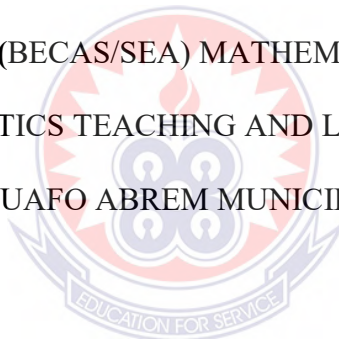


**UNIVERSITY OF EDUCATION, WINNEBA**

THE USE OF BASIC EDUCATION COMPREHENSIVE ASSESSMENT SYSTEM/SCHOOL  
EDUCATION ASSESSMENT (BECAS/SEA) MATHEMATICS TESTS AND ITS RESULTS  
IN ENHANCING MATHEMATICS TEACHING AND LEARNING AT KOMENDA EDINA  
EGUAFO ABREM MUNICIPALITY



BY

TORSOO ERIC (7090110389)

MED MATHEMATICS

DECEMBER, 2012

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DECEMBER, 2012

A project report in the Department of Mathematics Education, Faculty of Science Education,  
submitted to the School of Graduate Studies, University of Education, Winneba, in partial  
fulfilment for the award of the Degree of Master of Education (Mathematics) of the University of  
Education, Winneba.

2012

## **CANDIDATE'S DECLARATION**

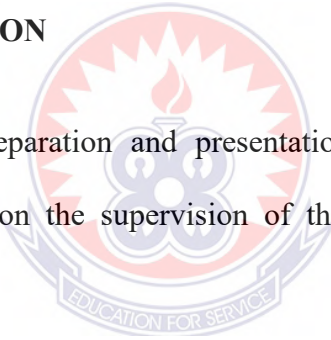
I hereby declare that this thesis is the result of my own original research that no part of it has been presented for another degree in this University or elsewhere.

Candidate's Name...Torsoo Eric

Signature.....Date.....

## **SUPERVISOR'S DECLARATION**

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on the supervision of thesis laid down by the University of Education, Winneba



Supervisor's Name ...Prof. Kofi Damain Mereku

Signature.....Date.....

## **DEDICATION**

To my dear wife Aretha Yayra Torsoo (Mrs), for her love, support and encouragement which enabled me complete of this work.

To you Esther Deladem Atsufui Abla Torsoo, for your constant love and understanding, even when you were deprived of father's care and attention.



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M.ED MATHEMATICS EDUCATION

AUGUST, 2011

UEW

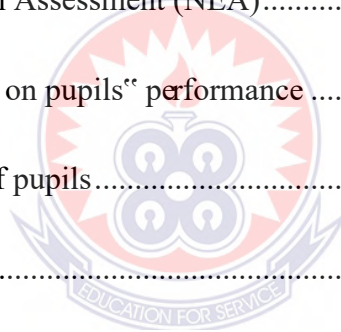
## ABSTRACT

This study examined the use of Basic Education Comprehensive Assessment System/School Education Assessment (BECAS/SEA) mathematics tests and its results in promoting learning of Mathematics in our basic schools. It also ascertained whether or not educational workers make use of the SEA results in the Komenda-Edina-Eguafo-Abrem (KEEA) municipality to improve teaching and learning in the municipality. The researcher administered questionnaires to fifty-two (52) teachers, ten (10) head teachers and all the six (6) circuit supervisors in the KEEA municipality. Head teachers in the District were also interviewed to solicit more about SPAM and SEA. The study revealed that most schools did organize SPAM in every two years (68.9% of the teachers said that their schools organized SPAM every two years). 40% of the 10 head teachers and two of the circuit supervisors confirmed this revelation in this finding. Most teachers participated in administration SEA test in their various schools, that is, as many as 61.5% of teachers. All head teachers and circuit supervisors have participated in organizing SEA in their schools. Almost all educationists in the municipalities had little to no knowledge of the minimum competency level (MCL) and the proficiency level at which the SEA test is measured. Since its inception SEA had been organized on three occasions, 2006, 2008 and 2009. The average scores in mathematics and English of the SEA results rose from 65.28% to 67.63% in mathematics and 59.03% to 66.03% for basic stage (BS) 2 pupils showing an improvement in their performance. In conclusion, it was recommended that to improve teaching and learning in our schools, SPAM which is a forum for all stakeholders in our educational institutions, should be organized regularly with its importance echoed into the ears of all. In conclusion, non-availability or insufficiency of required text books and ineffective supervision of supervisors in GES are some factors militating against effective teaching and learning in most of our schools.

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## Abbreviations and Acronyms

BECAS	-	Basic Education Comprehensive Assessment System
BECE	-	Basic Education Certificate Examination
CA	-	Continuous Assessment
CRT	-	Criterion Referenced Test
CS	-	Circuit Supervisor
EQUIBS2	-	Associate Award of the Educational Quality Improvement Program 2
FCUBE	-	Free Compulsory Universal Basic Education
GES	-	Ghana Education Service
MCL	-	Minimum Competency Level
MOE	-	Ministry of Education
NEA	-	National Educational Assessment
PMT	-	Performance Monitoring Test
PPM	-	Participatory Performance Monitoring
PTA	-	Parent Teacher Association
SBA	-	School Based Assessment
SEA	-	School Educational Assessment
SPAM	-	School Performance Appraisal Meeting
SPIP	-	School Performance Improvement Plan
USAID	-	United States Agency for International Development
WAEC	-	West Africa Examination Council
WASSCE	-	West Africa Secondary School Certificate Examination

## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND TO THE STUDY.

Ghana's formal educational system follows a progressive structure. This is made up of eleven years of basic education comprising 2-years of kindergarten, 6 years primary education, three (3) years of Junior High School (JHS), Senior High School education, and tertiary/university education (Education reform, 2004). The educational structure had been without the two years kindergarten (KG) education until September, 2007. Basic education is the constitutional right of every child in Ghana irrespective of ethnicity, religion, gender and geographical location (Ghana's Constitution, 1992).

The issue of providing quality basic education to the citizens of a country is mostly the number one priority for most countries, of which Ghana is no exception. Determining quality education, apart from providing adequate infrastructure and other resources, is done through effective evaluation of teaching and learning that takes place in the classroom. Quality in this sense can be measured in terms of the systemic factors or variables that generally seem to make one school more or less *effective* than another, example, relevant resources, levels of reading, writing and numeracy; the manner in which these factors or variables are played out in relation to each other in a particular learning environment with a view to *improving* that environment; and the *value-added* dimension which represents changes in quality between and within schools over a particular period of time (Ministration of Education, Sports and Science (MOESS), 2007).

The process of quality and effective education cannot get underway without a critical examination of academic work. A key factor of academic examination is the feedback provided by evaluating what pupils have learned. More importantly, a culture of evaluation, follow-up and recognition of academic progress in schools and in the classrooms helps us to ensure that the approach and activities of teachers will continually promote quality education in our country.

This effective evaluation is done, among others, by the regular assessment of learners achievement based on the curricular goals and objectives. At Basic 9, which is the eleventh year of basic education in Ghana, the Basic Education Certificate Examination (BECE) is conducted at national level to assess the learners for certification, selection and placement into second cycle institutions. This end-of-programme assessment had little or no feedback for teachers and school authorities at that level since the participants who take the test will not be available in the schools for any cross-referencing of diagnosis. Until the end of the then nine year basic education programme (basic nine), Ghana had less structured modalities of national assessment of teaching and learning at the lower levels of basic education, especially, in the primary levels (Akakpo, 2010).

Today many nations have adopted and fashioned out various assessment models aimed at ensuring quality basic education to their respective citizenry. Countries such as El Salvador, Macedonia, Nicaragua, Pakistan, Zambia and Ghana have all adopted national assessment schemes for evaluating their educational system. In most countries, the assessment programmes are relatively new, having been established within the last decade (Anamuah-Mensah, Mereku & Ghartey-Ampiah, 2008).

Following Ghana's earlier educational reform in 1987 and the consequent national outcry about the quality of teaching and learning that went on in our basic schools in general and primary schools in particular, there had been series of studies to review the curriculum to ensure quality (Mereku, 2004, Curriculum Research and Development Division (CRDD), 2011). A sharp response to the solution of the decline in quality primary education was the development of a test instrument called Criterion Referenced Test (CRT) in 1992 by the Curriculum Research and Development Division (CRDD) of Ghana Education Service (GES), with the support of USAID, to measure pupils' achievement in English and mathematics in the last year of primary school (Akakpo, 2010).

The development of the CRT was informed by the fact that there was no form of structured assessment to measure the achievement of pupils and success level of the implementation of the curricula at primary school level. The CRT which ended in 2001 was a test administered to 5 per cent of Primary six pupils in the country to assess the skills attained by children in English and mathematics at this level. These tests which were designed to measure performance based on the entire syllabus of each subject had „fixed standards“ with scores being reported as a percentage of students reaching a score of 60 per cent in English and 55 per cent in mathematics.

CRT in Ghana began 1992 (Asiegbor, 2009) as a national test structure to measure the achievement of pupils in both public and private schools. It was intended to measure the success level of the implementation of the curriculum and assess the skills attained by pupils in mathematics and English. The CRT did not cover the entire nation, its coverage was 5% of pupils in primary six (6) and the standard fixed score was 60% for English and 55% for mathematics. The 1997 Criterion Referenced Test (CRT) conducted in Primary 6

in 5% of primary schools showed that only 6.0% of the pupils attained mastery level in English. The situation was even worse in Mathematics in which only 2.7% of the pupils“ attained mastery level (MOE, 2002).

This alarming poor performance was the main factor that revealed the major weaknesses of the CRT which were designed to measure the whole or the intended curriculum. The CRT, however, suffered two main setbacks: the scope it measured (the topics that pupils were expected to read was so wide), and the nature of performance outcomes it recorded. It was believed that the ceiling (mastery level) was too high to be attained by most of the pupils from the public schools. The objectives of the CRT were not attained due to lack of curriculum materials and low teacher motivation in our schools (Snyder, 2004).

Realizing that the CRT had failed to provide a good measure of teaching and learning, the Ministry of Education (MOE) directed the Ghana Education Service (GES) to establish and implement a Performance Management System which involved objectives setting, regular performance review and corrective action, with mechanisms for monitoring and accountability appropriate for a decentralised education system. In response to this directive, GES in 1998 developed a new Monitoring System called Participatory Performance Monitoring (PPM) which was of two components, namely, the Performance Monitoring Test (PMT) and the School Performance Appraisal Meeting (SPAM) (MOE, 2002).

It was expected that from the PMT and its accompanying SPAM, accurate data on improvement in the performance of public primary schools would be obtained; healthy competition would be generated and sustained among schools; learning achievements in English and mathematics would improve in public primary schools and teachers found to



be producing good or poor results would be identified for appropriate action. Under the PMT, uniform test instrument were developed by the Inspectorate Division of GES but the printing of question papers and answer sheets, as well as the administration of the test were done in the districts, under the supervision of the District/Municipal/Metropolitan Director of Education. The PMT which was introduced in our assessment system ended in 2003, was also a test in English and mathematics which was administered to about 25% - 50% of pupils in Public Basic Schools to monitor pupils' achievement and progress. The results of the tests were made available to communities within 4 months of completion of the test administration and this formed the subject of SPAM (GES, 1988).

SPAM is a meeting of school teachers and the entire school community convened by the District/Municipal Education Office to discuss the performance of their schools in a metropolis/municipal/district/nation-wide test organized by GES or other examination bodies like West Africa Examination Council (WEAC). At these meetings new performance targets are set, and design strategies for the attainment of the set targets formulated. All stakeholders of education such as parents, pupils, opinion leaders, teachers and other concerned members in the school community are sensitized at such meeting on what role to play in educating their children and how to go about their identified roles. The implementation and results of these set targets have been questioned by many people because it seems that the performance of pupils in primary schools, more especially has not seen significant improvement over the years.

The PMT led to the introduction of the LEAGUE (ordering performance of schools to show the best to the least school in the country) table system leading to school authorities teaching

their pupils topics to avert being questioned by stakeholders during SPAMS. The PMT did not make enough effort to cover the essential knowledge and skills in the syllabi.

Ghana's new model of assessment in the basic sector of education, Basic Education Comprehensive Assessment System (BECAS) with three components [National Education Assessment (NEA), School Education Assessment (SEA) and Continuous Assessment (CA)], was introduced in 2004 to assess pupils in English and mathematics at 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 6<sup>th</sup> class level (Asiegbor, Antwi and Buckle, 2009). It was to address the Education Strategic objective Policy Goal 2 which seeks with the aim to developing a reliable pupil testing and assessment system to replace the previous tests that existed in the GES (MOE, 2003). The idea is to have a comprehensive system that includes all assessments and to link them in meaning even though they serve different purposes for informing the GES, the Ministry of Education, Schools, and many others (Snyder, 2004).

BECAS is a new assessment system introduced, as a means of responding to the limitation of the pervious CRT and PMT assessment systems. In July 2005, the National Education Assessment (NEA) was first implemented with P3 and P6 classes from a sample of four hundred and twenty-three (423) primary schools. The 423 primary schools represented a sampling fraction of 3% of all public primary schools in Ghana. In July 2006, pupils in all public primary school classes 2 and 4 throughout the country took the BECAS/SEA tests in Mathematics and English language.

## **1.2 Statement of the Problem**

The School Education Assessment (SEA) is the assessment that was implemented and administered in 2006; this assessment measures how well students completed the core

objectives in the curriculum in English and mathematics. The results of SEA are meant to help teachers and stake holders improve the focus and content delivery in the classroom. The result of 2006 SEA were not organized well and submitted to the national secretariat in time, hence the national administrative body could not use the years' results to generate and submit report with necessary information required for the stakeholders meeting to the various districts/municipal, circuits and schools for needed action be taken, if not for the analysis of the forms 3 and 4 (forms for circuits and district summary of results) by the district/municipals (Akakpo, 2010). A visit to BECAS Secretariat in Accra showed that the information available was not clearly organized and difficult to interpret for any meaningful policy to be implemented by the stakeholders in education at the lower level without the assistance of a consultant. This made the 2006 SEA have less impact on the schools which took part in the examination.

According to Asiegbor, Antwi and Buckle, (2009), the SEA exams administered in 2008 also had some difficulties with the submission of results to the National secretariat for data analysis and onward submission to the districts/municipalities for decision making. According to the 2008 report on SEA, the secretariat had difficulties with receiving the analysed results of forms 3 and 4 from the various districts/municipal and regional education offices. The Secretariat had to resort to the use of SMS messaging and phone calls as late as July, 2009 to remind the various educational offices to forward their results of the exams organised since July 19 – to – 23 the previous year.

The decline in the performance of candidates/students in BECE Mathematics is a matter of concern to stakeholders because of the separate value of mathematics (and English), to gain access to the next level of education. As a result of the central important role

Mathematics plays in education, the poor performance in it, adversely affects the student/learner in his/her progresses in education in general. This current state of affairs therefore has a telling effect on the required manpower for nation development; hence government and stakeholders are greatly troubled. The April, 2011 results of candidates in the BECE prove that the performance of students in mathematics in BECE in KEEA is not encouraging as compared to other subjects. Educators and stakeholders in the municipality are putting in much effort into education so that the performance of students (in Mathematics) will rise to an appreciable level in KEEA. The effective training of children at the early years through an enhanced approach/pedagogy is being admonished, hence the SEA goal of assessing the knowledge in-depth of pupils and pedagogy used by our teachers at the basic school is the appropriate tool in improving mathematics teaching and learning at the basic level of education. With all these going on, what are our stakeholders doing with policies, decisions they make and targets they set? This made the researcher to research into the topic “the use of SEA mathematics tests and its results in Komenda-Edina-Eguafo-Abrem (KEEA) municipality”.

### **1.3 Research Objective and Questions**

One major purpose of SEA is to assist schools and districts by providing information for the school inspection process and to better direct assistance to districts. Its focus is on improving instruction and information for schools, communities and districts, rather than national bodies. The objective of this study therefore is to analyse the SEA results in the Komenda-Edina-Eguafo-Abrem Municipality to;

1. find out teachers and municipal education officers knowledge, participation and use of the results of SEA in the KEEA municipality.
2. examine the frequency of organising SPAM and issues raised on the effective teaching of mathematics in the KEEA municipality.
3. determine how pupils' performance in mathematics has changed in schools in KEEA since the inception of SEA.

Based on the above research objectives the following research questions were formulated for the investigation:

1. To what extent do teachers know about SEA, participate in and use the results in improving education in the KEEA municipality?
2. What is the frequency of SPAM and issues raised on the effective teaching of mathematics during SPAM?
3. How have pupils performance changed in mathematics in schools in KEEA since the inception of BECAS/SEA?

#### **1.4 Significance of the Study**

The outcome of this study would be very useful to all stakeholders in education in the Municipality. It would inform the various local administrators such as head teachers, teachers, parents and PTA/SMC executives of the performance of their wards. Again, the outcome of the study would inform the Municipal Directorate of Education, the Municipal Assembly, Circuit Supervisors (CS), pupils and religious organizations of the state of

affairs in their schools and this would urge them to fashion out programmes that would promote better education in the municipality. The results of the study would also be very beneficial to the Curriculum Research and Development Division (CRDD) because the results could be used to appraise their internal structures and help in developing guidelines for using the result of the SEA to write reports for District SPAM.

## **1.5 Delimitation**

A study of this kind calls for a wide sampling of data from all basic schools in the districts, municipals and metropolises of education in Ghana, but due to time constraint, the study was restricted to basic schools in Komenda-Edina-Eguafo-Abrem though the problem may exist in other areas of the country.

The data collection tools and travelling to administer them heavily had a toll on the budget of the researcher, hence cautious effort in selecting only these areas for easy access. It was also somehow hectic locating some of the schools because they were scattered at the various villages few kilometres from the researcher's working place.

Most newly employed teachers were not involved in the study because most of them if not all had little or no knowledge about SPAM and SEA.

## 1.6 Limitations

In research terminology, limitations refer to the weakness of the study. They are those things the researcher could not control, but that may have influenced the results of the study (Baumgartner, Strong & Hensley, 2002)

The researcher was limited by finance to prepare questionnaires and interview guide, gadget for recording and money to get to the schools in the municipality in administration of his questionnaires. Responding to questionnaires administered to target group and the rate at which these questionnaires were returned was not encouraging at all. Many of the targeted groups were adamant in their respond to the questions posed in the questionnaires. This affected what the researcher intended to measure due to the number of respondents.

Some unplanned interruptions on the academic time table such as going for supervision, public holidays and such situations militated against the work of the researcher. Most respondents misplaced their questionnaire hence reduce the sample size of teachers from sixty-five to fifty-two.

The conclusion was therefore limited by these factors; as such generalization cannot cover all basic schools throughout Ghana.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.0 Overview

This chapter is about the review of related literature to the study, to enrich the work. This comprises theories and concepts as well as empirical evidence of what other people have already discovered or written on the topic. The review of related literature focuses on the following; types of assessments in Ghanaian schools, assessment and curriculum change, influence of assessment on pupils' performance, educational reforms in Ghana,

#### 2.1 Educational Assessment

Making judgement, educational or judgement in other field of life is said to be assessment. It is being carried out to obtain information to guide in any further activity to be conducted. The fundamental purpose of assessment is to provide information (Niss, 1993, Desforges, 1989) to learners which enable them build their intellectual capacity and take the optimal advantages of the educational resources around them (Hatch & Gardner, 1990). Students need to know the progress they are making and what their strengths, weakness and abilities are, and assessment help them to identify such things.

Educational assessment can also be defined as means of gathering, analyzing, and interpreting information to tell how well a student is doing on a particular subject such as reading. Assessment entails everything from informal observations of a students work, to the use of commercial tests such as BECE exams. Assessment is also said to be a process of gathering full range of information in the classroom to enable teachers to understand



their pupils, monitor their instructions, and establish a viable classroom atmosphere (Nabie, 1999).

Assessment goes through three stages; the assessor collecting evidence, making decisions on the basis of the evidence and the consequences or event that follow (Drummond, 1993). Most assessments do not progress through all these stages as stated by Drummond, most ends at the first stage and few progresses to the second but for the third level, hardly do many assessor progress to that level when assessing. Drummond put assessment as the essentially provisional, partial, tentative, exploratory and inevitably incomplete. All over the world people are always in search for better methods of assessments. These have made many nations including Ghana to change its curriculum and assessments for learning both at the basic and high schools. This should not have been so if the curriculum and assessment have been properly evaluated and its effect felt on the people. Yes, changes in curriculum are influenced by many factors such as; educational, internal or external factors. These influences for external agencies have cost the nation so much on its reforms unlike what only educational and/or it assessment would have cost the nation.

## **2.2 Types of national assessment in Ghanaian schools.**

A close look at assessment in Ghanaian schools shows quite clearly that we use only two forms of assessments; Internal and External Assessment. Internal assessment in Ghanaian schools can be described as the mid-term examination, the quizzes, and final term exams (Ashie, 2009). These are the ongoing assessment which in Ghana we call continuous assessment, now the school base assessment (SBA). In the Ghanaian educational system,

the current form of external examination are the Basic School Certificate Examination (BECE) which began in 1990 and West African Senior School Certificate Examination (WASSCE) which began in 2006 but was preceded by Senior Secondary Certificate Examination (SSCE) in 1993.

Based on the above premise the country contracted an institution for assessing education, notably the West African Examination Council (WAEC), which is in charge of external assessment in Pre-Tertiary Education. WAEC conducts examinations such as the GCE „O“ and „A“ level examination, the Common entrance exams and the MSLC, Basic Education Certificate Examination, (BECE) and West African Senior School Certificate Examination (WASSCE) and other commercial examinations.

### **2.3 Assessment and curriculum change**

Assessment has a correlation with curriculum as such it is the most important part of the educational system. Through assessment, we are able to monitor the success or failure of educational approaches and if there be any need to make changes in the curriculum. Assessment gives us feedback if desired educational goals are being achieved or not. With all the curriculum/educational reforms/changes going on since independence, our country has not seen any effective equivalent assessment policy to evaluate these reforms except the external examinations and two studies conducted in 1993 and in 2003 by the GES and TIMSS respectively to have examined aspects of the standards (Mereku *et. al.*, 2005). The 1993 study by the GES was to examine and analyze the primary school official curriculum materials and was found deficient in the area of language development. The principal

investigator Kraft reported that the syllabi, textbooks and teachers' handbooks did not meet the highest international standards, the best thinking on sequence, learning and pedagogy and would not prepare Ghanaian students for the needs of the next century (Mereku *et. al.*, 2005). TIMSS in 2003, investigated into factors that led to the poor performance in mathematics by JSS form two students from Ghana who participated in the third Trends in International Mathematics and Science study (TIMSS) organized, but Ghana's first participation in the test (Anamuah-Mensah *et. al.*, 2004). This we can say, is not enough, hence the MOE with support from NGOs and consultants develop all kind of assessment to test the performance of basic school education. This saw development of the CRT, PMT, SPAM, BECAS and CA (Snyder, 2004).

Assessment enables the teacher to reflect on his teaching and make recommendation for the modification of the curriculum and the educational structure as a whole. Niss (1993) summarises it that the aim of information to the teacher is to inform and advise the students, assist that teacher in assessing his/her own teaching, provide a basis for teacher reporting to parents, the school, the authorities, further educational institutions and employers of the performance of an individual student. Assessed work is what the populist and policy makers use to value an educational system and the curriculum in place if it's working or not.

#### **2.4 Assessment in Ghanaian primary schools in the 1990s.**

Ghana started national assessment of Primary Education in 1990s with the Criterion Referenced Test (CRT) in 1992. Participatory Performance Monitoring (PPM) programme

with its components; Performance Monitoring Test (PMT) and School Performance Appraisal Meetings (SPAM) was introduced in 1998 (Asiegbor, 2008). PMT was a second choice to CRT due some challenges identified.

#### **2.4.1 Criterion-Referenced Tests (CRT)**

According to Valpar International Corporation, in criterion-reference test (CRT) the evaluatee is required to demonstrate ability at a particular level by performing tasks at that degree of difficulty. Scores on CRTs indicate what individuals can do – not how they have scored in relation to the scores of particular groups of persons, as in norm – reference test. Norm – reference tests compare an individual’s performance to the performance of a group (norm).

According to the Wikipedia CRT provides for translating of scores into a statement about the behaviour to be expected of an evaluatee with their scores or their relationship to a specified subject matter. The objective is simply to see whether the student has learned the material. Criterion-referenced assessment can be contrasted with norm-referenced assessment. Most CRTs have unintentionally been turned to mastery test because of cut off scores involved. Cut offs are pegged scores where the examinee passes if their score exceeds the cut off and fails if it does not. Some CRTs have high cut off scores making them suitable for only the good students and hence does not become a fair assessment tool for all students.

As stated earlier, CRT in Ghana began 1992 as a national test structure to measure the achievement of pupils in both public and private schools. It was intended to measure the success level of the implementation of the curriculum and asses the skills attained by

pupils in Mathematics and English. The CRT did not cover the entire nation, its coverage was 5% of pupils in primary six (6) and the standard fixed score was 60% for English and 55% for Mathematics.

According to Snyder (2004), the Ghana CRT was design from the statement of content objectives. It has never been fully reviewed or revised so no iterative congruence was attempted. One item was used for each objective, but with ten forms, ten items for each objective were used in practice but not with the same student. There was a view building that the CRT was not well-aligned with what was taught in the schools, and this would depend somewhat on the alignment of the curriculum as designed and the curriculum as taught. Also, the CRT and the PMT were not mutually aligned so information from one did not necessarily enhance the information from the other or totally. Rather, they frequently presented different pictures of performance and their lack of alignment eventually weakened their influence and effectiveness. Full alignment of the National Educational Assessment (NEA), School Educational Assessment (SEA), and Continuous Assessment (CA) is essential in order to communicate the full intent and progress on that intent through the *Ghana Basic Education Comprehensive Assessment System (BECAS)*.

The mathematics CRT items had 100 items administered in 140 minutes and was based upon objectives from the 1990-1991 curriculum in the areas of basic number concepts, basic operations, story problems and geometry. The average scores of public school which took the test from 1992-to-2000 ranged from 27.3 to 32.3, and that of some private schools who took the test in 1994, 1996 and 1997 were 47.3, 47.0 and 51.7. The results in English showed no significant difference in the scores from their mathematics scores. Apart from the content of the test item and performance of the pupils, is the scope of the curriculum

covered by the school. According to the BECAS work plan in 2004 -2005, the above are partly the motivation behind the development in 1998 of the Performance Monitoring Test (PMT)-SPAM process in order to bring accountability to public schools and encourage greater supervision and public oversight. Snyder continued that BECAS was then initiated to monitor changes in the public schools, and easier items needed to supplement the scale so that „gains“ at the foundational level can be identified.

#### **2.4.2 The Performance Monitoring Test (PMT)**

The Performance Monitoring Test (PMT) and School Performance Appraisal Meetings (SPAM), which were introduced in 1998, have proved to be effective tools in monitoring teaching and learning outcomes in basic schools. The PMT was a test in English and Mathematics administered to 25% - 50% of pupils in public schools. Test results are discussed at School Performance Appraisal Meetings (SPAM) where parents had the opportunity to analyze the performance of their children and map out strategies for improving their performance and school achieving set targets. Records suggest that the initiative has impacted positively on quality teaching and learning in schools.

The Performance Monitoring Test (PMT) is an annual nation-wide test organized by the Inspectorate Division of Ghana Education Service to test pupils in Mathematics and English. Test instruments in English and Mathematics together with other documents are sent to the various districts for conducting the test. District Directors are tasked to prepare timetable indicating dates on which each school will take the test while Circuit supervisors (CS) forms Test Administrators for PMT (GES, 2002).

### **2.4.3 School Performance Appraisal Meetings (Spam) and Its Importance**

Teachers and parents play an important role in shaping learners' attitude towards Mathematics and education in general. Lartey (2009) observed that a teacher's or parent attitude can motivate or discourage students from pursuing mathematics or may encourage them to do so, then this category requires consideration. The SPAM is therefore considered to give parents greater opportunity to formulate policies in the education of their wards in the school their wards find themselves. Jones (2001) assumed the idea by noting that parents' support may not necessary depend on their socio-economic status, but their love and care, understanding of their academic responsibility and investment in the direction of their children. Some parents show less interest in attending PTA/SPAM/SMC meetings only with the defence that they are illiterate and/or busy and do not have time for such fruitless meetings, but some though are illiterate and less busy attend such meetings to shaping the activities of their wards' schools.

SPAM is a meeting of school teachers and the entire community, convened by the District Education Directorate to discuss the performance of their schools in a district-wide performance monitoring test organized by the District Education Directorate, and design strategies to improve school performance in subsequent years.

SPAM is therefore an activity designed to keep all stakeholders in education, particularly local communities, well-informed about the amount of teaching and learning going on in their school and also to give all members of the community, not just representatives but also the opportunity to participate meaningfully in deciding on how to improve outcomes in their school.

SPAM should not be restricted only to PMT, BECAS SEA/NEA test and Basic Education Certificate Examination (BECE). Head teachers and other school authorities can use end-of-term, end-of-year and other tests organized by the District Education Directorate to conduct school-level SPAM.

How is SPAM organized? School performance appraisal meetings are held at four different levels namely, District level, Circuit level, Community level and School level. At each level, the facilitator is assisted by a secretary to ensure that proceedings at the meeting are carefully recorded and copies of the reports sent to all stakeholders within four weeks.

Before dates and venues are fixed for any of the different levels of SPAM, the convener will have to consult the people involved in order to agree on a suitable date, time and place for the meeting. One major activity at the community SPAM is that the participants are encouraged to discuss the roles which the various stakeholders are expected to play to ensure the attainment of the objectives of schooling and the realization of parents' expectations for sending their wards to school (GES, 2002).

In Ghana, School Performance Appraisal Meeting (SPAM) is held as a strategy to promote the use of data to manage enrolment and attendance, as well as accountability for learning outcomes, among others. As already stated, SPAM is a multi-stakeholder forum that involves parents, teachers, community leaders and managers of education. Issues of enrolment of pupils, attendance of pupils and teachers, the availability and utilisation of school resources, learning outcomes and all other issues that affect access and quality are analysed at the SPAM and strategies agreed to overcome identified challenges, usually including strategies for the re-entry of drop outs and the enrolment of out-of-school



children in general. It is worth noting however, that inadequate and unreliable data on school, age population, enrolment and results of formative assessments of learning outcomes hinder the effectiveness of SPAM, especially in deprived rural settings.

#### **2.4.5 Ghana Basic Education Comprehensive Assessment System (BECAS)**

Ghana Basic Education Comprehensive Assessment System (Ghana BECAS) is a United States Agency for International Development (USAID) funded project in 2005 and an Associate Award of the Educational Quality Improvement Program 2 (EQUIBS2) (Adu, 2006). The Ghana BECAS project focused on the development of a new comprehensive education assessment system that includes National Education Assessment (NEA), School Education Assessment (SEA), and Continuous Assessment (CA) now the School-Based Assessment (SBA). The tests were developed by a Technical Working Group (TWG), which consisted of representatives from the Ghana Education Service (GES) and other educational organizations with experience in test item writing. Ghanaian university consultants and BECAS staff assisted the group. The group rates the syllabus, objectives and chooses those they identified as “core.” Test development focuses on this set of core objectives. This exercise aligns the tests to the primary school curriculum and takes into account the findings of the Opportunity to Learn (OTL) study which precedes the item writing (Asiegbor, Antwi and Buckle, 2009).

The Ghana Basic Education Comprehensive Assessment System (Ghana BECAS) project aims at fulfilling this critical role (Adu, 2006). Though CRT and PMT were greatly criticized, they have some relationship with the test items in NEA and SEA because the earlier tests were specified in the Education Strategic Plan 2003-2015 as indicators of

quality with the baseline year at 2001-2002. The Plan calls for 80% of the BS2-P6 students to reach Minimum Competency in the PMT by 2015, and 40% in mathematics and 60% in English to reach Mastery Level Pass rates in CRT by 2015 also (Snyder, 2004).

#### **2.4.6 National Education Assessment (NEA)**

To enhance proper assessment of students learning outcomes, and improve educational planning the GES embarked on training programmes for teachers, head teachers, Directors of Education and other stakeholders on the effective use of the results of the School Education Assessment (SEA) and the National Education Assessment (NEA) right from the year 2010 (Tettey-Enyo, 2010).

The National Education Assessment (NEA) is an indicator of Ghana's quality education at the basic level. It is a curriculum-based, competency assessment programme that reflects the entire curriculum. It samples the performances of schools across the educational regions of Ghana and provides national indicators for Basic level 3 and 6 on achievement in English and mathematics, and two Ghanaian languages (which has not yet commenced). NEA is a multiple-choice test designed for Primary 3 and Primary 6 and aligned to the national curriculum (English and mathematics) to provide policy-level information regarding class achievement and system performance. The test has been administered to primary 3 and primary 6 pupils across the country in 2005, 2007 and 2009. The results of NEA are compared across the districts and regions in Ghana.

Two cut-off scores were established to provide useful information regarding pupil performance and system effectiveness. *Minimum-competency* describes pupils reaching 35% and *Proficiency level* identifies those reaching 55% of the total score on the test

(Asiegbor, 2009). The 35% minimum-competency level was the collective judgment of some item writers with support from other subject specialists and reflects 10% points above the chance score of 25% (a multiple choice test with four possible answers to each question), thereby suggesting learning has taken place. The proficiency level of 55%, determined by the same group of educators, shows that the pupil has learned the curriculum for the class (grade level) to the degree necessary to work at the next grade level.

#### **2.4.7 School Educational Assessment (SEA)**

The SEA is an assessment intended for school-level diagnostic use. Designed as a multiple choice and constructed response items, the test measures how well students can complete core objectives in mathematics and English language (Snyder, 2004). Results of the SEA at the school level are not intended for comparison across schools and regions. Rather, the assessment results highlight the areas in English language and mathematics which need to be addressed.

Parents in each community could also be provided with information through School Performance Appraisal Meetings (SPAM) on how their school performed on each of the assessments. The results of the SEA are meant to help teachers and school leaders improve the focus and content delivery in the classroom. The results are therefore not intended to serve as an overall measure of student achievement.

The SEA examination was implemented for the first time in Ghana in July 2006. Approximately 515,000 students participated in the examination across the ten regions of the country (Ghartey-Ampiah, 2010). He continued by stating, the examination was

administered at the Primary 2 and Primary 4 levels in mathematics and English language. Overall results on the Primary 2 English examination highlighted that students were able to use appropriate greetings, tell time, read words and phrases, as well as read short sentences but had difficulty with listening comprehension and higher order analysis skills, particularly reading comprehension. They also encountered difficulties in reading a passage and answering questions where the answers were not directly in the text – but required a level of understanding and abstraction. While in mathematics test, pupils appeared to be learning basic addition and subtraction well. The results showed that more instruction time on multiplication, fractions and ordinal numbers is needed (see MoESS, 2008).

The SEA was intended to be conducted for pupils in primaries two, four and six in Mathematics, English and one Ghanaian language. This has not materialised, only pupils in primary two and four has so far taken the examinations in English and Mathematics as stated earlier. Both NEA and SEA are indicators for systematic improvement, in our educational system. It is either school or district based by SEA or district, regional or national based by NEA. The minimum competency and proficiency level of the pupils’ performance in SEA is also measured.

## **2.5 Influence of assessment on pupils’ performance**

Assessments play an important role in the teaching and learning process, and for specific uses. For individuals, assessments, particularly public examinations, profoundly affect life chances, not just in the first years after leaving school, but many years later (Danili &

Reid, 2005). So, we see assessment playing an important role in the life of learners not only during their educational period but also after they have left the walls of their institutions. Every parent, teacher and policy maker will always be interested in the progress of learners in all aspects of their schooling. The progressions of learners are most often determined through assessment. The potency of measurement of teachers during the learning stages should be considered as important as the lesson itself. As Boud (1995, p. 35) stated,

“The effects of bad practices are far more potent than they are for any aspect of teaching. Students can, with difficulty, escape the effects of poor teaching, they cannot (by definition, if they want to graduate) escape the effects of poor assessment. Assessment acts as a mechanism to control students that is far more pervasive and insidious than most staff would be prepared to acknowledge”.

In 2001, Professor Biggs noted that assessment is almost certainly the most important single component in the system, that is, get assessment wrong and you get everything wrong. He went on to say we therefore need to be clear about why we assess, what we assess, how we assess, and who is involved in the assessing.

Indeed, to evaluate someone and make decision for his/her career and future is not an easy task to do. It is a very difficult one and carries with it awesome responsibility. Therefore, some authors’ characterizations for assessment were: “both times consuming and potentially dangerous” (Johnstone, 2003, p 24); “a serious and often tragic enterprise” (Ramsden, 2003, p. 13); “nightmares” (Race, 2003, p. 61).

Some cognitive factors which can potentially affect pupils' test performance may be the content of the test, the format of the test and psychology of the individual. When the content of a test is not too much for student and above what student have been made to learn, such student would perform well in the test given. Other people write test items which are ambiguous and also do not communicate to the student at their level of understanding hence make the test lose its value. Items in the test must be communicated to answering it at their level of understanding. The psychological state of those taking the test is very much to be desired. A hungry, sick and traumatised person cannot write any test and perform very well in it no matter how well the content framed and test formulated, hence the psychological state of our children should be taken seriously by all the people who matter in the education of our children.

Behaviourist learning theories require practice, repetition and test of discrete basic skills prior to any teaching of higher order thinking skill (Shepard, 1992 cited by Lartey, 2009). Constructivists on the other hand see learning as a process of personal knowledge construction and making personal meaning to the knowledge. This means assessment reduce the emphases on the ability to memorise, and increase emphases on thinking and problem solving (Fieldman, 1996).

The importance of aligning teaching methods and assessment task is stressed in many publications pertaining to the curriculum (Osborne, 2005). However, over the last decade, the amount of assessment in schools has increased, thus the assessment workload for teachers has grown considerably, and time devoted to assessing each student has fallen. Teachers may therefore have adapted to objective test, based on objectivistic theories, which is greatly concerned with quantitative measurement (Biggs, 1996) and is easily

marked. The over dependency on objective test to essay/theory questions, is as a result of increased school population (Johnstone, 2003) and this may not be in line with the constructivist theory of learning, which regards learning more in qualitative terms than in quantitative terms (Biggs, 1996). Teachers' dependency on the objective test may not lead to fair assessment of the student as Race (2003) argued out, "the greater the diversity in methods of assessment, the fairer assessment is to students". Another problem this situation creates is that it does not allow most intellectually mature students enough room to expand and show their independence of thought (Johnstone, 2003). Constructivist view of assessment policy is that, assessment should be based on performance, on open-ended task, which can reveal a wide variety of insights of thinking processes in students' written responses.

Student's interest and personal effort in mathematics goes a long way to affect his/her performance and improvement in his competency in the subject. The student's state of learning, capability and readiness is also very important influence in teaching and learning of the subject (Bolaji, 1994).

Ferguson (1991) was of the view that the home and family factors (including parents' educational and language background, income level and race) may have an impact on student's performance. The teacher is also blamed by other school of thought on the student's performance. The preparation he/she makes towards the lesson, pedagogy and content of the lesson. The student is not left out, his indiscipline to studies in terms of doing and submitting assignments, and participating in class activities also affect his/her performance. Parents' control and assistance in the life of the student's forms a great part in the performance in his/her learning.

Sylvan (2007) discovered that most children are terrified by standardized test due to their anxiety and lack of confidence built up in them. He said, this is as a result of their philosophy of postponing learning till the last moment of writing a test which creates a bad habit for the student and such students are expected to experience anxiety during the study and while writing the examination. Sylvan suggested that if the child is taught to read/study one hour or so every day or two weeks to the exams he/she will commit information to long term memory and curb test anxiety. Apart from advance learning by a learner, healthy diet and a good night sleep will help the learner relax and stay focus during the examination and hence perform well. Lartey (2009) suggested that, for pupils to perform well in mathematics and become good product of education, parents and teachers must positively motive pupils to have positive attitude towards mathematics.

The Executive report on NEA 2011 identified some factors that militate against the performance of students in our schools (MOE, 2012). It linked the performance to his/her demography, teacher characteristics and some classroom practices. It strongly associated students' performance to availability of textbooks, proportion of teachers with training, visits from circuit supervisors, proportion of female teachers in the school, keeping of administrative registers and rate of transfer of students. Also in the report were some negative factors associated with students' performance. These factors are high repetition and dropout rates, multi-graded classrooms and higher percentage of orphans at school. Schools that maintain classrooms should receive specific pedagogical supervision and in-service training to help the teachers overcome the challenges associated with teaching in multi-grade-classroom setting.



The test conducted by classroom teacher seem not to have grip on the national curriculum as most students output seem not to show in any form on external test conducted by most public basic schools. The 2010 and 2011 BECE conducted by WAEC showed that about fifty percent (50%) of the candidate failed, that is, did not obtained aggregate thirty to enable them to continue with secondary school education. This makes a lot of questions to be asked if these evaluative assessments given by most teachers are valid and standard. Lindeman (1967) once put it that one can ensure that a test has adequate content validity by adhering carefully to a course or plan as he constructs a test. Content validity is based on effective teaching; hence if teachers teach effectively and students play their role very well then all these assessments given above would have proved effective in their wake and hence will not call for changes in educational reforms.

## **2.6 Trend in performance of pupils**

The findings of a research studies showed that student performance is affected by different factors such as learning abilities because new paradigm about learning assumes that all students can and should learn at higher levels but it should not be considered as constraint because there are other factors like race, gender, sex that can affect student's performance. (Hansen, 2000). Some of the researchers even tried to explain the link between students achievements, economic circumstances and the risk of becoming a drop-out that proved to be positive (Hijazi & Raza Naqvi (2006) cited Goldman, Haney & Koffler, 1988). Chansarkar and Michaeloudis (2001) explained the effects of age, qualification distance from learning place etc. on student performance. The performance of students on the

module is not affected by such factors as age, sex and place of residence but is associated with qualification in quantitative subjects. It is also found that those who live near the university perform better than other students.

## **2.7 Summary**

The GES in 2003 began an initiative to improve the implemented and attained curricula in mathematics and English in our basic schools. That is the Ghana Basic Education Comprehensive Assessment System (BECAS) to replace Criterion Referenced Tests (CRT) and Performance Monitoring Tests (PMT) instituted in the 1990s to monitor pupils' achievement and progress in English and Mathematics. The BECAS was instituted to address the Ministry's Education Strategic Plan objective QE6, which states "to develop a reliable pupil/student/learner testing and assessment system" (Mereku, 2006). It will provide quality information to the Ministry of Education and Sports, Donor Groups and Communities, the Ghana Education Service, teachers and parents, to improve instruction. This information will be disseminated to parents and other stakeholders through School Performance Appraisal Meeting (SPAM) held at the local level via the District Directorates of Education (Snyder, 2004).

SPAM an activity designed to keep all stakeholders in education, particularly local communities, well-informed about the amount of teaching and learning going on in their school and also to give all members of the community, not just representatives, the opportunity to participate meaningfully in deciding on how to improve outcomes in their school (MOE, 2002). All stakeholders have their part to play for effective teaching and

learning to take place. Parents have a responsibility to seek the psychologically and emotional welfare of their children (Lartey, 2009) while the stake holder and the government are tasked to provide infrastructure (MOE, 2012).



## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.0 Overview

This chapter describes the research method that the study was framed on. This chapter deals with items such as the research design, study population, sampling and sampling techniques and research instruments. These were followed by the research instruments, administration of instrument, data collection procedure and summary of the chapter.

#### 3.1 Research design

To address the different research questions, the researcher employed different methods in the work but this research is purely a survey/investigative work. The researcher used a mixed method research approach. Mixed methods research is the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purpose of breadth and depth of understanding and corroboration (Harrison & Reilly, 2011).

Using a mixed-method design is considered to be appropriate to gain a more comprehensive picture of the phenomena. The study used a combination of both quantitative and qualitative methodology to explain or describe the situation which gave an in-depth analysis of one or more events, settings, programs, social groups, communities, individuals, or other bounded systems. Interviews, questionnaires and other documents

(samples of termly examination questions from few of the sampled schools and data on SEA performance in 2008 and 2009 was collected from the municipal education office) were also employed to find out the effect of the use of SPAM and SEA in improving the performance of pupils in the KEEA municipality.

The surveys method, which is one of the most common types of quantitative, social science research, was used in this study. In survey research, the researcher selects a sample of respondents from a population and administers a standardized questionnaire to them.

### **3.2 Population**

The population of this study is all the basic schools in the Komenda-Edena-Egufo-Abrem Municipal (K.E.E. A). The 2011 survey conducted in municipal by the education office shows there are seventy (70) primary schools in the six (6) circuits in the municipality. The population of the pupils in the primary schools and kindergarten is twenty-four thousand, nine hundred and sixty (24960), made up of twelve thousand, eight hundred and eighty-nine (12889) boys and twelve thousand and seventy-one (12071) girls respectively. There are seven hundred and eight (708) teachers (2010/11 school census in KEEA by HRD of MOE of KEEA). The targeted population is all the circuit supervisors, head teachers and teachers in the municipality. Denscombe (2003) acknowledged that every member of the population has equal chance of being selected in relation to their proportion within the total population which included all relevant categories of sex and age in the adopted sample.

### 3.3 Sample and Sampling techniques

The sample of this study is the head teachers and teachers of two primary schools in each circuit and all circuit supervisors in the municipality. A purposive sampling was used to sample the respondents and responding schools in the research. Denscombe (2003) stated that with purposive sampling, the sample is „handpicked“ by the researcher. This often applied in a situation where the researcher is knowledgeable in the specific situation or the respondents on whom the research is conducted. The researcher deliberately selects particular respondents because they are seen as instances that are likely to produce the most valuable data. This particular sample was used because the variables, that is teachers, head teachers and circuit supervisors are mostly with the items in the objectives of the study. The schools were randomly selected based on their location from a list of all schools in KEEA.

Sixty-five (65) teachers were sampled and given questionnaires. Only fifty-two teachers, consisting of twenty-five (25) males and twenty-seven (27) females responded to the questionnaires. These teachers were from two schools in each circuit and the sampling was also based on the location of the schools, which is rural, urban or semi-urban school. The sampling included all six (6) circuit supervisors in the municipality. The researcher could not visit all twelve schools in the six circuits but visited ten of them to administer his questionnaires, hence had only ten head teachers responding to the questionnaires and eight (8) availing themselves for the interview.

### **3.4 Research Instrument**

The instruments for data collection in this study were questionnaire and interviews guide. The questionnaires were administered to teachers and head teachers from sampled schools and all six circuit supervisors in the municipality. Questionnaires were given out and respondent given some days to respond to the questions before they were received by the researcher.

The researcher also collected sample (mathematics) questions from some of the schools to identify the effect of the SEA test items have on test items in our basic schools. The collected questions also determined how teachers and (other) the education officers make use of the results of BECAS-SEA. Results from the 2008 and 2009 were collected from the KEEA education office and analysed was to determine the trend in performance of pupils who took the SEA test.

#### **3.4.1 Questionnaire**

Questionnaires are research instruments consisting of a series of questions and other prompts for the purpose of gathering information from respondents. The use of questionnaire as a data collection tool allows for facts and opinions to be obtained, they are flexible and versatile method of collecting data and are frequently used to evaluate a course, assess satisfaction with social research (Denscombe, 2003). Questionnaires need to be designed to answer the research objectives or questions. Established questionnaires have the advantage of accepted validity and reliability, however they may not be suitable for a specific project, researchers intent on designing a questionnaire need to consider this can be time consuming, and also involve considerable costs (Denscombe, 2003).

The questionnaire used in this research combined open ended and closed ended type of questions. There are open and closed ended questions in the formulation of questionnaires. The use of questionnaire in conducting research had advantages over some other types of instrument in data collection, in that it is cheap, did not require as much effort from the questioner as interview or telephone surveys, and required answers that make it simple to compile data. Reference can be made of the sample of questionnaire used in this work in Appendix A of the work.

### **3.4.2 Interview Guide**

An interview is a conversation between two people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee. Interviews can be used to collect quantitative and qualitative data. They have the capacity to describe, explain and explore issues from the participant's perspective. A structured interview equates to an interviewer administered questionnaire and is often associated with social surveys where collection of large volumes of data from a wide range of respondents is required. A semi-structure interview allows for more flexibility, the interviewer has a clear list of issues to be covered but allow respondents to elaborate on points of interest. Unstructured interviews involve the introduction of theme or topic by the interviewee and the respondent is free to develop their own thoughts and ideas.

A friendly, motivating interviewer can help respondents, increase response rates, probe for responses and aid clarity of response (Denscombe, 2003). Denscombe, however caution against the „interviewer effect“, the personal attributes of the researcher such as, gender,



age and ethnic group. Also, interview can be a flexible and efficient way of gathering data for a research but it could also be very labour intensive, time consuming and expensive.

Interviews may be guided or unguided depending on the nature and purpose of the research work. Guided interview was employed in this research; it was a face to face interview with the most of the head teachers in most of the schools sampled. Some heads could not avail themselves for the interview but agreed to respond to the questions on the questionnaires. Sample of the guide for the interview is in Appendix B.

### **3.4.3 Piloting the Instrument**

For reliability and validity, the questionnaires and interview guide developed had to be piloted. The instrument was developed by the researcher with great support from his supervisor. These instruments were given to researcher's colleague to analyse and criticize. Questionnaire and interview guide were all piloted on twenty (20) teachers, two (2) head teachers and a circuit supervisor in the Cape Coast metropolis which was closer the researcher and the point of research and also have similar characteristic with the targeted group. Corrections and adjustments were made to the original tools for collecting data to suit the purpose of the research.

### **3.4.4 Reliability and Validity**

Reliability refers to the extent to which research findings can be replicated (Apaw, 2009). Golafshani (2003) cited that reliability is the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of the study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. In other words, it is such that if a

later researcher follows the same procedure as described by an earlier researcher and then conducts the same action research all over again, the later researcher should arrive at similar findings and conclusions.

When a research measures what it is intended to measure then it is valid. Apaw stated that validity addresses the following question: did the research actually measure what it's intended to measure since one of the assumptions underlying qualitative research is that reality is holistic, multidimensional, and ever-changing; it is not a single, fixed objective phenomenon waiting to be discovered, observed, and measured as in quantitative research.

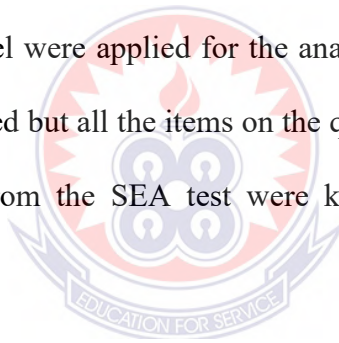
Validity and reliability of the research instrument is vital to persuade the reader that the findings of the study are accurate and something constructive. Validity means that the data and the methods are correct, in terms of research this is concerned with the truth and reality of the data (Denscombe, 2003). The validity of a questionnaire and interview guide is associated with the ability of the questionnaire and interview guide to measure what it is intended to measure. Reliability relates to the extent to which the research instrument produces the same data after time on each occasion it is used. As such, a questionnaire is reliable if it gives consistent answers. There are technical and statistical methods of demonstrating validity and reliability but that was not used in the scope of this research because it was largely qualitative study.

The main approach of assuring validity and reliability of the questionnaires and interview guide used in this study was to pilot the questionnaires twenty (20) teachers, two (2) head teachers and a circuit supervisor and interview a head teacher in the Cape Coast metropolis which had have similar characteristic with the targeted group, this helped to ensure that the potential sample understood the questions, were able to complete and the required

information was obtained. To ensure internal validity, peer review of questionnaire and interview guide was employed. This was done by asking self-governing auditors such as master's students majoring in Mathematics Education to comment on the results during the period of the data analysis.

### **3.5 Data Analysis**

The quantitative and qualitative methods were used in analysing the data collected. Qualitative method of data analysis was used in analysing data on the questionnaire whilst the SEA test were analysed quantitatively. The Statistical Package for Social Sciences (SPSS) and Microsoft Excel were applied for the analysis of data. Some of the data from the questionnaire were coded but all the items on the questionnaire keyed into the SPSS for the analysis and results from the SEA test were keyed into Microsoft Excel also for statistical analysis.



### **3.6 Summary**

The study which was largely a survey involved fifty-two (52) teachers, ten (10) head teachers and six (6) circuit supervisors of Komenda-Edina-Eguafo-Abrem (KEEA) education municipality of the central region. The researcher administered questionnaires to the entire group above and also interviewed some of the head teachers on the usage of the School Education Assessment (SEA) test result and how they have used School performance appraisal meeting (SPAM) to help improve learning (of mathematics) in their

schools. The information was analysed with SPSS and excel by the researcher to draw his conclusion on the findings.



## **CHAPTER 4**

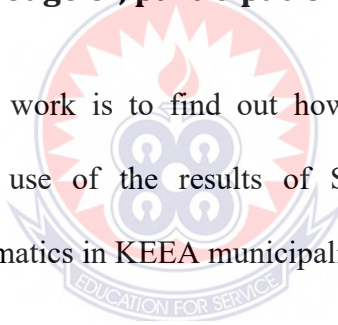
### **ANALYSIS AND DISCUSSION OF FINDINGS**

#### **4.0 Overview**

This chapter deals with the analysis of data collected on the field by the researcher. Questionnaires and interview were the tools for data collections. As said earlier, the data was collected from sampled schools on the KEEA municipality. Tables and diagrams were used to show information.

#### **4.1 Teachers' Knowledge of, participation in and use of SEA result.**

A major objective of this work is to find out how teachers and municipal education directorate officers made use of the results of SEA over the years in improving teaching/learning of Mathematics in KEEA municipality.



##### **4.1.1 Teachers' Knowledge of SEA result.**

The results show that most of the responding teachers had a little knowledge of SEA, apart from the test being conducted in their school. Most of the teachers know very little about the use of the results because most schools do not receive anything from the Educational Directorate. Looking at their response, 38.5% of the teachers and 10% of the heads did not know what the education directorate sent to them after the assessment has been conducted. A majority, that is, about 41.3% of teachers and 40% of the heads stated they received the results of the school and that of the district as shown in Table 4.1.

**Table 4.1** Items schools received from the Municipal Education office after the SEA test has been conducted

	Teachers		Head teachers	
	Freq	Percent	Freq	Percent
Results of test	10	19.2	3	30
Short report	5	9.6	0	0
District results	12	23.1	1	10
Results of test and short report	1	1.9	2	20
Results of test and district results	4	7.7	3	30
Missing values	20	38.5	1	10
Total(n)	52	100	10	100

Looking at the above trend in items received, if this item(s) is/are not discussed at SPAM most teachers will not have the essence of the assessment.

#### 4.1.2 Teachers and Stakeholders Knowledge on MCL and proficiency level

Out of the sampled teachers and heads of schools only one person knew the percentage level at which the minimum competency and proficiency are measured. What was surprising was that the circuit supervisors had little or no knowledge of the percentage at which MCL and proficiency level were measured, none of them was able to state the exact percentages. The percent stated for MCL were 50 and 55, and that stated for proficiency was 60. This made it difficult for the schools to measure the percentage of the number of pupils taking the test that reach the set levels. Even though there were some percent of children reaching these *assumed* levels they cannot be taken because the levels given by these respondents were not all that accurate.

When they were asked about their knowledge on the minimum competency and proficiency levels, one of the circuit supervisors stated of knowledge of the levels. Two of the heads and four of the teachers also had knowledge of the levels but only one of the heads“ was able to state the levels, 35% for MCL and 55% for proficiency, this shown in Table 4.2

Table 4.2. Results of teacher and heads knowledge on MCL and proficiency level

Response	No. of Teacher	No. of Head-teacher	No of Circuit Supervisor
Yes	4	2	1
No	27	5	4
Total	31	7	5

During the interview none of the head teachers was able to state the levels of measurement of pupils“ performance during the SEA. The scores they stated are shown in Table 4.3 below.

Table 4.3 Results of interviewee for MCL and proficiency level

Stated MCL percents	Frequency	Percent
40 and 60	1	12.5
50	1	12.5
I think is about 50%	1	12.5
No	2	25.0
not familiar with it	1	12.5

#### 4.1.3 Assistance given to pupils who did not reach MCL

When asked to state the percent reaching MCL in basic stage (BS) two and four in their circuits, only one of the circuit supervisors stated 60% for BS2 and 45% for BS4 pupils.

Four (4) of the teachers stated 68.8% and one said 50% of their BS2 pupils reached MCL, while four stated 41.6% and one stated 60% of their BS4 pupils. The six (6) head teachers stated 12%, 25%, 49%, 50% 62.66% and 68.8% of their BS2 pupils reaching MCL.

Though the percent of pupils quoted as reaching the MCL levels cannot be fully accepted, the actions taken to help the pupils below the minimum competency level to reach that ability and even progress beyond it cannot be under-estimated. Thirty-three point seven percent (33.7%) of the teachers have taken some actions to help their pupils improve upon their performance. Most of the pupils are encouraged by their teachers to work and study hard, special tuition is given to some of them to improve their learning while extra classes is organized for some. Most head teachers have also instituted some actions to see their pupils improve upon their performance when the SEA or any equivalent assessment is conducted on their pupils and in their schools. These actions taken by teachers and their heads can be seen in appendices F, G and H.

#### **4.1.4 Participation of teachers in SEA**

The participation of teachers in SEA, that is either as helping with the marking of the test item or invigilating the writing of the test had an influence on them. Thirty-two (32) of the teachers sampled stated they had participated in conducting SEA in their schools. Out of this twenty-eight point one percent (28.1%) has participated in all the three years that the test has been taken and sixty-eight point percent (68.8%) forms the accumulated percent of those who have participated in the various years from 2006 to 2009 and the rest took part in 2006 and 2008. Table 4.4 displays the distribution of their years of participation.



**Table 4.4** Years teachers participated in conducting School SEA in their schools

S/No	Years	Frequency	Percent	Cumulative Percent
1	2006	4	12.5	12.5
2	2008	7	21.9	34.4
3	2009	11	34.4	68.8
4	2006,2008 & 2009	9	28.1	96.9
5	2006 & 2008	1	3.1	100
	Total (n)	32	100	

Twenty (20) of the teachers stated that the participation of their schools in the SEA test has changed or improved the way they conducting assessment in their classes. When asked to state what they have done differently in their assessment procedure, only fifteen (15) of them stated what they have done. Four (4) of them said it has improved the way they set (examination) questions. Three stated that it had made them give more assignments, such as homework and class test to their pupils, while five (5) of the teachers are so concentrated on developing their pupils' learning skills. A teacher said it had made him do rational teaching instead of rout teaching and he also set critical thinking questions for his students. Another teacher also said lessons that he/she uses to teach are into details rather than the surface one which he/she used to do. His/her pupils are given more time to practise to boost their understanding rather than get more exercise to please CS. Appendix E shows the details of the statements of the teachers.

All the head teachers have participated in the conducting of SEA over the period it has been conducted but two (2) participated in 2008 and four (4) in 2009. Nine (9) of the head teachers affirmed that their schools' have improved its assessment procedures or the way they conduct monitoring in their schools due to their participation in SEA but when asked

to state things they are doing differently, only eight stated something. Among the statements was effective monitoring of teachers and pupils work, teachers made to set targets to work towards them, ensuring the punctuality and regularity of teachers and pupils using the SEA test item as a blueprint in writing their examination items and giving shading sheets to pupils to practise shading in their early years were some of the statements made. Their statements are in Appendix I.

#### **4.1.5 Use of SEA result and test items**

The research found out that most schools in the municipality though the regularity of their SPAM is not encouraging and are not aware of the levels at which its candidates' minimum competency and proficiency are measured, still consider the School Education Assessment (SEA) test items very important and use it as a blue print in writing their end of term examination. Sample Mathematics examination questions collected from some basic schools in the municipality showed that most of the schools are following the questioning trend in SEA and they followed the domains which the questions follow. These domains on which the mathematics questions follow are basic operations, number and numerals, measurement, shapes and space, and collecting and handling of data (Adu, 2006). Though most of these schools are doing their best to follow the questioning pattern of SEA and NEA, some have financial constrain to provide the children with answer sheets to shade the answers of the multiple choice questions and this will not sharpen the shading skills of these children.

## 4.2 Frequency of organizing and decisions taken during SPAM

As discussed earlier, SPAM is an activity designed to keep all stakeholders in education, particularly local communities, become well-informed about the amount of teaching and learning going on in their school and also to give all members of the community, not just representatives the opportunity to participate in meaningful discussions on how to improve outcomes in their schools.

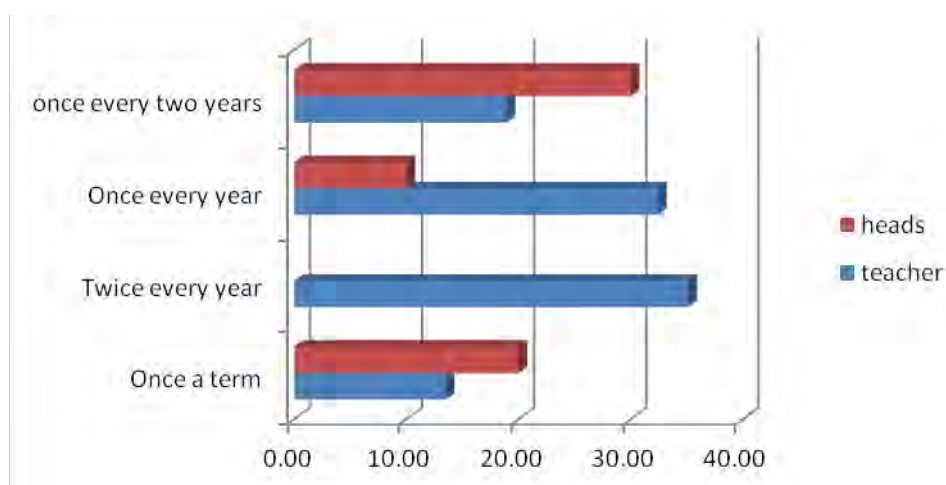
### 4.2.1 Frequency of SPAM

From the research, majority of the schools in the municipality organize SPAM regularly.

Table 4.5 Frequency of organization of SPAM in at most 2 years.

Response	Teacher		Head teacher		Circuit Supervisor	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	31	68.9	5	62.5	4	66.7
No	14	31.1	3	37.5	2	33.3
Total	45	100.0	8	100	6	100

Figure 1 Regularity of SPAM in our schools



From Figure 1 and Table 4.5, it is shown that thirty-one (31), that is, 68.9% of the teachers responded that their schools organize SPAM in every two years out of the fifty-two (52) teachers sampled. 13.5% of this agreed that they organize it once a term, 35.1% said they organize it twice a year, 32.4% once every a year and 18.9% once every two years out of the thirty-one respondents. This was not confirmed by their heads because out of the ten head teachers who responded to the questionnaires, five affirmed that they organize SPAM in every two years but when the crosstab checked only four confirmed their response. Out of this, no head indicated having SPAM once a term. If what the head teachers said will be taken as authority then we can conclude that less than half of the schools in the municipality organize SPAM on a regular base that is, taking two years as a period of regularity.

There was a little disparity in this situation, the circuit supervisors are not certain of the regularity of organizing SPAM because thirty-three point three percent (33.3%) said they had not organize SPAM in the last two years. When they were asked how regular they organize SPAM, 16.7% indicated that they organize it once a term and 83.3% once a year. This was cleared when they were made to state the proportion of schools in their circuit which have organize SPAM in the past two years. Only 33.4% were those ones who were able to state positive response. Out of the thirty-four schools within these circuits, (in two circuits) only six organized SPAM in the past two years. If this is anything to go by, then it will be concluded that most schools are not involving the community in their decision and policy making hence this low rate of organizing SPAM.

It was noted that most respondents who agreed that they organize SPAM are from the rural areas. All the five head teachers who responded yes to organizing SPAM were all from the rural areas. It is agreed that the KEEA municipality is largely rural but this should be the situation with no urban school not organizing SPAM. This was also seen in the response from the teachers as shown in the Table 4.6 below.

**Table 4.6 Frequency of SPAM in schools in KEEA**

		Has your school organized SPAM in the past 2 years?		
		Yes	No	Total
Location of school	Rural	24	2	26
	Urban	0	4	4
	Semi-urban	7	8	15
	Total	31	14	45

#### 4.2.2 Decisions taken at SPAM

The research shows that the School Educational Assessment (SEA) does not form the bases of the discussion during the meeting in most places/schools because twenty (20) out of the fifty-two (52) teachers respond yes to the question while eighteen (18), that is, 34.6% did not respond to this question. This makes only 38.5% of the teachers responding yes but 51.5 % of them refuted that SEA sets the agenda of SPAM. With regards to some of the issues raised at meetings where SEA set the agenda these were what some responds;

- teachers to improve upon their teaching methods,
- teachers use their contact hours effectively and use interactive teaching methods to make lessons effective and interesting.
- parents should provide learning materials to their children and on time to help in their learning process.

One of the dominant issues most respondent stated as discussed during their meeting was the poor performance of pupils. Head teachers, teachers and the community were made to set targets for higher performance of the pupils anytime SEA or any test is conducted in their schools. This was one of the things that were done with SEA results as discussed during SPAM. Some of the popular suggestions raised at SPAM are as follows:

- In-service training should be organized at a good interval to update teachers with new trends in education.
- Relevant TLMs should be used to in teaching mathematics.
- TLMs should be provided (by GES or PTA)
- Interactive approach is to be used the teach mathematics to make it interesting.

See Appendix C.

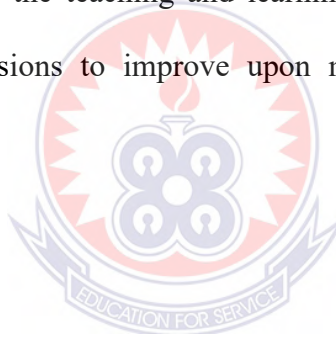
The use of appropriate and effective teaching and learning materials in teaching, especially mathematics, was one of the things stated by teachers when asked to state two issues raised at SPAM. SPAM can be said to have improved upon the teachers' style of teaching as a result of their participation in SPAM, they know their work will be evaluated. These were some of the common things some teachers stated when asked what they have done differently due to their participation in SPAM;

- Encouraging pupils to practise every day for perfection in the subject they are learning
- Encouraging pupils to work in groups by assigning group work.
- Using simple method and TLMs in teaching for greater understanding and lively lessons.

See appendix D for the statements made.

Many of the teachers do not see that major decisions are made concerning the teaching of mathematics during SPAM. Only 48.1% of the teachers of those who agreed that they have been organizing SPAM, said discussions are taken to improve mathematics in their schools.

When they were made to state at least two decisions made in improving mathematics teaching/learning, 29 teachers made statements on improving teaching/learning. Head teachers who responded to the same question, although forty percent (40%) agreed that they organize SPAM on regular bases, seventy percent (70%) responded that they take decisions to improve upon the teaching and learning of mathematics but most of them could not give solid decisions to improve upon mathematics teaching/learning when interviewed.



### **4.3 Trends in performance of pupils**

From the data collected from the KEEA Educational Directorate for the 2008 and 2009 SEA results, it is obvious that the trend in performance in SEA has improved. The average performance of pupils in stage four changed from 37.91 to 41.45 and that of stage two also improved from 65.28 to 67.63. Though the general averages improved there is still more to be done to improve on the performance of schools in the circuit. Looking at performance circuit by circuit, it was seen that the performance of Komenda and Elmina circuits fell, the change was -3.93 and -0.5 in their average performance, details in Table 4.7 show these

details. Table 4.8 also shows that of primary two, which also shows that Agona and Elmina circuits did not improve in performance. The change in performance is significant because the t-value 1.8125 varies with the calculated values. The t-values of primaries two and four are -1.620 and 0.6541. The performance of pupils in primary two was better than those in primary four in the years under consideration.

**Table 4.7 Trends of Mathematics and English SEA Test for Primary 4 in 2008 and 2009**

CIRCUIT	MATHEMATICS			ENGLISH		
	2008	2009	change	2008	2009	Change
AGONA	37.63	43.56	5.93	47.67	43.96	-3.72
AYENSUDO	37.05	48.71	11.66	52.49	49.69	-2.80
ELMINA	37.3	36.8	-0.5	48.10	47.57	-0.53
KISSI	33.78	35.9	2.12	51.14	41.36	-9.78
KOMENDA	42.64	38.71	-3.93	56.49	48.24	-8.25
NTRANOA	39.08	45.03	5.95	46.32	52.94	6.62
	37.91	41.45	3.54	50.37	47.29	-3.08

**Table 4.8 Trend in performance among BS2 in 2008 and 2009 in Mathematics and English**

CIRCUIT NAME	MATHEMATICS			ENGLISH		
	2008	2009	change	2008	2009	Change
Agona	69.15	59.64	-9.51	61.42	56.03	-5.39
Ayensudo	65.70	77.08	11.38	58.42	74.53	16.11
Elmina	74.73	64.06	-10.66	68.30	62.43	-5.88
Kissi	54.95	63.59	8.63	49.39	68.38	19.00
Komenda	68.31	69.78	1.47	61.39	70.85	9.47
Ntranoa	58.83	71.62	12.79	55.26	63.95	8.68
	65.28	67.63	2.35	59.03	66.03	7.00

Looking at the results of primary four pupils, it showed that though there was an improvement in the results, the results of the schools showed that they were not above the proficiency but almost all the schools were above the minimum competency level with the exception of performance from schools in the Kissi circuit which scored 33.78. The test

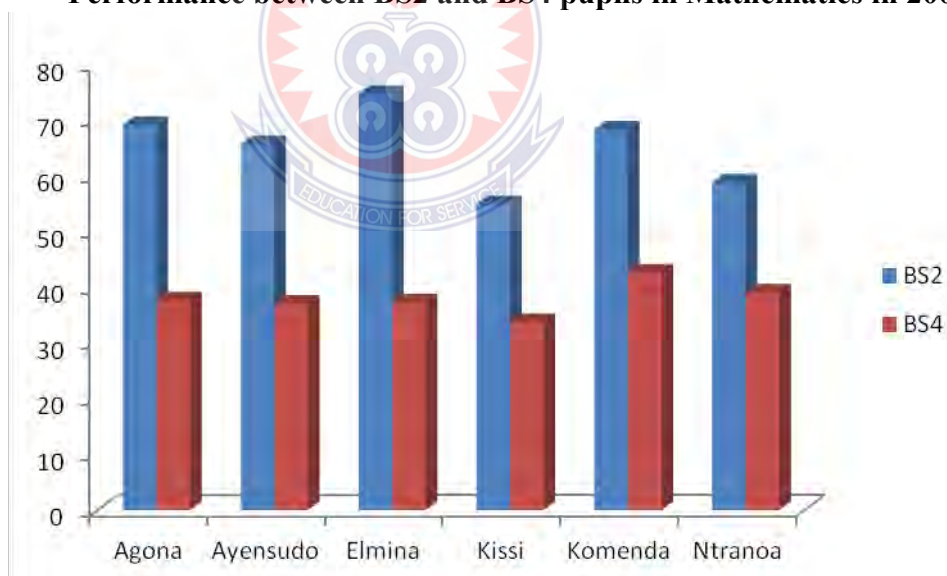


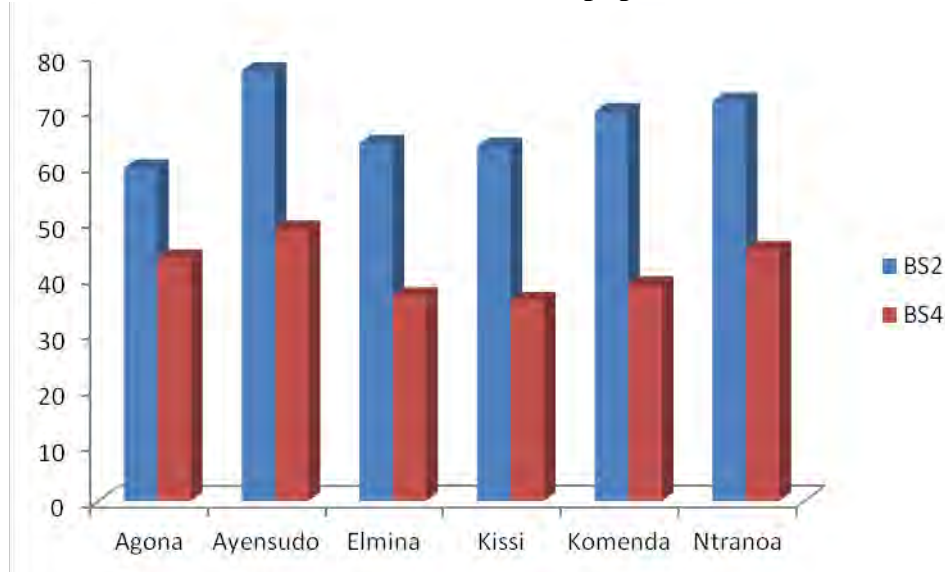
scores for the two years range from 33.78 to 48.71 for pupils in primary four and 58.83 to 77.08 primary two pupils hence we can conclude that pupils in primary two performed better than those in primary four. Table 4.9 and Figures 2 and 3 show these performances.

**Table 4.9 The average performances of BS2 and BS4 pupils in SEA results in Mathematics in 2008 and 2009**

CIRCUIT NAME	2008		2009	
	BS2	BS4	BS2	BS4
Agona	69.15	37.63	59.64	43.56
Ayensudo	65.70	37.05	77.08	48.71
Elmina	74.73	37.3	64.06	36.8
Kissi	54.95	33.78	63.59	35.9
Komenda	68.31	42.64	69.78	38.71
Ntranoa	58.83	39.08	71.62	45.03
	65.28	37.91	67.63	41.45

**Figure 2 Performance between BS2 and BS4 pupils in Mathematics in 2008**



**Figure 3 Performance between BS2 and BS4 pupils in Mathematics in 2009**

Has pupils' performance in English got something to do with their performance in mathematics? From the results, it shows that there is no much difference in pupils' performance in Mathematics and English for pupils in primary two while that of primary four shows some significant difference in their performance in English and Mathematics. The difference in mean performance in English and mathematics of BS 2 is -6.25 and -1.6 and that of BS 4 pupils is 12.46 and 5.84 (from Table 4.7 and 4.8).

During the research some head teachers, four of them, indicated that knowledge in English is paramount to pupils performance in any subject, hence they are placing much emphasis on pupils ability to read and write properly. Some of them said through SPAM they are trying to improve upon pupils reading and writing skills. A head teacher said;

“We noticed at the meeting that some students cannot read... and to improve on this we make them read every morning because their inability to solve most problems was based on their inability to read and understand the text.”

As is common knowledge, a substantial number of Ghanaian children are not reading at the expected level. This clearly affected their test scores in both English and Mathematics in P3 and P6. A concerted and collaborative effort towards improving reading instruction would greatly improve literacy levels of primary school children (MOE, 2012).

In conclusion, it is noticed that if all stakeholder in education play their roles well our educational system, including assessment will be well conducted and also there will be improvement in pupils' performance.



## CHAPTER 5

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Overview

This chapter provides the conclusion of the whole research project. It also includes a summary of the findings. It further outlines some of the recommendations for further research studies.

#### 5.1 Summary and Conclusion

Most of the performance of our pupils in Mathematics, Science and English in our basic schools these days is not encouraging. These poor performances have been confirmed by the recent national assessments such as School Education Assessment (SEA), National Education Assessment (NEA) and TIMSS (Adu, Acquaye, Buckle & Quansah, 2007; Anamuah-Mensah, Mereku & Ghartey-Ghartey-Ampiah, 2008). The 2011 Basic Education Certificate Examination (BECE) organized by WACE showed that about 50% of the candidate did not perform well and hence cannot continue to the senior high schools, that is, their grades were higher than aggregate 30. This survey was conducted on teachers in basic schools in the Komenda-Edina-Eguafo-Abrem (KEEA) municipality and their circuit supervisors on how they use the results of SEA test conducted and SPAM to improve education in the municipality.

The objectives of this study were to determine the trends in pupils' performance in mathematics teaching/learning in schools in KEEA since the inception of BECAS-SEA.

Also to find out how teachers and the education officers in KEEA make use of the results of BECAS-SEA in improving education in the municipality. Finally, to examine the nature of SPAM and some of the issues on the effective teaching of mathematics identified during the meeting.

The trend of education has not changed much in terms of the performance of our pupils throughout their eleven years in most of our basic schools in the municipality. These performances of our schools cannot be attributed only to the children or teachers but there are other sources to these short falls. Before mentioning some of these short falls let examine the outcome of the study. It was surprising that the bench marks at which the SEA test was measured were not known by almost all the educational workers in the municipality. 99% of respondents could not state the percentage at which the minimum competency level and proficiency level were measured. Almost 50% of schools do not involve the community building policies in their schools through SPAM. The study showed that SPAM is *dead* in the urban schools in the KEEA municipality because most of the urban schools which participated in the study stated they do not participate in SPAM. This implies that most of our urban schools are closed to themselves not allowing the participation of other stakeholders in education. This, I wish some other researchers could conduct research on SPAM in urban schools in other regions, municipalities or district to see the outcome. The rural schools on the other hand organize SPAM on regular bases.

During the interview, the researcher noticed that most of the SPAM meetings take place only when SEA or NEA test is conducted and this is done, in zonal bases. Of the Schools that conduct SPAM, only 20% conduct school base SPAM with a little or representative from the municipal (education) office.

Some factors identified to be associated with shortfall in performances in our schools include:

- Non-availability/insufficient of textbooks
- Proportion of trained teachers in most schools
- Visits from circuit supervisors
- Schools keeping of administrative registers
- Student transfer rates
- Higher repetition and dropout rates
- Multi-grade classroom (MOE, 2012)

Most of the above indicators to the shortfall of education have influence on education in most of our public schools. During my research I observed that most of the schools have a higher proportion of their teachers being new. A school had all its teachers to be new teachers with only one untrained old teacher on the staff, this may affect learners academic development when there are proper documents showing pupils academic work/development. Most of the teachers although were trained are new in the system. Most of these new teachers have to undergo in-service training to be fully equipped to work effectively. Teacher quality depends not only on observable and stable indicators but also on the quality of training they receive (Ankomah, Koomson, Bosu & Oduro, 2005). It also depends on the behaviour and the nature of the relationship teachers maintain with their pupils or students. The level of teachers' knowledge of subject is crucial and has been shown to be a good predictor of student achievement (Darling-Hammond, 2000). Teacher absenteeism, a persistent problem in many countries, reduces the quality of education and results in a waste of resources.

School record keeping was also a problem my attention was drawn to during the interview because when the question of the rate at which SEA was measured and percent of pupils reaching the rates were asked most of the interviewees had a problem because there were no documents to refer to. The newly appointed head teachers also stated that they had no document to retrieve such information; hence the researcher notice there may be problems with manner in which some school administration registers were kept. Some of these documents are not sent to the schools by the appropriate authorities.

Non availability/insufficient textbooks were few issues some public schools were grappling with. This had made some circuit supervisors in KEEA having to take books from some school to furnish other schools with. This some of them said is a problem for them because gathering and conveying these books comes with a lot of challenge.

## **5.2 Recommendation**

The importance of mathematics and involvement of others in decision making to our institutions cannot be over emphasized. It is in the view of this that SPAM and other appraisal meetings form an essential component in the Ghanaian schools from basic education level to tertiary level. How our pupils will develop in mathematics is very important and our approach to teaching the subject in basic schools is very important. The inclusion of SPAM in all sectors of education, especially in the basic and secondary, will improve the performance of our children. This is due to the fact that most of our schools do not appraise and/or assess the performance of our children hence not much measures is put in place to improve their performance.

In this view of the following recommendations were made:

The document on SEA should be redistributed and workshops organized to train all workers of the educational unit in the municipality and the nation as a whole, this is to emphasize the point Hon. Tettey-Enyo made in 2010 when he was addressing the press, when he said,

“In order to enhance proper assessment of students’ learning outcomes and improve resource planning, the GES must embark on training programmes for teachers, head teachers, Directors of Education and other stakeholders on the effective use of the results of the School Education Assessment (SEA) and the National Education Assessment (NEA) this year.”

The importance of SPAM should be re-echoed into the ears of all educational workers for them to attach some importance to its organization more especially the CS seeing to it that the schools in their circuit organize it on regular bases. This will also call for report from BECAS/SEA officers to be attached to test results sent to the schools either on or after the results have been sent to the schools.

USAID and MOE should recruit other officers apart from the Test Monitors to go the field, that is, the schools and districts to monitor the efficiency of SEA/NEA and its impact on pupils and schools not only on the conduct of the test.

There are so many assessment procedures in the system from other self-styled exams bodies conducting exams in various places and yet without much emphasis on assessment procedures. Most of these examination contractors conduct the test, mark them and that ends their assessment procedure. These assessments are also not leading most educational workers on to sharpen up their assessment skills. The GES should monitor the things going



in our schools to stream out some of these tests being carried out in our schools to make teachers sharpen their assessment skills.

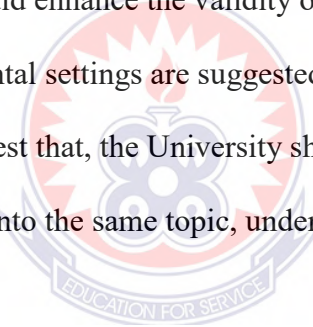
### **5.3 Suggestions for future Research.**

In designing future studies, the following suggestions may be considered.

1. The differences in circuit performance need further research for explanation.

Further studies need to be done to establish the causes of variation in performance across the various regions of the country. The sample size should be increased. A much larger size would enhance the validity of the findings.

2. Different environmental settings are suggested for future study at the same time. In that case, I also suggest that, the University should allow two or three different students to research into the same topic, under the same supervisor.



## REFERENCE

- Adu, J., Acquaye, E., Buckle & Quansah, K. B. (2007). *Report of the 2007 National Education Assessment (NEA)*. Accra: Assessment Services Unit of the Curriculum Research and Development Division, GES.
- Adu, J.K., (2006). *Report on 2005 Administration of National Education Assessment Primary 3 and Primary 6 English And Mathematics*. Accra. ASU
- Akakpo, G. S. (2010). Performance of Primary Pupils in AOKB Circuit in Tema Metropolis in 2006 BECAS/SEA Mathematics Tests. (Master's Thesis in Mathematics Education, University of Education, Winneba, 2009, UEW Library).
- Anamuah-Mensah, J., Mereku, D. K. and Asabere-Ameyaw, A. (2004). *Ghanaian Junior Secondary School Students' Achievement in Mathematics and Science: Results from Ghana's participation in the 2003 Trends in International Mathematics and Science Study*, Accra: Ministry of Education Youth and Sports
- Anamuah-Mensah, J., Mereku, D. K. and Ghartey-Ampiah, J. (2008). *TIMSS 2007 Ghana Report: Findings from IEA's Trends in International Mathematics and Science Study at the Eighth Grade*. Accra: Ministry of Education
- Ankomah, Y. A., Koomson, J. A., Bosu, R. S. and Oduro, G. K. T. (2005). *A Review on the Concept of Quality Education: Perspective from Ghana*. Cape Coast: UCC
- Apaw, J (2009). *The use of Information and Communication Technology in the teaching of Mathematics in Colleges of Education in Ghana*. (Master's Thesis in Mathematics Education, University of Education, Winneba, 2009, UEW Library).

- Ashie, J. (2009). JSS Exams and Assessment in Ghanaian schools. Retrieved on 23/09/2011 from <http://www.modernghan.com/new/245678/j...>
- Asiegbor, I Antwi, A. & Buckle, J. (2009). *Report on 2008 Administration of school education assessment, primary 2 and primary 4, English and Mathematics*. ASU.
- Asiegbor, I. (2009). Assessment in Pre-Tertiary Education, Ghana: Retrieved on 6/06/2001 from [http://www.GESCI\\_WORKSHOP\\_Presentation\\_on\\_Assessment\\_07\\_07\\_2009-Ghana](http://www.GESCI_WORKSHOP_Presentation_on_Assessment_07_07_2009-Ghana)
- Baumgartner, T. A. Strong, C. H, and Hensley, D. L. (2002). *Conducting and Reading Research in Health and Human Performance*. The McGraw-Hill Companies, Inc.
- Biggs J. (2001). The Reflective Institution: Assuring and Enhancing the Quality of teaching and learning. *Higher Education* 41(3).221 – 238.
- Biggs, J. (1996). Enhancing teaching through Constructive alignment. *Higher Education*, 32,347-349.
- Bolaji, C. (1996). Gender Difference in the use of Approaches in teaching of Algebra, Tanbari: *Kano Journal of Education*, 3, 24-35, 248:160-167.
- Boud, D. (1995). Assessment and learning: contradictory or complementary? In P. Knight (Ed.), *Assessment for learning in higher education*, London: Kogan Page Ltd
- Chansarkar, B. A. and Michaeloudis, A.(2001). Student profiles and factors affecting performance *Int. j. math. educ. sci. technol.*, 2001, vol. 32, no. 1, 97–104, Pp 103-104

*Constitution of the Republic of Ghana, 1992 (2005)*. Article 25. Ministry of Justice/Allshore Co.

Criterion-referenced test. Retrieved on 05/07/2011 from [http://en.wikipedia.org/wiki/Criterion-referenced\\_test](http://en.wikipedia.org/wiki/Criterion-referenced_test)

Curriculum Research Development Division (CRDD) 2011. *Teaching Syllabus for mathematics (SHS)*. Accra.MOE

Danili, E. and Raid, N., (2005). Assessments formats: do they make a difference? In *Chemistry Education, Research and Practice*, 6, 204-212. Retrieved on 04/07/2011 from [http://www.rsc.org/images/Danilipaper\\_tcm18-41066](http://www.rsc.org/images/Danilipaper_tcm18-41066)

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state quality evidence. *Education Policy Analysis Archives*, 1. Retrieved on 20/02/2012 from <http://epaa.asu.edu/epaa/v8n1>

Denscombe, M. (2003). *The Good Research Guide for small-scale social Research project (2<sup>nd</sup> Ed)*. London: Open University Press.

Drummond, M. J., (1993). *Assessing Children's Learning*. London: David Futon Publishers.

EQUIP 2 / Ghana Basic Education Comprehensive Assessment System (BECAS).

Retrieved on 28/06/2011 from <http://www.equip123.net/>

Ferguson, R., (1991). Paying for Public Education: New Evidence of How and Why Money Matters. *Haward Journal on Legislation* 28 (Summer 1991): 465-498.

Fieldman, R.S. (1996). *Understanding Psychology*. New York: McGraw Hill Inc.

Francis Galton. Retrieved on 15/07/2011 from [http://en.wikipedia.org/wiki/Francis\\_Galton](http://en.wikipedia.org/wiki/Francis_Galton)

Ghana Education Service (GES), (1988). *Report of the Sub-Committee on Assessment at Basic Education Level*. Accra: Ghana Education Service

Ghartey-Ampiah, J. (2008). An investigation of provision of quality basic education in Ghana: A case study of selected schools in the Central Region. *Journal of International Cooperation*, 11 (3) 19-37.

Ghartey-Ampiah, J. (2010, January). *Quality Basic Education in Ghana: Prescription, praxis and problems*. Paper Delivered at the Experience Sharing Seminar at Erata Hotel, Accra.

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. In The Qualitative Report Volume 8 Number 4 December 2003 University of Toronto, Toronto, Ontario, Canada Retrieved from <http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>

Hansen, J. B. (April 2000). "Student Performance and Student Growth as measure of success: A evaluator's perspective" *Paper presented at annual meeting of the American Educational Research Association New Orleans, Louisiana, April 25, 2000*

Hatch, T. and Gardner, H. (1990). If Binet had looked beyond the classroom: The Assessment Intelligence. *In International Journal of Education Research*, 14(5)

Hijazi, T. S. and Raza Naqvi, S.M.M. (2006). Factors Affecting Students' Performance.

*Bangladesh e-Journal of Sociology*. Volume 3. Number 1. January 2006. pp 1 - 10

Interview. Retrieved on 19/07/2011 from <http://en.wikipedia.org/wiki/Interview>

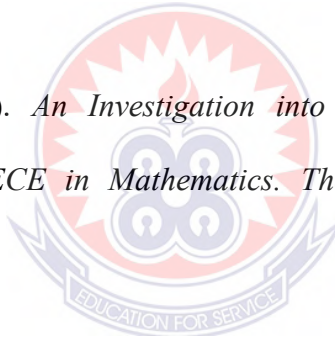
Johnstone, A. H. and Ambusaidi, A., (2000). Fixed Response: what are we testing?

*Chemistry Education Research and Practice*, 1, 323-328.

Johnstone, A. H., (2003). LTSN Physical sciences practice guide: effective practice in objective assessment, Hull, LTSN.

Jones, R., (2001). How parent can support learning. *American school Board Journal*, 2, 18-21.

Lartey, A. A. B., (2009). *An Investigation into the Nature of Decline in pupils' performance at BECE in Mathematics. Thesis*. An unpublished work. UEW, Winneba.



Mellor, W. L. and Holases, O. (2001). *World Forum: Thematic Studies, Funding agency Contributing to Education for All. UNESCO*. France: Graphoprint.

Mereku, K. (2004). *Mathematics Curriculum: Its implementation in Ghana*. Accra.

Mereku, K. (2006). *Primary 2 & 4 pupils to take SEA on July 19*. UEW. Winneba

Mereku, K. D., Amedahe, F. K., Etsey, K., Long, B., Adu, J., Synder, W. C. and Moore A. (2005). *BECAS – Opportunity to Learn English and Mathematics in Ghanaian Primary Schools*. Accra

Ministry of Education (MOE), (2012). *National Education Assessment (NEA) Executive Summary 2011 Report*.

Ministry of Education (MOE), 2002. *Circuit Supervisors' Handbook*. Accra

Ministry of Education, (2007). *Teaching Syllabus for Mathematics*. Accra: CRDD.

Ministry of Education, (2010). *Teaching Syllabus for Mathematics*. Accra: CRDD.

Ministry of Education, Science and Sports (MOESS) (2007). *Preliminary Education Sector Performance Report, June*.

Ministry of Education, Science and Sports (MOESS) (2008). *Education Sector Report*.  
Accra: MoESS.

Ministry of Education, Science and Sports [MoESS] (2008). *Education Sector Report*.  
Accra: MoESS.

Nabie, M. J., (1999). Assessing Mathematics Investigation in the Primary years. In *Mate Masie; Journal of the University of Education, Winneba, No. 1, 10/1999* p.19.

Niss, M. (1993). *Assessment in Mathematics Education and Its Effects*. Retrieved on  
23/02/2011 from [http://www.ewi-psy.fu-berlin.de/en/v/mes6/documents/  
research\\_papers/Moya-Romero\\_MES6.pdf](http://www.ewi-psy.fu-berlin.de/en/v/mes6/documents/research_papers/Moya-Romero_MES6.pdf)

Osborne M. (2005). Constructive alignment of learning outcomes to assessment methods.  
In *Enhancing Practice: Reflection on Assessment Vol. 1. Quality Assurance. Agency  
for Higher Education*. Mansfield, UK, pp114 – 147.

Peppler Barry, U. & Brun, K. (2000). *Education Forum: The Dakar Framework for Action, Dakar, Senegal, 26-28 April, 2000*. UNESCO. France: Graphoprint.

*Questionnaire*. Retrieved on 15/07/2011 from <http://en.wikipedia.org/wiki/Questionnaire>

Race, P. (2003). Designing assessment to improve Physical Sciences learning-exams.

Retrieved on 6/06/2011 from

<http://www.physsci.ltsn.ac.uk/Publications/PracticeGuide/guide4.pdf>

Ramsden, P., (2003). *Learning to teach in higher education* (2nd ed.), London, Routledge Falmer.

Review Committee (2004) *White paper on the report on the educational reform*. Ministry of Education, Youth and Sports.

Sekyere, E.A., (2006). Teachers' Guide for Topical Issues for promotion and selection Interview. Kumasi: Aforsek Educational Consultancy Centre.

Snyder, C.W., (2004). Ghana Basic Education Comprehensive Assessment System (BECAS), *Work Plan, (2004-2005)*. Accra.

Sylvan (2007). *Testing taking tips and study techniques*. Sylvan Learning. Retrieved on 30/06/2011 from [http://www.educational\\_gateway.com/tutor](http://www.educational_gateway.com/tutor).

Tettey-Enyo, A. (2010, January). *Situating the Education Sector within the NDC Education Development Agenda*. Paper presented at Meet the Press Session at the Ministry of Information, Accra.



UNESCO (2005). *Education for all. The quality imperative*. Paris: UNESCO

UNESCO (2009). *Overcoming inequality: Why governance matters*. Paris: UNESCO

What is Criterion – Reference Testing? Retrieved on 15<sup>th</sup> May, 2012 from

<http://www.valparint.com/CRITERIO.HTM>

Writing Guide: Survey Research. Retrieved on 13/07/2011

<http://writing.colostate.edu/guides/research/survey/>



## APPENDICES

### Appendix A:

#### i. TEACHER'S QUESTIONNAIRE

This questionnaire is designed purposely to seek information for a very important research in the field of academia. May you kindly read through each of the items carefully and indicate your candid opinion or responses that express your view(s) on each of the issues raised. Moreover, every piece of information you give will be accorded the needed confidentiality. The researcher therefore entreats you to be candid in whatever information you will provide in relation to the questions asked. Thank you.

Please tick [] your response

1. Gender:      Male []      Female []
2. Number of years in present school
  - i) under 3 years      []
  - ii) 3 – 5 years      []
  - iii) 6 – 10 years      []
  - iv) 10 years or more      []
3. Location/Setting of school;    Rural []    Urban []    Semi-urban []
4. Has your school organized School Performance Appraisal Meeting (SPAM) in the past two years?  
Yes    []                      No    []

5. How regular is the SPAM in your school?

i) Once a term [     ]

ii) Twice every year [     ]

iii) Once every year [     ]

iv) Once every two years [     ]

6. Were there any suggestions or decisions made in improving mathematics during the SPAM?

Yes [     ]                      No [     ]

7. State TWO of the decisions made in improving Mathematics during the SPAM meeting.

.....

.....

.....

.....



8. What have you done differently in your class as a result of the discussions you participated in at SPAM meetings?

.....

.....

.....

9. Are the results of SEA tests discussed during your SPAM meetings?

Yes [     ]                      No [     ]

10. If yes, what are some of the issues raised?

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

11. Tick the years in which you participated in conducting School Education Assessment (SEA) in your school:

2006 [ ] 2008 [ ] 2009 [ ]

12. Has your school's participation in SEA changed the way you (as a teacher) conduct your own class assessment?

Yes [ ] No [ ]

13. If yes, what are you doing differently now because of your participation in SEA?

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

14. How will you rate the extent to which SEA and SPAM meetings have improved the performance of your pupils?

To a high extent [ ]

To a moderate extent [ ]

To a little extent [ ]

To a no extent [ ]

15. Which of these items do your school receive from the Municipal Education office after the SEA test has been conducted?

Results of test for each class [ ]

Short report (or feedback) on the test [ ]

District results including that of your school [ ]

16. Do you know the percentage minimum competency level and the proficiency level which has been set to measure the performance in SEA?

Yes [ ] No [ ]

17. If yes, state the percentage of minimum competency level (MCL) and the proficiency level which the performance of SEA is measured?

Minimum competency level .....

Proficiency level .....

18. In the last SEA test conducted, what percentage of your pupils reached the MCL in maths?

BS2.....

BS4.....

Entire school.....

19. What have you (as an individual teacher and/or as a school) done to those who did not reach the MCL to improve their performance?

.....

.....

.....

20. What percentage of them reached the proficiency level in mathematics?

BS2.....

BS4.....

Entire school.....

21. How do teachers in your school monitor pupils' individual performance?

.....

.....

.....

## ii. HEAD TEACHER'S QUESTIONNAIRE

### SECTION A

1. Gender: Male [ ] Female [ ]

2. Number of years in present school

i) under 3 years

[ ]

ii) 3 – 5 years

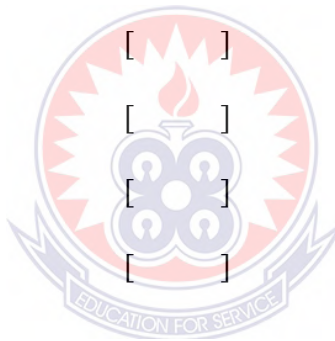
[ ]

iii) 6 – 10 years

[ ]

iv) 10 years or more

[ ]



3. Location/Setting of school; Rural [ ] Urban [ ] Semi-urban [ ]

4. Has your school organized School Performance Appraisal Meeting (SPAM) in the past two years?

Yes [ ]

No [ ]

5. How regular is the SPAM in your school?

i) Once a term

[ ]

ii) Twice every year

[ ]

iii) Once every year

[ ]

iv) Once every two years [ ]

6. Were there any suggestions or decisions made in improving mathematics during the SPAM?

Yes [ ] No [ ]

**SECTION B**

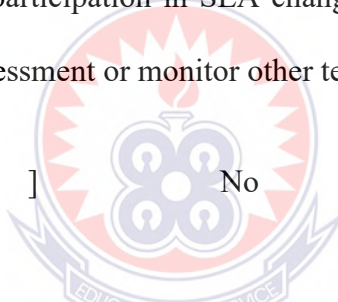
1. How many years have you been in this school?

2. Which years did you participate in conducting School Education Assessment (SEA) in your school?

2006 [ ] 2008 [ ] 2009 [ ]

3. Has your school's participation in SEA changed the way you (as a head teacher) conduct your own class assessment or monitor other teachers?

Yes [ ] No [ ]



4. If yes, what are you doing differently now because of your participation in SEA?

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

5. Which of these items do your school receive from the Municipal Education Directorate after the SEA test has been conducted?

Results of test for each class [ ]

Short report (or feedback) on the test [ ]

District results including that of your school [ ]

6. Do you know the percentage minimum competency level and the proficiency level which has been set to measure the performance in SEA?

Yes [ ] No [ ]

7. If yes, state the percentage of minimum competency level (MCL) and the proficiency level which the performance of SEA is measured?

Minimum competency level .....

Proficiency level .....

8. In the last SEA test conducted, what percentage of your pupils reached the MCL in maths?

BS2.....

BS4.....

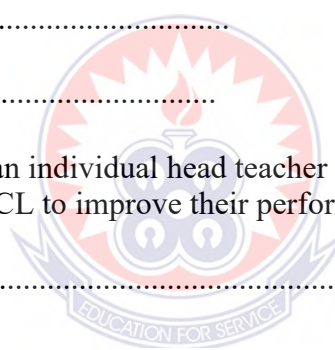
Entire school.....

9. What have you (as an individual head teacher and/or as a school) done to those who did not reach the MCL to improve their performance?

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

10. What plans were put in place to address their learning challenges to reach or cross the MCL?

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





11. Your school has been organizing SPAM meeting over some years, can you please tell me when was the last time your school organized one and what were some of the issues discussed during the SPAM?
  
12. Are the results of SEA test conducted discussed during your SPAM meetings? How would you say SPAM and SEA have improved the performance of pupils in your school?
  
13. Would you also say the participation of your school in SEA has improved or changed the way teachers conduct their class assessment in recent years?



### **iii. CIRCUIT SUPERVISOR'S QUESTIONNAIRE**

This questionnaire is designed purposely to seek information for a very important research in the field of academia. May you kindly read through each of the items carefully and indicate your candid opinion or response that expresses your view(s) on each of the issues raised. Moreover, every piece of information you give will be accorded the needed confidentiality. The researcher therefore entreats you to be candid in whatever information you will provide in relation to the questions asked. Thank you.

Please tick [] your response

SECTION A

1. Gender: Male [] Female []
  
2. Number of years working as a CS in the District Office?
  - i) under 3 years []
  - ii) 3 – 5 years []
  - iii) 6 – 10 years []
  - iv) 10 years or more []
  
3. Location of Circuit Rural [] Urban [] Semi-urban []
  
4. Has your schools in your circuit organized School Performance Appraisal Meeting (SPAM) in the past two years?  
Yes [] No []
  
5. What proportion of school has organised School Performance Appraisal Meeting (SPAM) in the past two years?  
.....
  
6. How regular is the SPAM in your school?
  - i) Once a term []
  - ii) Twice every year []
  - iii) Once every year []
  - iv) Once every two years []

7. Were there any suggestions or decisions made in improving mathematics during the SPAM?

Yes [ ] No [ ]

### SECTION B

1. Which year(s) did you participate in conducting School Education Assessment (SEA) in your school?

2006 [ ] 2008 [ ] 2009 [ ]

2. Have your school's participation in SEA changed the way you supervise and monitor assessment in schools?

Yes [ ] No [ ]

3. If yes, what are you doing differently now because of your participation in SEA?

.....

.....

.....



4. Which of these items do your schools receive from the Municipal Education Directorate after the SEA test has been conducted?

Results of test for each class [ ]

Short report (or feedback) on the test [ ]

District results including that of your school s" [ ]

5. Do you know the percentage minimum competency level and the proficiency level which have been set to measure the performance in SEA?

Yes [ ] No [ ]

6. If yes, state the percentage of minimum competency level (MCL) and the proficiency level which the performance of SEA is measured?

Minimum competency level .....

Proficiency level .....

7. In the last SEA test conducted, what percentage of your pupils in your circuit reached the MCL in maths?

BS2.....

BS4.....

Entire school.....

8. What have you (as an individual supervisor and/or as a circuit) done to those who did not reach the MCL to improve their performance?

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

9. What plans were put in place to address their learning challenges to reach or cross the MCL in the circuit?

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

10. What were some of the issues discussed during your last SPAM?

Were issues on improving of mathematics discussed during the SPAM meeting?

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

11. Are the results of SEA test conducted discussed during your SPAM meetings? How would you say SPAM and SEA have improved the performance of pupils in the circuit?

.....

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12. Would you also say the participation of your school in SEA has improved or changed the way teachers conduct their class assessment in recent years? What is/are the evidence?

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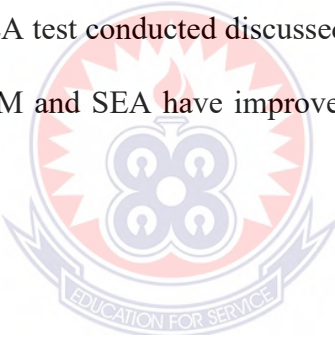
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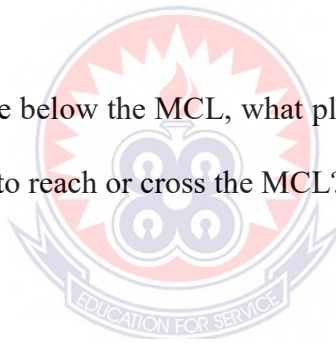
## **Appendix B: INTERVIEW GUIDE FOR HEAD TEACHER**

1. How many years have you been in this school?
  
2. Your school has been organizing SPAM meeting over some years, can you please tell me when was the last time your school organized one and what were some of the issues discussed during the SPAM?  
  
(Were issues on improving Mathematics discussed during the SPAM meeting?—if respondent did not mention such item)
  
3. Are the results of SEA test conducted discussed during your SPAM meetings? How would you say SPAM and SEA have improved the performance of pupils in your school?  
  
The logo of the University of Education, Winneba, is a circular emblem. It features a central design of four interlocking circles forming a cross-like shape, with a sunburst pattern radiating from the center. Below the emblem is a banner with the motto "EDUCATION FOR SERVICE".
  
4. Would you also say the participation of your school in SEA has improved or changed the way teachers conduct their class assessment in recent years?

5. Hope you know the percentage set for the minimum competency level and the proficiency level for the measuring the performance of the SEA test? If so, state the percentage score for the minimum competency level (MCL) and the proficiency level?

Can you tell the percentage of pupils reaching these levels for the last SEA test?

6. The pupils who were below the MCL, what plans were put in place to address their learning challenges to reach or cross the MCL?



### APPENDIX C: Decisions made at SPAM to improve learning of Mathematics

S/No	ITEM	Frequency
1	In-service training should be organized at good interval to update them with new trends. Relevant TLMs should be provided with funds from GES	2
2	Conducting test twice in a week. Conducting of „mental“ every morning before lesson.	1
3	Four types of class activities (say-do-read-write) are integrated to improve mathematics. Using TLMs in lessons.	1
4	Mathematics can be improved by using all necessary methods at instruction. Pupils should fully participate in discussing problems.	1
5	Mathematics should be taught every day. Encourage to use TLMs in teaching mathematics.	1
6	Mathematics to be taught during the extra classes. Mathematics is to be allocated several periods on the timetable.	1
7	„Mental“ should be organised at least twice a week. Text books and materials should be available to schools to make teaching easy and understandable.	1
8	New teaching materials were introduced.	2
9	Organization of maths Quiz and Prize given to those who win.	2
10	Provision of TLMs by GES or from PTA funds. Using the contact hours effectively by pupils and teachers.	1
11	Relevant TLMs should be used in teaching mathematics. Syllabus should be revised to suit and make lesson objectives more relevant.	1
12	Supervision by head to be intensified. The use of concrete materials as TLMs is encouraged.	1
13	Teachers are advised to give adequate class exercise. Teachers to use child centred activities.	2
14	Teachers are advised to monitor pupils while doing class exercises. Teachers to use child centred activities.	2
15	Teachers should monitor pupils work in class and give support. Teachers should give adequate home work for pupils to do.	1
16	Teachers should use TLMs in teaching mathematics. More exercises should be given.	1
17	Teachers were tasked to make learning of mathematics easier and understandable by using TLMs. Teachers to vary their teaching methods. Teachers to set targets to work at them.	1
18	TLMs should be provided regularly. Text books must be available at all times.	1
19	Use of TLMs in teaching in teaching mathematics. Use activity method in lessons.	1
20	Use of TLMs in teaching. Extra time should be allotted to teaching of maths by teachers.	2
21	Use TLMs in teaching mathematics. Teachers were made to set targets during SPAM.	2
22	Use TLMs to teach mathematics. Help students to understand some concept in some topics.	1
	Total	29



**APPENDIX D: Actions taken by Teacher to improve learning after participating in SPAM**

S/NO	ITEM	Frequency	Percentage
1	Avoid gender bias when assigning duties to pupils. Distribute questions evenly to both boys and girls.	1	1.9
2	Change presentation of my lesson and have introduced different teaching and learning activities during lesson delivery.	1	1.9
3	Teaching and learning mathematics. On the job in-service training should be organized for teachers regularly to up date	1	1.9
4	Encourage pupils to practise every day for perfection.	1	1.9
5	Encourage to share their ideas on new topics.	1	1.9
6	Encouraging pupils to practise every day.	1	1.9
7	Engaging pupils in every lesson delivery.	1	1.9
8	Extra classes are held after school for low achievers.	1	1.9
9	Give pupils more homework to do.	1	1.9
10	Giving more home work. Group work and discussions.	1	1.9
11	Grouping pupils based on ability. Using more TLMs and allow pupils participant greatly in lessons.	1	1.9
12	I have encouraged my pupils to practise every day to make them perfect.	1	1.9
13	Improvisation of relevant TLMs and making teaching as practical as possible	1	1.9
14	Introduction of mental in Mathematics.	1	1.9
15	I use simply method to teacher so as pupils will understand better.	1	1.9
16	Made pupils work in groups to help themselves. Made pupils explore and find solution to some problem.	1	1.9
17	Make pupils work in group.	1	1.9
18	Make pupils work in groups.	1	1.9
19	Organise mental at least twice a week.	1	1.9
20	Organising extra and remedial classes to help the slow learners.	1	1.9
21	Remedial lessons should be done for mathematics after classes.	1	1.9
22	Use activities that will involve children participation in lessons.	1	1.9
23	Use and improvised appropriate TLMs where necessary to enhance pupils understanding and participation in class.	1	1.9
24	Use of more concrete materials in teaching Mathematics.	1	1.9
	Total	24	45.6

**APPENDIX E: Actions taken by teacher after participating in SEA**

S/NO	ITEM	Frequency	Percent
1	Do a lot of rational teaching and set questions which need critical thinking.	1	1.9
2	Focus on the learning needs of pupils and on low performing pupils to reach good levels	1	1.9
3	Giving daily home work. Marking class work as they are working. Rewarding the up and doing pupils.	1	1.9
4	Giving students class test and home work	2	3.8
5	I encourage pupils to learn.	1	1.9
6	I supply answer sheet to pupils during the examination.	1	1.9
7	My focus is on the learning needs of the pupils and also on low performances.	1	1.9
8	Questions are set at the level of the class as compared to SEA.	3	5.7
9	Questions must be set according to their standard.	1	1.9
10	Some of the SEA test items are general so it helps me discuss general questions with my pupils.	1	1.9
11	Teach lessons into details rather than the shallow teaching I used to do. Pupils are given more time to practise to boost their understanding rather than get more exercise to please CS.	1	1.9
12	Working hard to improve upon pupils reading and hand writing skills.	1	1.9
	Total	15	28.5

**APPENDIX F: Actions taken by Teachers to improve performance of pupils below MCL**

S/No	ITEM	Frequency	Percent
1	Change some teaching methods and give more individual assignments than group assignment.	1	1.9
2	Encourage pupils to study hard and give them adequate home work.	3	5.7
3	Encourage them to learn hard.	3	5.7
4	Enough attention is given to the low learners to assist them to raise their standard.	2	3.8
5	Enough time is given to them both in and out of the class for them to learn at their own pace.	1	1.9
6	Extra class was organized for them.	3	5.7
7	I adopted a new method to teach others to reach the minimum competency level.	1	1.9
8	Special class is organized for them to understand the lessons.	2	3.8
9	Special attention should be paid to the pupils who have problems in the study of the subject.	1	1.9
	Total	17	32.7



**APPENDIX G: Actions taken by head teacher to improve performances of pupils' low performance.**

S/No	ITEM	Frequency	Percent
1	I encourage the pupils to learn header and also advise the teachers to conduct extra classes for such pupils.	1	10
2	I discussed with my teachers to have or give extra effort to raise the standards of the low achievers by instituting extra classes and remedial teaching.	1	10
3	I have asked the teachers and the pupils to improve upon their work.	1	10
4	I have instructed my teachers to give extra tuition.	1	10
5	Much attention is given to those pupils in normal class as well as extra classes.	1	10
6	Reading is enforced in the school.	1	10
7	Special attention is given those pupils to improve their performance.	1	10
	Total	7	70

**APPENDIX H: Plans put in place head teacher to address their learning challenges of pupils**

S/No	ITEM	Frequency	Percent
1	Advise them to be serious with their books and to read more story books.	1	10
2	More attention is given to them and also study with their mates who perform better in class.	1	10
3	Parents are advised to buy materials needed for their wards to perform well. Teachers are also advised to put up their best.	1	10
4	Pupils are encouraged to read more.	1	10
5	Teachers to have enough time for the learners. Enough class work and home/project work should be assigned pupils. Teachers to vary their method of teaching.	1	10
6	We set up target above the previous percentage.	1	10
	Total	6	60

**APPENDIX I: Things head teachers do differently because of their participation in SEA**

S/NO	ITEM	Frequency	Percent	Cumulative Percent
1	I encourage my teachers to do more effective work than previously done.	1	12.5	12.5
2	I have been going around supervising teachers work.	1	12.5	25
3	Monitor teachers effectively. It has help the upper primary.	1	12.5	37.5
4	Pupils are using the shading materials to be conversant with that of the SEA.	1	12.5	50
5	Teachers are made to set targets so as to work extremely hard to improve standards of learners.	1	12.5	62.5
6	The school uses the SEA test item as a guide when setting end of term examination.	1	12.5	75
7	To ensure regularity and punctuality on both teachers and pupils. Examination questions are set to the standard	1	12.5	87.5
8	We set targets.	1	12.5	100
	Total	8	100	