UNIVERSITY OF EDUCATION, WINNEBA

STUDENTS' PERCEPTIONS ON FORMATIVE ASSESSMENT IN FOUR SELECTED SENIOR HIGH SCHOOLS IN THE KUMASI METROPOLIS

FRANCIS SOMBAGRE SAMANI

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DECLARATION

STUDENT'S DECLARATION

I, FRANCIS SOMBAGRE SAMANI, declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and that it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: ……

DATE: …… ……

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work were supervised in accordance with the guidelines on supervision of dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. STEPHEN BAAFI-FRIMPONG

SIGNATURE: ……

DATE: …… ……

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DEDICATION

To my beloved wife Ruby Adwoa Samani and our children Prince, Francisca, Eunice and Ransford Samani.

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ABSTRACT

The study was conducted to find out students' views on the implementation of formative assessment in Senior High Schools and its impact on students' learning in the Kumasi Metropolis. The objectives of the study were to identify formative assessment activities students have experienced, identify students' attitudes toward formative assessment activities, examine challenges inherent in formative assessments and to assess the impact of formative assessments on students' learning in Senior High Schools in the Kumasi Metropolis. Descriptive research design with quantitative approach was used for the study. The target population was all the 189 Senior High School teachers and students who hold various positions in the Kwadaso Circuit. Simple random sampling was used to select 128 respondents for the study. Survey questionnaire was the instrument used for the study. The data collected were analyzed using the Statistical Package for Social Science (SPSS) version 20.0 and presented in tables, frequencies and percentages. The study found among others that teachers provided regular feedback in details to stimulate action for improvement in learning and also encouraged students to do peer-assessment during lessons. Students attitude towards formative assessment were that they studied hard to improve on their academic performance and also monitored their own progress in the teaching and learning process. Also formative assessment helped students to attain the intended learning outcome and that inadequate training of teachers in the management of assessment practices is a challenge associated with formative assessment. Based on the findings and conclusions, it is recommended that formative assessment should be highly encouraged by the Ghana Education Service to enhance teaching and learning to improve students' achievement.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Education has remained a social process in capacity building and maintenance of society for decades, as well as a weapon for acquiring skills, relevant knowledge and habits for surviving in the changing world (Adepoju & Fabiyi, 2007). According to Adesina (2011), education is a major force in economic, intellectual, social and cultural empowerment. He goes on to say that education has the capacity to bring about character and attitudinal change, as well as reshape human potential for desired development. In higher education, students' learning is more influenced by their perceptions of the educational environment than by the actual educational practices. Furthermore, students' conceptions of assessment are of particular importance because assessment has a significant impact on the quality of learning (Brown & Hirschfeld, 2008).

In many education systems around the world, assessment used for summative, accountability, and evaluation purposes plays an important and indispensable role as it caters for the diverse and often competing demands of the various stakeholders and users of assessment information. It is used for example, in selecting the best students for the next level of education, monitoring school performance, or allocating limited resources (Pongi, 2004). Great value is placed on testing, as some believe that testing provides incentives to students and their teachers to improve academic performance. The accessibility of test results to society also pushes schools to provide any support necessary for the purpose of improving

academic achievement (Adediwura, 2012). As assessments are conducted by the students' own teacher in their own classroom, students are meant to play an active role in the assessment process, particularly through the use of self and/or peer assessment used in conjunction with formative teacher feedback (Davidson, 2007). Assessment is one of the most important components of teaching and learning, which, if done effectively, can significantly improve students' performance (Feng, 2007).

It was further established by Feng (2007) that learning is driven by what teachers and students do in the classroom, therefore teachers need to know about their students' progress and difficulties with learning so that they can adapt their own work to meet students' needs. In Ghana, the poor performance of Senior High School (SHS) students and candidates who take the West Africa Senior Secondary Certificate Examination (WASSCE) is a cause for concern to educators. The School Based- Assessment (SBA) was designed to provide schools with an internal assessment system that will help schools to achieve the expected standards. The introduction of the SBA led to several changes in Continuous Assessment (CA). These changes were necessary for some pertinent reasons, among which was to bring about a reduction in the workload of teachers (Awoniyi, 2016)

In the Continuous Assessment, every term, the teacher was expected to be active in designing and producing a variety of assessment instruments, scoring the class tests, assignments, projects, taking observations, providing up-to-date records on each pupil and simultaneously be involved in remedial and individual teaching. Where classes were large, the workload became unbearable. The teachers then

resorted to unfair means of providing the requisite data for each student (Etsey, 2003). The SBA, on the other hand, consists of end-of-month tests, home work/ assignments (specially designed for SBA) and project. In the CA, the total class score generated throughout the term was 30% but in the SBA it is 50%. The end of term examination formed 70% in the CA but in the SBA, it is 50%. The emphasis is to improve students' learning by encouraging them to perform at a higher level (Awoniyi, 2016).

Brooks (2011) indicated when teachers join forces with their students in the formative assessment process, their partnership generates powerful learning outcomes. Teachers become more effective, students become actively engaged, and they both become intentional learners. Propelled by the formative assessment process, students understand and use learning targets, set their own learning goals, select effective learning strategies, and assess their own learning progress. And as students develop into more confident and competent learners, they become motivated (energized) to learn, increasingly able to persist during demanding tasks and to regulate their own effort and actions when they tackle new learning challenges. The primary purpose of formative assessment is to improve learning, not merely to audit it. It is assessment for learning rather than assessment of learning. Formative assessment is both an "instructional tool" that teachers and their students "use while learning is occurring" and "an accountability tool to determine if learning has occurred" (National Education Association, 2003 cited in Rudner & Schafer, (2005).

According to Chung (2006), formative assessment is regarded as a means to provide teachers and students with information about the strengths and weaknesses

of student learning with the ultimate goal of making responsive changes in teaching and learning. There has been an increasing criticism in the educational field on high stakes examinations because of their harmful effect on student learning. Consequently, the agitation is that, it should be reduced to the minimum (Morrison, 2002). In the international scenarios, formative assessment has been practised in schools in various western countries including Australia, Canada, Demark, England, Finland, Italy, New Zealand and Scotland (OECD, 2005). Ghana is therefore no exception. Effective practices in continuous assessments in teaching and learning process are vital components in developing students' meta-cognitive skills and valuable in giving feedback and crafting instructional strategies (Heritage, 2007).

It can be argued that formative assessment is valuable for both teachers and students. Formative assessment provides information to teachers about how students are progressing and they can use this information to make the necessary adjustments to their teaching. Students can also gain from feedback obtained from formative assessment because it can help them realise where there are gaps in their desired goals and in their current knowledge and skills (Marshall, 2006). The education policies and practice in Ghana have historically been influenced by the policies and practices in the United Kingdom (UK) and more recently the United States of America (USA). The trends in the UK and the USA have shifted towards centrally prescribed curricula which provide for inclusion of pupils with difficulties or disabilities. In terms of teacher assessment, for example, in England, the Qualifications and Curriculum Authority (2006) directs teachers to use appropriate assessment approaches that allow for different learning styles and ensure that pupils

are given the chance and encouragement to demonstrate their competence and attainment through appropriate means that are familiar to the pupils and for which they have been adequately prepared (Hayford, 2007).

When student learning is defined solely by the results of a summative test, the nature of the student is devalued and the process of learning is minimized. Currently, in many countries including Ghana, the educational quality of schools is often judged by performance on standardized tests. This has put strain on teachers to measure up to government-set standards and has left students struggling to perform on high-pressure tests. An alternative to such testing exists in formative assessment (Schenk, 2012).

1.2 Statement of the Problem

Formative assessments are used to modify, change, or enhance the instructional strategies the teacher has chosen to use as a way to maximize student learning and develop a productive learning environment (Schenk, 2012). Formative assessment should thrive within the classroom because attention is given to the diverse learners, learning is emphasized as a process, and a collaborative learning partnership is forged between teacher and student. Unfortunately only few studies are available which document the benefit that formative assessment has within Senior High Schools in Ghana. It also appears that continuous assessment has been highly focused than that of formative assessment in most Senior High Schools in the Kumasi Metropolis (Asamoah-Gyimah, 2002). Thus, it appears both teachers and students have little knowledge of formative assessment and its significance within the metropolis. Unfortunately, it seems limited literature exists about students'

perception of assessment particularly, in the context of Ghana. My interaction with some students in the metropolis revealed their lack of knowledge and understanding of the meaning of classroom formative assessment. These have made it imperative for the researcher to assess students' views on formative assessment practices in four selected Senior High Schools in the Kumasi Metropolis as a multi-stage case study.

1.3 Purpose of the Study

The purpose of this study was to find out students views on the implementation of formative assessment in Senior High Schools and its impact on students' learning in the Kumasi Metropolis.

1.4 Objectives of the Study

The study seeks to achieve the following objectives:

1. To find out formative assessment activities students have experienced in Senior High Schools in the Kumasi Metropolis.
2. To find out students' attitudes toward formative assessment activities in Senior High Schools in the Kumasi Metropolis.
3. To examine challenges inherent in formative assessments activities in Senior High Schools in the Kumasi Metropolis.
4. To assess the impact of formative assessments on students' learning in Senior High Schools in the Kumasi Metropolis.

1.5 Research Questions

The following research questions were formulated to guide the study.

1. What are the experiences of students with the formative assessment in Senior High Schools in the Kumasi Metropolis?
2. What attitudes do students exhibit toward formative assessment activities in Senior High Schools in the Kumasi Metropolis?
3. What challenges are inherent in formative assessments in Senior High Schools in the Kumasi Metropolis?
4. What are the effects of formative assessments on students' learning in Senior High Schools in the Kumasi Metropolis

1.6 Significance of the Study

Assessment in Senior High Schools has traditionally been seen as summative, or the process of establishing the standard reached by a student at the end of a particular course of learning. The use of formative assessment in classrooms can serve as one of the conditions for raising classroom standards.

A better understanding and implementation of formative assessment by teachers and students are crucial for mainstream Senior High School classroom learning. This may lead to a better understanding of how to use formative assessment to help with student learning.

The study will also contribute to the area of teaching and assessment, exploring various approaches of assessment in relation to students' learning; raise awareness about different paradigms of classroom assessment, in particular, introducing a shift from conventional approaches to the alternative methods; and advocating for students' involvement in the process of developing assessment

tools/instruments. This will help policy makers in taking informed decisions on formative assessment related matters.

1.7 Delimitation of the Study

A study of this nature could have been done for all Senior High Schools in the Ashanti Region, but due to the limited resources and time, this was not possible. The study was therefore delimited to only four (4) Senior High Schools in the Kumasi Metropolis, namely Yaa Asantewaa Girls' Senior High School, Prempeh College, Kumasi Senior High Technical School and Armed Forces Senior High School. It was further delimited to the tutors and students of these schools for better coverage and effective work to be done. Focus on this study involves basically formative assessment activities, students' attitude toward formative assessment, inherent challenges and effects on students' learning.

1.8 Limitations of the Study

The study like any other research had its limitations. A comprehensive study using all the Senior High Schools in Ashanti region or even Ghana could have been ideal. In that case, the findings would have applied to the whole country.

Despite precautions that were taken to avoid errors in sampling, the study had been affected by some difficulties encountered during the data gathering process. The flow of information from some respondents was not encouraging. Some respondents were also not likely to be honest and might have given responses, which did not reflect the reality in the schools. Thus; some respondents were likely to give

misleading responses which could not portray the real situation on the ground. This might be due to fear of victimization or hatred for some teachers on the part of students. To mitigate the challenge, the respondents were assured of confidentiality and anonymity.

1.9 Organisation of the Study

The work was organised mainly into five chapters. The Chapter One consists of background of the study; problem statement; objectives of the study; research questions; scope of the study; significance and limitations of the study. The researcher further reviewed some literature related to the study on the premise of both theoretical and empirical existing studies with the help of journals, articles and reports in Chapter Two. Chapter Three dealt with the methodology of the study. Thus, the research design, population of the study, the sampling techniques and instruments that were employed to gather the data were presented and discussed. It also presented data collection procedure, pilot test, validity and reliability and data analysis procedure. The results from the study were analysed and discussed and presented in the form of tables, graphs and charts in Chapter Four. The Chapter Five presents the summary of the findings, conclusions and recommendations of the study based on the results that were achieved.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature related to the topic under study as documented by some authorities and researchers in the area. The review is organised under the following sub-headings: Concept of assessment, Criteria for assessment, Concept of formative assessment in schools, Adopting formative assessment practices in schools, School based assessment in the Ghanaian Senior High Schools curriculum, Recognising the formative assessment process, Competency of teachers in handling formative assessment in schools, Theories on formative assessment, Students' conceptions of assessment and formative assessment on student learning, Challenges of formative assessment in schools and Effects of formative assessment on schools.

2.1 Concept of Assessment

Airasian (2001) defined assessment as the process of gathering, synthesizing, and interpreting information to assist in decision making. Angelo (1995) distinguished between assessment and evaluation. He saw assessment as process-oriented (formative), aimed to examine or diagnose ongoing individual student's performance, whereas evaluation was seen as product oriented (summative), purposely used for judgmental issues such as validity, accuracy, reliability, analysis and reporting about students' performance. Black and Wiliam (1998) define assessment broadly "to include all activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning"

(p.139). According to Boston (2002), assessment encompasses teacher observation, classroom discussion, and analysis of student work, including homework and tests. Assessment become formative when information is used to adapt teaching and learning to meet student needs. It is also based on prescribed comparative achievements among students to improve academic performance. Through this information, a teacher is able to evaluate his or her teaching strategies as well as learner's performance in the classroom (Boston, 2002).

Assessment is one of the most important components of teaching and learning, which, if done effectively, can significantly improve students' performance. Learning is driven by what teachers and students do in the classroom, therefore teachers need to know about their students' progress and difficulties with learning so that they can adapt their own work to meet students' needs. However, differences in schooling and cultural traditions lead to different understandings of learning, teaching and assessment (Feng, 2007). Jonasson (2004) suggests that assessment itself might be the master key to unlock the level of achievement, the level of understanding, and the level of language that these students and their teachers are hoping for. She points out that assessment is a dominant determinant of learning behaviour, an integral part of the teaching and learning process, and a significant contributor to learning outcomes.

It can be argued that formative assessment is valuable for both teachers and students. Formative assessment provides information to teachers about how students are progressing and they can use this information to make the necessary instructional adjustments to their teaching. Students can also gain from feedback obtained from

formative assessment because it can help them realise where there are gaps in their desired goals and in their current knowledge and skills (Marshall, 2006). Assessment is the term used to describe those actions for collecting information about what the students have learnt in terms of cognitive, psycho-motor and affective domains (Chung, 2006). In school practice, assessments are mostly summative in the form of standardized tests and examinations which measure student learning outcomes for the purpose of holding schools accountable for their student performance (OECD, 2005). Nevertheless, assessments can be formative when teachers provide information to students to enable them to improve their learning; and, on the basis of this information, teachers are able to adjust their teaching strategies to meet the identified learning needs of their students (OECD, 2005).

Assessment according to Dhindsa, Omar, and Waldrip (2007), is a systematic process for gathering data about student achievement. It is also seen as an essential component of teaching. Assessment in education is the product of the 20th century (Linn & Miller, 2005). Scriven (1967) proposes the use of formative and summative assessment in order to make the distinction between the roles of evaluation. Hence, assessment is perceived to serve two different purposes: (1) formative; to improve instruction and (2) summative; to measure students' achievement. The use of assessment to classify, predict, and sort has also changed to advance the process of teaching and learning in addition to accountability purposes (Gordon, 2008). Assessment that acknowledges the diverse social, cultural and academic needs of learners as well as the situated nature of learning has enormous potential to not only

scaffold effective learning but also to generate positive outcomes for students in Social Studies (Gipps, 2002).

This type of assessment often leads to better outcomes for students because formal assessment tasks are constructively aligned with the teaching and learning programme. This means that assessment information that is generated by these tasks is used by teachers and students to inform subsequent teaching and learning (Black & William, 1998; Harlen, 2007). The active, dynamic and socially responsive nature of these assessment processes are not only thought to align with socio-cultural principles of learning but have also shown to be central to raising student achievement (James, 2006). Assessment from this perspective is therefore said to be formative assessment or assessment for learning (Black & William 1998). Assessment is the process of gathering evidence of what the child can do. Evaluation is the process that follows this collection of data, including analysis and reflection as well as decisions based on the data (ACELAC, 2014).

Agbesanwa (2014) identified some assessment strategies that could be employed by the teacher in the English language tasks as paper and pencil test, quiz, portfolio, anecdotal record, interview, group work, performance task, question and answer (oral), observation and project. Each of these assessment strategies has its purpose in every language instruction depending on the domain in which it is used. However, most teachers do not use evaluation as a way of promoting learning. Evaluation should rather be used as a vehicle of teaching and learning. In order to ameliorate the rate of students' failure in English language, scholars have suggested

shifting focus from methods and strategies to assessment and feedback because quality of assessment could have great impact upon performance.

There are two broad types of assessments namely: formative and summative assessments. Black and William (1998) defined formative assessment as 'all those activities undertaken by teachers and/or by their students which provide information to be used as feedback to modify the teaching and learning activities on which they are engaged' (pg.10). On the other hand, Evelyn and Joseph (2009) remarked that summative assessment helps determine to what extent the instructional and learning goals have been met. Assessment is central to teaching and learning. Assessment information is needed to make informed decisions regarding students' learning abilities, their placement in appropriate levels and their achievement. According to Sadler (1989), "assessment refers to the making of evaluation on students overall performance and generating assumptions regarding their learning and production education-wise, which include the quality or achievement in tasks such as tests, projects, reports and examinations" (p. 7). The success of any assessment depends on the effective selection and use of appropriate procedures as well as on the proper interpretation of students' performance. Thus, assessment procedures also help in evaluating the suitability and effectiveness of the curriculum, instruction and teaching methodology. It has become common more recently among educational reformers to criticize traditional testing for its emphasis on outcomes that will not serve the students beyond the classroom.

According to Bekoe, Eshun and Bordoh (2013), assessment helps the teacher to know the level of understanding of the students and their ability level. Wiggins

(1998) argued that the aim or purpose of assessment is primarily to educate and improve student performance, not to audit it. Schools tend to focus on teaching students to pass simplistic, multiple-choice tests that neither assesses what we neither value nor provide feedback about how to teach and how to learn. The tendency is to sacrifice what we truly want to assess and settle for score accuracy and efficiency. Assessment policy is an area about which classroom teachers appear to be relatively uninformed and about which they concern themselves very little. Even where district or school assessment and assessment-related policies exist, teachers are largely unaware of them. When they are aware of certain policies, they appear to have the autonomy to ignore them by and large. Teachers very broadly control the conduct of their own classrooms, including assessment aspects (Stiggins & Chappuis, 2005).

2.1.1 Criteria for Assessment

Two types of assessment criteria are described in the literature: process criteria and product criteria (Gruber, 2008). Teachers utilizing process criteria are considering the development of learning and growth within a programme. They report the results of quizzes, homework, class participation, or even attendance. They are also cognizant of effort and work habits. On the other hand, teachers who utilize product criteria base their results on final exam scores, overall assessments based on product appearance, and other critical presentations that demonstrate learning. For these teachers, the significance of where their students are is more meaningful than how far they have come. Process criteria appear to be reliable measures of student growth and establish a baseline from which growth is gauged. Yet product criteria

also can provide a valid estimate of student learning as an indication of current ability and knowledge.

Put simply, criteria are statements describing elements of a lesson that are significant in determining whether or not the lesson objectives are being met. It goes without saying that if the lesson is to teach colour harmonies, the assessment criteria should be specific to aspects of colour harmony. When viewing art prints in the classroom, the student properly identifies the colour harmony of a given artwork. Assessment criteria can extend to any and all aspects of each lesson. Another example could be a lesson objective that states, "The student will demonstrate proper use of the vanishing point in a one-point perspective drawing." In this case, the product assessment criteria would specifically designate the proper use of the vanishing point as described in the objective. The design and development of assessment criteria are as vital as that of the design and development of each lesson plan and its objectives (Gruber, 2008). Assessment criteria should be included in each lesson plan.

2.2 History of Assessment

The earliest known written tests were developed in China around 2200 B.C. The earliest standardized tests were used in China around 537 B.C. (Miyazaki & Schirokauer, 1981). These tests were developed to determine whether government officials could perform and bring honour to their particular offices. Unlike aristocrats, government officials were appointed, rather than born, into a position. Special areas such as music and art were subject to particular scrutiny, due to the

high honour of those positions (Hashaway, 1998). This type of assessment operated for over 2000 years. Hashaway (1998) goes on to say that in the United States tests were used to determine merit for positions and advancement until the 1850s.

At this point in history, tests did not have reliability data or validity to guide administration. This type of testing ended near the 1850s because of a general lack of accountability and standardization, as well as increased immigration of limited English speakers to the United States (Hashaway, 1998). In the nineteenth-century, schools began to test their students to see if they had mastered what they were taught. Students who did not pass the tests were literally left behind, and were required to repeat what they had not mastered (Boaler, 2000). Teachers in the nineteenth century were often required to pass a test of their knowledge, and could be interviewed by members of the local school board to ensure they measured up to community, secular, and most often, religious standards, and to ensure the teachers were "fit" to serve in that role.

Once a candidate was hired for a teaching position, lie or she faced no more tests of proficiency or pedagogical delivery (Fiske, 1987). Ravitich (2002) stated that the feeling in schools at that time was that if a student failed to learn, it was the fault of the student. Changes implemented at the turn of the 20th century increased student success as well as the standing of the United States in the global market. Shepard (2001) stated that the social efficiency movement of the l900s sought to use science to solve problems of industrialization and urbanization. However, this movement also sought to improve education in order to address the larger issues of industrialization and urbanization.

Modern assessments were born of necessity to gauge student mastery of specific subjects (Parsons, Hinson & Sardo-Brown, 2001). Because there were no standards or standardization processes in place in at the turn of the 20th century, assessments may have been churned out haphazardly and randomly (Watkins & Campbell, 2000). Today many assessment tools have been developed to measure a wide range of contracts, from IQ to attitudes about one's career choice. In the contemporary education setting, assessment tools are developed to show specific performances at specific ages and grade levels. These tools have been developed with stringent validity and reliability measures in place. Stiggins and Conklin (1992) stated that, over time, assessment tools became better at what they measured because of the nature of school reform and improvement.

From the mid-1830s to 1852, Horace Mann became a revolutionary educator through his advocacy for the standardization of schooling, particularly school evaluation and measurement (Hashaway, 1998). Mann measured the progress of students in Boston schools and provided an accountability tool for school boards. In this way, school boards could hold administrators accountable for student learning. Roles and responsibilities that focused on student learning and achievement, for administrators and teachers alike, came to light as various educational reforms gained a foothold in the United States' educational system. Historically, assessment practices shifted the responsibility for learning slightly away from the learner and somewhat toward the school and its leaders. No longer was the responsibility for failure on the student alone; responsibility was placed on administrators and subsequently on the classroom teacher (Hashaway, 1998).

2.3 Concept of Summative Assessment

Summative assessment is used towards and at the end of the instruction period. Teachers document the culmination of students' learning achievements through tasks that invite students to demonstrate their mastery and knowledge of the course content. Summative assessment data provides teachers with information about how effective teaching strategies have been, time needed for instruction and how to improve teaching for future students. Summative assessment is described as a tool used after instruction to measure student achievement which provides evidence of student competence or program effectiveness (Teach, 2010). To Clarke (2006), summative assessment is all about summarizing students‟ progress at a particular point in time for the purpose of reporting, motivating and evaluation of their standards and progress. Clarke (2006) thus makes a point that this kind of assessment emphasises on the teacher' sitting with the learner'- that is a thing that the teacher does with and for the learner rather than to him. Summative assessment also hammers on assessment for the purpose of accountability so as to determine students' performance level on a specific task or at the conclusion of a unit of teaching and learning (Clarke, 2006). Deducing from these, it can be said that such an assessment takes place after teaching and learning and can also be labelled as an end-of-key-stage levelling assessment process (Clarke, 2006).

2.4 Concept of Formative Assessment in Schools

Mpapalika (2013) emphasised that *continuous assessment* is about obtaining marks from tests, exercises, terminal examination, practical laboratory and project

work. It is carried out throughout the course of study. On the other hand, *summative assessment* involves obtaining marks based on a final examination or obtaining marks at the end of a course. As an assessor, the teacher is expected to evaluate his or her learners' performance through continuous assessment. Normally, learners' final scores are comprised of both the continuous assessment and summative assessment. For effective assessment, the teacher must be skilled and competent in constructing and administering continuous assessment. This is important for improving the effectiveness of the teaching and learning process. It is important that teachers be able to follow assessment procedures when constructing and administering continuous assessment in the classroom (Lissu, 2008).

In New Zealand, from early childhood education to tertiary education, assessment of individual students has predominantly been viewed as a responsibility of the person or people directly involved in their teaching (Crooks, 2002). The main exceptions to this have been national examinations in the final three years of secondary education and some examinations for trade qualifications in polytechnics (Feng, 2007). With formative assessment being such an important component of the learning process, it is obviously important to adopt appropriate and effective formative assessment methods for students. Although formative assessment has been shown to be effective in enhancing learning in a number of studies, these studies have been mainly conducted in mainstream classes with no special attention paid to the particular needs of students (Feng, 2007).

Chung (2006) noted that formative assessment is regarded as a means to provide teachers and students with information about the strengths and weaknesses

of student learning with the ultimate goal of making responsive changes in teaching and learning. Formative assessment is an active and intentional learning process that partners the teacher and the students to continuously and systematically gather evidence of learning with the express goal of improving student achievement. Intentional learning refers to cognitive processes that have learning as a goal rather than an incidental outcome (Brooks & Sikes, 2016). Teachers and their students actively and intentionally engage in the formative assessment process when they work together to do the following (Brooks & Sikes, 2016). The formative assessment process constantly uses evidence to guide teaching and learning. When school leaders enter into collaborative inquiry with teachers, they not only model the formative assessment process, they embody it. Research on professional development tells us that when principals engage in periodic, short, focused, individual conversations with a teacher, they advance professional learning and produce positive change in teacher behavior in ways that far surpass the effects of the traditional "sit and get" workshops (Brooks & Sikes, 2016).

Due to a great deal of record-keeping and frequent measurement of student performance, assessment demands more dedication and professionalism from teachers, and the adjustment may be painful for some teachers. Teachers would have to construct tests, and other forms of testing instruments, mostly on their own. This explains why many teachers have difficulty in test construction and time related problems. Difficulty in test construction and marking are all signals to the fact that teachers were only trained to teach but not to assess (test) their students (Awoniyi, 2016). It is becoming more and more evident that formative assessment is an

integral component of the teaching and learning process (Black & William, 1998). Ampiah, Hart, Nkhata and Nyirend (2003) contend that a teacher need to know what children are able to do or not if he or she is to plan effectively.

Also, Goodrum, Hackling and Ronnie (2001) assert that "an assessment is a key component of teaching and learning process. This means that formative assessment is integral part of teaching and learning. However, little evidence exist that teachers actually use formative assessment to inform planning and teaching hence, formative assessment techniques tutors use to assess teacher-trainees learning in social studies in colleges of education, for example, would be considered reasonable, given the fact that teachers' rational might influence the way students proceed with learning and the way it is tested. Contemporary perspective of assessment now considers assessment to be a critical and integral part of effective learning (James, 2006; Harlen, 2007). The emphasis in contemporary outcomes-based approach in education is mainly on skills. Outcomes-based education is an attempt to reform certain education practices in order to prepare learners better in schools to cope with the demands of life.

Scoring in formative assessment needs to be taken seriously by formative assessment practitioners. The literature sheds light that one core reason teachers hesitate to use alternative assessment is because they provide little information in a numerical way. If teachers become aware of the many ways that formative assessment makes it possible to quantify or measure the information, this concern can be alleviated. Some ways to achieve this numerical representation are using rubrics, checklists, and questionnaires. Wiggins (1998) define a rubric as a

"criterion-based evaluation tool, consisting of a fixed measurement scale (such as four score points) and descriptions of the characteristics for each score point". Scoring rubrics are descriptive scoring schemes that are developed by teachers or other evaluators to guide the analysis of the products or processes of students' effort.

2.4.1 Meaning of Formative Assessment

Formative assessment refers to the process used by teachers and students during instruction that provides feedback to adjust on-going teaching and learning to aid students improve their achievement of intended instructional outcomes (Heritage, 2011). Similarly, CCSSO, (2008) cited in Durán, (2010) defined formative assessment as a process used by teachers and students during instruction that provides feedback to adjust on-going teaching and learning to improve students' achievements of intended instructional outcomes. Whereas there are varying definitions of formative assessment given by experts in the field, adopted by many groups such as the State Collaborative on Assessment and Student Standards (SCASS) and the ARG, and implemented by states (Gallagher & Worth, 2008), there exist certain common traits that run across them. Formative assessment (Heritage, 2010) as cited in Madison-Harris, Muoneke and Times, (2012) has certain unique elements. Such elements common in these definitions are that, formative assessment:

i. is a systematic, continuous process used during instruction by teachers;
ii. evaluates learning while it is developing;
iii. is indivisible with instruction and integrated with teaching and learning;
iv. actively involves both teacher and student;

v. provides a feedback loop to adjust on-going instruction and close gaps in learning;

vi. involves self- and peer-assessment; and

vii. informs and supports instruction while learning is taking place. (Madison-Harris, Muoneke and Times, (2012).

Formative assessment is used at the beginning of an instructional period and during the process of instruction as teachers check for student understanding. Diagnostic tools determine what students already know and where there are gaps and misconceptions. Formative assessment also includes assessment as learning, where students reflect on and monitor their own progress. The information gained guides teachers' decisions in how to enhance teaching and learning. Formative assessment enables students to learn through the process of feedback and opportunities to practise and improve. As students reflect on and monitor their progress this process effectively becomes assessment as learning and contributes to students planning future learning goals.

Inversely, formative assessment is not a single or one-shot event or measurement instrument but an ongoing (minute-by-minute, day-to-day) (Leahy, Lyon, Thompson, & Wiliam, 2005), planned practice that allows teachers to assess learning after teaching. It also allows teachers to predict and make adjustments regarding their teaching and standardized judgments about student performance toward state content standards (Heritage, 2010). For the purpose that it serves, Herman, Osmundson, and Dietel (2010) again remarked strongly that formative assessment information is mainly for teacher and classroom use. They however point

out that formative assessment can serve different purposes in local educational agencies, and may also be used by schools and districts to make data based decisions at different levels of the system. Formative assessment is part of the progeny of assessments, and therefore, its purposes can sometimes overlap with interim / benchmark and summative assessments.

Despite that, it is important to dichotomise these different assessments as they obviously serve uniquely different purposes (Black & William, 1998; Davidson & Frohbieter, 2011) as cited in Madison-Harris, Muoneke and Times, (2012), and the quality of information provided differs. Thus, in Madison-Harris, Muoneke and Times, (2012), Gallagher and Worth (2008) advanced a point that the purposes of formative assessment are to help teachers target instruction that meets specific learning goals, support student learning, check for progress and determine learning gains, diagnose strengths and weaknesses, check for misconceptions following instruction, differentiate instruction, evaluate the effectiveness of instructional methods or programs, and transform curriculums.

2.4.2 Characteristics of Formative Assessment

Roskos and Neuman (2012) explain that the key features of formative assessment encompass identifying gaps between where students are and where they need to go in their learning development; creating feedback loops that generate information about changes in performance gaps; involving students in meaningful, productive self-assessment; and charting from point A to point B to shape, mould, form and develop understanding in the desired direction. Similarly, the CCSSO (2008) cited in Durán (2010), states that there are five attributes that have been

identified from a cross-section of literature as critical features of effective formative assessment. The compilers of the document stress that no one of such attributes should be regarded as a sine qua non, that is, an attribute without which the assessment would not be formative. These attributes are: Learning progressions, identifying learning goals and criteria for success, descriptive feedback, self- and peer-assessment and Collaboration (CCSSO, 2008 cited in Durán, 2010). These are corroborated by the FCPS (2012) and Heritage (2010) who refer to such characteristics as the "drivers of formative assessment" (Heritage, 2010: 37).

i. Learning Progressions

Learning progressions refer to how concepts and skills build in a domain, and show the trajectory of learning along which students are expected to progress. From a learning progression, teachers develop the big picture of what their students need to learn, as well as sufficient details for planning instruction to meet short-term goals (CCSSO, 2008 cited in Durán, (2010). They are able to connect formative assessment opportunities to the short-term goals to keep track of how well their students" learning is moving forward. Characteristically, learning involves progression and to aid in the emergence, teachers need to have an understanding of the pathways along which students are expected to progress. These progression or otherwise called pathways ground both instruction and formative assessment (CCSSO, 2008 cited in Durán 2010; Heritage, 2010). Learning progressions should clearly articulate the minor goals of the ultimate learning goal. Ideally, learning progression should be built from a strong research base about the structure of

knowledge in a particular area of discipline as well as how learning happens (Heritage, 2010). Hence teachers need to construct learning progression to aid them plan instruction and formative assessment.

ii. Identifying learning Goals and Criteria for Success

It is an established fact that once teachers are able to conceive of the learning progression, learning goals can be identified from such progression (Durán 2010; Heritage, 2010 & FCPS, 2012). Learning goals or learning intentions specify the learning that is intended for a lesson or a sequence of lessons. Because formative assessment as a continuum helps students attain intended learning outcomes based on explicit learning progressions, teachers must first identify and then communicate the instructional goal to their students. Additionally, teachers must provide the criteria by which learning will be assessed so that students will know whether they are successfully progressing toward the goal. It is essential to ensure that the goal and success criteria are understandable to students. This means that they will have to be communicated to students in a language appropriate to the students‟ level. To facilitate the process, teachers can also give exemplars of what success criteria look like (Heritage, 2010).

iii. Formative feedback for teaching / Descriptive Feedback (formative feedback for learning)

Formative assessment provides feedback to teachers from the evidence they gather during teaching and learning (Heritage, 2010). Heritage further explains that this feedback is fed into their instruction to improve student learning. This is formative feedback for teaching. Students are also recipients of feedback that comes

from their own internal monitoring during learning, or external from the teacher. That is what Heritage (2010: 57) calls "formative feedback for learning". The CCSSO (2008) cited in Durán (2010), also adds that descriptive feedback as provided by instructors to students should be about the particular qualities of student learning with discussion or suggestions about what the student can do to improve. The CCSSO cited in Durán (2010), however warns that descriptive feedback should avoid comparisons with other pupils. Specific, timely feedback should be based on the learning goal and criteria for success. It should help the student answer three basic questions: Where am I going? Where am I now? How can I close the gap? (CCSSO, 2008 cited in Durán (2010). Formative feedback for learning must help answer these set of questions.

On the other hand, formative feedback for teaching should also in the words of Harlen (2005); Heritage (2010) and Leahy, et al. (2005) answer the following questions: Where is the student going? Where is the student now? Where to next? To answer the above questions by the teacher implies that assessment and instruction have to be planned in a way that evidence gathered will appropriately be interpreted for the "just right gap". The "just right gap" in instructional terms is conceived of as the Zone of Proximal Development (ZPD). The teacher's task then is to scaffold learning in the ZPD through differentiation of instruction (Harlen, 2005; Heritage, 2010; Ash & Levitt, 2003). A student's "just right gap" will not necessarily be the same as another's. To meet the varying learning needs in the classroom, instructors ought to allow for different levels and rates of learning. This is powered by differentiating instruction.

iv. Self- and Peer-Assessment

The formative assessment process recognises both teachers and students as important partners in the teaching and learning process. As a result teachers and students are directly involved in its process (CCSSO, 2008 cited in Durán (2010). CCSSO (2008) cited in Durán (2010) and Heritage (2010) agree that in addition to teacher feedback, students and their peers, when they are involved, are able to share many more opportunities and receive feedback that helps to create a learning community within a classroom. This is similarly shared by Garrison and Ehringhaus (2009) when they explained that peer and self-assessment helps to establish a healthy learning community. Garrison & Ehringhaus (2009) further espouse that students who can reflect while engaged in meta-cognitive thinking are involved in their learning. When students have been involved in criteria and goal setting, self-assessment is a logical step in the learning process. With peer assessment, students see each other as resources for understanding and checking for quality work against previously established criteria.

In sum therefore, the teacher must the technical knowhow to provide structure and support to support both self- and peer-assessment so that reflection on one's own work and that of peers, pride in success, modification and improvement be made a natural part of the process of students' learning (Clarke, 2006). Through this meaningful and constructive feedback can be provided.

v. Collaboration

According to the CCSSO (2008) cited in Durán (2010), the first four characteristics discussed are illustrations of students and teachers working together in the teaching and learning process. However, for students to be actively and successfully involved in their own learning, they must be made to feel that they are bona fide partners in the learning process and people to sit aside to receive pre-packaged knowledge. This feeling referred to is dependent on a classroom culture that is characterized by a sense of trust between and among students and their teachers. The norms created in the community are mutual support, trust, respect, and collaboration. The teacher and students – participants in the community – take up roles, goals, practices, and norms for interaction that are intended to support learning (Durán, 2010: Heritage, 2010).

Enabling such a culture requires teachers to model these behaviours during interactions with students, to actively inculcate in students the classroom norms, and to build the students‟ skills in constructive self- and peer-assessment. A classroom culture like this makes students more likely to feel they are collaborators with their teacher and peers in the learning process.

In conclusion, the CCSSO (2008) cited in Durán (2010) explicitly stated that while there is evidence in various degrees to support the five attributes presented, there is clearly no one best way to carry out formative assessment. The way these attributes are put into practice depends on the particular instructional context, the individual teacher, and- perhaps most importantly- the individual students.

2.5 Formative and Summative Assessments in Contention

Outlined succinctly in Rudner and Schafer (2002), McMillan (2001) presents eleven fundamental principles to guide the assessment training of both teachers and administrators in light of current assessment demands and contemporary theories of learning and motivation. The third of such principles as in Rudner & Schafer (2002: 7) is that "assessment decision-making is influenced by a series of tensions". Explaining this particular principle, it is contended in Rudner and Schafer (2002) that competing purposes, uses, and pressures result in tension for teachers and administrators as they take assessment-related decisions. For instance, good teaching is characterized by assessments that motivate and engage students in ways that are in consonance with their philosophies of teaching and learning and with theories of development, learning and motivation.

A good number of teachers want to use constructed-response assessments due to the belief they hold that this kind of assessment is best to ascertain student understanding. On the other hand, factors external to the classroom, such as mandated large-scale testing, promote different assessment strategies, such as using selected-response tests and providing practice in objective test-taking (McMillan & Nash, 2000) cited in Rudner and Schafer (2002). One good example of the tensions include the formative (informal and ongoing) versus summative (formal and at the end) assessments.

Taras (2008) confirms the tension between formative and summative assessments when he posits that "assessment vies with learning for supremacy at the heart of the educational experience". (pp. 122). This he says is seen in the tension

between formative and summative assessment functions, that is, assessment to support learning and assessment for validation and accreditation, although these are not separate or fixed paradigms (Wiliam & Black, 1996). Shavelson et al. (2003) also agree that tensions arise between the formative and summative functions in evidence elicited, interpretation of evidence, and actions taken. First in a compressed exposition, Black and Wiliam (1998) assert that summative assessment has increasingly been used to sum up learning. Harlen (2005) similarly opines that summative assessment: looks at past achievements, adds procedures or tests to existing work, involves only marking and feedback grades to student, is separated from teaching and is carried out at intervals when achievement has to be summarized and reported. Formative assessment on the contrary often means no more than that the assessment is carried out frequently and is planned at the same time as teaching (Black & Wiliam, 1998); provides feedback that leads to students recognizing the (learning) gap and closing it and it is forward looking (Harlen, 2005); it includes both feedback and self-monitoring (Sadler, 1998) and it is also used essentially to feed back into the teaching and learning process (Tunstall & Gipps, 1996).

Also, in considering evidence, Shepard (2001) noted that, issues of reliability and validity are paramount in the summative function on the grounds that, typically, a "snapshot" of the breadth of students' achievement is sought at one point in time. The forms of assessment used to elicit evidence are likely to vary from summative to formative. It is argued further that in summative assessment, typical "objective" or "essay" tests are given on a particular occasion (Shavelson et al., 2003). With formative assessment however, students‟ real-time responses are given to one

another in group work, to a teacher's question, to the activity they are engaged in or to a curriculum-embedded test. Also, the summative and formative functions vary in the reliability and validity of the scores produced. In summative assessment, each form of a test needs to be internally consistent (for example, the CA conducted) and scores from these forms need to be consistent from one another to the next or from one form to the next. The items on the tests have to be a representative sample of items from the broad knowledge domain defined by the curriculum syllabus / standards.

Contrary to this, as formative assessment is iterative or cyclical, issues of reliability and validity are resolved over time with corrections made as information is collected naturally in everyday student performance. Finally, the same test question might be used for both summative and formative assessment but, interpretation and practical uses will probably differ (Wiliam & Black, 1996).

The potential conflict between summative and formative assessment as Wiliam and Black (1996) noted can also be seen in the interpretation of evidence. The summative function typically requires a norm-referenced or cohort-referenced interpretation where students‟ scores come to have meaning in respect of their standing (rank) among peers. Such comparisons typically combine complex performances into a single number and put the performance of individuals into some kind of rank order. A norm- or cohort-referenced interpretation would indicate how much better an individual needs to do, highlighting the existence of a gap, rather than giving and indicating how that improvement will happen. It tells the individual (the student) that they need to do better rather than telling him or her how to improve as

well as how the teacher will necessarily adjust his or her instruction to meet a set target.

In line with the foregone contentions, some also argue that summative assessments are frequently criticized because: they provide information too late on a student's performance (Popham, 1999); they are not connected to actual classroom practice (Shepard, 2001); they suffer from "construct underrepresentation" (Messick, 1989), indicating that one assessment typically cannot represent the full content area. Therefore, only those areas that are easily measured will be assessed, and hence, taught; and finally, they lack "consequential validity" (Messick, 1989), meaning that the test results are not used appropriately (Johnson & Jenkins, 2009). This last concern is related to state accountability systems because high stakes, such as student retention or teacher performance pay, are attached to performance on state assessment systems, yet most of these assessments have not been designed for the broad and numerous purposes they serve (Baker & Linn, 2004) cited in Johnson and Jenkins (2009).

Drawing from the formative and summative assessments contentions, it can be concluded that summative assessments can also generate critical information about students' overall learning as well as an indication of the quality of classroom instruction, especially when they are accompanied by other sources of information and are used to inform practice rather than to reward or sanction. But that notwithstanding, Formative assessments according to research (Marzano, 2006: Heritage, 2010) are the most instructionally sensitive types of assessment and are considered an on-going activity or process. Formative assessments are embedded

within instructional activities and are linked directly to current teaching and learning activities in the classroom (Pinchok & Brandt, 2009) cited in FCPS (2012). As cited in Heritage (2010), Marzano (2006) concludes that classroom formative assessment is an effective way to plan and apply instructional interventions to close the gap than summative assessments.

2.6 Adopting Formative Assessment Practices in Schools

Research by Lissu (2008) showed that the majority of science teachers (Chemistry, Physics and Biology) experienced difficulty in procedures and methods employed typically in conducting and administering of continuous assessment. Additionally, Tanzanian Science teachers have been found to be inadequately skilled with regard to the administration and implementation of continuous assessment.

Although, in Ghana, there is a centrally prescribed curriculum for basic schools (primary and junior secondary), there are no special provisions for children with needs, particularly those who record lower attainments in classrooms. In terms of assessment, the formative/continuous assessment programme does not make any provision for assessing and recording the progress of lower attaining pupils. Teachers use the same approach for assessing all pupils to assess lower attainers' progress in learning. The use of the same approach to assess all pupils causes those who record lower attainments to continually perform poorly at school (Hayford, 2007).

Black and Wiliam (1998) conducted an extensive research study involving over 250 studies to ascertain whether or not formative assessment could be shown to

raise levels of attainment in the classroom. Although a large number of studies were selected initially by Black and Wiliam, they rejected many through lack of rigour and decided to take account of only those where a control group had been set up. They concluded that efforts to strengthen formative assessment produce significant learning gains as measured by comparing the average improvement in the test scores of the students involved in the innovation with a range of scores found for typical groups of students on the same tests. Effect sizes range between 4. and 7 with formative assessment apparently helping low-achieving students, including students with learning disabilities, even more than it helped other students. Shavelson (2006) examined the effects of embedded assessments with 12 classes over one school year. They concluded that formative assessment indeed provide major changes in student achievement but the challenge was for teachers to change their beliefs about the nature of student learning and their own teaching to bring about the kind of inquiry teaching that was required.

Black and Wiliam (1998) indicate that formative assessment, if properly implemented in schools, is a powerful means to improve student learning. In the international scenarios, formative assessment has already been practised in schools in various western countries including Australia, Canada, Demark, England, Finland, Italy, New Zealand and Scotland (OECD, 2005). In Hong Kong, the assessment reform policy has an aim to encourage the use of formative assessment in schools so as to improve students' learning skills and to promote their life-long learning abilities (Chung, 2006). In multiple studies of high school student evaluations of the Assessment Tools for Teaching and Learning standardisation tests, Hattie, Brown,

Ward, Irving and Keegan (2006) surveyed student opinions about the tests they had just taken. A factor analysis of the responses identified three factors:

1. attitude towards doing the tests,
2. the layout and use of white space, and
3. confidence in doing well on the tests.

However, no meaningful correlations between their attitude to these three assessment related factors and their achievement in each subject (i.e., reading, mathematics, *p nui* [M ori reading], and *tuhituhi* [M ori writing]) in which they were surveyed were found (mean correlation over ten evaluation factors and four subjects was $r = .013$; $SD = .11$; all statistically significant).

Many educational reforms have heralded new classroom assessment approaches that go beyond traditional paper-and-pencil techniques to include strategies such as performance and portfolio-based assessment or alternative assessments (Hargreaves, Lorna, & Schmidt, 2009). Changes in classroom assessment represent major paradigm shifts in thinking about learning, schools, and teaching. Alternative classroom assessment requires that teachers use their judgments about learner's knowledge, understand how to include feedback in the teaching process, decide how to meet students' varying learning needs and learn how to share decision making about learning and teaching with colleagues, parents and students (Awoniyi, 2016).

Taking note of the need to use formative assessment in schools, the United Nations General Assembly embarked on Universal Declaration of Human Rights to specifically help address problems faced by most of the underdeveloped countries,

African countries included. Such problems include illiteracy, poverty, low health status, and poor quality of life. Emphasis was placed on the attainment of Millennium Development Goals because they were seen as critical for human development. These targets include access to basic education for all by 2015, gender equality in access to educational opportunities, eradication of adult illiteracy, as well as an improved, sustainable, and quality education (United Nations Development Program, 2002).. It has also provided sections to help student-teachers undergoing training to become professionally trained teachers. The policy emphatically stressed that the training should be to:

1. Produce highly motivated, conscientious and efficient teachers;
2. Encourage further the spirit of enquiry and creativity in teachers;
3. Provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world.

Morgan and Watson (2002) also reported that most middle and high school teachers use teacher-constructed tests to assess students' achievement. In addition, Morgan and Watson found that most teachers view classroom assessment as an added requirement to their teaching job and not as a tool to improve their teaching and so should not be time consuming. Eshun, Bordoh, Bassaw and Mensah (2014) also revealed in their study about nine (9) College of Education Social Studies tutors in central region of Ghana that, effective use of formative classroom techniques by teachers motives students to take part in classroom activities. Teachers failed to use formative strategies with the fear of not completing their course outline on time

(Eshun et al., 2014). Tindal and Fuchs (1999) identified four reasons why teachers do not use multiple assessment or authentic assessment methods. First, some teachers had limited knowledge of different forms of assessment. Second, teachers felt they had no time to create different forms of assessment. Third, teachers felt there was little or no professional guidance; therefore, they (teachers) were not confident enough to try out other forms of assessments. Fourth, it is usually not part of the demands of the state or nation.

2.7 Examples in Evidence of Formative Assessment:

Classroom Experience

In this section we present brief accounts of pieces of research which, between and across them, illustrate some of the main issues involved in research which aims to secure evidence about the effects of formative assessment.

The first is a project in which 25 Portuguese teachers of mathematics were trained in self-assessment methods on a 20-week part-time course, methods which they put into practice as the course progressed with 246 students of ages 8 and 9 and with 108 older students with ages between 10 and 14 (Fontana & Fernandes, 1994). The students of a further 20 Portuguese teachers who were taking another course in education at the time served as a control group. Both experimental and control groups were given pre- and post- tests of mathematics achievement, and both spent the same times in class on mathematics. Both groups showed significant gains over the period, but the experimental group's mean gain was about twice that of the control group's for the 8 and 9-year-old students--a clearly significant difference.

Similar effects were obtained for the older students, but with a less clear outcome statistically because the pre-test, being too easy, could not identify any possible initial difference between the two groups. The focus of the assessment work was on regular--mainly daily--self-assessment by the pupils. This involved teaching them to understand both the learning objectives and the assessment criteria, giving them opportunity to choose learning tasks and using tasks which gave them scope to assess their own learning outcomes.

This research has ecological validity, and gives rigorously constructed evidence of learning gains. The authors point out that more work is required to look for long-term outcomes and to explore the relative effectiveness amongst the several techniques employed in concert. However, the work also illustrates that an initiative can involve far more than simply adding some assessment exercises to existing teaching--in this case the two outstanding elements are the focus on self-assessment and the implementation of this assessment in the context of a constructivist classroom. On the one hand it could be said that one or other of these features, or the combination of the two, is responsible for the gains, on the other it could be argued that it is not possible to introduce formative assessment without some radical change in classroom pedagogy because, of its nature, it is an essential component of the pedagogic process.

The second example is reported by Whiting et al. (1995), the first author being the teacher and the co-authors university and school district staff. The account is a review of the teacher's experience and records, with about 7000 students over a period equivalent to 18 years, of using mastery learning with his classes. This

involved regular testing and feedback to students, with a requirement that they either achieve a high test score--at least 90%--before they were allowed to proceed to the next task, or, if the score were lower, they study the topic further until they could satisfy the mastery criterion. Whiting's final test scores and the grade point averages of his students were consistently high, and higher than those of students in the same course not taught by him. `Me students' learning styles were changed as a result of the method of teaching, so that the time taken for successive units was decreased and the numbers having to retake tests decreased. In addition, tests of their attitudes towards school and towards learning showed positive changes.

Like the previous study, this work has ecological validity--it is a report of work in real classrooms about what has become the normal method used by a teacher over many years. The gains reported are substantial; although the comparisons with the control are not documented in detail, it is reported that the teacher has had difficulty explaining his high success rate to colleagues. It is conceded that the success could be due to the personal excellence of the teacher, although he believes that the approach has made him a better teacher. In particular he has come to believe that all pupils can succeed, a belief which he regards as an important part of the approach. `Me result shows two characteristic and related features--the first being that the teaching change involves a completely new learning regime for the students, not just the addition of a few tests, the second being that precisely because of this, it is not easy to say to what extent the effectiveness depends specifically upon the quality and communication of the assessment feedback. It differs from the first example in arising from a particular movement aimed at a radical change in learning

provision, and in that it is based on different assumptions about the nature of learning.

The third example also had its origin in the idea of mastery learning, but departed from the orthodoxy in that the authors started from the belief that it was the frequent testing that was the main cause of the learning achievements reported for this approach. The project was an experiment in mathematics teaching (Martinez & Martinez, 1992), in which 120 American college students in an introductory algebra course were placed in one of four groups in a 2 X 2 experimental design for an 18-week course covering seven chapters of a text. Two groups were given one test per chapter, the other two were given three tests per chapter. Two groups were taught by a very experienced and highly rated teacher, the other two by a relatively inexperienced teacher with average ratings. The results of a post-test showed a significant advantage for those tested more frequently, but the gain was far smaller for the experienced teacher than for the newcomer. Comparison of the final scores with the larger group of students in the same course but not in the experiment showed that the experienced teacher was indeed exceptional, so that the authors could conclude that the more frequent testing was indeed effective, but that much of" the gain could be secured by an exceptional teacher with less frequent testing.

By comparison with the first study above, this one has similar statistical measures and analyses, but the nature of the two regimes being compared is quite different. Indeed, one could question whether the frequent testing really constitutes formative assessment--a discussion of that question would have to focus on the quality of the teacher-student interaction and on whether test results constituted

feedback in the sense of leading to corrective action taken to close any gaps in performance (Ramaprasad, 1983). It is possible that the superiority of the experienced teacher may have been in his/her skill in this aspect, thus making the testing more effectively formative at either frequency.

Example number four was undertaken with 5-year-old children being taught in kindergarten (Bergan et al., 1991). The underlying motivation was a belief that close attention to the early acquisition of basic skills is essential. It involved 838 children drawn mainly from disadvantaged home backgrounds in six different regions in the USA. The teachers of the experimental group were trained to implement a measurement and planning system which required an initial assessment input to inform teaching at the individual pupil level, consultation on progress after two weeks, new assessments to give a further diagnostic review and new decisions about students' needs after four weeks, with the whole course lasting eight weeks. The teachers used mainly observations of skills to assess progress, and worked with open-style activities which enabled them to differentiate the tasks within each activity in order to match to the needs of the individual child. There was emphasis in their training on a criterion-referenced model of the development of understanding drawn up on the basis of results of earlier work, and the diagnostic assessments were designed to help locate each child at a point on this scale. Outcome tests were compared with initial tests of the same skills. Analysis of the data using structural equation modelling showed that the pre-test measures were a strong determinant of all outcomes, but the experimental group achieved significantly higher scores in tests in reading, mathematics and science than a control group. The criterion tests used,

which were traditional multiple-choice, were not adapted to match the open child-centred style of the experimental group's work. Furthermore, of the control group, on average 1 child in 3.7 was referred as having particular learning needs and 1 in 5 was placed in special education; the corresponding figures for the experimental group were I in 17 arid 1 in 71.

The researchers concluded that the capacity of children is under-developed in conventional teaching so that many are `put down' unnecessarily and so have their futures prejudiced. One feature of the experiment's success was that teachers had enhanced confidence in their powers to make referral decisions wisely. This example illustrates again the embedding of a rigorous formative assessment routine within an innovative programme. What is more salient here is the basis, in that programme, of a model of the development of performance linked to a criterion based scheme of diagnostic assessment.

In example number five (Butler, 1988), the work was grounded more narrowly in an explicit psychological theory, in this case about a link between intrinsic motivation and the type of evaluation that students have been taught to expect. The experiment involved 48 11-year-old Israeli students selected from 12 classes across 4 schools, half of those selected being in the top quartile of their class on tests of mathematics and language, the other half being in the bottom quartile. The students were given two types of task in pairs, not curriculum related, one of each pair testing convergent thinking, the other divergent. They were given written tasks to be tackled individually under supervision, with an oral introduction and explanation. Three sessions were held, with the same pair of tasks used in the first

and third. Each student received one of three types of written feedback with returned work, both on the first session's work before the second, and on the second session's work before the third. The second and third sessions, including all of the receipt and reflection on the feedback, occurred on the same day. For feedback, one-third of the groups were given individually composed comments on the match, or not, of their work with the criteria which had been explained to all beforehand. A second group were given only grades, derived from the scores on the preceding session's work. The third group were given both grades and comments. Scores on the work done in each of the three sessions served as outcome measures. For the `comments only' group the scores increased by about one-third between the first and second sessions, for both types of task, and remained at this higher level for the third session. The `comments with grade' group showed a significant decline in scores across the three sessions, particularly on the convergent task, whilst the `grade only' group declined on both tasks between the first and last sessions, but showed a gain on the second session, in the convergent task, which was not subsequently maintained. Tests of pupils' interest also showed a similar pattern: however, the only significant difference between the high and the low achieving groups was that interest was undermined for the low achievers by either of the regimes involving feedback of grades, whereas high achievers in all three feedback groups maintained a high level of interest.

The results were discussed by the authors in terms of cognitive evaluation theory. A significant feature here is that even if feedback comments are operationally helpful for a student's work, their effect can be undermined by the negative motivational effects of the normative feedback, i.e. by giving grades. The results are

consistent with literature which indicates that task-involving evaluation is more effective than ego-involving evaluation, to the extent that even the giving of praise can have a negative effect with low-achievers. They also support the view that pre-occupation with grade attainment can lower the quality of task performance, particularly on divergent tasks.

This study carries two significant messages for this general review. The first is that, whilst the experiment lacks ecological validity because it was not part of or related to normal curriculum work and was not carried out by the students' usual teachers, it nevertheless might illustrate some important lessons about ways in which formative evaluation feedback might be made more or less effective in normal classroom work. The second lesson is the possibility that, in normal classroom work, the effectiveness of formative feedback will depend upon several detailed features of its quality, and not on its mere existence or absence. A third message is that close attention needs to be given to the differential effects between low and high achievers, of any type of feedback.

The sixth example is in several ways similar to the fifth. In this work (Schunk, 1996), 44 students in one USA elementary school, all 9 or 10 years of age, worked over seven days on seven packages of instructional materials on fractions under the instructions of graduate students. Students worked in four separate groups subject to different treatments--for two groups the instructors stressed learning goals (learn how to solve problems) whilst for the other two they stressed performance goals (merely solve them). For each set of goals, one group had to evaluate their problem-solving capabilities at the end of each of the first sessions, whereas the

other was asked instead to complete an attitude questionnaire about the work. Outcome measures of skill, motivation and self-efficacy showed that the group given performance goals without self-evaluation came out lower than the other three on all measures. The interpretation of this result suggested that the effect of the frequent self-evaluation had out-weighed the differential effect of the two types of goal. This was confirmed in a second study in which all students undertook the self-evaluation, but on only one occasion near the end rather than after all of the first six sessions. There were two groups who differed only in the types of goal that were emphasised- the aim being to allow the goal effects to show without the possible overwhelming effect of the frequent self-evaluation. As expected, the learning goal orientation led to higher motivation and achievement outcomes than did the performance goal.

The work in this study was curriculum related, and the instructions given in all four `treatments' were of types that might have been given by different teachers, although the high frequency of the self-evaluation sessions would be very unusual. Thus, this study comes closer to ecological validity but is nevertheless an experiment contrived outside normal class conditions. It shares with the previous (fifth) study the focus on goal orientation, but shows that this feature interacts with evaluative feedback, both within the two types of task, and whether or not the feedback is derived from an external source or from self-evaluation.

The seventh example involved work to develop an inquiry-based middle school science-based curriculum (Frederiksen & White, 1997). The teaching course was focused on a practical inquiry approach to learning about force and motion, and the work involved 12 classes of 30 students each in two schools. Each class was

taught to a carefully constructed curriculum plan in which a sequence of conceptually based issues was explored through experiments and computer simulation, using an inquiry cycle model that was made explicit to the students. All of the work was carried out in peer groups. Each class was divided into two halves: a control group used some periods of time for a general discussion of the module, whilst an experimental group spent the same time on discussion, structured to promote reflective assessment, with both peer assessment of presentations to the class and self-assessment. This experimental work was structured around students' use of tools of systematic and reasoned inquiry, and the social context of writing and other communication modes.

All students were given the same basic skills test at the outset. The outcome measures were of three types: one a mean score on projects throughout the course, one a score on two chosen projects which each student carried out independently, and one a score on a conceptual physics test. On the mean project scores, the experimental group showed a significant overall gain; however, when the students were divided into three groups according to low, medium or high scores on the initial basic skills test, the low scoring group showed a superiority, over their control group peers, of more than three standard deviations, the medium group just over two, and the high group just over one. A similar pattern, of superiority of the experimental group which was more marked for low scoring students on the basic skills test, was also found for the other two outcomes. Amongst the students in the experimental group, those who showed the best understanding of the assessment process achieved the highest scores.

This science project again shows a version of formative assessment which is an intrinsic component of a more thorough-going innovation to change teaching and learning. Whilst the experimental-control difference here lay only in the development of `reflective assessment' amongst the students, this work was embedded in an environment where such assessment was an intrinsic component. Two other distinctive features of this study are first, the use of outcome measures of different types, but all directly reflecting the aims of the teaching, and second the differential gains between students who would have been labelled `low ability' and `high ability' respectively.

The eighth and final example is different from the others, in that it was a meta-analysis of 21 different studies, of children ranging from pre-school to grade 1:2, which between them yielded 96 different effect sizes (Fuchs & Fuchs, 1986). The main focus was on work for children with mild handicaps, and on the use of the feedback to and by teachers. The studies were carefully selected-all involved comparison between experimental and control groups, and all involved assessment activities with frequencies of between 2 and 5 times per week. The mean effect size obtained was 0.70. Some of the studies also included children without handicap: these gave a mean effect size of 0.63 over 22 sets of results (not significantly different from the mean of 0.73 for the handicapped groups). The authors noted that in about half of the studies teachers worked to set rules about reviews of the data and actions to follow, whereas in the others actions were left to teachers' judgments. The former produced a mean effect size of 0.92 compared with 0.42 for the latter. Similarly, those studies in which teachers undertook to produce graphs of the

progress of individual children as a guide and stimulus to action reported larger mean gains than those where this was not done (mean effect size 0.70 compared with 0.26).

Three features of this last example are of particular interest here. The first is that the authors compare the striking success of the formative approach with the unsatisfactory outcomes of programmes which had attempted to work from a priori prescriptions for individualised learning programmes for children, based on particular learning theories and diagnostic pre-tests. Such programmes embodied a deductive approach in contrast with the inductive approach of formative feedback programmes. The second feature is that the main learning gains from the formative work were only achieved when teachers were constrained to use the data in systematic ways which were new to them. The third feature is that such accumulation of evidence should have given some general impetus to the development of formative assessment--yet this paper appears to have been overlooked in most of the later literature.

The studies chosen thus far are all based on quantitative comparisons of learning gains, six of them, and those reviewed in the eighth, being rigorous in using pre- and post-tests and comparison of experimental with control groups. This does not imply that useful information and insights about the topic cannot be obtained by work in other paradigms. The ecological validity of studies is clearly important in determining the applicability of the results to normal classroom work. However, there is the assumption that, given this, useful lessons can be learnt from studies which lie at various points between the `normal' classroom and the special conditions

set up by researchers. In this respect all of the studies exhibit some degree of movement away from `normal' classrooms. The study by Whiting et al., (1995) which is most clearly one of normal teaching within the everyday classroom is, inevitably, the one for which quantitative comparison with a strictly equivalent control was not possible. More generally, caution must be exercised for any studies where those teaching any experimental groups are not the same teachers as those for any control groups.

Given these reservations, however, it is possible to summarise some general features which these examples illustrate and which will serve as a framework for later sections of this article. It is hard to see how any innovation in formative assessment can be treated as a marginal change in classroom work. All such work involves some degree of feedback between those taught and the teacher, and this is entailed in the quality of their interactions which is at the heart of pedagogy. The nature of these interactions between teachers and students, and of students with one another, will be key determinants for the outcomes of any changes, but it is difficult to obtain data about this quality from many of the published reports. The examples do exhibit part of the variety of ways in which enhanced formative work can be embedded in new modes of pedagogy. In particular, it can be a salient and explicit feature of an innovation, or an adjunct to some different and larger scale movement--such as mastery learning. In both cases it might be difficult to separate out the particular contribution of the formative feedback to any learning gains. Another evaluation problem that arises here is that almost all innovations are bound to be

pursuing innovations in ends as well as in means, so that the demand for unambiguous quantitative comparisons of effectiveness can never be fully satisfied.

Underlying the various approaches are assumptions about the psychology of learning. These can be explicit and fundamental, as in the constructivist basis of the first and the last of the examples, or in the diagnostic approach of Bergan et al. (1991) or implicit and pragmatic, as in the mastery learning approaches. For assessment to be formative the feedback information has to be used-which means that a significant aspect of any approach will be the differential treatments which are incorporated in response to the feedback. Here again assumptions about learning, and about the structure and nature of learning tasks which will provide the best challenges for improved learning, will be significant. The different varieties and priorities across these assumptions create the possibility of a wide range of experiments involving formative assessment.

The role of students in assessment is an important aspect, hidden because it is taken for granted in some reports, but explicit in others, particularly where self and peer assessments by and between students are an important feature (with some arguing that it is an inescapable feature-see Sadler, 1998). The effectiveness of formative work depends not only on the content of the feedback and associated learning opportunities, but also on the broader context of assumptions about the motivations and self-perceptions of students within which it occurs. In particular, feedback which is directed to the objective needs revealed, with the assumption that each student can and will succeed, has a very different effect from that feedback which is subjective in mentioning comparison with peers, with the assumption--

albeit covert--that some students are not as able as others and so cannot expect full success.

However, the consistent feature across the variety of these examples is that they all show that attention to formative assessment can lead to significant learning gains. Although there is no guarantee that it will do so irrespective of the context and the particular approach adopted, we have not come across any report of negative effects following on an enhancement of formative practice. In this respect, one general message of the Crooks review has been further supported. One example, the kindergarten study of Bergan et al. (1991) brings out dramatically the importance that may be attached to the achievement of such gains. This particular innovation has changed the life chances of many children. This sharp reality may not look as important as it really is when a result is presented dryly in terms of effect sizes of (say) 0.4 standard deviations.

2.8 School Based Assessment (SBA) in the Ghanaian SHS curriculum

SBA refers to assessments administered in schools and marked by the students' own teachers. As indicated above, in Ghana, SBA was introduced into the curriculum in the last curriculum review in 2007 to replace what used to be called Continuous Assessment with the aim of making assessment more comprehensive i.e. to cover more applications profile dimensions (Mereku, Nabie, Appiah & Awanta, 2011). A project involves tasks or a series of tasks for students to carry out using one or more of the following processes: gathering data, observing, looking for references, identifying, measuring, analyzing, determining patterns and or relationships, graphing and communicating. An investigational task may also be set in the context

of algebra, geometry and or measurements. A project usually requires students to take a substantial amount of time (e.g., a few days, weeks, or even months) to finish. As part of project-based learning, the teacher is expected to give the students the opportunity periodically to present progress reports to the class for colleagues' feedback and suggestions. For SBA scoring, it is recommended that each class test (or task) should be scaled to the score 10, and project task scaled to the score 20 (CRDD, 2007).

An investigation into student assessment procedures in public junior secondary schools in 11 districts in Ghana revealed that teachers did not have adequate training in the management of assessment practices (CRDD, 1999). The report indicated that 55% of the teachers interviewed felt they were not confident in the testing and measurement practices because they did not have any training in testing and measurement. Etsey (2003) corroborated that report in a study of teacher trainees in 24 Teacher Training Colleges (now Colleges of Education) when he recommended making courses in the management of assessment practices a priority in the first-two years in the training of teacher trainees in the then Teacher Training Colleges in the country.

2.9 Recognizing the Formative Assessment Process

Table 2.1: Recognizing the Formative Assessment Process

Teacher "Look Fors"	Student "Look Fors"
Share learning goals in developmentally appropriate ways.	Understand and can explain what they do well and exactly what they should do next.
Adjust their teaching on the fly to deepen student understanding and clear up misconceptions.	Recognize when they are learning and when they are not.
Plan the questions they will ask throughout the lesson to help students focus on salient aspects of important concepts and the criteria for a successful performance.	Use teacher-made rubrics, checklists, and guides to monitor and adjust the quality of their learning performance.
Teach specific metacognitive strategies to maximize student success.	Can adapt their learning strategies to meet their learning needs.
Provide feedback that is clear, descriptive, and task specific, and show students where they are in relation to the goal and what they should do next to close the gap.	Set their own learning goals and monitor their progress.
Greet student questions with respect and enthusiasm and respond in thoughtful	Can assess their own work or performance in relation to the criteria

Teacher "Look Fors"	Student "Look Fors"
ways.	for success.
Use provocative questions to prompt student reflection on their understanding and performance.	Set realistic short-term goals for where they want to be, the strategy they will use to get there, and the criteria they will apply to determine they have succeeded.
Model self-assessment using the kinds of reasoning skills that students will use to succeed at the task at hand.	ask questions that seek clarity concerning concepts, tasks, and reasoning processes.
Describe student learning along a continuum of progress toward a specific learning goal, noting plans for adjusting instruction and levels of support to promote student growth.	Appear confident, engaged, and motivated to learn.
	Describe their learning in terms of where they are in relation to the learning goal and what they intend to do next to keep making progress

Source: Adapted from Brooks and Sikes (2016).

School leaders can use formative discussions with teachers to promote "systematic and intentional inquiry" (Brooks & Sikes, 2016) into their classroom practices. Formative assessment operates at the nexus of what teachers believe to be

true about teaching and learning, how those beliefs shape the ways teachers choose to teach, and the effects of instructional decisions on student achievement and motivation to learn. Each element of the formative assessment process helps educators assess what they are doing in their classrooms, why they are doing it, and how their choices are affecting their students. And because the formative assessment process requires teachers to use information about student learning to guide and promote student achievement, it helps their instructional decisions become increasingly intentional and scientifically based. The ability of formative assessment to promote and sustain active teacher inquiry that is both systematic and intentional is exactly why it can have a significant effect on daily classroom practices. Simply put, formative assessment situates powerful professional learning in the heartbeat of the classroom and encourages educators to approach their teaching as "intentional learning" (Brooks & Sikes, 2016).

As schools become places of collaborative inquiry, school leaders can use formative discussions to take a collegial rather than a supervisory perspective on professional learning, focus on each teacher's unique expertise and professional learning needs, and promote teacher collaboration to improve instruction (Brooks & Sikes, 2016). School leaders can use well-chosen starter statements that encourage shared inquiry. These starter statements situate the interaction as a formative conversation, center it on professional self-analysis of patterns of practice rather than ramifications of particular incidents, and keep the dialogue free from judgment or evaluation. The statements signal that the teacher is in charge of his or her own professional learning and indicate interest and support. These formative

conversations can preview or follow a scheduled classroom visit with a single teacher. In addition, they can serve or launch collaborative inquiry among individuals in a small group or an entire school (Brooks & Sikes, 2016). According to Freeman and Lewis (1998), when planning assessment, the following ways of expressing learning may be useful:

1. Knowledge emphasizes the need to learn how to make a portion of the knowledge of humankind one's own;
2. Reasoning pertains to the need to understand the importance of knowledge in human life;
3. Skills point to the need to dig such knowledge out as it may be needed;
4. Products demonstrate the need to think critically about what has been previously accepted as knowledge to see whether or how well it tests out in today's circumstances; and
5. Affect suggests the need for values and to learn how to be creative in the acquisition of new knowledge.

From the foregoing it can be asserted that, tutors scope of assessment at the pre-service level is limited to be the academic aspect of learning to the neglect of the other areas of human development.

2.10 Competency of Teachers in Handling Formative Assessment in Schools

Regarding pre-service and post-service training in continuous assessment in Ghana, teacher-trainees are offered modules at both initial training colleges and the universities (Amedahe, 2000; Asamoah-Gyimah, 2002). However, these modules

emphasize measurement and statistics and focus on the technicalities of assessment, rather than innovative use of assessment for improvement of learning. The few publications on continuous assessment for example, Amedahe (2000) and Etsey (2003) have raised concern about the validity and reliability of teachers' continuous assessment. They did not consider teachers' skills in organizing, reporting and using assessment information to improve learning of all pupils and in particular, lower attaining children.

2.11 Theories on Formative Assessment

Constructivism through scientific inquiry based theory involves scientific inquiry which consists of skills and abilities that are necessary in conducting classroom continuous assessments. Such abilities include identifying scientific problems, designing and conducting investigations to solve the problems, collecting and analyzing data, interpretation of results and communicating the findings (Hofstein & Lunetta, 2004; Kang & Wallace, 2005). Classroom instructional practices, for example laboratory works such as practical assessments are related with exposition, discovery, guided discovery, problem-solving, and investigative, inquiry and constructivist approach (Mpapalika, 2013). Contemporary learning theories, including constructivism, cognitive theory, and sociocultural theory, share several core principles. Most important are two concepts: that knowledge is constructed through language and interaction, and that learning and development are culturally embedded, socially supported processes (Shepard, 2005).

From a constructivist perspective, formative assessments are more valuable to the learner (Lamon, 2007). Within social constructivist conceptions, formative assessment can be seen as a dynamic process in which teachers or classmates help learners move from what they already know to what they are able to do next, using their zone of proximal development (Shepard, 2005). The zone of proximal development is the range of potential each person has for learning, with that learning being shaped by the social environment in which it takes place. This potential ability is greater than the actual ability of the individual when the learning is facilitated by someone with greater expertise.

Fisher and Frey (2007) distinguish between formative assessment and summative assessment. Formative assessment enables teachers to improve their teaching instruction and also provides feedback to learners while summative is aimed at measuring learners' competency at the end of the course. Formative assessment helps both the teacher and learners in self-assessment and identifies the learning gaps. In other words, formative assessment relates directly to classroom instruction.

Heritage (2007) has suggested a formative assessment model based on learning progression, closing the learning gaps and defining the criteria for success. This involves: learning progression and defining criteria for success, eliciting evidence of learning; interpreting the evidence and identifying the gaps. It also involves providing feedback to learners, planning learning and teaching and scaffolding learners. In this process, teachers should continually practice formative assessment in the classroom to identify learners' misconceptions in order to empower self-regulation.

In Ghana, the behaviourist learning theory has a long tradition in education policies. Many aspects of general and special education such as curriculum, pedagogy and assessment have been shaped by the principles of behaviourist learning theory. The behaviourists, according to Smith (1999) view learning as a change in behaviour and the purpose of learning is to produce a behavioural change in a desired direction. The teacher's role is to arrange the environment to elicit the desired responses and assessment is used to ascertain whether all pupils, including lower attainers, have achieved the desired responses (Hayford, 2007). James (2006) explains that behaviourist theorists are interested in observable behaviour and claim that this is sufficient. From this perspective, achievement in learning is often equated with the accumulation of skills and the memorization of information (facts) in a given domain, demonstrated in the formation of habits that allow speedy performance. The implication is that the teacher's role is to train pupils to respond to instruction correctly and rapidly. With respect to assessment, the implications are that progress is measured through unseen timed tests with items taken from progressive levels in a skill hierarchy. This view is endorsed by Harlen (2006) who suggests that since behaviourism is based upon the principle of reinforcing required behaviour with rewards and deterring unwanted behaviour with punishments, pupil assessment is generally used as the vehicle for applying these rewards and punishments.

Bell and Cowie (2001) propose two models of formative assessment in schools. They are planned formative assessment and interactive formative assessment. These two models are cyclical in nature and the components involved

are mutually related. Moreover, the purpose of formative assessment determines how the assessment information is collected and used. In the process of planned formative assessment, the teachers plan to use various assessment strategies to elicit information about student learning. For example, the teachers usually ask their students to write something on a piece of paper or to make a physical model. The teachers interpret the collected information with a pre-determined set of criteria and make judgement on the achievement levels of the students. Then the teachers act on the interpreted information to improve student learning by providing students with different tasks or materials to work with. Interactive formative assessment occurs during student - teacher interactions.

Unlike planned formative assessment with pre-determined assessment activities, interactive assessment arises out of a learning activity. The teachers are unable to plan the details of this kind of formative assessment because they cannot predict what exactly the students would be doing. In the actual process of interactive formative assessment, the teachers firstly get information which is verbal (e.g. students' answers) or non-verbal (e.g. students' body language). This sort of information is short-lived and in progress. The teachers recognise the significant levels of this information and determine its implications for their student learning. Then the teachers make response to the information so as to improve their students' learning (Chung, 2006).

The theory of Westera (2001) indicate competence is usually associated with highly professional performance and there is a direct link in the field of education and teacher′s professional competence. There are two distinct meanings of

competence in education. From a theoretical point of view, competence is understood as a cognitive structure that facilitates specified behaviours. From an operational point of view, competence seems to cover a broad range of higher-order skills and behaviours that represent the ability to deal with complex, unpredictable situations. This operational definition includes knowledge, skills, attitudes, metacognition and strategic thinking, and presupposes conscious and intentional decision making (Westera 2001). Westera sees competence as individual's cognitive structures which contain considerable theoretical and practical knowledge. "This knowledge can be made available to the outside world by way of reproductive skills (i.e. speech, writing, pointing, etc.), or can become supportive to skills and the associated skilled behaviour" (p.81). Competent individuals should be able to make the right choice out of a variety of different possible behaviours by anticipating the effects of their intervention. Accordingly, the competence model below identified what constitute teacher's competence:

1. Knowledge reproduction.
2. Skilled (competent) behaviour.
3. Attitudes.
4. Knowledge.

The factors listed above are key factors of Westera's model and they are the determinants of human thinking, which are knowing (the cognitive), feeling (attitudes) and doing (skills) (Westera, 2001).

2.12 Students' Conceptions of Assessment and Formative Assessment on Student Learning

Assessment is any act of interpreting information about student performance, collected through any of a multitude of means. Research into the conceptions teachers have about the purposes of assessment has identified four major purposes: that is, (a) assessment improves teaching and learning, (b) assessment makes students accountable for learning, (c) assessment makes schools and teachers accountable, and (d) assessment is irrelevant to education (Brown 2002). The research literature on students' conceptions of assessment is not vast, and is largely focused on tertiary or higher education students. Review of the empirical literature on students' conceptions of the purposes of assessment has identified four major purposes, some of which can be matched to teachers' conceptions of assessment. Students are reported as conceiving of assessment as (a) improving achievement, (b) a means for making them accountable, (c) being irrelevant, and (d) being enjoyable (Brown & Hirschfeld, 2008).

In Nigeria for instance, based on the facts that every individual student is unique and possesses personal ability to learn, make progress and excel in their academic career, the school system should therefore develop the multiple intelligences and potentials of each student. The new Nigeria National Policy on Education therefore recommends a change in assessment practices and schools should put more emphasis on "Assessment for Learning" as an integral part of the learning, teaching and assessment cycle. It was against this background that a school-based assessment (SBA) component was added to the Basic School

Certificate Examination (BSCE) and the Senior School Certificate Examination (SSCE) (Adediwure, 2012).

Student participation becomes a key component of successful assessment strategies at every step: clarifying the target and purpose of assessment, discussing the assessment methods, deliberating about standards for quality work, reflecting on the work. Sharing assessment with students does not mean that teachers transfer all responsibility to the student but rather that assessment is shaped and refined from day to day just as teaching is. For student self- and peer-assessment to be incorporated into regular practice requires cultivation and integration into daily classroom discourse, but the results can be well worth the effort (National Academy of Sciences, 2017 cited in Adediwure, 2012).

According to William and Thompson (2008), gathering purposeful examples of students' work that demonstrate their effort, progress, and level of understanding over a period to time, compose the main features of portfolio. However, what has changed through the course of time is the format and content, making portfolios meaningful and purposeful. Based on the constructivist theories, which advocate that learning has to be constructed by the learners themselves, rather than being imparted by the teachers, portfolio assessment requires students to provide selected evidence to show that learning relevant to the course objectives has taken place. They also have to justify the selected portfolio items with reference to the course objectives. Meaningful learning occurs when learners build a new knowledge structure by consciously and explicitly constructing new nodes and interrelating them with existing nodes and with each other.

Moreover, Jonassen, Beissner and Yacci (1993) conceive structural knowledge as the structure of how information within a knowledge domain is organized, and state the importance of structure knowledge as a conceptual basis for knowing why. The explicit awareness of those interrelationships and the ability to explicate those relationships is essential for higher order, procedural knowledge, a type of knowledge of knowing how.

Nesa (2014) noted that some teachers often complain about sacrificing time to assess during the lesson with the fear that they may not even finish the lesson. Despite its perceived shortcoming, formative assessment cannot be ruled out of any goal-oriented teaching and learning for its advantages. Formative assessment delivers information during the instructional process, before the summative assessment. Both the teacher and the students use formative assessment result to make decisions about what actions to promote further learning. It is an on-going dynamic process that involves far more than frequent testing and measurement of student learning is just one of its components (Chappuis & Chappuis, 2007). Pinchok and Brandt (2009), among a number of experts, believed that the timeliness, flexibility and ongoing nature of formative assessment techniques were most helpful in informing instruction for teachers and closing achievement gaps for students and for preparing students for the short and long-term formative and summative benchmarks they must meet.

Formative assessment helps students to monitor their own progress as they get feedback from their peers and the teacher .Feedback is information a teacher or another speaker, including another learner, gives to learners on how well they are

doing, either to help the learner improve specific points, or to help plan their learning. Feedback can be immediate, during an activity, or delayed at the end of an activity or part of a learning programme and can take various forms. Providing feedback throughout lessons is important. It is something that will become second nature with just a little bit of practice. Feedback encourages students to work hard and indicate what they need to focus on when they are having difficulty (British Council, 2014).

2.12.1 Students and Formative Assessment

The core of the activity of formative assessment lies in the sequence of two actions. The first is the perception by the learner of a gap between a desired goal and his or her present state (of knowledge, and/or understanding, and/or skill). The second is the action taken by the learner to close that gap in order to attain the desired goal (Ramaprasad, 1983; Sadler, 1998). For the first action, the prime responsibility for generating the information may lie with the student in self-assessment, or with another person, notably the teacher, who discerns and interprets the gap and communicates a message about it to the student. Whatever the procedures by which the assessment message is generated, in relation to action taken by the learner it would be a mistake to regard the student as the passive recipient of a call to action. There are complex links between the way in which the message is received, the way in which that perception motivates a selection amongst different courses of action, and the learning activity which may or may not follow. For the

purposes of this review, the involvement of students in formative assessment will be considered by division into two broad topics, as follows:

(1) The first of these will focus on those factors which influence the reception of the message and the personal decisions about how to respond to it. The concern will be with the effects of beliefs about the goals of learning, about one's capacity to respond, about the risks involved in responding in various ways, and about what learning work should be like: all of these affect the motivation to take action, the selection of a line of action and the nature of one's commitment to it.

(2) The second will focus on the different ways in which positive action may be taken and the regimes and working contexts in which that action may be carried out. The focus here will be on study methods, study skills, collaboration with peers, and on the possibilities of peer and self-assessment.

There is clearly a strong interaction between the two areas. In particular, if self and peer-assessment are promoted in a classroom, this affects the initial generation of the message about a gap as well as the way in which a learner may work to close it. However, the over-arching sets of beliefs to be considered within the first focus bear on the perception of and response to feedback messages, albeit in different ways, whether they are generated by the self or by others. In the studies reported within the first topic, both sources of feedback have been considered.

In his analysis of formative assessment by teachers in France, Perrenoud (1991) comments that a number of pupils do not aspire to learn as much as possible, but are content to 'get by', to get through the period, the day or the year without any

major disaster, having made time for activities other than school work. Perrenoud further stated that formative assessment invariably presupposes a shift in this equilibrium point towards more school work, a more serious attitude to learning. Every teacher who wants to practise formative assessment must reconstruct the teaching contracts so as to counteract the habits acquired by his pupils. Moreover, some of the children and adolescents with whom he is dealing are imprisoned in the identity of a bad pupil and an opponent (Perrenoud, 1991)

This rather pessimistic view is supported, but modified, by the finding of Swain 1991) that some secondary students working on teacher assessed science projects in England would respond to serious difficulties by working on subsidiary aspects of the task, so avoiding the main problem, and would be 'insatiable' in their search for cues for the 'right answer' from teachers. These symptoms of insecurity were accompanied by frequent moves to secure the esteem of the teacher. Similarly, Blumenfeld (1992) that some US students will try to avoid the risks involved in tackling a challenging assignment.

Thus whilst reluctance to be drawn into a more serious engagement with learning work may arise from a wish merely to minimise effort, there can be other influences. One problem may be fear--the extra personal commitment required can carry with it an enhanced penalty for failure in terms of one's self-esteem. Another problem may be that students can fail to recognise formative feedback as a helpful signal and guide (Tunstall & Gipps, 1996). Purdie & Hattie's (1996) comparative study of the responses of Japanese and Australian students, which aimed to explore their self-regulation strategies, shows that response can be culturally determined.

Many researchers report that positive learning gains secured by formative feedback are associated with more positive attitudes to learning--notably in mastery learning regimes where the use to be made of the feedback is clearly planned (Kulik et al., 1990; Whiting et al., 1995), but there can also be negative affects and the notions of attitude and motivation have to be explored in more detail if the origin of such effects is to be understood.

In the review and analysis presented by Blumenfeld (1992), he points to evidence that students can be reluctant to seek help, and are not always happy to receive extra assistance because it is interpreted as evidence of their low ability. Similarly, in their experimental study of the effects of different forms of guidance with 3rd and 6th graders solving mathematical problems, Newman and Schwager (1995) found that, whilst the different approaches could make a difference, the frequency of requests for help from all students was surprisingly low and they concluded that there is a need to encourage more help-seeking in the ordinary classroom. The central feature of this particular study was that the difference between the two forms of feedback guidance being given was a seemingly narrow one. One group were told that the goals of the work were in learning ('This will help you to learn new things...') with emphasis on the importance of understanding how to tackle problems of the type presented, whilst for the other the goal stressed was their own performance ('How you do helps us to know how smart you are and what kind of grade you will get...') with corresponding emphasis on completing as many problems as possible. Apart from this difference, all received the same tuition, including feedback, in respect of the work and all were encouraged to seek for help

whenever they felt the need. The performance goal students were more likely to show maladaptive questioning patterns and solved fewer problems, particularly when those initially classified as low achievers were compared across the two groups.

i. Goal Orientation

This effect of goal orientation on learning has been extensively studied. The study of Ames and Archer (1988) involved only enquiry into the goals that students already held. They found that their sample of 176 students ranging over grades 8 to 11 could be divided into two groups--those with mastery orientation and those with performance orientation. The former spoke of the importance of learning, believed in the value of effort to achieve mastery, and had a generally positive attitude to learning. The latter attributed failure to lack of ability, spoke more in terms of their relative ability, about learning with relatively little effort if able, and focused on the significance of out-performing others. A similar distinction was made in the intervention study by Butler (1988) already described in the section on Classroom experience above in which the terms 'ego-involving feedback' and 'task-involving feedback' were used. The surprising result of this study, that the giving of grades could undermine the positive help given by task comments, illustrates the sensitivity of the issues raised here. In a later study, Butler and Neuman (1995) showed that those in task mode were more likely to seek help and to explain help-avoidance in terms of seeking independent mastery, whilst those in an ego mode sought help less and explained their avoidance in terms of masking their incapacity. Two general reviews of this field both stress that feedback which draws attention away from the task and towards self-esteem can have a negative effect on attitudes and performance

(Cameron & Pierce, 1994; Kluger & DeNisi, 1996). It is even the case that giving praise can have bad effects, particularly when it is not linked to objective feedback about the work. Lepper and Hodell (1989) argue that reward systems can undermine both interest and motivation, whilst a detailed study by Pryor and Torrance (1996) shows how a teacher can concentrate on protective care for a child at the expense of helping the child to learn.

Several studies by Schunk (1996) have developed this same theme. This has already been brought out in the one described in the section on Classroom experience. In two studies, one on the learning of reading with 5th grade remedial students (Schunk & Rice, 1991), the other on writing instruction with mainstream 5th-graders. (Schunk & Swartz, 1993a), the second showed that better results were secured by giving process goals rather than product goals, and both showed that where the feedback on process goals was supplemented to include information about students' progress towards the overall aim of the learning, both the students' learning performance and their beliefs about their own performance capacities (self-efficacy), were at the highest level. The patterns of association between achievement, self concept, and the regimes of study and feedback experienced by students have been the subject of a detailed analysis, using results from 12 high school biology courses, by Thomas et al. (1993). A complex pattern of links emerged, but the importance of self-concept was clear, and it also seemed that the provision of challenging assignments and extensive feedback lead to greater student engagement and higher achievement.

ii. Self-Perception

In a more general review of the literature in this field, Ames (1992) started from the evidence about the advantages that 'mastery' (i.e. task-related) goals can secure and reviews the salient features of the learning environments that can help to secure these advantages. She concludes that evaluation to students should focus on individual improvement and mastery, but before this the tasks proposed should help students to establish their own self-referenced goals by offering a meaningful, interesting and reasonably demanding challenge. She also recommends that feedback should be private, must be linked to opportunities for improvement, and should encourage the view that mistakes are a part of learning. The self-perception of students is all-important here, and this will be strongly influenced by teachers' beliefs about the relative importance of 'effort' as against 'ability' in their views of learning. In particular, it is important that motivation is seen to involve changes in students' qualitative beliefs about themselves, which the setting of goals and the style of feedback should both be designed to secure. The use of extrinsic rewards can be counter-productive if they focus attention on 'ability' rather than on the belief that one's effort can produce success. Of course, the beliefs of peers and of parents can also affect the ways in which the self-concepts of students are developed, as is pointed out in Blumenfeld's analysis (1992), which draws general conclusions similar to those of Ames.

There is evidence from many studies thatlearners' beliefs about their own capacity as learners can affect their achievement. Examples that can be added to those already quoted above are those of *Lan et al.* (1994), Craven et al. (1991),

Fernandes and Fontana (1996), King (1994) and Butler and Winne (1995). The study of Fernandes & Fontana showed that achievements within the experiment in Portugal described in the section on Classroom experience were linked to an enhancement of the students' sense of their own control over their learning, and King's work also focused on locus of control as a predictor of performance. Grolnick and Ryan (1987) demonstrated that self-directed learning styles produced better conceptual learning, an effect that they attributed to enhanced autonomy and internal locus of control. These issues were analysed in a theoretical paper by Deci and Ryan (1994) which is discussed further in the section on Meta-task processes.

Studies by Skaalvik (1990), Siero and van Oudenhoven (1995) and Vispoel and Austin (1995) all show that the reasons students gave for the results of their learning differ between low achievers, who attribute failure to low ability, and high achievers who tend to attribute success to effort. Vispoel and Austin urge that teachers should help students to overcome attributions to ability, and should encourage them to regard ability as a collection of skills that they can master over time.

Craven's work in mathematics and reading with students in grades 3 to 6 (Craven et al., 1991), showed that students' self-concept could be enhanced by feedback designed to this end and that whilst those whose self-concept was initially low showed large gains, those with initially high self-concept showed no gains. In addition, the students' attribution of success in the work to effort increased whilst attributions to ability did not. However, in this short intervention, the results obtained by the researcher could not be replicated by the teacher and there were no significant

differences in achievement between experiment and control groups. A final and further perspective is added by the review of Butler and Winne (1995), who, in addition to covering the evidence that many of the factors mentioned above can have on learning achievement, also draw attention to the importance of learners' beliefs about the importance of effort, about the amount of effort that successful learning can demand, about the nature of learning, and about the--immature--expectation that all learning should lead to simple and unambiguous answers to all the questions that can be raised.

Overall, this section of this review has been selective and does not claim to cover the many possible aspects implied in the terms attitude and motivation. The particular focus in the work reviewed here is to call attention to the importance of a variety of personal features-self-concept, self-attribution, self-efficacy, and assumptions about the nature of learning. There are clearly complex overlaps and interactions between these features; Geisler-Brenstein and Schmeck (1995) in a comprehensive analysis of evidence on these inter-relationships, have formulated an `Inventory of Learning Processes' in order to promote what they call `a multi-faceted perspective Non individual differences in learning'.

The importance of these features arises from the conjunction of two types of research results summarised above. One is that the `personal features' referred to above can have important effects on a student's learning. The other is that the way in which formative information is conveyed to a student, and the context of classroom culture and beliefs about ability and effort within which feedback is interpreted by the individual recipient, can affect these personal features for good or ill. The

hopeful message is that innovations which have paid careful attention to these features have produced significant learning gains when compared with the existing norms of classroom practice.

iii. Assessment by Students

The focus of this section is to discuss one aspect of the learning activity which may follow from the student acceptance and understanding of the need to close a gap between present achievement and desirable goals. In formative assessment, any teacher has a choice between two options. The first is to aim to develop the capacity of the student to recognise and appraise any gaps and leave to the student the responsibility for planning and carrying out any remedial action that may be needed. This first option implies the development within students of the capacity to assess themselves, and perhaps to collaborate in assessing one another. The second option is for teachers to take responsibility themselves for generating the stimulus information and directing the activity which follows. The first of these two will be the subject of this section, whilst the second will be discussed in the sections titled Strategies and tactics for teachers and Systems below. The two options overlap in that it is possible to combine the two approaches: the boundary between this section and the section on Strategies and tactics for teachers will therefore be arbitrary, as is the boundary between this section and the section on Classroom experience.

The focus on self-assessment by students is not common practice, even amongst those teachers who take assessment seriously. Daws and Singh (1996) found that only about a third of the UK science teachers whom they sampled

involved pupils directly in their own assessment in any way, and both Parkin and Richards and the account of Norwegian initiative by Jernquist (Black & william, 2004) describe the introduction of self-assessment, respectively in secondary school science in the UK and in secondary mathematics in Norway, as innovations. In the general literature on classroom assessment, the topic is frequently overlooked--for example, the otherwise comprehensive collection by Phye (1997) contains no piece which focuses explicitly on self- and peer-assessment.

The motives for introducing this practice are diverse. Parkin and Richards started because of the practical impossibility of appraising the level of need of each individual in a class of about 30 students engaged in practical laboratory work-if they could do it for themselves the teacher could deploy his/her effort more efficiently. In his review of the literature on student self-evaluation in professional training courses in the health sciences, Arthur (1995) reported that the requisite skills are not purposefully taught in most programmes, but also described new research to develop these skills in nursing education. The motive given here is that the future professional will need all of the skills necessary for life-long learning, and self-evaluation must be one of these.

The Norwegian initiative started from a more fundamental motive, which was to see self- and peer-assessment as an intrinsic part of any programme which aims to help students to take more responsibility for their own learning. A different slant on this aspect is provided in the study by James of recorded dialogues between teachers and students (1990). This study showed that in such dialogues, the teacher's power easily overwhelms the student's contribution, the latter being too modestly tentative.

The effect is that inquiry into the reasons for a student's difficulty is not pursued. Some of the research discussed in the section on Classroom experience above involved experiments where work on goals was pursued both with and without training in self-evaluation; an example is the research by Schunk (1996) which showed that, if combined with performance goals, self-evaluation practice improved persistence, self-efficacy and achievement.

Some authors have taken the argument further by developing a theoretical reflection on how students might change their understandings. The assumption here is they cannot do so unless they can first understand the goals which they are failing to attain, develop at the same time an overview in which they can locate their own position in relation to those goals, and then proceed to pursue and internalise learning which changes their understanding (Sadler, 1989). In this view, self-assessment is a sine qua non for effective learning. This theoretical stance will be further explored at the end of this section and in the section titled Prospects for the theory and practice of formative assessment.

iv. Studies of Self-Assessment

Research studies of self- and peer-assessment can be broadly divided into two categories--those involving experimental work yielding quantitative data on achievement and those for which the evidence is qualitative. These will now be discussed in turn. Two quantitative examples have already been described in some detail in the section on Classroom experience (Fontana & Fernandes, 1994; Frederiksen & White, 1997). Both of these have in common an emphasis on the need for students to understand the learning goals, to understand the assessment criteria,

and to have the opportunity to reflect on their work. Peer evaluation played a part only in the Frederiksen & White study.

Two studies have worked with children who have learning difficulties. In the first of these (McCurdy & Shapiro, 1992), the oral reading rates of elementary school students were improved by giving them verbal and visual performance feedback, either by the teacher only, or through peer-monitoring, or self-monitoring. The largest gains, measured by comparison of pre- and post-test scores over the programme's period of nine weeks, were achieved by the self-monitoring group, whilst all three did better than a control group who had no formative feedback. Both on the grounds of acceptability to the teachers involved and on the reliability of their own appraisal of their work, the peer- and self-monitoring methods were preferred and one benefit of both was that they reduced the amount of time that the special education teachers had to spend on measurement in their classrooms. In the second research (Sawyer et al., 1992) the focus was on the writing composition skills of 4th and 5th grade students. Here, a group who were taught self-regulated strategies with explicit attention to goals did better than a similar group without the goal emphasis and a group without self-monitoring instruction. The first group were better overall on generalisation of the writing skills taught, but all groups with feedback did better, after the particular experiment was over, than other learning disability students without any experience of such feedback.

In research to investigate the most effective way of using a problem-solving software programme (Delclos & Harrington, 1991), two groups of 5th and 6th grade students were both given training in their pro-active use of the programme, but one

of them also had to take part in monitoring exercises, described by the authors as meta-cognitive training. There was also a matched control group who used the programme without the training. The monitoring exercises were provided by a booklet of questions with which students monitored their results on a set of practice problem-solving exercises selected from the software. Both trained groups achieved greater success with the programme than the control group, but those with the monitoring training were also significantly better than those without it. They were more successful with the more complex problems, they succeeded more quickly, and overall they were seen to be employing more effective strategies. They seemed to do better, not because they could use the particular strategies more effectively, but because they started by reflecting on a problem and considering the possibilities of using different strategies before proceeding--an outcome which seemed to link with the meta-cognitive emphasis underlying the self-monitoring training.

A focus on self-directed learning was seen, in the review by Thomas (1993), to be a necessary concomitant to the moves to develop practical work, study skills, and responsibility for learning amongst students. He distinguished course features that discourage independent learning, such as test review handouts, from those that encourage it, including extensive performance feedback, and reviewed evidence which established that such activities can improve student achievement. In a review of the practice of writing, Zimmerman and Risemberg (1997) discussed the different forms of the practice of self-regulation employed by several well-known authors and linked this to research evidence on the effectiveness of supporting students by encouraging self-monitoring (Schunk & Swartz, 1993b; Zimmerman & Bamdura,

1994). A closely related set of studies by King (1994) on students' questioning strategies will be reviewed in the section on Questions below.

Self-evaluation is an intrinsic aspect of reflection on one's own learning. Several qualitative studies report on innovations designed to foster such self-reflection. In science education, Baird et al. (1991) reported on work with 27 teachers and 350 students where teachers were helped to know more about their students and to learn more about how they might change the style of classroom work by a strategy based on meta-cognition and constructivism. Both the teachers and the students involved had to analyse what had happened in a piece of the learning work, and each side had to propose three changes to be put into effect. Later, students had to evaluate whether these changes had happened. The evidence, based on self-reports by those involved, was that successful implementations had been achieved. Maqsud and Pillai (1991) trained a class of high-school students in self-scoring of their tests and found that their score gains were significantly higher than those of a control group class: they attributed this to the lowering of their students' normal distrust of and antagonism towards marked feedback. Similar success was achieved by Merrett and Merrett (1992) in an experiment aimed to help students to realise, through feedback on their self-assessment, the lack of correspondence between their self-perception of their work and the judgments of others; the quality and depth of the students' self-assessments were enhanced as the experiment proceeded. Similar work is reported by Meyer and Woodruff (1997).

A larger scale innovation is fully described in a book by Ross et al. (1993). The aim was to change assessment of achievement in the visual arts by bringing

students into the assessment process as reflective practitioners, mainly through the development of `assessment conversations' in which students were encouraged to reflect on their work and to articulate their reflections. The authors are enthusiastic in their accounts of the success of their work, and believe that the students involved showed that they `are capable of rich and sophisticated responses to and understandings of their own work ... in collaboration with their conversation partner' (p. 161). They concluded that the approach opened up new opportunities in aesthetic knowing and appraisal, but that it also required that teachers abandon traditional assessment practices. However, the evidence of the `success' of the work is to be found only in the accounts, illustrated with quotations, of the quality of the students' aesthetic judgments. Similarly qualitative reports were given of an initiative to hand over all responsibility for assessment of a first-year undergraduate course to students' self-assessment (Edwards & Sutton, 1991), and of the outcome of a project to train 2nd, 3rd, and 4th grade students to record their on or off task state of work at regular intervals (Wheldall & Pangagopolou-Steamatelatou, 1992). In both cases, the initiative produced a significant change in students' commitment to their work and there was also some indirect evidence in both of improvement in their learning achievement.

v. Peer-assessment

Several of the accounts described in this section involve both self-assessment and peer-assessment, Peer-assessment as such is included in several accounts of the development of group collaboration as a part of classroom learning activity. In an

experimental study by Koch and Shulamith (1991), college students were taught to generate their own questions about topics in physics, and achieved better learning gains than those who used only teacher's questions; amongst those generating their own questions, some also used peer feedback to answer and discuss their efforts, and this group showed even greater learning gains than the rest. Higgins, Hall, Wall, Woolner & McCaughey (1994) also used collaborative work, in their work with 1st and 2nd grade school-children developing assessment skills in their integrated project work. The children generated their own criteria, and the quality of these rose during the study. Good agreement with teachers' assessments was achieved, with children tending to under-assess. However, groups were not accurate in their assessments of other groups. The reliabilities of self-and peer-assessments were also investigated, in work with college biology students, by Stefani (1994). He found correlations with teachers' assessments of 0.71 for self-assessments and 0.89 for peer-assessments. All of the students said that the self- and peer-assessment work made them think more, and 85% said that it made them learn more. Hughes and Large (1993) also investigated peer-assessment of final year undergraduates in pharmacology and found a correlation coefficient of 0.83 between the mean ratings of peers and those of a group of staff.

It is often difficult to disentangle the peer-assessment activity from other novel activities in work of this kind, and impossible in general to ascribe any reported gains to the assessment component. General reviews are given by Slavin (1991) and by Webb (1995). The second of these does focus on assessment practices in group work and it stresses the importance of training in group processes and of the

setting of clear goals and clear achievement criteria. In such groups, a clear choice has to be made, and shared in the group, between a goal of the best performance from the group as a group, and a goal of improving individuals' performances through group collaboration. The question of the optimum group composition is a complex one; where a group goal has priority, then for well defined tasks, established high achievers are the most productive, but for more open tasks a range of types of students is an advantage. Where individuals' performance has priority, then the high achievers are little affected by the mix, but the low achievers benefit more from a mixed group provided that the group training emphasises methods for drawing out, rather than overwhelming, their contribution. The need for such care is emphasised in a study of group discussions in science education by Solomon (1991).

2.13 Challenges of Formative Assessment in Schools

Inadequate of qualified teachers in secondary schools especially for science and mathematics (Kibga, 2004; Zalia, 2007). They added that current there was expansion of secondary schools in Tanzania to increase the number of students per class which in turn not match with the supply of qualified science teachers in governments and private secondary schools. This result ineffective in conducting the classroom assessment practices. Lissu, (2008) also found that the majority of Tanzanian science teachers use traditional modes of instructional (teacher centered pedagogical approach) in teaching and learning process. Traditional mode instructional may not identify students' misconceptions and effectiveness of classroom continuous assessments.

Clarke (2001) also noticed that Black and William identified some inhibiting factors which affect the use of formative assessment and these include:

1. A tendency for teachers to assess quality of work and presentation rather than the quality of learning,
2. Giving greater attention to marking and grading rather than providing advice for improvement,
3. Having a strong emphasis on comparing students with each other which demoralises the less successful learners,
4. Teachers feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.

Chung (2006) in his study noted that in the implementation of school-based formative assessment approach, the school had encountered a number of challenges in the process. Very often, there were new teachers joining the school in new academic years, some of them might not have the professional knowledge and skills in school-based formative assessment. Some others might not agree with the use of formative assessment or would not be willing to change their mind-set unless they saw the good results of formative assessment. The school had to allow adequate time for these new teachers to establish their relevant concept and practice. The existing teachers in the school needed to have the professional knowledge and patience to help the new colleagues to understand and work on formative assessment. Some of these negative attitudes toward the continuous assessment approach and record keeping were earlier on observed by Fletcher (2001). He pointed out that the arrangements in assessment of students' achievement in mathematics at the senior

high school level were not substantially different from the traditional modes of assessment which they were meant to replace.

2.14 Effects of Formative Assessment on Schools

From a pedagogical point of view, it is difficult to disagree with many of the claims made about formative assessment (Craven, Marsh & Debus (1991). Formative assessment helps with planning because it involves giving clear learning intentions to the students. Formative assessment ensures that pupils are focused on the purpose of the task and that they can become involved in their learning and can comment on it - that is there is a sharing of learning intentions. Formative assessment empowers the student to realise his or her own learning needs and to have control over future targets. Students are trained to evaluate their own achievements against the learning intentions in oral or written form. Formative assessment tracks progress diagnostically and informs a student of his or her successes and weaknesses. Formative assessment ensures student motivation and involvement in progress - it raises achievement, it keeps teachers informed of individual needs.

Pajares (1998) surveyed 216 Grade 8 students in language arts classes and found that they wanted honest, comprehensible, and constructive feedback on how to improve, while their teachers emphasised praise and positive affect as the important response. In other words, the students wanted to improve and conceived that feedback in response to an assessment should help them to do this. In contrast, their teachers wanted the students to feel good and so denied the students' access to constructive feedback in order to protect the students from negative consequences.

The students were able to see such 'impression management' for what it was and sought truth and instruction instead. In a similar vein, American high school students reported that good teachers, in contrast to poor teachers, regularly tested and provided feedback to students about learning. Tertiary students, likewise, have requested more improvement-oriented feedback on their assessed performance than they were actually receiving (Duffield & Spencer, 2002).

Research studies have gathered evidence showing benefits of assessment for learning or formative assessment to students' learning. With the shift in teacher's role to that of a facilitator in formative assessment, students change from passive recipients of information and knowledge to active participants in the classroom (Black et al, 2003). Students tend to take more responsibility for their learning and become more independent learners (Black, et al., 2003; Organization for Economic Co-operation and Development, 2005). When students are offered some element of choice in terms of task type and the techniques used to tackle problems or express ideas, they are more motivated to find out solutions to problems themselves and thus develop knowledge and skills (Bullock, Bishop, Martin, & Reid, 2002). In other words, students enjoy the sense of ownership of their own work and the freedom they have in the assessment process.

Formative assessment or school-based assessment can also influence student affects, for example, motivation, self-esteem, and confidence (Black & William, 1998). Cowie (2005a, 2005b) found in his studies that students' trust and respect were important in assessment for learning. "Along with a sense of comfort or safety based on trust, the students identified respect as important to their active involvement

in assessment interactions with teachers and peers." (2005b, p. 210). Another benefit of formative assessment or teacher assessment to teachers is related to professional development. Hall and Dorman (1997) conducted a study to investigate teacher assessment (TA) at the level of classroom practice. The teachers participating in the study claimed that the need to assess the students pushed them to plan their teaching in greater depth for the short, medium and longer term. They became aware of the importance of keeping a regular and close eye on students' work, which gave them a better insight into students' ability and made them more focused on teaching.

Brooks and Sikes (2016) emphasised that effects of the formative assessment process on students are just as dramatic because it engages students in learning how to learn. Students learn more, learn smarter, and grow into self-aware learners who can tell you exactly what they did to get to exactly where they are. In other words, students become self-regulated learners and data-driven decision makers. They learn to gather evidence about their own learning and to use that information to choose from a growing collection of strategies for success. And students not only learn how to take ownership of their learning but also increasingly view themselves as autonomous, confident, and capable. And although formative assessment has a significant effect on learning for all students, it "helps low achievers more than other students and so reduces the range of achievement while raising achievement overall" (Black & William, 1998). For reasons we mention here and for many more we explore in later chapters, the formative assessment process is a compelling force for increasing student learning and closing the achievement gap.

2.15 Summary of Literature Review

This chapter have so far reviewed literature related to the topic under study as documented by some authorities and researchers on the following sub-headings: Concept of assessment, Criteria for assessment, Concept of formative assessment in schools, Adopting formative assessment practices in schools, School based assessment in the Ghanaian Senior High Schools curriculum, Recognising the formative assessment process, Competency of teachers in handling formative assessment in schools, Theories on formative assessment, Students' conceptions of assessment and formative assessment on student learning, Challenges of formative assessment in schools and Effects of forma tive assessment on schools.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This research was conducted in order to assess students perception on formative assessment in Senior High Schools and its impact on students' learning in the Kumasi Metropolis. The structure of methodology in this study consist of research design, population, sample size, sampling techniques, sources of data, data collection tools, data collection procedure data analysis procedure and ethical considerations.

3.1 Research Design

In this study, the descriptive method of research was used. According to Amin (2005), the descriptive method of research is used to gather information about the present existing condition. The main purpose of descriptive research is to authenticate formulated hypotheses that refer to the present situation in order to clarify it. This approach is quick and practical considering the financial aspect.

Also, it aims at obtaining an accurate profile of the people, events or situations. In this study, the descriptive research method was employed in order to examine formative assessment in Senior High Schools and its impact on students' learning in the Kumasi Metropolis.

This method was opted for, in light of the objective of getting first hand data from respondents. The inherent advantage in the descriptive method cannot be overemphasised for its flexibility, regarding its potential for allowing the researcher

to use its approaches. This also gave the researcher greater options in selecting the instrument for data gathering.

3.2 Population

The target population in research work is the total number of subjects or the total environment that is of interest to the researcher (Oso & Onen, 2011). The target population was all the 189 Senior High School teachers and students who hold various positions in the four schools in the Prempeh Zone of the Kwadaso circuit, comprising 132 students and 57 teachers in the four Senior High Schools namely, Yaa Asantewaa Girls' Senior High School, Prempeh College, Kumasi Senior High Technical School and Armed Forces Senior High Technical School.

3.3 Sample Size and Sampling Techniques

According to Howit and Cramer (2011), the quality of a piece of research does not only stand or fall by the appropriateness of methodology and instrumentation but also by the suitability of the sampling strategy that has been adopted.

The study adopted the multi-stage sampling techniques to select its sample. Multi-stage sampling technique involves the use of more than one sampling technique when selecting sample size in a particular study (Creswell, 2003). In order to get an appropriate sample size for the study, an updated list of all the teachers who hold various positions and have been in their positions for more than five years and all the students who also hold various positions were obtained from the headmasters

of the four Senior High Schools in the selected senior high schools in the Kumasi Metropolis.

Purposive sampling was first used to select all the 132 students who hold various positions comprising 33 from each of the 4 senior high schools and the 57 teachers who hold various positions and have been in their positions for more than 5years in the 4 senior high schools. Tongco (2007) postulated that, purposive sampling technique is a deliberate choice of an informant due to the qualities pertaining to the knowledge and experience.

The positions held by respondents were considered based on exposure to formative assessment in the various schools. These positions included housemasters, assistant headmasters, form masters, heads of department, senior house masters and mistresses, house masters and mistresses, guidance and counseling coordinators and so on. The same technique was used to select student who hold various positions like house prefects, school prefects, class prefects and so on.

On the part of the students, 21 students were selected randomly out of the 132 students who were purposively selected from each of the four schools making up the total sample size of 84 from the purposively selected students representing 64% of the 132 purposively selected in each of the schools. On the part of the teachers, a proportional sample of 40 was also selected randomly out of the 57 purposively selected teachers who held various positions like housemasters, assistant headmasters, form masters, heads of department, senior house masters and mistresses, house masters and mistresses, guidance and counseling coordinators and so on from the four Senior High Schools making a total of 128 respondents

comprising 4 headmasters, 40 teachers and 84 students for the study. The lottery type of the simple random sampling was used to select the 128 respondents in accordance with De Vaus (2002) sample size population proportion formula shown below for all the groups.

$$\frac{189}{1+189(0.05^2)} = \frac{189}{1.4725} = 128$$

3.4 Sources of Data

3.4.1 Primary Data

Primary data is data collected directly from first-hand experience (Yin, 2005). Primary data is usually collected when using quantitative methods of data collection. Primary data can be collected through observation, discussions and the issuance of questionnaires. This study employed the use of questionnaires to collect primary data from the respondents.

3.4.2 Secondary Data

Cooper and Schindler (2003) define Secondary data as data gathered for purposes other than the completion of a research project. Secondary data were basically data derived from raw data and published documents and literatures that were relevant to the study. These included data gathered from the internet, official reports, newsprint, journals. The Secondary data helped to cross-check official information.

3.5 Data Collection Instrument

The researcher employed survey questionnaire as the main data-gathering instrument for the study. Questionnaire is a series of questions, each one providing a number of alternative answers from which the respondents can choose (Amin, 2005).This instrument was used because it is the most appropriate in collecting data of this nature (Amin, 2005). A questionnaire was developed for the respondents to answer based on the research questions. The questionnaires consisted of closed ended items.

The questionnaires were in a 4-point likert scale According to Sarantakos (2005), closed-ended items require less effort to respond to, easy scoring and promotes objectivity on the part of the respondent. However, they are limited to only the areas indicated in the questionnaires, and do not give room for self-expression. Notwithstanding the lapse of closed-ended items in restricting the responses of respondents, its adoption ensures effective editing and analysis of data.

3.5.1 Pre-Testing of the Instrument.

A pilot testing was conducted to make sure the research instruments were valid and reliable. The purpose for piloting is to get the bugs out of the instrument so that the respondents in the study area will experience no difficulties in completing the questionnaire and also enable one to have preliminary analysis to see whether the wording and format of questions is appropriate (Bell, 2005).

During the pre-testing the questionnaires were administered to 30 students and 30 teachers of the Opoku Ware Senior High School which was outside the study

area but had similar characteristics. Respondents were conveniently selected as statistical conditions are not necessary in the pilot study (Cooper & Schindler, 2003). The purpose of the pre-test was also to determine the suitability of the items of the questionnaire, to allow the researcher to make the necessary changes to items which were inappropriate as well as the reliability of the instruments.

3.5.2 Validity

According to Fraenkel and Wallen (2002), Validity revolves around the defensibility of the inferences researchers make from data collection through the use of an instrument. The issue about validity, therefore, has to do with the instruments used to collect data and whether the instruments permit the researchers to draw valid conclusions about the characteristics of the individuals about whom they collected the data. The validity of the instruments for this study was, therefore, established by making the instruments available to my supervisor and colleagues to edit and offer suggestions for the necessary corrections to be made. Ambiguous and inappropriate items were either deleted or modified.

3.5.3 Reliability

Polit and Hungler (1995) refer to reliability as the degree of consistency with which an instrument measures the attribute it is designed to measure. To determine the reliability of the instrument the questionnaire was administered on the same group of respondents twice in the pilot study and given a grace period of two week between the first and second test and the coefficient of reliability from the two tests

correlated. The reliability test for the two tests, yielded Crombach alpha of 0.87. Alpha values of above 0.87 are considered highly reliable (Cohen, Manion & Morrison, 2007). Therefore the values obtained from the pre-test showed that items in the survey were highly correlated and reliable capable of eliciting the desired information for the study.

3.6 Data Collection Procedure

The researcher sought permission from the Kumasi Metro Director of Education to conduct the study after the University has approved of the research topic with an introductory letter. The Metro Director of Education gave the researcher, the permission to conduct the study after which the researcher visited all the sampled population. The questionnaires were afterwards administered personally by the researcher on the respondents upon the approval of the management of the four selected Senior High Schools.

The respondents were given enough time and space to reflect on each question item before providing their own responses to the questionnaire. The researcher was able to retrieve all the 128 questionnaires, within two weeks.

3.8 Data Analysis Procedure

The data were cleaned with the aim of identifying mistakes and errors which may have been made and blank spaces which have not been filled. A codebook for the questionnaire was prepared to record the response. The data was then computed using the Statistical Package for Social Sciences (SPSS) version 16.0 software

package. The data were analysed descriptively and presented in tales with frequencies and percentage to answer all the research questions.

3.7 Ethical Considerations

The researcher first explained the essence of the study to the respondents. The confidentiality of the information collected from respondents was considered by ensuring that their names and other information that could bring out their identities were not included in the data collection. The respondents were also made to understand that their role in the data collection activity was to find answers to the research questions. To avoid imposing the questionnaires on respondents, they were given the choice to opt out if the exercise would affect them in any way.

Respondent(s) discovered to harbour bias or unethical leanings towards the schools were disqualified and replaced. Politically, this study does not contravene any law of the country therefore the researcher does not anticipate to run into any political clashes.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

The chapter presents and analyses the data of the study. This is followed by discussion of the findings with reference to the literature reviewed. The chapter begins with the analysis of the demographic characteristics of respondents that address data on age, sex, educational background, and teaching experience. This is proceeded by analysis of the main data relating to the research questions.

4.1 Demographic Characteristics of Respondents

The demographic characteristics of the respondents are shown in Table 4.1

Table 4.1: Demographic Characteristics of Respondents

Variable	Frequency	Percentage
Sex		
Male	78	61
Female	50	39
Total	**128**	**100**
Age		
11-20 years	84	66
21-30 years	6	5
31-40 years	17	13
41-50 years	12	9
51-60 years	9	7
Total	**128**	**100**
Highest educational qualification(Teacher only)		
Diploma in Education	9	20

Bachelor's Degree	21	48
Masters' Degree	14	32
Total	**44**	**100**
Teaching Experience(Teacher only)		
1-5 years	6	14
6-10 years	8	18
11-15 years	13	30
16-20 years	9	20
21 years and above	8	18
Total	**44**	**100**

Source: Field Data, 2016

Table 4.1 shows that the males who participated in the study were more than that of the females as males constituted 61% as against 39% females. On the age of respondents, 66% were aged between 11-20 years, 5% were aged between 21-30 years, 13% were aged between 31-40 years, 9% were aged between 41-50 years while 7% were aged between 51-60.

On respondents' highest educational qualification (excluding students), 20% were holders of Diploma in Education certificates, 48% were holders of Bachelor's Degree while 32% were holders of the Masters' Degree. The results mean that the respondents possess the requisite educational certificate to participate in the study. On respondents' teaching experience (excluding students), 14% of the respondents had worked for between 1-5 years, 18% of the respondents had worked for between 6-10 years, 30% of the respondents had worked for between 11-15 years, 20% of the respondents had worked for between 16-20 years while 18% of the respondents

had also worked for 21 years and above. The results mean that all the respondents were experienced professional teachers.

4.2 Analysis of the Main Data

The analysis of the main data is organised in line with the research questions.

Research Question 1: What have been the experiences of students with the formative assessment in Senior High Schools in the Kumasi Metropolis?

The researcher wanted to know from the respondents, the experiences of students with the formative assessment in Senior High Schools. The result is shown in Table 4.2.

Table 4.2: Students Formative Assessment Experiences

Statement	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Teacher provides regular feedback in details to stimulate action for improvements in learning	46(36%)	68(53%)	14(11%)	-
Teacher provides feedback to students at the initiation session, in the lesson and after the lesson.	34(27%)	62(48%)	32(25%)	-
Teacher encourages students to do peer-assessment during lessons.	41(32%)	58(45%)	29(23%)	-
Teacher encourages students to do self-assessment during lessons.	32(25%)	48(37%)	34(27%)	14(11%)
Teacher assessment links practices to instructional goals	41(32%)	54(42%)	33(26%)	-
Teacher integrates formative assessment strategies into instruction	28(22%)	52(41%)	36(28%)	12(9%)

Table 4.2 shows that 36% of the respondents strongly agreed that an experience of students with the formative assessment in senior high schools was that teachers provided regular feedback in details to stimulate action for improvements in learning, 53% of the respondents agreed while 11% of the respondents disagreed. Also, 27% of the respondents strongly agreed that teachers provided feedback to students at the initial session of the lesson and after the lesson, 48% of the respondents agreed while 25% of the respondents disagreed.

Again, 32% of the respondents strongly agreed that an experience of students with the formative assessment in senior high schools was that teachers encouraged students to do peer-assessment during lessons, 45% of the respondents agreed while 23% of the respondents disagreed. What is more, 37% of the respondents strongly agreed that an experience of students with the formative assessment in senior high schools was that teachers encouraged students to do self-assessment during lessons, 27% of the respondents agreed while 11% of the respondents disagreed.

Moreso, 32% of the respondents strongly agreed that an experience of students with the formative assessment in senior high schools was that teachers linked assessment practices to instructional goals, 42% of the respondents agreed while 26% of the respondents disagreed. Finally, 22% of the respondents strongly agreed that teachers integrated formative assessment strategies into instruction, 41% of the respondents agreed, 28% of the respondents disagreed while 9% of the respondents strongly disagreed.

From the analysis, it can be concluded that generally, the students perceived their teachers as doing whatever was expected of them to ensure the effective

implementation of the formative assessment as they were able to integrate formative strategies into instruction and provide students the necessary feedback. This was a positive development because assessment is one of the most important components of teaching and learning, which, if done effectively, can significantly improve students' performance (Feng, 2007).

Research Question 2: What attitudes do students exhibit toward formative assessment activities in Senior High Schools in the Kumasi Metropolis?

The researcher wanted to know from all the respondents (teachers and student), the attitudes students exhibit toward formative assessment activities in Senior High Schools. The result is shown in Table 4.3.

Table 4.3: Students' Attitude towards Formative Assessment

Statement	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Students study hard to improve on their academic Performance	62(48%)	66(52%)	-	-
Students have intrinsic motivation to learn on their own	43(33%)	52(41%)	33(26%)	-
Students monitor their own progress in the teaching and learning process	48(38%)	72(56%)	8(6%)	-
Students set targets on their own academic performance	62(48%)	36(28%)	19(15%)	11(9%)
Students are involved in the assessment interactions with teachers and peers	39(30%)	74(58%)	15(12%)	-
Students participate actively in the classroom as the teacher facilitates	52(41%)	45(35%)	31(24%)	-

Table 4.3 shows that 48% of the respondents strongly agreed that the attitude students exhibited toward formative assessment activities in Senior High Schools was that students studied hard to improve on their academic performance while 52% of the respondents agreed. Also, 33% of the respondents strongly agreed that the attitude students exhibited toward formative assessment activities in Senior High Schools was that students were intrinsically motivated to learn on their own, 41% of the respondents agreed while 26% of the respondents disagreed.

Also, 38% of the respondents strongly agreed that the attitude students exhibited toward formative assessment activities in Senior High Schools was that students monitored their own progress in the teaching and learning process, 56% of the respondents agreed while 6% of the respondents disagreed. Again, 48% of the respondents strongly agreed that the attitude students exhibited toward formative assessment activities in Senior High Schools was that students set targets on their own academic performance, 28% of the respondents agreed, 15% of the respondents disagreed while 9% of the respondents strongly disagreed. Furthermore, 39% of the respondents strongly agreed that the students were involved in the assessment interactions with teachers and peers, 58% of the respondents agreed while 12% of the respondents disagreed. Finally, 41% of the respondents strongly agreed that students participated actively in the classroom as the teacher facilitated, 35% of the respondents agreed while 24% of the respondents disagreed.

It is evident from the analysis of the results that generally, the students had positive attitude towards the formative assessment implemented in the schools as

they were intrinsically motivated to study hard on their own, monitor their own progress and set their academic performance target.

It is good that the students had positive attitude towards formative assessment and were motivated to learn on their own. This is in conformity with the claim by Brooks and Sikes, (2016) that formative assessment process engages students in learning how to learn and that students learn more, learn smarter, and grow into self-aware learners who can tell you exactly what they did to get to exactly where they are. In other words, students become self-regulated learners and data-driven decision makers. They learn to gather evidence about their own learning and to use that information to choose from a growing collection of strategies for success. And students not only learn how to take ownership of their learning but also increasingly view themselves as autonomous, confident, and capable. The finding also supports the views of Black and William (1998) that formative assessment process is a compelling force for increasing student learning and closing the achievement gap.

Research Question 3: What are the effects of formative assessments on students' learning in Senior High Schools in the Kumasi Metropolis?

The researcher wanted to know from the respondents, the effects of formative assessments on students' learning in Senior High Schools. The result is shown in Table 4.4.

Table 4.4: Effects of Formative Assessment on Students Achievement

Statement	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Help students attain the intended learning outcome	62(48%)	51(40%)	15(12%)	-
Makes students accountable for learning	54(42%)	66(52%)	8(6%)	-
Improves teaching and learning	45(35%)	60(47%)	23(18%)	-
Formative assessment enhances self-esteem, motivates and improve attitudes to learning	42(33)	59(46%)	18(14%)	9(7%)
Helps to improve students' achievement	35(27%)	71(56%)	14(11%)	8(6%)
Makes teacher accountable for teaching and learning	47(37%)	73(57%)	8(6%)	-
Helps students to monitor their own progress in the teaching and learning environment through feedback	45(35%)	52(41%)	31(24%)	-

Table 4.4 shows that, 48% of the respondents strongly agreed that the effect of formative assessments on students' learning in Senior High Schools is that it helps students to attain the intended learning outcomes, 40% of the respondents agreed while 12% of the respondents disagreed. Also, 42% of the respondents strongly agreed that the effect of formative assessments on students' learning in senior high schools is that it makes students accountable for learning, 52% of the respondents agreed while 6% of the respondents disagreed.

In addition, 35% of the respondents strongly agreed that the effect of formative assessments on students' learning in senior high schools is that it improves teaching and learning, 47% of the respondents agreed while 18% of the respondents

disagreed. Again, 33% of the respondents strongly agreed that the effect of formative assessments on students' learning in senior high schools is that it enhances self-esteem, motivates and improve attitude to learning, 46% of the respondents agreed while 14% of the respondents disagreed.

Further, 27% of the respondents strongly agreed that the effect of formative assessments on students' learning in senior high schools is that it helps to improve students' achievement, 56% of the respondents agreed, 11% of the respondents disagreed while 6% of the respondents strongly disagreed. Furthermore, 37% of the respondents strongly agreed that the effect of formative assessments on students' learning in Senior High Schools is that it makes teacher accountable for teaching and learning, 57% of the respondents agreed while 6% of the respondents disagreed.

Finally, 35% of the respondents strongly agreed that the effect of formative assessments on students' learning in senior high schools is that it helps students to monitor their own progress in the teaching and learning environment through feedback, 41% of the respondents agreed while 24% of the respondents disagreed.

From the analysis it could be said that the four most important effects of the implementation of formative assessment identified by the participants were helping students attain the intended learning outcome, making students accountable for learning, improving teaching and learning and making teachers accountable for teaching and learning

All the results in Table 4.4 corroborate the assertion of Craven, Marsh & Debus (1991) that from a pedagogical point of view, it is difficult to disagree with many of the claims made about formative assessment. Formative assessment helps

with planning because it involves giving clear learning intentions to the students. Formative assessment ensures that pupils are focused on the purpose of the task and that they can become involved in their learning and can comment on it - that is there is a sharing of learning intentions. Formative assessment empowers the student to realise his or her own learning needs and to have control over future targets. Students are trained to evaluate their own achievements against the learning intentions in oral or written form. Formative assessment tracks progress diagnostically and informs a student of his or her successes and weaknesses. Formative assessment ensures student motivation and involvement in progress, it raises achievement, it keeps teachers informed of individual needs.

Research Question 4: What challenges are inherent in formative assessments in Senior High Schools in the Kumasi Metropolis?

Nothing in this world is without challenges of which formative assessments in Senior High Schools is not an exception. The researcher therefore wanted to know from the respondents, the challenges inherent in formative assessments in Senior High Schools. The result is shown in Table 4.5.

Table 4.5: Challenges of Formative Assessment

Statement	Strongly Agree N (%)	Agree N (%)	Disagree N (%)	Strongly Disagree N (%)
Inadequate training of teachers in the management of assessment practices	47(37%)	56(44%)	25(19%)	-
A tendency for teachers to assess quality of work and presentation rather than the quality of learning,	53(41%)	42(33%)	22(17%)	11(9%)
Giving greater attention to marking and grading rather than providing advice for improvement,	62(48%)	41(32%)	14(11%)	11(9%)
Having a strong emphasis on comparing students with each other which demoralizes the less successful learners,	43(34%)	71(55%)	14(11%)	-
Teachers' feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.	38(30%)	68(53%)	13(10%)	9(7%)

Table 4.5 shows that 37% of the respondents strongly agreed that a challenge inherent in formative assessments in senior high schools is that there is inadequate training of teachers in the management of assessment practices, 44% of the respondents agreed while 19% of the respondents disagreed. Also, 41% of the respondents strongly agreed that a challenge inherent in formative assessments in senior high schools is that there is the tendency for teachers to assess quality of work

and presentation rather than the quality of learning, 33% of the respondents agreed, 17% of the respondents disagreed while 9% of the respondents strongly disagreed.

Again, 48% of the respondents strongly agreed that a challenge inherent in formative assessments in senior high schools is that there is the tendency for teachers to give greater attention to marking and grading rather than providing advice for improvement, 32% of the respondents agreed, 11% of the respondents disagreed while 9% of the respondents strongly disagreed. Additionally, 34% of the respondents strongly agreed that a challenge inherent in formative assessments in senior high schools is that there is the tendency for teachers to have a strong emphasis on comparing students with each other which demoralizes the less successful learners, 55% of the respondents agreed while 11% of the respondents disagreed.

Finally, 30% of the respondents strongly agreed that a challenge inherent in formative assessments in senior high schools is that teachers' feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively, 53% of the respondents agreed, 10% of the respondents disagreed while 7% of the respondents strongly disagreed.

From the analysis it could be said that the four most important challenges identified by the participants to be plaguing the implementation of formative assessment in the schools were: inadequate training of teachers in the management of assessment practices, giving greater attention to marking and grading rather than providing advice for improvement, having a strong emphasis on comparing students with each other which demoralizes the less successful learners and that teachers'

feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.

All the results in Table 4.5 are in consonance with the findings of Black and Wiliam (as cited in Clarke, 2001) that inhibiting factors which affected the use of formative assessment included a tendency for teachers to assess quality of work and presentation rather than the quality of learning, giving greater attention to marking and grading rather than providing advice for improvement, having a strong emphasis on comparing students with each other which demoralises the less successful learners, and teachers feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.

Chung (2006) in his study also noted that in the implementation of school-based formative assessment approach, the school encountered a number of challenges in the process. For instance, very often, there were new teachers joining the school in new academic years and some of them might not have the professional knowledge and skills in school-based formative assessment. Some others might not agree with the use of formative assessment or would not be willing to change their mind-set unless they saw the good results of formative assessment.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter deals with the summary of the research findings, conclusions and recommendations. In addition, the chapter offers suggestions for further research.

5.1 Summary

The purpose of this study was to find out students' views on the implementation of formative assessment in Senior High Schools in the Kumasi Metropolis. The objectives of the study were to identify formative assessment activities students had experienced in Senior High Schools in the Kumasi Metropolis; identify students' attitudes toward formative assessment activities in Senior High Schools in the Kumasi Metropolis; examine challenges inherent in formative assessments activities in Senior High Schools in the Kumasi Metropolis; and to assess how formative assessments affect students' learning in Senior High Schools in the Kumasi Metropolis.

The descriptive survey design was employed in conducting the study. The study adopted the multi-stage sampling techniques in selecting the sample. Purposive sampling was first used to select all the 132 students who held various positions in the four Senior High Schools and the 57 teachers who held various positions and had been in their positions for more than 5years in the four Senior High Schools.

The researcher employed survey questionnaire as the main data-gathering instrument for his study.

5.2 Key Findings

The study found that generally, the students perceived their teachers as doing whatever was expected of them to ensure the effective implementation of the formative assessment as they were able to integrate formative strategies into instruction and provide students the necessary feedback.

The study also revealed that mostly, the students had positive attitude towards the formative assessment implemented in the schools as they were intrinsically motivated to study hard on their own, monitor their own progress and set their academic performance target.

The study further revealed that the four most important effects of the implementation of formative assessment identified by the participants were; helping students attain the intended learning outcome, making students accountable for learning, improving teaching and learning and making teachers accountable for teaching and learning.

The study finally revealed that the four most important challenges identified by the participants to be plaguing the implementation of formative assessment in the schools were: inadequate training of teachers in the management of assessment practices; giving greater attention to marking and grading rather than providing advice for improvement, having a strong emphasis on comparing students with each other which demoralizes the less successful learners; and that teachers' feedback to

students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.

5.3 Conclusions

Based on the fact that the students perceived their teachers as doing whatever was expected of them to ensure the effective implementation of the formative assessment as they were able to integrate formative strategies into instruction and provide students the necessary feedback, it is concluded that there was good school climate characterised by effective teaching and learning.

It is also concluded that the formative assessment practices impacted positively on students' academic achievement as it helped students to attain the intended learning outcome, make students accountable for learning, also help to improve teaching and learning and enhanced students' self- esteem.

5.4 Recommendations

Based on the findings and conclusions drawn from them, it is recommended that:

1. Formative assessment should be highly encouraged by the Ghana Education Service to enhance teaching and learning and to improve students' achievement. This can be done by giving teachers the necessary resources they need.
2. The Ghana Education Service should organize regular training programmes for teachers on effective formative assessment practices to enable teachers to deal with the inherent challenges.

3. The Ministry of Education in collaboration with the Ghana Education Service should provide teachers with adequate incentives to boost their morale to undertake formative assessment effectively.

5.5 Suggestions for Further study

The study was conducted to find out students' views on the implementation of formative assessment in Senior High Schools and its effects on students' learning in the Kumasi Metropolis. Therefore, further study should be carried out to find out students' views on the implementation of formative assessment in Senior High Schools and its impact on students' learning in the remaining municipals and districts of the Ashanti Region for effective generalization.

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APPENDIX A

INTRODUCTION LETTER

Dear Respondent,

I am conducting a study on students' perceptions on formative assessment in Senior High Schools in the Kumasi Metropolis in partial fulfillment for the award of the Master of Philosophy in Educational Leadership at the University of Education, Winneba. You have therefore been selected to participate in the study.

I would be very grateful if you could give your frank respond to the attached questionnaire which has been designed to collect data for the study.

Please be informed that the information you would give would be used for academic purposes only and would be treated with utmost confidentiality, you are therefore guaranteed complete anonymity, and no identification of information is requested or will be transmitted with your completed questionnaire. Participation is voluntary. Thank you for your co-operation.

Yours sincerely,

FRANCIS SOMBAGRE SAMANI

(POST GRADUATE STUDENT)

APPENDIX B

QUESTIONNAIRE FOR THE RESPONDENTS

SECTION A: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Please respond to all the questions as frankly as possible. Tick [√] the appropriate box for your answer.

1. What is your age?

a). 11-20 [ ]

b). 21- 30 [ ]

c). 31- 40 [ ]

d). 41- 50 [ ]

e). 51- 60 [ ]

1. What is your gender?

a). Male [ ]

b). Female [ ]

3. What is your highest educational qualification?

a) student

a). Post Graduate Diploma in Education (PGDE) [ ]

b). Bachelor's Degree [ ]

c). Master's Degree [ ]

4. How long have you been teaching?

a) Never

b) 1-5 years

c) 6-10 years

d) 11-15 years

e) 16-20 years

f) 21 years and above

SECTION B: STUDENTS FORMATIVE ASSESSMENT EXPERIENCES

Please carefully read the following statements and rate your opinion on your formative assessment experiences in a likert scale of **SA= Strongly Agree (1), A=Agree (2), D=Disagree (3) and SD= Strongly Disagree (4)**

	Statement	**SA**	**A**	**D**	**SD**
1	Teacher provide regular feedback in details to stimulate action for improvements in learning				
2	Teacher provides feedback to students at the initiation session, in the lesson and after the lesson.				
3	Teacher encourages students to do peer-assessment during lessons.				

4	Teacher encourages students to do self-assessment during lessons.				
5	Teacher link assessment practices to instructional goals				
6	Teacher integrate formative assessment strategies into instruction				

SECTION C: STUDENTS ATTITUDE TOWARD FORMATIVE ASSESSMENT

Please carefully read the following statements and rate your opinion on the processes involved in formative assessment in a likert scale of **SA= Strongly Agree (1), A=Agree (2), D=Disagree (3) and SD= Strongly Disagree (4)**

	Statement	**SA**	**A**	**D**	**SD**
7	Students study hard to improve on their academic Performance				
8	Students have intrinsic motivation to learn on their own				
9	Students monitor their own progress in the teaching and learning process				
10	Students set targets on their own academic performance				
11	Students are involved in the assessment interactions with teachers and peers				
12	Students participate actively in the classroom as the teacher facilitates				

SECTION D: EFFECTS OF FORMATIVE ASSESSMENT ON STUDENTS ACHIEVEMENT

Please carefully read the following statements and rate your opinion on the processes involved in formative assessment in a likert scale of **SA= Strongly Agree (1), A=Agree (2), D=Disagree (3) and SD= Strongly Disagree (4)**

	Statement	**SA**	**A**	**D**	**SD**
12	Help students attain the intended learning outcome				
13	Makes students accountable for learning				
14	Assessment improves teaching and learning				
15	Formative assessment enhances self- esteem, motivation and attitudes to learning				
16	Helps to improve students' achievement				
17	Makes teacher accountable for teaching and learning				
18	Helps students to monitor their own progress in the teaching and environment learning through feedback				

SECTION E: CHALLENGES OF FORMATIVE ASSESSMENT

Please carefully read the following statements and rate your opinion on the processes involved in formative assessment in a likert scale of **SA= Strongly Agree (1), A=Agree (2), D=Disagree (3) and SD= Strongly Disagree (4)**

	Statement	**SA**	**A**	**D**	**SD**
19	Inadequate training of teachers in the management of assessment practices				
20	A tendency for teachers to assess quality of work and presentation rather than the quality of learning,				
21	Giving greater attention to marking and grading rather than providing advice for improvement,				
22	Having a strong emphasis on comparing students with each other which demoralises the less successful learners,				
23	Teachers feedback to students is often done to serve managerial and social purposes rather than allowing them to learn more effectively.				