisors similarly planned further workshops with the teachers as part of the on-going support and training for teachers in their districts.

6.2.1 Summary and Discussion of the findings

The rationale of this study is based on the need for teachers to make use of common examinations, a tool for effective formative assessment processes in their schools to improve the performance of learners in the National and Provincial Mathematics common examinations. Since the commencement of these examinations in 2015, there have been challenges with what is assessed in the common examinations, the quality of marking by the teachers, level of learner performance and the dearth of skills among teacher to design, create and administer quality assessment instruments in schools. The findings of the study are summarised in the next sub-sections in line with the conceptual framework and themes.

6.2.2 Applying education materials and policies in the classroom

- ***The Implementation of Annual Teaching and Assessment Plans***

Generally an assessment plan and programme are prepared according to the subject guidelines and CAPS policies by the provincial and district subject advisors. Well-structured and comprehensive guidelines should be provided to the teachers to assist them during the implementation of lesson plans and assessment programmes. With the inception of integrated communication technology systems these tools are easily accessible for teachers. Therefore teachers are expected to administer specific tasks as indicated in Table 6.1 in accordance to the topics provided in the CAPS.

An assessment plan is developed from the assessment programme and it specifies what, when and how the formal assessments (SBA and examinations) should be administered to the learners. Appendix D shows an assessment plan that stems from the assessment programme. Interestingly, the formative assessment tasks are not included in the plans. This omission implies that the role of formative assessment is from the onset not the focus of empowering teachers to use assessment during the delivery of content. As it is evident, the teachers are not supported in their attempts to introduce formative assessment tasks as they are faced with tight time frames to teach and assess according to the prescribed curriculum and assessment tasks. The purpose of both the formative and summative assessment must be embedded in the assessment and teaching plans to assist learners while they are learning (formative) and to find out what they have learnt at particular points in time (summative). The study showed that teachers were unable to make use of the information

that emanates from the summative assessment outcomes to transform the summative assessment plans to include formative assessment.

This study realised that generally teachers are strictly attached to the prescribed assessment and lessons plans in order to meet the requirements of the intended curriculum. The assessment programme that is used in schools pays attention to the weighted formal assessment tasks with rigid time frames, as shown in Table 6.2. This programme limits and impedes the possibilities of teacher flexibility to incorporate the formative assessment activities into the prescribed plans.

Table 6-2: Grade 11 Mathematics Assessment Programme

SUBJECT	TERM	TASK DESCRIPTION	SBA FOR TERM	TOPIC COUNT	SBA WRITTEN	RAW MARK	WEIGHT FOR TERM	WEIGHT FOR YEAR
MATHEMATICS	Term1	1 (Investigation) - Formal	Yes	1	2018/02/23	50	25.00	20.00
	Term1	2 (Standardised test) - Formal	Yes	1	2018/03/16	50	75.00	10.00
					Term 1 Totals:	**100**	**100.00**	
	Term2	3 (Assignment) - Formal	Yes	1	2018/05/21	50	25.00	10.00
	Term2	4 (Mid-year examination) - Formal	Yes	1	2018/06/21	200	75.00	30.00
					Term 2 Totals:	**250**	**100.00**	
	Term3	5 (Standardised test) - Formal	Yes	1	2018/07/24	50	50.00	10.00
	Term3	6 (Standardised test) - Formal	Yes	1	2018/08/24	50	50.00	10.00
					Term 3 Totals:	**100**	**100.00**	
	Term4	7 (Standardised test) - Formal	Yes	1	2018/11/21	50	0.00	10.00
	Term4	8 (End-of-year examination) - Formal	Yes	1	2018/11/23	300	75.00	
		SBA Year Mark - Convert Marks using Weight: 25%				**0**	**25.00**	**100.00**
					Term 4 Totals:	**350**	**100.00**	

As can be gleaned from Table 6.2 the common examinations are administered in term two and four as midyear and end of year examinations. These examinations are preceded by the formal tasks such as an assignment and a cycle test. This assessment programme illustrates that formative assessment are not included and shows the need for teacher involvement when the plans are drawn. It is evident from the data collected that there is little room for teacher developed formative assessment tasks such as testlets, oral assessments and pre- and post-tests in the assessment plans. Teachers must be able to balance the formal and formative assessment tasks during instruction. If the assessment plans can be flexible and incorporate the formative assessment tasks, teachers would have an opportunity to be creative and motivate to start using assessment to improve learning. Undeniably formative assessment should not be separated from the formal

teaching and assessment plan but it should be entrenched in the broader assessment programme. When integrating the formative and summative assessment plans, teachers should be cautious as planned formative assessments might take the form of summative assessment (Iliya, 2014).

- ***Implications of Annual Teaching Plans on teacher classroom practices***

The annual teaching plan has numerous implications for teaching and learning. Accordingly the teacher lesson plans should be informed by the ATP for the subject and specify what should be taught at the different stages of the teaching and learning process. As teachers are provided with a readymade ATP it implies that teachers should not be innovative. On the contrary, teachers should be able to contextualise these plans to their learning environments. In planning for both instruction and assessment of the learners, pre-conceived knowledge is not taken into account as teachers have to comply with the ATP pace and prepare for common examinations. This was indicated by the fact that learners were judged on the basis of the same assessment plans, instruments, criteria and marks regardless of their abilities. Whereas if formative assessment was entrenched into the plans, attention would be given to all learners including the ones who are struggling to grasp the learning outcomes. Both the teaching and assessment plans should include various teaching and assessment strategies to prepare learners fully for the common assessments.

The subject advisors who participated in this study indicated that when teachers adhered to the ATP they should be able to adequately prepare learners for common examinations. Yet, the teachers insisted that they are not coping with the demands of the ATP. Teachers raised concerns about workload and limited time to cover the subject content in a given period of time. Hence formative assessment tasks are seldom used in the schools' daily assessment practices. Evidence from the current study resonates with Gwambombo (2013), who maintains that teachers do not provide enough exercises, weekly and monthly tests to the learners due to the heavy teachers' workload, and are likely to only administer summative assessments that do not indicate the real academic performance of learners. As a result, learners tend to perform badly in the examinations as they are not exposed to more formative assessments during the learning process.

Appendixes E and F present the ATP and subject strategy that are used in schools to indicate the amount of work teachers are faced with in each term. Over and above the duties outlined in the ATP and assessment plans, the teachers are faced with academic and administrative duties such as administering tests and examinations, marking, conducting extra classes and reporting. Bearing the heavy teacher workload in mind, it can be deduced that teachers are faced with a huge task of

managing the tension between improving learning on the one hand and complying with the ATP and formal assessment programmes on the other hand. The OECD (2009) argues that when teachers are faced with the potential consequences of evaluation based on the accountability results they are inclined to jeopardise improvements on learning. In order to reduce the overburdening duties there is a need to re-examine the teachers' educational activities and consider introducing assessment for learning principles in the classroom and reduce the extra workload.

- ***Using quality and standardised assessment tasks***

Teachers who participated in the study regarded common examinations as standardised quality assessments compared to the assessment tasks that were developed by the teachers at their schools. These teachers placed emphasis on using moderated assessment instruments to ensure that the tasks that are managed at school level meet the subject requirements in terms of content coverage and cognitive levels. The document analysis of the DBE and Umalusi (2017) reports on the moderation of internal assessments, show that the assessment tasks developed especially at school level are of poor quality. According to the SQA (2009) the quality assurance system should do more than moderate the internal assessment components of the external examination. Rather, the quality assurance system should lead to changes in behaviour and focus on knowledge based professional development of teachers. This recommendation implies that the teachers must be provided with an assessment framework which clearly defines the quality indicators to guide teachers on how to use different approaches to enhance learning.

It is expected that teachers should be well-versed in the design of assessment tasks that will enable learners to perform better in external assessments. To do this, there should be transparency about the quality of the assessments such as the standard error of measurement in terms of grades and average scores for each unit of work (SQA, 2009). The teachers in this study equated common examinations with quality indicators such as fairness, validity, cognitive levels, the content coverage, language appropriateness, CAPS alignment and error free question papers. The teachers also highlighted the need for quality development workshops which will be geared towards assisting them to effectively implement CAPS relevant assessment tasks in preparation for common examinations. These teachers found themselves having to balance compliance with the policies and improvement of learning, hence it can be inferred that common examinations intensify the focus on accountability without contributing to quality teaching, learning and assessment.

6.2.3 The Role of Pre- and In-service on Teachers' Assessment Practices

- ***Teacher quality***

Education authorities at different levels serve various roles in ensuring improvement and accountability in schools (OECD, 2009). The minimum qualifications of teachers who participated in the study were at Bachelor's Degree level. In terms of the professional levels the school based teacher levels ranged from post level one to three and the district officials were at Senior Education Specialist and Deputy Chief Education Specialist levels.

The data provided by the respondents at district level was beneficial as it clarified the role and responsibilities of subject advisors. Their duties include provision of curriculum support and training to the teachers on an on-going basis. What emanated from the study is that the subject advisors in District A train the teachers during subject meetings and they prefer to provide teachers with ready-made plans and assessment activities to standardise the assessment practices rather than letting the teachers develop their own tasks. This type of training shows that teachers are not empowered to improve their assessment skills. Instead, they are given readymade teaching and assessment materials. Teachers were only allowed to use their own assessment tasks when they conducted what they termed 'Informal' assessments as they had no bearing on the final scores of the learners.

More explorations of the effect of teacher quality revealed that at school level the subject heads of departments should be knowledgeable in the subjects they were responsible for in order to support the teachers with subject content and assessment approaches. This study provided evidence that the HOD for Science subjects[v] might not necessarily be competent in mathematics. Since the head of departments may not be familiar with all the subjects they were appointed for, it was evident that the task of using common examinations as a tool for effective formative assessment would remain colossal. In such schools it would necessary to explore if teacher quality affected learner performance or induced superficial approaches to teaching and assessment. It became discernible that considerable research was necessary on knowledge centredness and teacher quality. In general, there is a need to set time aside, by education authorities, to train teachers as assessors in terms of methodology, techniques and approaches and providing time and resources for schools to prepare and understand the assessment instruments (OECD, 2009).

- ***Teachers' understanding of the concept common examinations***

This study revealed the teachers' diverse perceptions of the concept common examinations. The finding highlighted diverse viewpoints depending on the teachers' experience in the development and administration of common examinations. As alluded in Chapter 4, common examinations are prepared at district, provincial and national levels for the June and November examinations. These examinations are set and moderated by appointed examiners and they are administered and marked by the teachers in schools. The teachers at all five the sampled schools regarded these examinations as external assessments that were used to:

- Monitor learner performance in terms of teachers' teaching according to the expected CAPS requirements. Assess the standards, performance levels, knowledge and skills that are expected at each grade.
- Encourage a teaching culture of high expectations in terms of the learner outcomes.
- Assess learners according to the required and appropriate cognitive levels.
- Ensure uniformity and compliance across all districts within the province in terms of intended and required content and assessment tasks and examinations that are planned in a particular grade.
- Assess the general performance of learners irrespective of the school they go to.

These findings confirm that these schools deem common examinations as monitoring tools that are used to ensure that the expected content is covered and assessed at particular points as explained in Section 6.2.1. It is interesting to note from the teachers' responses that there was no indication of how these assessments related to learning. In addition, these teachers did not mention the assessments that were developed collaboratively by groups of teachers as common assessments. It can thus be assumed that these teachers are simply introduced to new assessments without being given the opportunity to understand why, when and how they will be useful for them. It is thus imperative for teachers to be given the affordance to try new assessments in their classrooms and then be provided with feedback so that they can understand where learners are in the 'development corridor' and to monitor progress (Bransford, Brown & Cocking, 2000).

- ***The extent of assessment literacy***

Educational researchers such as Zhang (2014), Stiggins (2014) and Demos (2004) identified factors that affected learner achievement, which included teacher expectations about learner achievement

and teachers' concerns on enhancing their own practice to ensure that learners learned successfully. To address assessment concerns, Bransford, Brown and Cocking (2000) argue that there should be a close link between the teachers' pedagogical knowledge, disciplinary knowledge and the possible conceptual barriers that may hamper their assessment practice. For teachers to be able to assess learners' work or performance they must understand the concepts that relate to the quality and appropriateness of the tasks and they should be able to judge learners' work based on the concepts that have been taught and assessed.

Three teachers from the current study were not formally trained as assessors. These three teachers were from District B and two of these teachers were at the level of HOD. One would expect that especially the HOD should be well vested with assessment knowledge, process and procedures in order to guide and support the teachers at school level. The study found that these three teachers were eager to be trained as assessors. The teacher at MH schools used his assessment knowledge and experience to improve assessment practices at his school. This teacher also felt that teachers in general must be trained as assessors to become competent in setting assessment tasks.

It is apparent that teachers from the selected schools do not need further professional qualifications, as they held Bachelor's Degrees. Rather, there was a need to improve their effectiveness in terms of assessment design, development, and moderation, marking and feedback provision. Webster-Wright (2009) agrees there needs to be a shift in teacher professional development to innovative practices which should focus on pedagogical practices such as problem based learning, action learning, practice focused learning and the use of collaborative and flexible teaching strategies. In order for the teachers in the sampled schools to develop effective assessment skills there should be flexibility in their assessment approach to allow them to introduce balanced assessments in their daily teaching practices.

- ***Improving teacher collaboration***

According to Lincoln and Guba (2013, p. 36) the school management teams need to understand how things are happening rather than merely what is happening and to understand the way the teachers interpret and respond to events. With regard to enhancing collaboration, teachers supported the idea of PLC and cluster meetings. In particular the entire teacher sample felt that the PLC was beneficial in affording teachers the chance to share teaching and assessment strategies. Clusters provide a good platform for teachers to work collaboratively to set question papers and moderate each other's work and to share their challenges and strategies. However, it was evident

from the responses that all five the schools followed different collaborative strategies that were best suited for their environments. Table 6.3 provides a summary of the collaborative strategies that were followed in the selected schools.

Table 6-3: Teacher collaboration strategies

School	Team Teaching	Cluster meetings	PLC meetings	District Subject Meetings
KD	**Not done on a regular basis**	**Once per term**	**Twice per term and whenever the need arises**	**Once per month**
MV	**Happens only during Saturday classes**	**Once per term**	**Twice per term**	**Once per month**
MS	**No team teaching**	**Sometimes**	**Twice per term**	**Once per month**
TL	**No team teaching**	**Not mentioned**	**Twice per term**	**Once per month**
MH	**No team teaching**	**As per agreement within the cluster**	**Twice per term**	**Once per month**

Table 6.3 shows that the schools are more inclined to take part in the meetings that are organised by the district such as the PLC and subject meetings. The teachers work as groups only during planning and distribution of work as is the case at MH school. Only one out of the five selected schools plays a part in cluster meetings to set question papers that would accommodate schools that are lagging behind with the syllabus coverage. If teachers were to actively participate in the cluster meetings, teacher collaboration would promote comradeship and attitudes towards learning to build a sense of community (Bransford, Brown & Cocking, 2000).

- ***Improving teacher development***

There is consensus among the professional research community that effective professional development is based on a notion of professional learning, which is characterised by continuity, active, social and relational practice (Webster-Wright, 2009).

The need for teacher professional development in assessment preparation design and development was expressed by all the teachers from the five schools that took part in the study. It was discernible from their responses that all these teachers experience gaps in the quality of assessment that are prepared at school level. Although the district officials mentioned that they conduct three days workshops every year with the teachers in District A, the teachers from these schools expressed the

need for development on how to set quality assessment tasks. The district subject advisors highlighted teacher behaviour and attitudes as one on the reasons that may be related to the inability of teachers to set their own question papers. This group referred to teachers who were lazy, unwilling and dependent on common examinations. However, in District B the subject advisor was of the opinion that the teachers were not really equipped on how to set quality assessment tasks, only the HODs were capacitated. These contrasting viewpoints indicate the teacher development programmes that are put in place are not evaluated against actual everyday experiences of teachers in their schools.

While these teachers hold master's and other teacher qualifications, there seems to be a growing need to increase teacher quality through professional development to address the scarcity of specific innovative programmes in assessment (Yoo, 2016). Different innovative measures were suggested by the teachers such as symposiums, workshops, professional training to advance teacher knowledge and skills in assessment. These suggestions imply that the professional development of teachers should move away from 'training' and should focus on supporting teachers on how to set and maintain standardised assessment tasks that are CAPS aligned. Therefore, considerable resources should be invested in establishing structures for providing professional development for teachers (Yoo, 2016).

6.2.4 How teachers create effective classrooms to increase learning

- ***The role of formative assessment in improving learning***

Scherman et al. (2017) suggest that teachers' main goal is to improve learner performance on accountability assessments, such as common examinations and therefore there is a disregard of deeper learning that is envisioned in the curriculum documents. This study found that teachers at the participating schools employed limited assessment approaches to ensure that learning takes place. These teachers used assessment tasks such as homework, classwork, chat groups on WhatsApp and group work to link up with the common examinations. For instance, at MS school, resources such as the smart board which contains audio-visual lessons and assessment activities is used to enhance learning. Such informal assessments, according to these participants, give a picture of what is happening in class and allow the teacher to change his/her methods and to decide if extra work can be given.

While the teachers attempted to use the aforementioned informal tasks, there was consensus among the teachers that time constraints emanating from ATP coverage, formal task administration

and marking hindered the effective use of formative assessment tasks in their classrooms. Therefore, maintaining a balance between improvement and accountability remains a challenge for teachers at the participating schools.

While the district subject advisors were confident that the assessment tasks that are prepared and issued by teachers would improve learning and performance, teachers indicated that they need the support of the district subject advisors in improving learning though the use of common examinations. In the views of the subject advisors, common examinations should be used effectively so that teachers do not assess what they have taught but the application of the topic as whole since there is a tendency of assessing what is taught (similar questions) and not the application of knowledge**.** This argument highlights that subject advisors are still not confident about the teachers' capabilities of setting assessment tasks despite the training and the subject meetings that are held with them. The viewpoints of subject specialists and what is really happening in the school environments show that improvement strategies are not applied in an integrated manner. Therefore, this study assumes that the assessment for learning approach, as mentioned in Chapter 3, would be helpful in improving teacher assessment practices and improve learning outcomes.

- ***The role of common examinations on learner performance***

This study established that the mathematics common examinations are used to determine whether the learners can meet the levels and targets set by the province or district. In addition, the Grade 10 and 11 common papers are used to guide teachers on the level of learners' preparedness and performance. Even though the common examinations were regarded as standardised and of good quality by all participants, the performance of learners in these examinations still remains below 65% as illustrated in Chapter 5. The need for teachers to start using the common examinations formatively thus remains pivotal. The teachers attributed low achievement scores to factors such as using assessment activities that were not examination type and the teachers' lack of skills to set balanced question papers.

It is evident from the findings that learners, across grades, are not coping and not getting the expected level of excellence and the majority of learners do not get proficient in mathematics, as highlighted by the teachers at sampled schools. The role of feedback interventions in addressing learner performance was found to be important in assisting learners after they had written the common examinations. Evans (2013) maintains that the interventions should be classified according to whether learners are active participants in the assessment process. Evidence from the current

study points to practices where teachers used feedback such as corrections and extra classes to make learners aware of the sections they needed to improve in mathematics. For example, the teachers at MH school tried to integrate the common examinations as far as possible in their intervention; and the intervention strategy is discussed during their meetings where teachers are encouraged to integrate content with the different forms of assessment.

- ***Over dependence on past examination question papers***

The teachers who participated in this study believe that past common examination question papers are necessary to prepare learners for external assessments, questioning style and the end of year examinations. These teachers were more concerned with how learners will perform in the examinations, hence in their attempts to familiarise learners with the common examination questions they relied on past question papers for revision and daily assessments. It was discernible from the findings that learners could gain access the past question papers and model answers through various platforms such as the Department of Education website and borrowing examinations from the school's repository. This practice indicates that there is overdependence on past common examination question papers in schools.

When learners are unfamiliar with the underlying concepts that will be assessed in the common examinations they may move back and forth among the performance levels. For instance, the teacher at KD school indicated "*that for improvement to take place learners should be exposed to quality up to standard and typical examination questions before seating for their final end of year national examinat*ion." The participants agreed that teachers are warranted to know what is going to be assessed in the common examinations so that they are able to teach relevant topics in their schools. If the learners are to be assessed on the basis of performance on a test, the likelihood is that teachers may prepare learners on how to answer specific questions that will form part of the final examinations. Teaching to the test will only benefit the learners if the questions that are used to practice will increase the learners' understanding of the sections of work instead of 'programming' learners to provide specific answers to specific questions. If learners memorise procedures without understanding the complexity of the procedures, they can be confused by things that are left unexplained (Bransford & Cocking, 2005). Failure to assist teachers on how to use past questions in a formative manner will result in a system that depends heavily on examinations to pass judgements about teachers and schools thus impacting on how learners are taught (Harlem, 2004). Learners should be exposed to quality assessment tasks and teachers should monitor their learning and identify what they have achieved and the reasons for the outcomes.

6.2.5 The impact of common examination on the public

- ***Benefits of using common examinations as formative assessment tools***

Although the common examinations have been met with discontentment from teacher unions, pockets of good practices were identified through document analysis reports generated by the mathematics Grade 11 moderators. The standardised common examinations unearthed a myriad of challenges and provided recommendations for teachers to improve their teaching and assessment practices. Highlights of some of the benefits mentioned by the teachers include the following:

- The question papers were standardised and aligned to the CAPS and their quality was acceptable.
- Problematic questions and sections of work in the curriculum were identified through analysis of learner performance results.
- Teachers were able to identify learning gaps and develop interventions though analysis.
- The quality of marking improved at school level.

The findings further indicated that both the teachers and subject advisors preferred both formative and summative assessment to be common to improve learner performance. The subject advisors felt that teachers were not using common examinations effectively to improve learning. Accordingly, they believe that if teachers were using common examinations on a continuous basis they would be able to analyse the outcomes, however they did not have the time to do so.

6.2.6 Improving research on teaching and learning

- ***Using learner performance data to improve teaching and learning***

Schools in Gauteng are encouraged to follow the repetitive cycles of the Teach-Assess-Diagnose-Remediate (TADR) approach to improve teaching, assessment and learning practices in schools. Effective assessments require consistent evaluation and the application of several strategies to ensure their fairness and accuracy (Reeves, 2004). The participating schools in this study employ various strategies to support the learners after the writing of common examinations. These strategies include addressing problematic areas or questions that were posed in the common examination through remediation with the learners to inculcate learning. In line with the TARD

approach which encouraged remediation of problematic areas of work, the teachers' pay attention to the learners who are not performing well in the common examinations. Revision of sections of work is conducted with the learners by using different resources and past examination question papers (as highlighted in 6.1.2.3). These interventions also differ from teacher to teacher, some teachers use short tests, winter school for extra lessons, retesting and pre-tests before the learners start with the final examinations.

Standardised assessments such as common examinations require frequent clear communication of standards and analysis to ensure their effectiveness. Document analysis of moderation reports indicate that the internal assessments set by the teachers are not aligned to the common examination standards. For example, the 2015 moderators noted that the mark allocation in the Grade 11 common examinations did not comply with the Trends in Mathematics and Science (TIMSS) cognitive levels that were supposed to inform the assessments in mathematics (Department of Education, 2015). Reeves (2014) caution that if a school has no standard and teachers develop assessments, for example in mathematics, without regard of the assessment criteria requirements chaos will ensue. Equally it was found that as schools withdraw from common examinations and set their own examinations; disorder prevailed in the analysis and standardisation of the Grade 11 mathematic results as different instruments were administered. This situation implies that when standards are not well communicated, teachers will rather set what they prefer than what would be covered in the national and provincial common examinations.

6.3 **LIMITATIONS OF THE STUDY**

Even though the Gauteng Education Province administers the common examinations in various grades and subjects, this study was limited to the interaction with mathematics Grade 11 teachers and district officials. The rational for this choice was based on the steady progress in improving performance in the subject mathematics. Teachers from grades other than grade 11 were thus excluded from the study. It is worth mentioning the study did not directly interact with the learners except through the evaluation of the learner performance data. Therefore the findings of this study are not generalisable to other subjects.

As results of the nature of the project, the implementation of the action research cyclical process of planning, action, observation and review was limited. For the repetitive cycles to fully institutionalise in the education system more engagements with teachers would be

useful. The study was further limited by the following factors that were beyond the researcher's influence:

a. The delay in the approval of ethics letters by the Department of Education.
b. The non-availability of participants on the set dates and times due to their commitments at school level.
c. The institutionalisation of action research cycles in schools.
d. The non-participation by participants due to the political issues.

6.4 CONCLUSIONS FROM RESEARCH

6.4.1 Main conclusions of the study

The finding of this study provided evidence that led to conclusions on the extent to which teachers use common examinations as tools for effective formative assessment to improve the quality of their assessment practices in schools. The key deduction that was gathered from the findings is that participating schools were committed to using common examination question papers to expose their learners to standardised summative assessments to prepare them for the Grade 12 examinations without paying much attention to formative assessment practices. In the DBE (2017) report, emphasis was placed on training teachers on how to develop quality assessment tasks and to be able to use previous question papers innovatively without opening up the papers to a high level of predictability.

The following sections will explain the conclusions drawn from the study corresponding to the sub-questions that were posed in Chapter 1.

6.4.2 Aligning formative and summative assessment plans to transform teacher assessment practices

The implementation of the CAPS aligned ATP and assessment plans are critical to ensuring that the correct subject content is taught and gets assessed. According to the CAPS, the assessment tasks should cover the content of the subject and include a variety of activities designed to achieve the objectives of the subject (Department of Basic Education, 2011a, p. 52). The teachers at school level are required to make sure that the correct content is taught so that the learners can be fully prepared

for the summative provincial and national common examinations. When these assessments are presented to the learners they should be able to answer the questions adequately since the correct content would have been covered. The findings in this study showed that teachers are faced with the challenge of balancing the formative and summative assessment plans and at the same time bring about improvement in learning. As a consequence of the limited time to cover the ATP and assessments, teachers are faced with a heavy workload which affects the teachers' ability to teach and assess adequately.

According to Klassen and Chiu (2010) insufficient time for planning and preparation and a heavy teaching workload reduces satisfaction obtained from teaching. Teachers end up teaching and assessing for compliance sake and teaching to the test without taking the learner's needs into account. The teachers' view point on the learners' ability to understand mathematical concepts was linked to the time that was allocated for formative assessments, support, remediation and feedback provision to the learners. To ensure that the learners are adequately taught and assessed teachers involuntarily introduced extra classes in the morning, afternoons, and weekends and during school holidays.

Conclusion 1: The conclusion that can be drawn from this argument is that if teachers are not involved and supported enough on how to balance the summative and formative assessment plans within the prescribed time frames, they are likely to deliver, in the main, the prescribed summative school based assessment tasks and examinations.

Even though the teachers tried to use informal tasks, which did not contribute to the final marks of the learners, some of the learners did not take part in them. In addition, the learners' lack of participation in the tasks could have resulted from the teachers not making available the assessment plans to the parents so that they could monitor their learners' learning. It is important for teachers to know that the audience for assessment plans includes parents, learners and teachers. The summative and formative assessment plans would assist parents and learners to know about learners' progress and achievement in relation to the expected standards and assist teachers to respond to question of how far learners are in terms of their learning (Davies & Le Mahieu, 2003).

a) Using common examinations as formative assessment tools to improve learners' achievements

The teachers were asked to explain the extent to which formative assessments are aligned to the common examinations. Their responses ranged from being uncertain, moderated and to a greater extent. According to these schools their assessment tasks were aligned to the June and November common examinations, yet the achievement of learners remained low. The main obstacles for teachers was the pressure that existed between classroom based formative assessments and high stakes assessments for schools to account for learner achievement and the lack of integration between common examinations, school and classroom approach to assessment (OECD, 2008). The challenge that was noted was that although the teachers wanted to set their own tasks they indicated that they could not set quality assessment tasks. So the utilisation of common examinations was seen as a solution to having quality and standardised assessments that would improve learner achievement.

Research shows that an examination and test driven system does not yield valid and dependable reports of learners' learning (Harlem, 2004). Teachers need to use more relevant assessment methods to balance the judgements made on learner performance. However, learner performance was not improving in these schools as shown in Chapter 5, Table 5.3. As a result, learner participation in mathematic dropped in most schools as learners' performance was below 65%. According to Stringer (2014) generalised solutions may not fit all contexts in which they are applied; therefore relevant resolutions that would work in local situations should be sought. In order to use common examinations as tools for formative assessment it is important to improve the quality of teachers and to provide them with support to become innovative when using common assessments to avoid just preparing learners to answer examination questions.

***Conclusion 2*:** The deduction that can be made is that the objectives of the common examinations, stated in GDE Examination Instruction (2015) (Appendix K) could not be realised in most schools as they were far different from the realities of the classroom assessment practices. It can be concluded from the learner performance data that the schools did not assimilate all the objectives of the common examinations into their own settings. Teachers could not internalise and contextualise these examinations to improve learners' achievement levels. The reaction from these schools was to make available past common examination question papers and memoranda, instead of using them formatively on the learners to acclimatise them to the questioning styles and prepare them for the Grade 12 examinations. In doing this the likelihood is that learners will not have a clear

understanding of the mathematics concepts. SAQA (2005, p. 10) proposes a solution that schools must ensure that integrated assessments are used so that all learning outcomes are assessed through a combination of assessment methods and instruments which would add value to the learning.

b) How teachers are assisted to develop quality assessments to become competent experts of assessment standards.

The teacher's knowledge about mathematics teaching and learning directly affects the teachers' conception of what and how to teach in preparation for assessments (Bransford, Brown & Cocking, 2000). To facilitate teachers' ability to develop quality assessment tasks and to become competent experts of assessment standards, it is necessary to afford them the opportunity to be capacitated in improving their teaching and assessment methods on how to prepare quality assessment tasks. When common examinations were introduced by the Department of Basic education, one of the prerequisites was that teachers were to be capacitated on how to set quality assessment tasks. During the interviews there was consensus among the participating teachers that they needed to be developed to gain knowledge and proficiency in assessment. Generally, teachers believe that their ability to think and solve mathematical problems relies on well organised bodies of knowledge and their capacity to assist learners to be knowledgeable. The SQA (2009) maintained that if teachers were well trained in analysing subject content and thought processes and developing assessments and if they had the time to set their own questions, their assessments would be near perfect. In agreement the participants mentioned that a combination of qualities are needed, over and above the teachers' qualifications, such as assessment skills, subject content knowledge, innovativeness, flexibility and commitment to effectively use integrated assessments. Teachers need continuous support from the subject advisors instead of the three days workshops that are provided annually. Similarly, the OCED (2008) proposes that teachers need to be given the opportunities for effective and on-going professional development from the programme leaders and peer networks.

Conclusion 3: It was interesting to see that there seemed to be incongruence between what the teachers needed and what the subject advisors were providing to improve the teachers' assessment literacy. Although considerable resources have been invested by the Department of Basic Education in the form of PLC, teacher professional development programmes and workshops, the supposition that can be drawn is that the support provided for teachers is inadequate. Teachers needed programmes that would be continual instead of the short term trainings that were provided (OECD, 2008).

The PLC and cluster meetings, as teachers' collaborative structures, were mentioned by the sampled teachers, however their functionality, especially that of the clusters, remains questionable. Such structures are supposedly used to share teaching and assessment ideas. Although this was the case, it was interesting to note that collaborative teaching was rarely used by the participants to strengthen their practices. Furthermore, by providing readymade assessment tasks to the teachers, district subject advisors were not addressing the skills gaps but merely ensuring accountability in the implementation of assessment tasks. Hence teachers found it difficult to integrate common examinations into the formative assessment tasks as a result of a lack of assessment skills and adherence to the school and assessment policies. Teacher networks such as PLCs should provide opportunities for teachers and subject advisors to share experiences; however these should augment rather than replace teacher professional development programmes.

c) How common examinations are used effectively to improve instructional interventions and learner performance

In attempting to find out what assessment remedial and support activities are given to learners before the common examinations are written, the teachers mentioned strategies such as testing and re-testing and analysing the learner performance level data to support learners who achieve at elementary (30-39%) level to allow them to move up to moderate achievement level (40-49%). These teachers and subject advisors mentioned item and question analysis of learner responses to identify the sections of work which learners were struggling with and identify interventions to close the learning gaps. It was noted that these teachers attempted to use the level data to accommodate all learners in their schools. In one school the teacher mentioned that the baseline assessments are used to diagnose the learning gaps while others employed remediation after every assessment on a ten-day cycle. During the observation it was discernible that feedback to the learners was given for both the formal and formative assessments. Each of these practices was used in different schools to improve their instruction and assessment interventions. The common examination moderation findings that were examined through document reviews and confirmed during interviews with teachers and subject advisors painted a different picture of the performance of learners in common examinations. If the teachers were to implement the moderation findings to supplement their own analysis of learner responses, it is likely that there would be improvements in the performance and learning in their schools.

Conclusion 4: There seem to be non-implementation of the findings of the moderators as the level of performance does not match the intervention strategies mentioned by the teachers. The analysis done by the teachers was acceptable, however it can be concluded that they could not determine how much room they had in fostering the improvements in the schools, given that they still needed time to address the requirements of the ATP. A myriad of factors needed to be addressed within a short space of time, such as improving teachers' content and assessment knowledge and improving learning and parental commitment to their learners' outcomes. In addition, Taylor (2013) points out that the lack of learner improvements can be attributed to the accuracy of teachers' assessments and feedback mechanisms. Therefore, the feedback on results should enable teachers to relate it to the feedback interventions that are planned for learners.

6.5 REFLECTIONS ON THE STUDY

6.5.1 Reflections on the Action Research Design

This study is based on the action research design which gives teachers the affordance to improve the identified challenges through the development of an action plan. The action research cycles of planning, action, reflection, observation and review are embedded in the objectives of the PLC which emphasises that "teachers should integrate their own professional knowledge with the latest research based knowledge about content and practice" (Department of Basic Education and Department Higher Education, 2011, p. 14). In reflection about the integration of action research in schools, focus will be placed on the use of teaching and assessment plans, the role of teachers' collaboration in improving teacher practices and the significance of involving teacher unions in bringing about improvements in schools.

First, as alluded to in Section 6.2.1.1, teaching and assessment in the schools that participated in this study is informed by the assessment programme and ATP that are prepared for the teachers by the district subject advisors. In order to link the ATP and assessment plans to the action research, the teachers should realise that these plans should be used to drive the curriculum and should be followed with the purpose of improving teaching and learning. When teachers take action in implementing these plans, they need to exercise flexibility by incorporating the routine informal assessments such as homework and classroom work in the assessment plans to make the learners learn. As teachers in this study found it challenging to move away from the prepared plans, they need to collaborate with other teachers at PLC to determine how the teaching and assessment plans could be effectively integrated in their schools.

Secondly, this study revealed that without taking part in collaboration exercises, the teachers are nowhere near to improving their assessment practices. Considering that professional learning communities have been introduced for groups of teachers to take part in information sharing partnerships, teachers have the opportunity to improve their professionalism and learning. According to the Department of Basic Education and Department of Higher Education (2011) teachers are at the centre of the teaching and learning process, therefore they should be able to take responsibility for their own development. In suggesting how action research could be implemented in schools, this study advances that the subject advisors should be supporting teachers in establishing school based PLC. While the teachers mentioned that they attend PLC twice per month at district level, it denotes that they are not advanced enough to run their own school based PLC. This observation further implies that teachers should consider using PLCs to change their school culture and promote ownership of their own practice. If teachers are involved in an integrative approach which fosters dialogue and support for their practices, the possibility is that they may create meaning to their teaching and assessment practices. Since the PLC is supposed be teacher driven, teachers should take action in identifying and bringing solutions to improve their schools. Hence the PLC put accent on teachers actively taking part in partnerships to assist one another in developing themselves through the creation of activities and material that will stimulate their work (Department of Basic Education and Department Higher Education, 2011). Therefore, the teacher engagements that are organised through the PLC and clusters are critical for teachers to incorporate action research principles in the practices.

Thirdly, the teachers' action and assessment practices needed to be improved so that formative assessment could be used effectively in schools. Although this study took place when the social partners were encouraging schools not to write the common examinations, the sampled schools continued with these examinations in order to administer quality assured and standardised assessments. As part of observation, the researcher conducted follow up to see if the skills that were gained at the workshop, alluded to in Section 6.2, were put into action by the sampled teachers. It was necessary to find out if teachers were able to introduce improvements in their schools whilst adhering to the mandates of the teacher unions. It was evident that the teachers had limited opportunities to take actions in identifying what was important and what would work for their schools to accomplish learning outcomes. The findings revealed that the teachers needed further collaborative engagements with other teachers to functionalise their improvement strategies. In order to improve teacher assessment practices and encourage them to produce new knowledge to find solutions to the problems, action research needs to be firmly entrenched in school PLCs. Most

significantly, discourses should be established between the teachers' unions, subject advisors, HODs and teachers to discuss the benefits of using common examinations as tools for effective formative assessments.

Lastly, for action research to be fully implemented in these schools, teachers need time to repeat the cycles and restructure their assessment plans to create more time for the collaboration. By repeating the action research cycles, teachers may review their actions in the classroom and practice, what Saggu (2016) refers to as practice oriented and teacher initiated research. To do this, teachers should collect data on their day-to-day activities and identify challenges and outcomes with the aim of changing themselves as teachers and the learners as the recipients of education. The benefit to teachers of repeating the action research cycles is that their teaching experiences will widen and they will be provided with an opportunity to take immediate action on the problems that are experienced by learners in the classroom.

6.5.2 Reflections of the Conceptual Framework

As alluded in Chapter 3, this study considers it necessary to make known the constructivist discourses that relate to assessments in the classroom. Constructivism was explored through a model espoused by Bransford, Brown and Cocking (2000) known as How People Learn. This model considers the following key areas as the main elements for effective teaching and learning; that is, learner centredness, knowledge centredness, assessment centredness and community centredness, as illustrated in Figure 6.1.

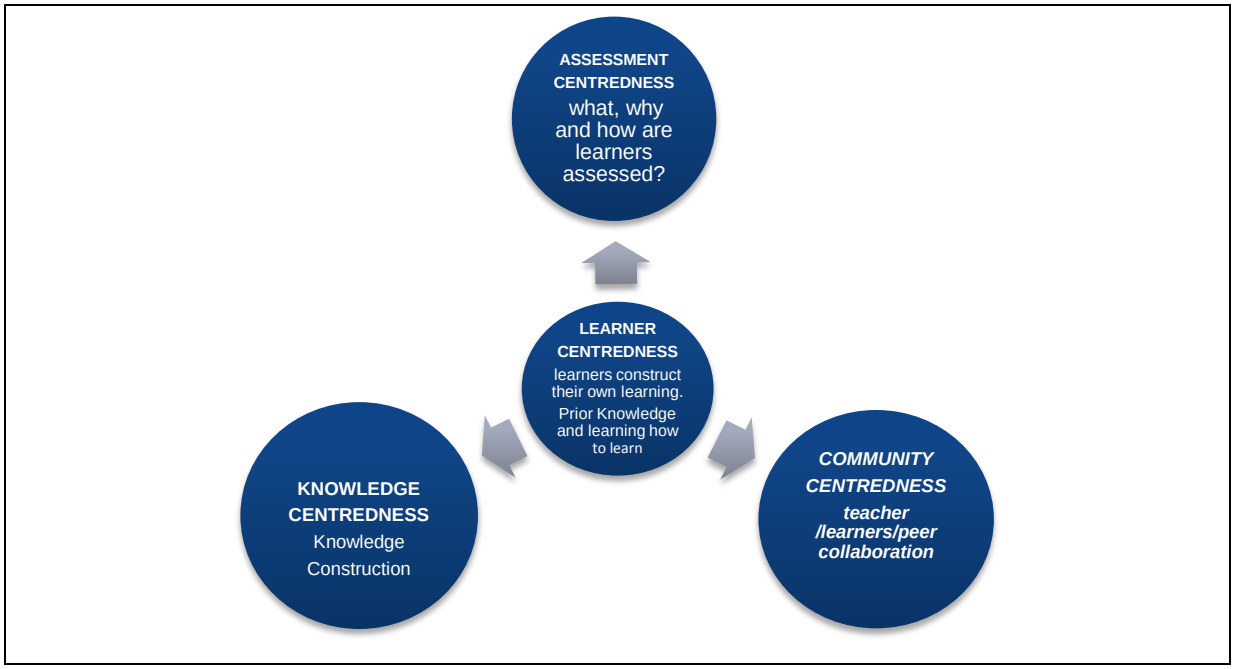

Figure: 6.1 Perspectives on learning environments: (Bransford, Brown and Donavan, 2000)

The reflection on the conceptual framework, shown in Figure 6.1, recognises that the teachers in this study attempted to place the learners at the centre when the plans to deliver the lessons and assessment learners were put in place. According to the constructivist learning theory, learners should construct their own knowledge and understanding on the basis of what they learn and constructivist teachers should encourage learners to constantly assess how the activity is helping them to gain understanding. During the observation the teachers attempted to give learners opportunities to construct their own meaning in relation to the test that was written earlier. Learners were given a chance to explain problematic sections and the teachers assisted them through remediation and further explanation of mathematical concepts. Even so it can be stated that the assessments that were used in these schools were examination driven, focusing on meeting the Department of Basic Education targets. The teachers did not devote time on how to teach leaners how to learn, they solely relied on past examination questions, hence assessment for learning was not embedded into the fundamental of the teachers' assessment practices.

In terms of assessment practice, the central role of this study was to establish how teachers were enhancing teaching, learning and quality assurance through the effective use of common examinations in a formative way. Largely, the teachers highlighted the need to take part in the development of common assessment tasks to improve the quality of their assessment tools. While the common examinations were prepared for teachers, they still need to be trained on how to

construct knowledge by developing quality assessment tools in order to improve classroom assessment practices. Teacher development needs to be sustained over time for without knowledge, teachers will make decisions that undermine the usefulness of assessment reforms (Wiliam, 2008).

The HPL model upholds the constructivist view that constructing meaning is equal to learning whereby teachers have to pay attention to the learners when they think about learning, and that there is no knowledge that is autonomous of the importance attributed to learner experience and the community (Hein,1991). Teachers' collaborative structures were found to be important; however their impact was limited when it comes to supporting teachers to advance their assessment knowledge. Improvement initiatives that were introduced in schools needed teachers with the skills to provide learners with multiple opportunities that are intended to achieve the learning outcomes. A community centred system characterised by learners and teachers who are connected to the larger communities such as classrooms and schools was found to be lacking. Teachers in the sampled schools were more concerned with the unavoidable pressures and constraints that are advanced by the social partners, policies and the Department of Basic Education's set targets. Hence completing the syllabus and administering the summative assessments were pivotal for these teachers. A shift in the assessment paradigm is thus necessary as the teachers were not involved in the collaborative effort to develop common formative assessment as part of improving and sharing assessment ideas and practices.

6.6 **RESEARCH RECOMMENDATIONS**

The recommendations from this study have been generated on the basis of the findings and the conclusions that were articulated throughout the discussion. The sections that follow will provide recommendations on how teachers can effectively use summative and formative assessment plans to improve their assessment practices (Section 6.5.1), teachers' professional development and support can be improved (Section 6.9.2), common examinations can be used effectively to improve classroom assessment practices (Section 6.5.3) and common examinations results can be used to inform teacher instructional interventions and learner performance (Section 6.5.4). The last section provides the recommendations for further research in summative and formative assessments.

6.6.1 Recommendations on using assessment plans to improve teachers' classroom assessment practices

Planning should involve various stakeholders such as subject heads of department, principals, SAT coordinators and teachers. Currently schools are provided with content coverage and SBA cycles which specify periods, the percentages and time frames for schools (Annexure H). The assessment cycles should be agreed upon with the teachers so that they can know what will be assessed and when the assessments will be conducted to minimise teacher workloads. For teachers to be able to implement the assessments according to the cycles and plans effectively a planning cycle should be provided to the teachers. The planning cycle should clearly articulate the subject assessment frameworks, strategies, assessment approaches and integrated assessment approaches coherent with the content of each subject.

The assessment plan and cycle should not be viewed in isolation of the ATP. At the level of the school the principal, HOD, senior teachers and the schools assessment team coordinators must be trained on how to unpack these plans. As mentioned in Chapter 5 and Section 6.7, teachers complained about the rigidity of the ATP and the limited amount of time to implement these. Accordingly, the curriculum officials at the district and provincial levels mentioned that the ATP is a guideline and teachers need to be flexible during implementation. Therefore, the school management team and the district officials should unpack the ATP and the assessment plans so that teachers can be assisted and supported during teaching and learning programmes. Then the teachers may be able to adapt these plans to their particular classrooms. By unpacking the assessment programmes and plans the teacher should be able to expand and contextualise the plans towards the realisation of the learning outcomes.

Parents and learners should also be provided with the assessment plans so that the learner progress can be monitored, supported and strengthened both at school and at home. As eluded to in Chapter 5, not all learners take part in the informal assessments that are provided by the teachers as homework and classwork. As parents may have low levels of education, these learners may tend to rely on their teachers and classroom learning for completing their assessments (Zhang, 2014). The assessment plans are meant to bring about transparency in what is going to be assessed. The fundamental recommendation is for schools to make parents aware and involved in their learners' learning by providing them with the detailed assessment plans, mediating them during meetings. In turn the parents must acknowledge and pledge support to both teachers and learners.

6.6.2 Recommendations for assisting teachers to develop quality assessment tasks

The key emerging aspect from the teachers who participated in this study was their non-implementation. Generally, the teachers felt that the quality of the teacher developed tasks is low compared to that of the common examinations. The consensus among the teachers was that there should be skills transfer provided for them in the form of workshops, training programmes and information sharing platforms. Capacity building initiatives are thus needed in order to address all the inadequacies mentioned by the teachers and to enhance their assessment initiatives. The three-day workshop which is conducted by the subject advisors with the teachers is not adequate to improve the teacher assessment knowledge. An alternative capacity building approach is proposed for teachers. A comprehensive teacher professional development programme which includes the enhancement of teacher quality, teacher commitment to formative assessment and improving teacher assessment knowledge and innovativeness should be considered for teachers instead of the short programmes that are provided by the Department of Basic Education.

While training alone cannot be regarded as a solution to enhance teacher assessment literacy, teacher professional development should be continual to maintain the high quality practice of teachers (Webster-Wright, 2009). Teacher training should not only focus on knowledge acquisition but should take the form of teacher professional learning and development in order to change teacher assessment practices. The teacher professional learning and development of teachers should:

- Be geared towards effective implementation of the CAPS to prepare teachers for the expectations of common examinations and formative assessment tasks.
- Equip teachers with the skills of integrating the cognitive levels within classroom assessment practices to accommodate all learning types
- Provide teachers with the skills to analyse the learner responses and to identify learning gaps and provide feedback and remediation.
- Provide teachers with the opportunities to share ideas with other teachers involved in structures such as PLCs, so as to capacitate them on mathematics content coverage and assessment practices.
- Lead to the strengthening of teacher collaboration through clusters to prepare quality common formative assessment tasks. The clusters will encourage teachers to learn from one another and to share good practices.

This study supports the suggestion by Webster-Wright (2009, p. 702) that "*there should be a shift in discourse from delivering and evaluating professional development programmes to understanding professional learning*."

6.6.3 Recommendations on how common examinations can be used as effective formative assessment tools to improve learner achievement

The assessment process should not be viewed as a once off event applied at the end of the learning process, but it should be integral to teaching and learning. The recommendation that is central in this is providing proposals for teachers to be able to use common examinations as formative assessment tools to become competent in their assessment school assessment practices.

To recapitulate, the key argument of this research is that generally the assessment system in the South African schools is examination driven with no emphasis on creating a balance between formative and summative assessment processes. The recommendations that are presented are necessary for teachers to develop an assessment strategy that goes beyond learners being presented with informal assessments such as homework, classwork, assignments, mini tests and group exercises and past examination question papers.

Firstly, teachers should follow a constructivist approach to learning whereby learning is positioned meaningfully in the assessment tasks teachers give learners for problem solving opportunities in the application of the acquired conceptual and procedural knowledge in a subject in mathematics.

Secondly, teachers should consider introducing the use of integrated assessments that would enable them to make use of a variety of methods, tools, techniques and contexts in assessing learners' performance (SAQA, 2015)

Thirdly, learners should be provided with consistent assessments that would address the whole activity or section of work rather than using past examination question papers and memoranda to drill learners to answer specific questions. Teachers should use the past question papers to address the different sections of work so that learners would be able to respond to questions that are similar to those in the topics that were learnt in class.

Fourthly, the teachers should be able control the nature of assessment feedback that is presented to the learners and determine how much room there is for improvement (Taylor, 2013). This study

showed that feedback can be given to learners during classroom sessions after the test was written. Since there is a gradual improvement in mathematics performance the likelihood is that the learners are unable to implement the teachers' recommendations. Therefore, feedback should not only be generic to the entire class, but focused feedback should be provided to the learners to ensure improvements in their achievements. Feedback should be reported on a regular basis to both learners and parents. Teachers should introduce feedback interventions that would lead to improvements and move the learners forward in terms of their learning.

Lastly, teachers need to be continually developed in using classroom assessments so that they can be able to prepare quality teaching and learning. If formative assessments are used in class, learning will be visible and will benefit both the teachers and the learners.

6.6.4 Recommendations on using common examination results effectively to improve instructional interventions and learner performance

The teachers in this study expressed the significance of the analysis of learner performance data in order to improve learner performance. Diagnostic tools such as learner evidence of performance and assessment instruments are necessary for remedial instruction. Common examinations should yield data that can be used to bring improvements in learning and teaching. The results emanating from the common examinations should provide teachers with the data that would be used during planning for interventions and selection of teaching methods that would be appropriate for all learners.

For teachers to be able to analyse the learners' results, they need to be familiar with the types of data which can be derived from different forms of assessment including their strengths and weaknesses (Yamtin & Wongwanich, 2014). It is important for teachers to be familiar with the assessment criteria set for common examinations. Subject advisors and district assessment senior education specialists, who are responsible for supporting teachers, should provide teachers with the necessary skills to do the analysis.

The teachers should note that the analysis feedback should be made available to the learners so that they can use the data from the assessment to enhance their knowledge and understanding of the sections of work they did not do well in. Self-assessments should be encouraged in learners to allow them to recognise that assessment forms part of learning not of judging them.

In terms of teacher plans for interventions, the teachers should be able to recognise the sections of work which posed challenges for learners. It is proposed that teachers should use the assessment outcomes to make decisions for each learner, all the learners in a classroom or school, for the community district and society at large (Yamtin & Wongwanich, 2014). Since feedback alone does not yield improvements in performance, a further recommendation is that the meta-analysis should be presented in annual conferences, feedback meeting with parents, cluster meetings and at all levels of the stakeholders to provide the results and solutions for improving learning. Knowledge of results (level of performance data e.g. 30%) and interventions (focus on specific areas in mathematics e.g. 'probability') is key to ensuring improvements in learning. By following this community centred approach all stakeholders will take accountability for the outcomes and provide possible solutions for improvements.

6.6.5 Recommendations on using action research effectively to improve teacher practices and quality

As teachers should also take responsibility for their own leaning, this study recommends that they should take advantage of the schools based professional learning communities to introduce the action research repetitive cycles.

When teachers meet as communities they should be able to:

- Collect and analyse learner performance date in order to improve their assessment and teaching practices;
- Create assessment tasks collectively and visit one another to observe teaching and assessment delivery in classrooms;
- Discuss and reflect on the finding at the PLC meetings;
- Review and analyse the learner results for further improvements. When teachers analyse the relationships and explanations of learner performance they will develop concepts that provide analytic descriptions of what was observed and create the plan of action.
- Finally, feedback should be given to the teachers to improve their practice.

The theory of actions should be integrated into the teachers' professional development for improvement of learning and performance to improve (Hopkins, 2012).

6.6.6 Recommendations for the Department of Basic Education

The following recommendations are necessary for bringing improvements to the broader education system. The Departments of Basic Education should:

- Establish an integrated assessment framework to regulate the implementation of formative assessment tools in schools to improve learning;
- Acknowledge and involve teachers in the development of common formative assessments to strengthen teachers' collaborative exercises;
- Ensure that the purpose and objectives of introducing common examinations are shared with all the social partners and stakeholders for effective school participation in these examinations;
- Strengthen skills transfer for teachers, on a continuous basis, to be able to set the assessment tasks that are suitable for their unique school's contexts;
- Introduce an experiential development programme for teachers to adapt to the changes in the curriculum and assessment landscape; this capacitation should take place in actual educational settings with the assistance of knowledgeable people.
- Support learners' learning by ensuring that the assessments that are used will enable them to construct their own knowledge and understanding.

6.6.7 Recommendations for further research

The significance of on-going learning in education should be recognised across the education sector through further research in the area of assessment for learning. Additional evaluation of the school assessment practices and systems on assessment for learning is recommended. With the assessment landscape fast becoming important the focus of the research by teachers and active people in schools should be based on the following key elements of assessment for learning:

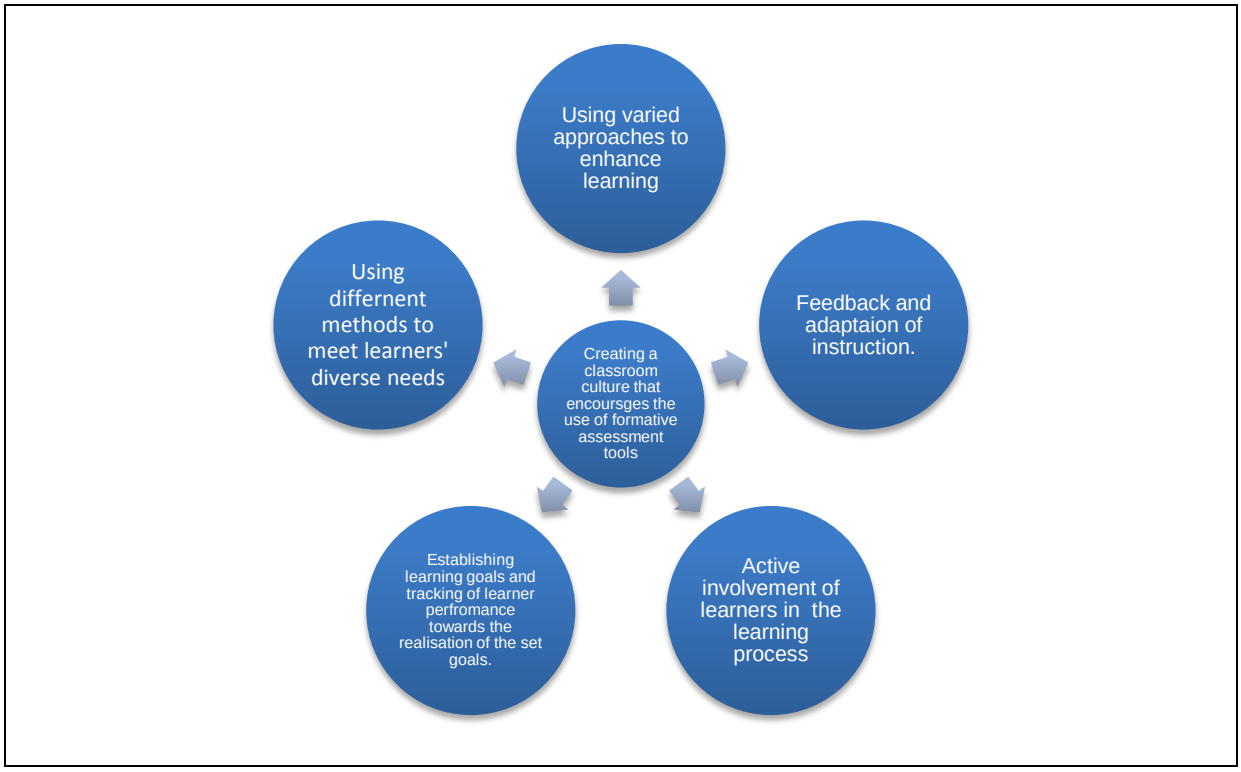

Figure 6-2: Key ingredients of formative assessments (OECD, 2008, p. 7)

Figure 6.1 provides a suggested framework for further research in the area of formative assessments. As the Department of Basic Education is currently advocating the use of formative assessments and the review of Chapter 4 of the CAPS is underway, it will be beneficial for research to be done to advance in this form of assessment to inform learning.

6.7 **CONCLUDING REMARKS**

This study explores the extent to which common examinations are used as a tool for effective formative assessment practices in schools. Despite the limited application of formative assessments in schools, pockets of good practices were noticed in the sample schools such as teacher initiated assessment activities and strategies, the use of technology in delivering lessons and assessments, attempts to analyse learning outcomes, feedback provision and interventions and sequencing and prioritising key sections of the curriculum to meet targeted outcomes, to name a few. The district officials and teachers who participated in this study also showed their commitment to using standardised assessment instruments such as common examinations to fortify their practices. All the participants were also committed to learner centredness in their endeavours to bring about learning in their schools.

The study submits that schools as institutions of learning communities should provide on-going guidance for teachers to bring about improvements in their schools. Unless teachers are fully supported and developed to become competent assessors, they will not be able to accurately assess learners and enhance the quality of learning in relation to the education goals. To do this teachers and subject advisors should be provided with the skills to improve their practices in order to strengthen the development of learning, teaching and assessment for learning.

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8 APPENDICES

8.1 APPENDIX A MODERATION FINDINGS

8.1.1 Appendix A (i): 2016 Grade 11 moderation findings

2016 Grade 11 Mathematics common examinations moderation findings

a. Grade 11 learners found Trigonometry and Euclidean and Analytic Geometry challenging.
b. Questions on Functions (Q5, 6, 7) are still poorly answered. Learners struggle with the interpretation questions.
c. Question 4- Analytical Geometry was very poorly answered. Many learners did not attempt this question.
d. Question 10 (Euclidean Geometry) was poorly answered. Many could not prove the theorem.
e. P 1 - 3.1.3 and 3.2.2 same skill being assessed more than once disadvantage the learners.
f. P1 - Question 7.2 depend on 7.1 and all the learners who could not answer 7.1 automatically could not attempt 7.2
g. P 1 – 3.1.3 and 5.1.4 Learners did not answer this question because of lack of knowledge but because they did not understand what is required.
h. Q4- Analytical geometry was a high order question.
i. P2 – Analytical Geometry was not easy as learners expected it to be.
j. Learners could not manage time well as the paper was too lengthy.
k. P1 the allocation of marks did not comply to TIMMS approximate percentage (Knowledge must be allocated 18% ,Routine Procedures must be allocated 30%, Problem solving questions must be allocated 20%, Complex Procedures must be allocated 35%).

Most Problematic Questions across Districts: Mathematics

Grade 11
Paper 2 Question 5
Paper 2 Question 10
Paper 2 Question 2
P1 - Question 7.2
P 1 - 3.1.3 and 3.2.2 same skill being assessed
P2 Q4- Analytical geometry
Questions on functions question 5, 6, 7

8.1.2 Appendix A (ii): 2017 Grade 11 moderation findings

2017 Grade 11 Mathematics common examinations moderation findings

i. Grade 11 learners found Trigonometry and Euclidean and Analytic Geometry challenging.

ii. Questions on Functions (Q5, 6, 7) are still poorly answered. Learners struggle with the interpretation questions.

iii. Question 4- Analytical Geometry was very poorly answered. Many learners did not attempt this question (SE).

iv. Question 10 (Euclidean Geometry) was poorly answered. Many could not prove the theorem (SE).

v. P 1 - 3.1.3 and 3.2.2 same skill being assessed more than once disadvantage the learners.

vi. P1 - Question 7.2 depend on 7.1 and all the learners who could not answer 7.1 automatically could not attempt 7.2 (JE).

vii. P 1 – 3.1.3 and 5.1.4 Learners did not answer this question because of lack of knowledge but because they did not understand what is required.

viii. Q4- Analytical geometry was a high order question.

(Department of Education. 2016 & 2017)

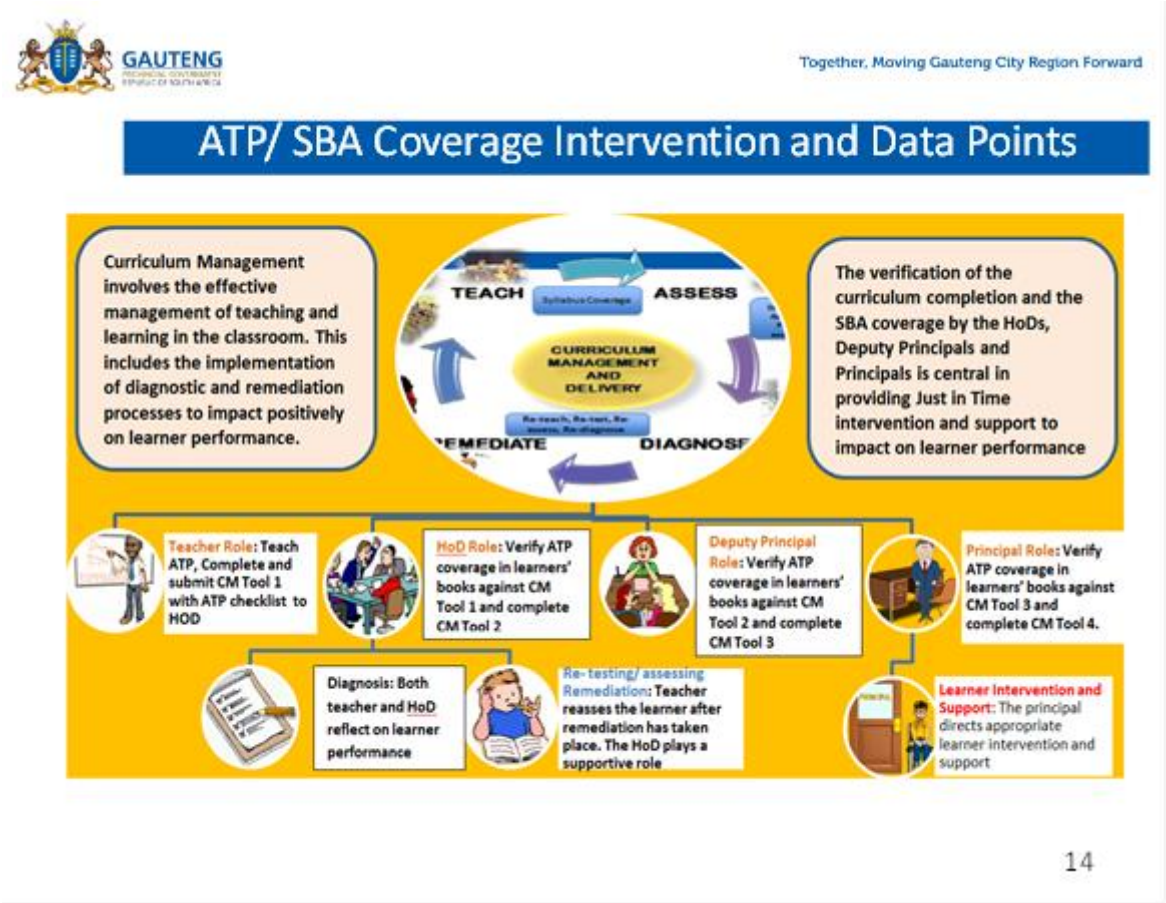
8.2 APPENDIX B: ASSESSMENT CYCLE: ATP AND SBA DATES

	Grade 12	Percentage	Grade 3	Percentage	Grade 6	Percentage	Grade 9	Percentage
Cycle 1	15/02/2019	20%						
Cycle 2	15/03/2019	40%	15/03/2019	25%	15/03/2019	30%	15/03/2019	30%
Cycle 3	10/05/2019	60%	-	-	-	-	-	-
Cycle 4	14/06/2019	80%	14/06/2019	50%	14/06/2019	60%	14/06/2019	60%
Cycle 5	16/08/2019	100%	-	-	-	-	-	-
Cycle 6	-	-	20/09/2019	75%	20/09/2019	90%	20/09/2019	90%
Cycle 7	-	-	-	-	01/11/2019	100%	01/11/2019	100%
Cycle 8	-	-	04/12/2019	100%				

Gauteng Department of Education 2019

8.3 APPENDIX C: TEACH, ASSESS, DIAGNOSE AND REMEDIATE MODEL

(Gauteng Department of Education,2016)



8.4 APPENDIX D: MATHEMATICS ANNUAL ASSESSMENT PLAN FOR GRADE 11

SUBJECT: Mathematics GRADE: 11

TERM 1	TERM 2	TERM 3	TERM 4
TOPICS: TERM 1	**TOPICS: TERM 2**	**TOPICS:TERM 3**	**TOPICS:TERM 4**
• Number systems • Algebraic Expressions • Equations and Inequalities • Nature of roots • Exponents & Surds • Number Patterns (Linear & quadratic) • Finance (Simple & Compound Decay) Effect of different compounding periods	• Trigonometry • Euclidean Geometry • Consolidation • Revision • Mid-Year Examinations	• Measurement • Analytical Geometry • Probability • Trigonometry • Functions: effect of parameters • Trigonometric Graphs • Revision	• Trigonometric Graphs • Statistics • Consolidation • Revision
Project/ Investigation	**Assignment/ Test**	**Test**	**Test**
Topic: Date: February Duration: 1 week Tool: Rubric	Topic: Date: May Duration: 1 hour Tool: Memorandum	Topic: Date: August Duration: 2 weeks Tool: Memorandum	Topic: Date: October Duration: 1 week Tool: Memorandum
Test	**Mid-Year Examination (June)**	**Test**	**END OF YEAR EXAM**
Topic: Date: March Duration: 1 hour Tool: Memorandum	All covered topics Topic: Date: June Duration: 2 hours Tool: Memorandum	Topic: Date: September Duration: 1 hour Tool: Memorandum	All topics in the core Topic: Two papers as per CAPS Date: November Duration: 4 hours Tool: Memorandum

8.5 APPENDIX E: MATHEMATICS – ANNUAL TEACHING PLAN –GRADE 11

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 1			**2 TASKS FOR TERM 1**			
09/1 – 11/1 (3 days)	Exponents and Surds	• **Simplify expressions** using the laws of exponents for rational exponents where $x^{\frac{p}{q}} = \sqrt[q]{x^p} ; x > 0; q > 0$				**3%**
14/1 – 18/1	Exponents and Surds	• **Solve equations** using the laws of exponents for rational exponents where • Add, subtract, multiply, divide simple surds. • Solve simple equations involving surds.				**6%**
21/1 – 25/1	Equations	• Revision of factorization. • Quadratic equations (by factorization). • Complete the square. • Quadratic equations (by using the quadratic Formula).				**9%**
28/1 – 01/2	Equations and Inequalities	• k - method • Quadratic inequalities in one unknown • (Interpret solutions graphically). • Equations in two unknowns, one of which is				**12%**

		Linear and the other quadratic. • Nature of roots.				
04/2 – 08/2	Euclidian Geometry	• Revision of grade 10 geometry (1 day) • Investigate and prove theorems of the geometry of circles assuming results from earlier grades, # The line drawn from the center of a circle perpendicular to a chord bisects the chord; # The perpendicular bisector of a chord passes through the center of the circle; # The angle at the center of a circle is double The size of the angle at the circle. NB: CONVERSES TO BE TAUGHT FOR APPLICATION PURPOSES	F	PROJECT/ INVESTIGATION SBA marks: 20		**16%**
11/2 – 15/2	Euclidian Geometry	# Angles subtended by a chord of the circle, On the same side of the chord, are equal. # The opposite angles of a cyclic quadrilateral are supplementary; # Two tangents drawn to a circle from the same point outside the circle are equal in length; NB: CONVERSES TO BE TAUGHT FOR APPLICATION PURPOSES				**21%**
18/2 – 22/2	Euclidian Geometry	# and the chord drawn from the point of contact is equal to the angle in the alternate Segment. • Solve circle geometry problems,				**24%**

		providing Reasons for statements. NB: CONVERSES TO BE TAUGHT FOR APPLICATION PURPOSES				
25/2 – 01/3	Trig functions and revision grade 10 trigonometry	• Basic graphs defined by $y = a \sin x$, $y = a \cos x$ and $y = \tan x$ for $\theta \in [-360^0 ; 360^0]$ • Investigate the effect of k and p on the graphs of the functions defined by: $y = \sin(kx)$, $y = \cos(kx)$, $y = \tan(kx)$ $y = \sin(x + p)$, $y = \cos(x + p)$, $y = \tan(x + p)$)	F	TEST SBA marks: 10		**27%**
04/3 – 08/3	Trig Identities & Reduction formulae	• Derivation and use of the identities $\tan\theta = \frac{\sin\theta}{\cos\theta}$ and $\sin^2\theta + \cos^2\theta = 1$ • Determine for which values of a variable an identity holds. • Derivation and use of reduction formulae for $\sin(90^0 \pm \theta)$, $\cos(90^0 \pm \theta)$, $\sin(180^0 \pm \theta)$, $\cos(180^0 \pm \theta)$, $\tan(180^0 \pm \theta)$, $\sin(360^0 \pm \theta)$, $\cos(360^0 \pm \theta)$, $\tan_{(360^o \pm \theta)}$ • $\sin_{(-\theta)}$, $\cos_{(-\theta)}$, $\tan_{(-\theta)}$				**30%**
11/3 – 15/3	Trig equations and general solutions	• Determine the general solution and / or specific solutions (given intervals) of trigonometric equations.				**33%**
END OF TERM 1 SCHOOLS CLOSES ON THE 15/03/2019						

TERM 2				2 TASKS FOR TERM 2		
02/4 – 05/4 (4 days)	Analytical Geometry	• The equation of a line through two points. • The equation of a line through one point and Parallel or perpendicular to a given line. • Collinear lines				**36%**
08/4 – 12/4	Analytical Geometry	• The inclination (θ) of a given line. • Applications in complex diagrams.				**39%**
15/4 – 18/4 (4 days)	Number patterns	• Revise linear number patterns. • Investigate number patterns leading to those where there is a constant second difference between consecutive terms, and the general term is therefore quadratic.		MATHS WEEK		**42%**
23/4 – 26/4 (4 days)	Number patterns	• Investigate number patterns leading to those where there is a constant second difference between consecutive terms, and the general term is therefore quadratic.				**45%**
29/4 – 03/5 (4 days)	Functions	• Revise the effect of *a* and *q* and investigate the effect of p on the graphs of the functions defined by:	F	ASSIGNMENT/ TEST SBA marks: 10		**48%**

		• $y = f(x) = a(x + p) + q$ $y = f(x) = a(x + p)^2 + q$				
06/5 – 10/5	Functions	• Revise the effect of *a* and *q* and investigate the effect of p on the graphs of the functions defined by: • $y = f(x) = a(x + p)^2 + q$ • $y = f(x) = \frac{a}{x + p} + q$ **NB: Apply nature of roots with functions**				**51%**
13/5 – 17/5	Functions	• Revise the effect of a and q and investigate the effect of p on the graphs of the functions defined by: • $y = f(x) = \frac{a}{x + p} + q$ • $y = f(x) = ab^{x+p} + q;\quad b>0\ ;\ b \neq 1$ **NB: Apply nature of roots with functions**				**57%**
20/5 – 24/5	**JUNE EXAMS**		F	**JUNE EXAM** **SBA marks: 30**		
27/5 – 31/5	**JUNE EXAMS**					
03/6 – 07/6	**JUNE EXAMS**					
10/6 – 14/6	**JUNE EXAMS**					
END OF TERM 2 SCHOOLS CLOSES ON 14/06/2019						

DATE	TOPIC	CONTENT	F	ASSESSMENT	Date Completed	% Completed
TERM 3			**2 TASKS FOR TERM 3**			
09/7 – 12/7 (4 days)	Functions	• Reflection about the y – axis (All functions) • Average gradient and gradient of a curve at a point. • Interpretations, applications and practical problems. **NB: Apply nature of roots with functions**				**60%**
15/7 – 19/7	Trigonometry Sin/Cos/Area rules	• Prove and apply the sine, cosine and area rules.				**66%**
22/7 – 26/7	Trigonometry Sin/Cos/Area rules	• Solve problems in two dimensions using the sine, cosine and area rules.	F	TEST SBA marks: 10		**69%**
29/7 – 02/8	Measurements	• Revision of grade 10 work.				**72%**
05/8 – 08/8 (4 days)	Statistics	• Variance and standard deviation of ungrouped data gives (cumulative frequency curves).				**76%**
12/8 – 16/8	Statistics	• Symmetric and skewed data. • Identification of outliers.				**79%**
19/8 – 23/8	Probability	• Exclusive events • Dependent and independent	F	TEST SBA marks: 10		**83%**

		events. • Two-way contingency tables. • the product rule for independent events: • P (A and B) = P(A).P(B).				
26/8 – 30/8	Probability	• Venn diagrams, tree diagrams and other techniques to solve probability problems (where events are not necessarily independent).				**86%**
02/9 – 06/9	Financial Maths	• Simple and compound decay formulae.				**93%**
09/9 – 13/9	Financial Maths	• Different periods of compound growth and decay. • Effective and nominal interest rates.				**100%**
16/9 – 20/9	Revision	• Revision				
END OF TERM 3 SCHOOLS CLOSES ON 20/09/2019						
TERM 4			**1 TASK FOR TERM 4**			
01/10 – 04/10 (4 days)	Trigonometry	• Revision				**100%**
07/10 – 11/10	Euclidean Geometry	• Revision	F	TEST SBA marks: 10		**100%**
14/10 – 18/10	Functions	• Revision				**100%**
21/10 – 25/10	Algebra	• Revision				**100%**
28/10 –	**FINAL**			SBA: 25 %		

01/10	**EXAMINATIONS**			Final exam: 75 %		
04/11 – 08/11	**FINAL EXAMINATIONS**					
11/11 – 15/11	**FINAL EXAMINATIONS**					
18/11 – 22/11	**FINAL EXAMINATIONS**					
25/11 – 29/11	**REPORTING**					
02/12 – 04/12	**REPORTING**					

8.6 APPENDIX F: MATHEMATICS SUBJECT FRAMEWORK (GRADE 10-12)

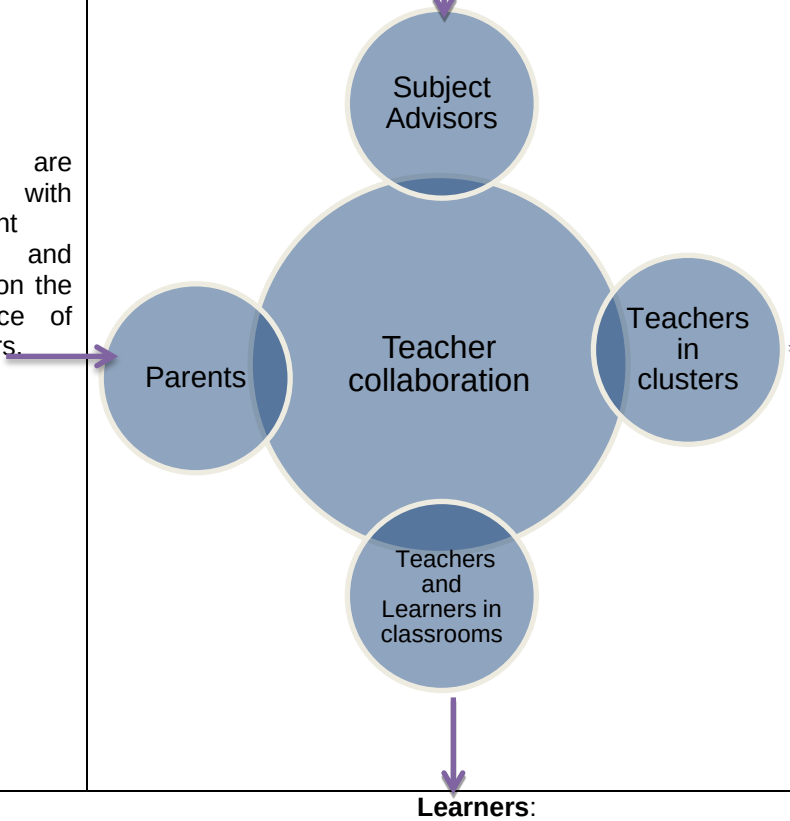
DATE	GRADE 10	%	Assessment	GRADE 11	%	Assessment	GRADE 12	%	Assessment
TERM 1			**Formal (25%)**			**Formal (25%)**			**Formal (25%)**
09/1 – 11/1 (3 days)	Algebraic expressions	**3%**	**2 TASKS:**	Exponents and Surds	**3%**	**2 TASKS:**	Number Patterns	**3%**	**3 TASKS**
14/1 – 18/1	Algebraic expressions	**6%**		Exponents and Surds	**6%**		Sequences and Series	**8%**	
21/1 – 25/1	Algebraic expressions	**9%**		Equations	**9%**		Sequenced and Series	**14%**	
28/1 – 01/2	Exponents	**12%**	**INVESTIGATION OR**	Equations and Inequalities	**12%**	**INVESTIGATION OR**	Euclidean Geometry	**18%**	**PROJECT / INVESTIGATION**
04/2 – 8/2	Equations	**15%**	**PROJECT**	Euclidian Geometry	**16%**	**PROJECT**	Euclidean Geometry	**22%**	
11/2 – 15/2	Equations and Inequalities	**18%**	**OR**	Euclidian Geometry	**21%**	**OR**	Euclidean Geometry	**26%**	
18/2 – 22/2	Euclidean Geometry	**21%**	**TEST**	Euclidian Geometry	**24%**	**TEST**	Trigonometry	**30%**	**ASSIGNMENT**
25/2 – 1/3	Euclidean Geometry	**24%**		Trig functions and revision grade 10	**27%**		Trigonometry	**34%**	
04/3 – 08/3	Trigonometry	**27%**		Trig Identities & Reduction formula	**30%**	**TEST**	Trigonometry	**38%**	
11/3 – 15/3	Trigonometry	**30%**	**TEST**	Trig equations and general solutions	**33%**		Analytical Geometry	**44%**	**TEST[variety topics]**
TERM 2									
02/4 – 05/4 (4 days)	Analytical Geometry	**33%**		Analytical Geometry	**36%**		Analytical Geometry	**48%**	
08/4 – 12/4	Analytical Geometry	**36%**		Analytical Geometry	**39%**		Function & Inverse Functions	**52%**	
15/4 – 18/4 (4 days)	Number patterns	**39%**	**2 TASKS:**	Number patterns	**42%**	**2 TASKS:**	Functions & Inverse Functions	**54%**	**1 TASK**
23/4 – 26/4 (4 days)	Functions	**42%**	**MATHS WEEK**	Number patterns	**45%**	**MATHS WEEK**	Functions: Polynomials	**58%**	**MATHS WEEK**
29/4 – 03/5 (4 days)	Functions	**45%**		Functions	**48%**		Differential Calculus	**62%**	
06/5 – 10/5	Functions	**48%**	**ASSIGNMENT OR**	Functions	**51%**	**ASSIGNMENT OR**	Differential Calculus	**70%**	
13/5 – 17/5	Trig Functions	**51%**	**TEST**	Functions	**57%**	**TEST**	Differential Calculus	**74%**	**TEST [variety topics]**
20/5 – 24/5	Trig functions	**54%**		Revision			Revision		

27/5 – 31/5	JUNE EXAMS		**EXAMS**	JUNE EXAMS		**EXAMS**	JUNE EXAMS		**JUNE EXAMS**
03/6 – 07/6	JUNE EXAMS			JUNE EXAMS			JUNE EXAMS		
10/6 – 14/6	JUNE EXAMS			JUNE EXAMS			JUNE EXAMS		
TERM 3									
09/7 – 12/7 (4 days)	Trig 2 – D	**57%**	**2 TASKS:**	Functions	**60%**		Financial Maths	**78%**	
15/7 – 19/7	Trig 2 – D	**60%**		Trigonometry: Sin/Cos/Area rules	**66%**		Financial Maths	**84%**	1 TASK
22/7 – 26/7	Statistics	**63%**		Trigonometry: Sin/Cos/Area rules	**69%**	**INVESTIGATION**	Statistics	**88%**	
29/7 – 02/8	Statistics	**66%**	**INVESTIGATION**	Measurements	**72%**	**OR**	Counting Principles and Probability	**92%**	**TEST [variety topics]**
05/8 – 8/8 (4 days)	Probability	**69%**	**OR**	Statistics	**76%**	**PROJECT**	Counting Principles and Probability	**100%**	
12/8 – 16/8	Probability	**72%**	**PROJECT**	Statistics	**79%**	**OR**	Prelim exam		**PRELIM EXAMS**
19/8 – 23/8	Financial Maths	**75%**	**OR**	Probability	**83%**	**TEST**	Prelim exam		
26/8 – 30/8	Financial Maths	**78%**	**TEST**	Probability	**86%**		Prelim exam		
02/9 – 06/9	Measurement	**81%**		Financial Maths	**93%**	**TEST**	Prelim exam		
09/9 – 13/9	Measurement	**90%**	**TEST**	Financial Maths	**100%**		Prelim exam		
16/9 –20/9	Revision	**93%**		Revision			Prelim exam		
TERM 4									
01/10 – 4/10 (4days)	Euclidean Geometry	**96%**	**1 TASK**	Trig revision		**1 TASK**	Revision		
07/10 – 11/10	Euclidean Geometry	**100%**		Euclidian Geometry revision			Revision		
14/10 – 18/10	Revision		**TEST**	Functions revision		**TEST**	FINAL EXAMINATIONS		**FINAL EXAMS**
21/10 – 25/10	Revision			Algebra revision			FINAL EXAMINATIONS		
28/10 – 01/11	FINAL EXAMINATIONS			FINAL EXAMINATIONS			FINAL EXAMINATIONS		
04/11 – 8/11	FINAL EXAMINATIONS			FINAL EXAMINATIONS			FINAL EXAMINATIONS		
11/11 – 15/11	FINAL EXAMINATIONS			FINAL EXAMINATIONS			FINAL EXAMINATIONS		
18/11 – 04/12	FINAL EXAMINATIONS			FINAL EXAMINATIONS			FINAL EXAMINATIONS		

8.7 APPENDIX G: TEACHER COLLABORATION

Subject Advisors
Provide guidance to teachers in the development and implementation of assessment plans and observe teachers in action in their classrooms

Parents:
Parents are provided with assessment plans and feedback on the performance of the learners.



Teachers:
Teachers work in clusters to identify and define the problems, causes and solutions. Action plans, formative tasks, rubrics and feedback mechanisms are developed.
Teachers also share common challenges, identify immediate actions and solutions and feedback strategies.
Teachers explore and evaluate issues of teaching and learning that require change or improvements.

Learners:
Learners are given formative assessment task. Learners are given support, remediation and marks on completed tasks and corrective feedback.

8.8 APPENDIX H: DATA COLLECTION DOCUMENTS

8.8.1 Appendix H (i): The Teacher Interview Protocol

Topic: The role of examinations as a tool for effective formative assessment practices

Time of the Interview: _____ **Duration:** _____

Date: _____

Place: Randfontein

Interviewer: Antoinette Dliwayo

Interviewee: _____ **Pseudonym:** _____

Male/Female: _____

The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to define the part that common examinations could play in the formative assessment practices of schools. The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. For this reason, schools require an examination and assessment system that will not only adequately measure the capabilities, knowledge and skills of learners, but that will also drive a formative agenda in ensuring mastering of skills and learner progress to ensure success in summative assessments.

Questions:

1. Tell me about your assessment background, knowledge and skills in Mathematics?

_____

_____

_____

_____

_____

2. Now that you mentioned your assessment background, had you had formal training?

_____
_____
_____
_____
_____

3. Tell me about how you currently plan for instructional and assessment sequence within a unit of study in preparation for Common Examinations?

_____
_____
_____
_____
_____

4. Could you describe how these examinations have benefited your school in the past three years?

_____
_____
_____
_____
_____
_____
_____

5. You mentioned that they are/not beneficial, tell me about that.

_____
_____
_____
_____
_____

6. What is the key assessment strategies used in Mathematics, give me a specific example of that?

_____

_____

_____

_____

_____

7. What is your role, as a Grade 11, teacher in the development and administration of common examinations in your school?

_____

_____

_____

_____

_____

8. Do you conduct formative assessments before your learners participate in common examinations? Tell me more about that?

_____

_____

_____

_____

9. What type of assessment methods you generally use?

_____

_____

_____

_____

_____

10. In your response you used the word informal assessment what do you mean by that?

_____

_____

_____

_____

_____

11. How often do leaners in your school participate in these assessments?

On a daily basis	As per the annual assessment Plan	In June and Nov	Not at all.

12. What other transition/remedial activities do you engage your learners to prepare them for common examinations?

_____

_____

_____

_____

_____

13. What are the benefit regular classroom assessments?

_____

_____

_____

_____

_____

14. How accessible are the past common examination materials to learners and teachers in your school?

More accessible	Controlled access	Limited accessibility	No Access
T	T	T	T
L	L	L	L

15. To what extent are the formative assessments, developed at school level, aligned to the mid-year and end of year common examinations?

Great Extent	Moderate Extent	Lesser Extent	Not at all

16. What do you think should be done to manage the mismatch between internal and external assessments?

_____

_____

_____

_____

_____

17. Tell me what you believe about teacher assessment literacy and competence in enhancing classroom assessment practices?

_____

_____

_____

_____

_____

18. How often do you participate in team teaching and collaborative assessment task development in your cluster/district?

On a termly basis	On a weekly basis	On a monthly basis	Not at all

19. How do you learn from this collaboration?

_____

_____

_____

_____

_____

20. What kind of quality checks do you use to ensure that the formative assessments are of an acceptable standard?

Pre-assessment moderation	Post assessment moderation	Pre and Post Assessment Moderation	Moderation of learner evidence of performance only

21. What do you think when you hear the term analysis of learners results?

_____

_____

_____

_____

_____

22. How have the common examinations results been used to improve learning and teaching in your subject? Can you give me an example

_____

_____

_____

_____

_____

23. What measures are put in place in your school to support learners after the writing of midyear common examinations?

_____

_____

_____

_____

_____

24. How are the diverse needs of learners catered for in the common examinations?

_____

_____

_____

_____

_____

25. What are general views of learners, in your class, on common summative assessments?

_____

_____

_____

_____

_____

26. To what extent do you associate the learners' opportunities to learn with common examinations?

Great extent	**Moderate extent**	**Limited extent**	**No associations**
Comment	**Comment**	**Comment**	**Comment**

8.8.2 Appendix H (ii): Focus Group Interview Protocol

Topic: The role of examinations as a tool for effective formative assessment practices

Time of the Interview: _____ Duration: 1hour
Date: _____
Place: _____
Interviewer: Antoinette Dliwayo
Interviewees: District Subjects Advisor, District Assessment Official, School Assessment Tem coordinator.
Pseudonyms: _____
Male/Female: _____

The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to define the part that common examinations could play in the formative assessment practices of schools. The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. For this reason, schools require an examination and assessment system that will not only adequately measure the capabilities, knowledge and skills of learners, but that will also drive a formative agenda in ensuring mastering of skills and learner progress to ensure success in summative assessments.

Questions

1. As a group of Grade 11 Mathematics teachers in your District how to do you ensure skills transfer with regard to instructional and assessment knowledge?

2. Are you, as Grade 11 Mathematics teachers, using the common examinations constructively to improve learner performance in your schools? explain

3. Do the assessment enhancements correlate with learners' academic development in Mathematics? Give clarification.

Yes	NO

4. Do teachers' assessment background, qualification and teaching experience, either in isolation or interacting with the learners' readiness, correlate with the outcomes in these examinations? Explain briefly.

5. How do you ensure that the assessments used by teachers at school level encompass different levels of difficulty to match the quality of questions used in common examinations? Explain how the balance is maintained.

6. How is the learners' performance in the normal classroom assessments and the provincial examinations compared to improve learning and teaching?

7. Do the learner performance levels in formative assessments and common examinations have an influence on the final Mathematics learner results?

Yes	No

8. How might the formative common examinations outcomes influence the academic outcomes for Grade 11 learners?

9. Would you consider common examinations as a sustainable strategy to enhance the performance of Grade 11 learners in Mathematics, why?

Yes	NO

10. How would you rate the involvement of parents based on the feedback on common formative assessments?

Good	Moderate	Low	None

8.9 Appendix H (iii): Teacher Questionnaire Protocol

Topic: The role of examinations as a tool for effective formative assessment practices

Time: _____ **Duration:** _____

Date: _____

Place: _____

Questionnaire developer: Antoinette Dliwayo

Respondent: _____ **Pseudonym:** _____

Male/Female: _____

Instructions:

Please take your time to complete the questionnaire and be as honest as possible in proving your responses.

No personal details should be provided.

Note that the information provided will be kept in strict confidentiality and will not be used for anything else except for the purposes of this study

The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to define the part that common examinations could play in the formative assessment practices of schools. The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. For this reason, schools require an examination and assessment system that will not only adequately measure the capabilities, knowledge and skills of learners, but that will also drive a formative agenda in ensuring mastering of skills and learner progress to ensure success in summative assessments.

1. What is your understanding of common examinations?

---

2. What is your impression of the Mathematics assessment plans used for Grade 11 in your school?

---

3. What would you consider to be the key purpose of common examinations for Grade 11 Mathematics?

---

4. Why, in your opinion, do you think is necessary to conduct the common examinations in Mathematics?

---

5. How you would use common examinations as effective formative assessment tools in your classroom?

---

6. What methods have you put in place, together with teachers in your cluster, to improve teacher assessment practices in Mathematics?

---

7. To what extent do you use the common examinations as an opportunity to improve the quality of school assessment practices?

For every teaching Unit	When requested by the Department of education	For mid- year and end of year examination only	Not at all

8. If you were to play a role in the improvement of common examination processes, what would you consider to be your most valuable contribution?

---

9. What assessment measures do you use in your subject to ensure the dependability (validity and fairness) and quality of the assessment tasks that are developed at school level?

---

10. What in your opinion is the impact of common examinations on learner performance compared to assessments that are developed by you at school level?

---

11. In your experience of having administered common examinations, what is the learners' reaction when taking these examinations?

8.9.1 Appendix H (iv): Observation Checklist

Topic: The role of examinations as a tool for effective formative assessment practices

Assessment Start Time: _____ Assessment end time: _____Duration of observation___

Date: _____

Observer: _____

School: _____

Observation instrument developer: Antoinette Dliwayo

Teacher Code: _____Grade: _____Subject Observed: _____

Number of learners: _____

Observation Instrument: Checklist

	Activity	YES	NO	SOMEWHAT	COMMENT
1.	**Teacher assessment Preparation**				
	a. A plan for the assessment activities is available				
	b. Learning and assessment resource materials are available for the learners (textbook, worksheets, assessment programme				
	c. Assessment plans are CAPS aligned				
	d. Teacher uses a variety of banked question to set classroom assessment tasks				
	e. Teacher uses the assessments that are appropriate for learners in terms of content coverage, language, cognitive levels etc.				
2.	**Type of assessment tasks provided by the teacher**				
	a. Teacher asks a variety of questions including open ended questions that probe learners' understanding				

	b. The teacher builds on the conceptual knowledge that learners bring with them to the class				
	c. Teacher uses diagnostic teaching starting from the learners' knowledge through questioning and reflections on the assessment task given				
	d. Teacher asks leaners to provide answers about specific concepts and to provide reasons for their responses				
	e. The assessment tasks are adapted to all types of learners (low /above average performing)				
	f. The teacher engages learners in discussions				
	g. Teacher follows a learner centred approach to get a sense of what learners know and can do well				
3.	**Learner involvement during assessment process**				
	a. There is evidence that learners benefit from assessment that are given to them.				
	b. Learners are engaged in classroom assessment activities				
	c. Learners understanding has changed during the unit of study				
	d. Learners can critique their own work and readjust their ideas				
	e. Learners interact with one another during the assessments				
	f. Learners ask clarity seeking questions during assessments				
	g. The classroom assessment tasks learners to be knowledgeable about a unit of work				
	h. Teacher present evidence in support of the unit of study (homework, assignment, classwork etc.)				
4.	**How the teacher engages with learners**				
	a. Teacher takes note of the learner's prior knowledge as a foundation to build new understandings				
	b. Teachers begins with learners' informal ideas and gradually helps				

	them to see how the ideas in a formal way				
	c. Teacher allows learners to use own words, diagrams to describe Mathematical concepts				
	d. Teacher encourages learners to explore, explain and extend and evaluate their progress				
	e. Teacher demonstrating Mathematical solutions and works with individual learners				
	f. Teacher uses cognitively guided instructions to build learners' complex reasoning				
	g. Teacher fosters integrated understanding of a unit of work(connections)				
5	**5.1 How the teacher marks/grades learners' work Teachers marking approach/method**				
	a. Teacher marking books at individual learners' desks				
	b. Marks the learner books after the lesson				
	c. Teacher uses peer marking assessment tasks by the learners/teachers				
	5.2 **Teacher assessment feedback**				
	a. The teacher feedback focuses on understanding not only on memory for procedures				
	b. The teacher gives feedback to learners in an informal /formal manner				
	c. The teacher gives feedback help learners to build skills of self-assessment				
	d. The teacher gives learners an opportunity to give feedback to their peers				
	e. How the teacher reacts to learner incorrect responses or lack of response i. Call on other to responds ii. Provide feedback to entire class iii. Demonstrates various methods				

	f. Feedback is given to graded tests, worksheets, homework for revision/remediation				
6.	**Assessment review**				
	a. Teacher use assessment to review his teaching practice				
	b. The teacher identifies the need for intervention to develop learners' understanding of important sections of work.				
	c. The teacher provides expanded opportunities to learners after the analysis of learner performance				

Comments

_____
_____
_____
_____
_____
_____
_____
_____
_____

8.10 **APPENDIX I: CONSENT LETTERS**

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education

Dear teacher

I am a student at the University of Pretoria, currently enrolled for my PHD in the Faculty of Education. I need to complete my research module and one of the requirements is that I conduct research and write a research report about my work. I wish to request you to participate in this research.

My research topic is: **The role of examinations as a tool for effective formative assessment practices.** The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to explore how common examinations could be used as formative assessment tools in classrooms to enhance teaching and learning. The scope of the research will include the analysis of the Grade 11 Mathematics common examinations learner performance results and also the teacher assessment practices in the schools. Since research on common examinations have been conducted internationally, it is envisaged that this study will bring light into how South African schools can use these examinations as formative assessments to improve learner performance.

If you agree to participate in this study, you will be interviewed about the topic in a group and individually. The interviews will take place a venue and time that will suit you. The interview sessions will not interfere with your normal school activities and teaching time and will not take longer than an hour. The interviews will be audio and video taped and transcribed for analysis purposes.

You will also be requested to complete a questionnaire on common examinations and their roles as formative assessment tools. The information you will provide will be treated confidentially and will be regarded as anonymous. The findings will only be shared with my supervisor.

I will also like to you to take part in 2 developmental sessions where guidelines for setting quality formative assessment tasks will be mediated to participating teachers. Examples of quality tasks will then be shared amongst teachers. Only my supervisor and I will have access to this information. No learners will be involved in this study, only the analysis of their performance data in common examinations will be used.

You do not have to participate in this study if you do not wish to do so; no participants will be coerced into any of the research projects. If agree to participate but later in the research in the research wish to withdraw, you will be allowed to do so.

This study upholds the principle of anonymity; therefore your identity will be protected. A pseudonym will be allocated to you, only my supervisor and I will know your true identity. In addition your school will also be kept anonymous. All data that will be collected from you will be in my care and that of my supervisor. You will be given an opportunity to see the transcripts and make necessary changes. The discussion and findings chapters will also be made available to you. After the study the information will be safely kept at the University Department of Science, Mathematics and Technology.

If you agree to take part in the research, please fill in the attached consent form. If you have any questions, you are welcome to contact my supervisor or me at the contact details provided below.

Signature of student

Name of student: Mary-Antoinette Dliwayo Supervisor: Dr Surette van Staden

Contact number of student: 083 362 9814 012 420 5159

E-mail address of student: antoinette.dliwayo@gmai.com surette.vanstaden@up.ac.za

Consent form

I_____ (your name) agree/ do not agree (delete what is not applicable) to take part in the research project titled: **The role of examinations as a tool for effective formative assessment practices.** I understand that I will be interviewed for an hour at a venue and time that will suit me, that this will not interfere with the school activities or teaching time and that the interview will be audio taped.

I understand that my Grade 11 Mathematics learner performance data in common examinations will be used in the research. I also understand that I will be required to complete a questionnaire and take part in task development sessions with other participating grade 11 Mathematics teachers which will be video recorded.

I understand that the researcher subscribes to the principles of:

a. *Voluntary participation* in research, implying that the participants might withdraw from the research at any time.
b. *Informed consent*, meaning that the research participants must at all times be fully informed about the research and its purpose, and must give consent to their participation in the research.
c. *Safety in participation,* meaning that the human respondents should not be placed at risk or harm of any kind e.g. research about personal issues of the participant.
d. *Privacy,* meaning that the *confidentiality* and *anonymity* of human respondents should be protected at all times.
e. *Trust,* which implies that human respondents will not be responded to any acts of deception or betrayal in the research process or its published outcomes.

Signature_____ Date: _____

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education

Dear Principal

I am a student at the University of Pretoria, currently enrolled for my PHD in the Faculty of Education. I need to complete my research module and one of the requirements is that I conduct research and write a research report about my work. I wish to request your approval for your teachers to participate in this research.

My research topic is: **The role of examinations as a tool for effective formative assessment practices.** The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to explore how common examinations could be used as formative assessment tools in classrooms to enhance teaching and learning. The scope of the research will include the analysis of the Grade 11 Mathematics common examinations learner performance results and also the teacher assessment practices in the schools. Since research on common examinations have been conducted internationally, it is envisaged that this study will bring light into how South African schools can use these examinations as formative assessments to improve learner performance.

If you allow me to conduct research in your school, I will interview the grade 11 Mathematics Teacher, HOD and the school assessment team coordinator about the topic individually and in groups. I attach the copy of the interview schedule for your information. Interviews will take place at a venue and time that will suit the participants. The interview sessions will not interfere with the normal school activities and teaching time. The interviews will be audio and video taped and they will be transcribed by me for analysis purposes. The information provided will only be accessible to me and my supervisor.

The participating teachers will also be requested to complete a questionnaire. The information that will be provided by your teachers will be treated confidentially and will be regarded as anonymous.

I will also like the teachers to take part in 2 developmental sessions where guidelines for setting quality formative assessment tasks will be mediated. Examples of quality tasks will be shared amongst teachers. Only my supervisor and I will have access to this information. No learners will be involved in this study, only the analysis of their performance data in common examinations will be used.

The teachers' participation will be voluntary and they can withdraw at any time. The identity of the school and participating teachers will be protected. Only my supervisor and I will know the participants. Pseudonyms will be used for your school and teachers during the data collection process and analysis. The information that will be collected will only be used for academic purposes. All the collected information and documents will be in my care or that of my supervisor. The findings of the study will also be made available to you. After the study the information will be safely kept at the University Department of Science, Mathematics and Technology.

If you agree to allow me to conduct the research in your school, please fill in the attached consent form. If you have any questions, you are welcome to contact my supervisor or me at the contact details provided below.

Signature of student

Name of student: Mary-Antoinette Dliwayo Supervisor: Dr Surette van Staden

Contact number of student: 083 362 9814 012 420 5159

E-mail address of student: antoinette.dliwayo@gmai.com surette.vanstaden@up.ac.za

Consent form

I_____ (your name) agree/ do not agree (delete what is not applicable) to allow _____to conduct research in this school for the topic titled: **The role of examinations as a tool for effective formative assessment practices.**

I understand that the Mathematics Grade 11 Teacher, HOD and school assessment team coordinator will be interviewed, that the study will not interfere with the normal school activities and that the teachers will be audio taped.

I understand that my schools' Grade 11 Mathematics learner performance data in common examinations will be used in the research. I also understand that my teachers will also be required to complete a questionnaire and take part in tasks development sessions with other participating grade 11 Mathematics teachers which will be video recorded.

I understand that the researcher subscribes to the principles of:

a. *Voluntary participation* in research, implying that the participants might withdraw from the research at any time.
b. *Informed consent*, meaning that the research participants must at all times be fully informed about the research and its purpose, and must give consent to their participation in the research.
c. *Safety in participation,* meaning that the human respondents should not be placed at risk or harm of any kind e.g. research about personal issues of the participant.
d. *Privacy,* meaning that the *confidentiality* and *anonymity* of human respondents should be protected at all times.
e. *Trust,* which implies that human respondents will not be responded to any acts of deception or betrayal in the research process or its published outcomes.

Signature_____ Date: _____

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education

Dear District Director

I am a student at the University of Pretoria, currently enrolled for my PHD in the Faculty of Education. I need to complete my research module and one of the requirements is that I conduct research and write a research report about my work. I wish to request your approval to conduct research in your District.

My research topic is: **The role of examinations as a tool for effective formative assessment practices.** The performance of learners in schools is always under the spotlight and the role of summative assessment in the South African education system has been given much more attention and weight than that of the formative role of assessment. The purpose of this study is to examine the role of common examinations as an effective formative assessment tool for schools. This study will seek to explore how common examinations could be used as formative assessment tools in classrooms to enhance teaching and learning.
The scope of the research will include the analysis of the Grade 11 Mathematics common examinations learner performance results and also the teacher assessment practices in the schools. Since research on common examinations have been conducted internationally, it is envisaged that this study will bring light into how South African schools can use these examinations as formative assessments to improve learner performance.

If you allow me to conduct research in your District, I will interview the grade 11 Mathematics SES and Assessment official HOD about topic. I attach the copy of the interview schedule for your information. Interviews will take place at a venue and time that will suit the participants. The interview sessions will not interfere with the normal District office activities and time. The interviews will be audio and video taped and they will be transcribed by me for analysis purposes. The information provided will only be accessible to me and my supervisor. The information that will be provided by your SESs will be treated confidentially and will be regarded as anonymous.

I will also like to take conduct research with the teachers in the selected schools in your District. At school level teachers will be involved in interviews, completing a questionnaire and participating in task development sessions. These activities will take place at a venue and time that will suit the participants and will not interfere with the normal school activities and teaching time. Only my supervisor and I will have access to this information. No learners will be involved in this study, only the analysis of their performance data in common examinations will be used.

Participation will be voluntary and SESs and teachers can withdraw at any time. The identity of the participating SESs and teachers will be protected. Only my supervisor and I will know the participants. Pseudonyms will be used for your District, schools and teachers during the data collection process and analysis. The information that will be collected will only be used for academic purposes. All the collected information and documents will be in my care or that of my supervisor. The findings of the study will also be made available to you. After the study the information will be safely kept at the University Department of Science, Mathematics and Technology.

If you agree to allow me to conduct the research in your District, please fill in the attached consent form. If you have any questions, you are welcome to contact my supervisor or me at the contact details provided below.

Signature of student

Name of student: Mary-Antoinette Dliwayo Supervisor: Dr Surette van Staden
Contact number of student: 083 362 9814 012 420 5159
E-mail address of student: antoinette.dliwayo@gmai.com surette.vanstaden@up.ac.za

Consent form

I_____ (your name) agree/ do not agree (delete what is not applicable) to allow _____to conduct research in this District for the topic titled: **The role examinations as a tool for effective formative assessment practices.**

I understand that the Mathematics Grade 11 SES, Assessment Official and teachers from sample schools will participate in interviews, questionnaire and task development sessions. The study will not interfere with the normal district and school activities and the participants will be audio taped.

I understand that my District Grade 11(sample schools) Mathematics learner performance data in common examinations will be used in the research.

I understand that the researcher subscribes to the principles of:

a. *Voluntary participation* in research, implying that the participants might withdraw from the research at any time.
b. *Informed consent*, meaning that the research participants must at all times be fully informed about the research and its purpose, and must give consent to their participation in the research.
c. *Safety in participation,* meaning that the human respondents should not be placed at risk or harm of any kind e.g. research about personal issues of the participant.
d. *Privacy,* meaning that the *confidentiality* and *anonymity* of human respondents should be protected at all times.
e. *Trust,* which implies that human respondents will not be responded to any acts of deception or betrayal in the research process or its published outcomes.

Signature_____ Date: _____

8.11 APPENDIX J: GROUP NETWORKS

Knowledge Centredness group network.xps

Learner Centredness group network.xps

Assessment Centredness group network.xps

Community Centredness group network.xps

8.12 APPENDIX K: LEGISLATIVE FRAMEWORK AND PURPOSE OF COMMON EXAMINATIONS

LEGISLATIVE FRAMEWORK

This Examination Instruction must be read in conjunction with the following documents:

1 *National Curriculum Statement, Grades R – 12*, which comprises the:

- Curriculum and Assessment Policy Statements (CAPS) for all approved subjects;
- *National policy pertaining to the programme and promotion requirements of the National Curriculum Statement, Grades R – 12 (N4PR)*; and
- *National Protocol for Assessment (NPA), Grades R – 12*
- *Amendments policy pertaining to the National Curriculum Statement Grades R – 12 published as Government Gazette Nos. 36041 and 36042 of 28 December 2012*
- *Language in Education Policy; Department of Education 1997*
- *National Education Policy Act 1996 (Act 27 of 1996) as amended*

B. PURPOSE OF PROVINCIAL ASSESSMENT TASKS AND EXAMINATIONS

The purpose of setting the common assessments is provincially, among others, to:

- Improve the quality of teaching and learning in the province through the standards provided by CAPS-directed tasks
- Ensure that common standards are applied across grades and subjects
- Establish a base from which to conduct a comparative analysis for the development of intervention programmes and targeted assistance measures
- Ensure curriculum coverage, as stated in the Curriculum and Assessment Policy Statements, across all grades and subjects, by the translation of CAPS into assessment tasks
- Enhance learner performance, within the parameters of all other programmes, in order to improve provincial performance in all external assessments

(Gauteng Department of Education, 2016)

8.13 APPENDIX L: RESEARCH PLAN

1. Research Plan

1.1 Introduction

Before conducting research a clear and concise research plan is needed to articulate how the outputs will be used and communicated. The research plan for this study, on exploring the role of common examinations as formative assessment tools, provides the researcher with a trajectory of all the activities and time frames leading to the completion of the study. The plan will assist the researcher to systematise the planning and to address the inadequacies of the study.

8.13.1 1.2 Purpose and Scope

The purpose of the research plan is to clearly and succinctly describe how the proposed research topic and questions will be accomplished. The plan is aligned to the main purpose of the study which is to examine the role of common examinations as effective formative assessment tools for the improvement of teacher assessment practices.

The scope of the implementation plan covers the following phases:

a. *Phase 1: Preparations to conduct research*
    - Submission of ethics letters to the Department of Education for approval.
    - Environmental scan which includes visiting the research sites and setting meeting dates.
    - Meetings with the participants at school and district level.
b. *Phase 2: Data collection*
    - Briefing meetings with participants.
    - Administration of the questionnaire.
    - Conduct of interviews with teachers and Districts officials.
    - Observations of teachers during the implementation of the action research cycles.

c. *Phase 3: Data analysis phase*
    - AT-LASTI training
    - Conduct document analysis of evidence collected from participants
    - Data coding and sorting
    - Development of sub- themes and themes
    - Data analysis and interpretation
d. *Phase 4: Preparation of final draft dissertation*
    - Submission of final draft dissertation for editing.
    - Proof reading of edited dissertation.
    - Submission of final corrected dissertation for editing
e. *Phase 5: Submission of final research dissertation phase*
    - Completion of submission forms
    - Submission of final dissertation for resulting.
    - Printing and binding of approved dissertation.

8.13.2 1.3 Limitations of the Research Plan

The focus of the research plan will only be on the activities that will be carried out by the researcher in collaboration with the participants. The plan will be limited to the interaction with Mathematics Grade 11 teachers. Teachers from grades other than grade 11 will be excluded from the study. Attention will be on specifics such as what, how and where the research will be completed.

The activities outlined in the research plan will accordingly take the following possibilities into account:

e. The delay in the approval of ethics letters by the Department of Education.
f. The availability of participants on the set dates.
g. The delay in receiving learner performance data and related evidence.
h. The implementation of action research cycles on the dates set.
i. The non-completion of questionnaires by the participants as expected.

2. Delineation of the Research Plan

The research plan shown in Table 1 highlights the dates, activities, targeted samples, implications and mitigations of the study.

8.13.3 3. Summary

This research plan focussed on the activities that are envisaged for the finalisation of the study. Of significance for the realisation of the objectives of the study is the accessibility of the data and the buy-in of the participants. To this end the researcher will play a pivotal role of ensuring that credible data is collected within the set time frames. In the event that the deadlines cannot be met as planned due to unforeseen circumstances, an alternative plan will be put in place to address the gaps.

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
Phase 1: *Preparations to conduct research*	24 November 2017	Submission of ethical letters for permission to gain permission for data collection	District Director School Principal Teachers	Ethical letters	Delay in receiving response Mitigation: constant follow ups with the participants.	Schools preparing for final year end reports moist teachers not at schools due to the marking of Grade 12 final, examination scripts
	7 December 2017	Collection of approved letters from participants		Approved letters	None	
	15 January 2018	Visit to research sites to secure meeting dates and to deliver approved letters	Sample schools	Research plan and meeting schedule	Teacher unavailability due to school readiness and programmes district monitoring schedule. Mitigation: Request for school and District calendar of activities to determine meeting dates	
	29 January – 16 February 2018	Briefing meetings with the participants at selected districts to explain the purpose of the research and to agree and on the research planned activities.	Mathematics Subject Advisors , HODs add Grade 11Teachers	Minutes of the meeting and attendance registers	None attendance of briefing meetings by teachers Mitigation: rescheduling of meeting dates	
Phase 2: Data	16 February – 31 May 2018					

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
collection	16 Feb 2018	Distribution of questionnaires to participants	Teachers Subject Advisors in the two selected districts	Questionnaires	None	Questionnaire distribution posed a challenge as a result of response from Principals and HODS
	28 February 2018	Collection of questionnaires from participants		Completed questionnaires	None or part completion of questionnaires by participants	
					Mitigation: use available data and request for more information where necessary.	
	6-10 March 2018	Focus group interviews at the two sampled districts.		Attendance registers and interview questions	Non-attendance by participants as interviews will be conducted after school activities, venue logistics.	
					Mitigation: target Mathematics cluster meetings where teachers meet with the subject advisors	
	20 March-7 April 2018	Face to Face interviews	Teachers and subject advisors in the two selected districts and 12 sample	Attendance registers and interview question, voice recorder, interview questions and	Unavailability, unwillingness on the part of participants	Interviews to be rescheduled, most schools have not returned consent forms and questionnaires;
					Mitigation: target Mathematics subject meetings where teachers meet with	

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
			schools (6 per district)	researcher transcripts	the subject advisors at district level	School recess also posed a challenge. To consider other schools. I completed questionnaire from school KD collected
	17-20 April 2018	Meeting with teachers to explain and discuss the action research and to share guidelines on how to set quality formative assessment tasks	Teachers and subject advisors in the two selected districts and 12 sample schools (6 per district)	Attendance registers and in- service training manual, video/voice recorder and transcripts	Unavailability, unwillingness on the part of participants	
					Mitigation: target Mathematics subject meetings where teachers meet with the subject advisors at district level	
	24 – 30 April 2018	Observation of teachers during the implementation of formative assessment in line with the action research cycles in their classrooms	Teachers in the 12 sample schools (6 per district)	Attendance registers, researcher transcripts video/voice recorder, observation sheet	Unwilling of teachers affiliated to teacher Unions to be observed in classrooms	
					Mitigation: Meeting with Mathematics HODs, subject advisors and the teacher union representatives to assure them of the	

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
					purpose of the observations and to further request permission to conduct observations in classrooms.	
	1-31 May 2018	Mopping up of the data collection phase	Teachers and subject advisors in the two selected districts and 12 sample schools (6 per district)	Interviews, Questionnaires observation, attendance registers, voice/video recorder and researcher transcripts	none	
Phase 3: Data analysis phase	15-19 May 2018	Organise logistics to attend training on how to use the AT-LASTI software for data analysis.	Researcher under the guidance of the supervisor	Ability to demonstrate understanding of how to make use of the data analysis software programme	Finding a suitable provider to train to train the researcher	
					Mitigation: request advice and guidance from the research supervisor	
	1 - June 31 October 2018	Data coding and sorting, Development of sub-themes and themes and data analysis and	Researcher under the guidance of the supervisor	Questionnaire, interviews, observation and document analysis	None	

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
		interpretation.		transcripts		
	1- 30 June 2018	Request participants to verify researcher's transcripts to ensure that research data is accurately captures and consolidation of findings	Teachers and subject advisors in the two selected districts and 12 sample schools (6 per district	Verified transcripts consolidated into sections	Delays in the submission of verified information by the participants	
					Mitigation: constant follow ups with the participants by the researcher.	
	31 August-30 November 2018	Completion of Chapter 5 -6	Researcher	Edited final Dissertation	Completion of chapter writing on specified dates	
	10 April	Submission of final draft dissertation for editing.	Researcher Researcher	Edited final Dissertation Final dissertation	Completion of chapter writing on specified dates	
Phase 4: Preparation of final draft dissertation	15 April, 2019	Proof reading of edited dissertation.			Mitigation: Seek advice and guidance from supervisor	
	22 April "019	Submission of final corrected dissertation for editing			Mitigation: Seek advice and guidance from supervisor Corrections of chapters as per/examiners supervisors advice	
	30 April 2019	Completion of submission forms Submission of final dissertation for resulting.				
Phase 5:	30 April 2019	Completion of	Researcher	Final	Resubmission of	

Phase	Date	Activity	Targeted Sample	Evidence	Implication and mitigations	comments
Submission of final research dissertation phase	As per date of releasing of results	submission forms Submission of final dissertation for resulting. Printing and binding of approved dissertation		dissertation	corrected dissertation	

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[i] The term ‘informal assessment’ is used interchangeably with ‘formative assessment in this study’ as the CAPS policy refers to the term ‘informal’ as ‘assessment for learning’. Generally teachers make use of the term ‘informal assessment’ to make a distinction from formal assessments.

[ii] When one of the selected schools was approached to participate in the study, the principal was hesitant. Three follow up meetings were held with the school principal as he needed to consult with relevant stakeholders. The school could not participate in the study stating that there is a prohibition against the common examinations by the union.

[iii] Model C school were all white schools that were financed by the South African state and were supported by parents who wished to preserve white traditions and domination and to exclude black learners from the white ‘privileged’ schools (Roets, 2016). Ex model C schools, unlike the former model C schools, gave access to all learners of colour after the apartheid regime collapsed.

[iv] Assessment literacy refers to the Knowledge and skills necessary for compiling data about learner achievement and effectively using assessment processes and outcomes to develop ad improve the quality of teaching and learning (Yamtin and Wongwanich, 2014).

[v] Science subjects imply Mathematics, Life sciences and Physical Sciences