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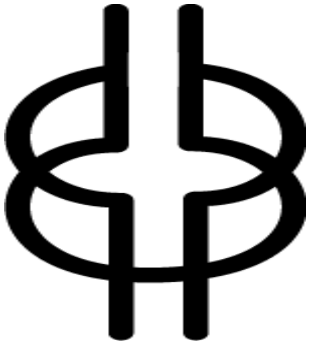

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Editorial Comment

The Ghana Journal of Education: Issues and Practice (*GJE*) is a peer reviewed journal which focuses on classroom practice and policy issues that affect teaching and learning. In this volume, researchers and authors have contributed a wealth of high quality and informative material to the journal. This volume contains seven articles that have gone through peer review process at three levels by independent reviewers.

Sally Diviner Yaa Adzaku, Godwin Awabil and Linda Dzama Forde investigate the effects of study skills counselling on the study behaviour of Senior High School students in the Ho Municipality of Ghana, using the quasi-experimental, pre-test and post-test control group design. Their study shows amongst others, that skills counselling significantly improves the study behaviour of Senior High School students and recommend that study skills counselling be adopted as a viable approach for improving study behaviour among senior school students so as to enhance their academic achievement.

Mathew Sola Aletan and Olaotan Oladele Kuku explore the effectiveness of frequency of testing on test anxiety and academic achievement in mathematics among Secondary School II students in Ogun State, Nigeria, using The Mathematics Achievement Test (MAT) and Mathematics Anxiety Rating Scale (MARS) instruments. The findings show that there were significant differences in the mean scores of students experiencing test anxiety and their achievement in Mathematics as a result of exposing them to varying test frequencies. The authors recommend a periodic testing of every two weeks for students experiencing poor achievement in Mathematics and weekly testing for students experiencing test anxiety.

George Ekem-Ferguson, Emmanuel Kofi Gyimah and Joseph K. Ofosuhene-Mensah investigate the relationship between depression, complication of disease and quality of life of type 2 Diabetes Mellitus patients in selected hospitals in the Central Region of Ghana using 307 Diabetes patients from 4 hospitals across the Central Region of Ghana. The authors report of a significant difference between complications of disease and the quality of life of type 2 diabetic patients. They provide educational implication of their study and highlight the need for parents

and teachers to ensure that they take good care of their health in order to prevent diabetes.

Canice Enuma Okoli and Theresa Ucheoma Ettu investigate the effects of three counselling interventions on attitude to, and involvement in bullying among Four hundred and twenty students drawn from twelve Senior Secondary students in Owerri, Nigeria. The findings show that the counselling interventions successfully modified students' attitude to bullying. They report of reduction in students' involvement in bullying as a result of counselling interventions and recommend that an anti-bullying policy be formulated at both junior and secondary school levels.

Phyllis Agyeman Nyarko investigates Management Support Services in Public Colleges of Education in the Ashanti Region of Ghana, using all tutors and all principals. Findings show that some of the common Management Support Services include orientation for new tutors and performance appraisal to inform the activities of tutors.

Eugene Yaw Milledzi, Gabriel Keney and Mark Owusu Amponsah employ a mixed method design to examine the influence of the school feeding programme on access to basic education in the South Tongu district in the Volta Region, Ghana. The results of the study show that the school feeding programme has a significant influence on increased enrolment, attendance and retention of pupils in the South Tongu district. The authors report of challenges associated with the implementation of the programme such as pressure on teaching and learning resources as well as increased teacher-pupil ratio and recommend the need for the government, implementation ministries and agencies to increase the existing human, physical and financial resources for the school feeding programme to be sustained.

Frank Ackon investigates the views of Junior High School (JHS) students and their parents about TVET in Cape Coast metropolis of Ghana, using questionnaire survey. The results of the study show the JHS students' response generally indicated negative perception towards TVET, while their parents' response generally indicated positive perception of TVET. The author provides interesting discussion and recommendations to encourage students' participation in TVET.

Jonathan Osae Kwapong investigates the internal consistency reliability of the scores that students of Colleges of Education in Ghana obtain for the Diploma in Basic Education examination in three courses

namely: FDC 121 English, FDC 122 Mathematics and FDC 124 Integrated Science, using scripts of 600 students for each examination paper from 12 Colleges of Education. The findings show that candidates' performance is reasonably consistent across items on each test paper.

The editorial team is grateful to all reviewers for the useful feedback they offered on the papers they reviewed and the level of professionalism they exhibited through the review process. To the Provost of the College of Education Studies, University of Cape Coast, the team would like to say a big thank you for the continual financial and logistical support which made the publication of this edition possible.

Ernest Kofi Davis, PhD
(Editor-in-Chief)

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Improving the Study Behaviour of Ghanaian Senior High School Students through Counselling

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Abstract

Despite the importance of study skills counselling, students in Ghana are not explicitly taught how to study. This study, therefore, explored the effects of study skills counselling on the study behaviour of senior high school students in the Ho Municipality of Ghana. The quasi-experimental, pre-test, post-test control group design was adopted for the study. The target population of the study consisted of all senior high school form one students. A sample of 40 respondents was selected through the simple random sampling technique. A study behaviour inventory was used in gathering the data. Three hypotheses were formulated and tested at 0.05 level of significance. Data were analysed using independent samples t-test. The findings revealed that study skills counselling significantly improved the study behaviour of participants when compared with the control group. It was also discovered that study skills counselling had significant effects on all the five components of study behaviour at post-test. In contrast, the results indicated that gender did not have significant influence on study behaviour at post-test. Based on the findings, it was recommended that study skills counselling be adopted as a viable approach for improving study behaviour among senior school students so as to enhance their academic achievement. Implications for counselling were also provided.

Key words: Study skills; counselling; study behaviour; quasi-experimental; senior high school students.

Introduction

Study behaviour or habit is one important factor influencing the academic performance of students. Good study behaviour facilitates academic success while poor study behaviour retards it (Awabil, Kolo, Bello & Oliagba, 2013b). The world over, effective study behaviour is the gateway to academic success. Poor study behaviour can bar even bright students from many important opportunities that would otherwise enable them to realize their potential. Experiences at the senior school level have shown that studying presents problems to students in various forms. Most students have the eagerness to study but do not know how to study effectively. This implies that students need counselling in their studying efforts (Musingafi & Zebron, 2014). Ogbodo (2010) also observed that the major problem contributing to students' poor performance in tests and examinations is lack of proper study behaviour. For students to form good study behaviour there is the need to teach them effective study skills.

It is important to note that study skills are not synonymous with study behaviour. According to Crede and Kuncel (2008), study skills refer to the student's knowledge of appropriate study strategies and methods and the ability to manage time and other resources to meet the demands of academic tasks, whereas study behaviour typically denotes the degree to which the student engages in regular acts of studying that are characterised by appropriate studying routines (e.g. reviews of materials and self-testing) occurring in an environment that is conducive to studying. Bliss and Mueller (1987) had earlier distinguished between the two terms. They posited that study skills are the potentials for action while study behaviours are the observed actions themselves. A student may have all the skills required, that is, he or she may be able to take good notes in class (possession of a study skill) but simply sit in class doodling (lack of a study behaviour).

Furthermore, Kerka (as cited in Awabil, 2016) defined study skills as learning strategies that help students organise, process, and use information effectively. Gettinger and Seibert (2002) also stated that study skills are viewed as academic enablers; they function as critical tools for learning. Kagu (2001) cited a number of important study skills such as planning and organising time for study, concentrating during hours of study, note-taking and use of library. Awabil (2016) also cited consultation, reading, writing, and finding and organising information,

time management, note-taking and test-taking as the necessary skills for good academic performance.

Awabil (as cited in Awabil, 2016) opined that study skills counselling is a technique which exposes students to effective study strategies in order to facilitate the development of good study behaviour. Gettinger and Seibert (as cited in Awabil, 2016) have indicated that effective study skills instruction can promote academic excellence. They cited four importance of study skills counselling as indicated below:

1. Through study skills counselling or instruction, students become more efficient, thoughtful and independent learners.
2. Even students who develop study skills on their own can learn to study more effectively and efficiently through explicit instruction.
3. Generally, study skills counselling has been shown to improve academic performance.
4. Research indicates that students require explicit instruction in study skills; individuals assigned randomly to control conditions tend not to acquire or use study strategies on their own without training (Gettinger & Seibert, 2002).

Despite the importance of study skills counselling, students in Ghana are not explicitly taught how to study. Teachers present their lessons without providing students with the methods to use in mastering the information taught. A major reason why students are not taught how to study could be due to the mistaken belief that students can learn effectively without receiving instruction on study skills. But it is not every student who can attain academic success without explicit instruction on study skills. A student may have the academic ability to benefit from formal education but may not know how to study effectively. The lack of training on study skills has adversely affected the academic performance of students in schools, colleges and universities (Awabil, 2016). The case of students in senior high schools in the Ho Municipality in the Volta Region is no exception. For instance, in 2013, only 14.5 % and 38 % of the students in Shia Senior High School and Sokode Senior High School in the Ho Municipality qualified to apply for admission into tertiary institutions respectively (Ho Municipal Education Office, 2014). Although factors such as inadequate motivation for teachers, low motivation for learning and

emotional problems contribute to poor academic performance, poor study behaviour has been consistently identified by researchers (e.g. Azeez as cited in Kagu, 2001; Yahaya, 2003) as the most important factor. Therefore, an improvement of the study behaviour of students in these schools through counselling may translate into better academic performance.

In addition, several experimental studies have been conducted in Nigeria (e.g.Yahaya, 2005; Olayinka, 2008; Ohanaka & Ofuani, 2010; Abdullahi, Atsua, Amudu & Ago, 2013) to improve study behaviour of senior high school students using counselling with the view to enhancing academic achievement. But in Ghana, it appears no experimental study has been carried out to improve study behaviour of students at the senior high school level. Studies done on study behaviour among senior high school students, for example, Quist, Nyarko-Sampson and Essuman (2006), Quist and Nyarko-Sampson (2006), Mensah-Okyere, Atta and Essuman (2007) and Akagah (2011) are descriptive, non-experimental in nature. The current study is experimental in nature, thereby bridging the gap identified.

Objectives

The objectives of the study were to:

1. determine the effect of study skills counselling on the broad study behaviour of students;
2. ascertain the effect of study skills counselling on each of the components (i.e. time management, concentration, note-taking, consultation, reading and library use) of student study behaviour;
3. find out the influence of gender on the broad study behaviour of participants in the experimental group.

Hypotheses

The following null hypotheses were formulated to guide the study.

1. There is no significant effect of study skills counselling on the study behaviour of students.
2. There is no significant effect of study skills counselling on the five (5) components (i.e. time management, concentration, note-

taking, consultation, reading and library use) of student study behaviour.

3. There is no significant difference in the study behaviour of participants in the experimental group on the basis of gender.

Methodology

Research Design

A pre-test, post-test quasi-experimental control group design was adopted for the study. According to Kolo (2003), the quasi-experimental design involves the manipulation of one or more independent variables, but there is no random assignment of subjects to conditions. The design of this study comprised two groups. The first group constituted the experimental group and, therefore, was exposed to study skills counselling while the second group which served as the control group was not.

Population

The target population of this study comprised all senior high school form one students in the Ho Municipality while the accessible population was made up of all Form 1 students in two Schools, namely, Sokode Senior High School and Shia Senior High School. The target and accessible population were 8,978 and 569 respectively.

Sample and Sampling Procedure

Simple random sampling technique was employed in selecting two schools out of the seven available for the study. A study behaviour inventory was administered to all form one students in the two schools. Out of 165 students who met the inclusion criterion **(**i.e. those who scored 101 or above on the inventory), 40 were randomly selected to constitute the sample using simple random sampling. Each group had 20 participants (10 males and 10 females). Before undertaking the study, the researchers obtained ethical clearance from the Ethical Review Board of the College of Education Studies, University of Cape Coast, Ghana. Other ethical issues observed included informed consent and confidentiality.

Instrumentation

The Study Behaviour Inventory (SBI) was used to generate pre-test and post-test scores on study behaviour of the students. The SBI was adapted from the Study Habit Survey developed by Essuman (2006). Five out of the 10 scales were used for the study. The SBI consisted of 40 items with a 5-point Likert-type scale of Very True=5, True=4, Somewhat True=3, Not True=2 and Not At All True=1. The five scales of the SBI were time management, concentration, consultation, note-taking, reading and use of library. A score of 101 or above is an indication that an individual has deficient study behaviour. The interpretation is that the higher the mean score the poorer the study behaviour and vice versa. The face and content validity of the SBI was ascertained by experts in guidance and counselling at the University of Cape Coast, Ghana. The instrument was administered to 30 senior high school students outside the study area so as to estimate the reliability of the instrument. The Cronbach's coefficient alpha was 0.89.

Treatment Procedure

There was pre-test and post-test in the study for both the control and the experiment group. After the pre-test phase, a treatment was applied to the experimental group to improve students' study behaviour while the control group did not receive any form of treatment. After 8 weeks of introducing the treatment to the experiment group, both the control and the experiment group were subjected to a post-test to determine the effect of the treatment on study behaviour. The treatment procedure had three components, namely, pre-treatment, treatment and post-treatment phases.

Pre-treatment Phase

During the pre-treatment phase, the SBI was administered to all the form one students in the two senior high schools. The researchers found that 165 met the inclusion criterion as indicated earlier. Forty students were randomly selected and put into two groups, 20 each (10 males and 10 females) according to their schools.

Treatment Phase

There were eight counselling sessions in all. The researchers carried out the counselling sessions for one hour twice in a week for

eight consecutive weeks. The details of each session have been spelt out below:

Session 1: Establishing the counselling relationship

The issues dealt with were rapport building, objectives of the counselling intervention, and setting rules to govern behaviour during the sessions.

Session 2: Time management

This session focused on counselling students on time management. Participants were allowed to discuss the problems associated with managing their study time. In addition, the researchers together with the participants discussed the purpose of effective time management and ways of improving time management.

Session 3: Concentration

To introduce concentration as a study skill, participants were asked to mention where they prefer to study and give reasons. The researchers assisted the participants to discuss effective ways of concentrating during study.

Session 4: Note-taking

Participants were asked to brainstorm on the concept of note-taking. The researchers helped them to discuss the purpose of note-taking. Participants were also introduced to methods of note-taking. The researchers asked participants to take notes in a subject area of their choice and bring up for discussion in the next session.

Session 5: Use of library

Participants were made to share their experiences regarding the purposes of libraries and strategies they employ in making use of the school library. After sharing their experiences, the researchers assisted them to identify effective strategies for using the library.

Session 6: Consultation

Participants were asked to explain consultation. After that they were made to outline their sources of support whenever they encounter academic challenges. Steps to be followed when consulting peers, teachers and parents were stated and discussed.

Session7: Reading

The researchers elicited from participants the strategies they use to read. After that they were guided on the use of the SQ3R technique so as to promote effective reading among participants. SQR3 stands for survey, question, read, recite and revise or review.

Session 8: Review of past sessions

During this session participants were helped to review the preceding sessions before the entire intervention was evaluated. Participants were encouraged to practice the skills taught.

Post-treatment Phase

Two weeks after the study skills counselling, the SBI was re-administered to participants so as to collect post-test data from the groups. The objective was to determine the effects of the treatment on the study behaviour of participants.

Method of Data Analysis

The data were analysed using the independent samples t-test. The level of significance was set at 0.05.

Results

Hypothesis 1: There is no significant effect of study skills counselling on the study behaviour of students.

The purpose of this hypothesis was to find out whether significant difference exists between the experimental and control group on study behaviour at post-test. This hypothesis was tested using independent samples t-test. The results are presented in Table 1.

Table 1: Independent samples t-test of Post-test Scores of Control and Experimental Groups

Groups	N	Mean	SD	df	t-value	Sig (2-tailed)
Control	20	127.1	30.92	38	7.153	.000
Experimental	20	81.15	18.79			

Significant, $p<0.05$

Table 1 shows that the p value of .000 is less than the 0.05 level of significance which indicates that there is a significant effect of study skills counselling on study behaviour at post-test ($t= 7.153$, $df= 38$, $p=.000$, 2-tailed). As a result of this, the null hypothesis is rejected. This finding means that the experimental group has improved significantly in their study behaviour when compared with the control group.

Hypothesis 2: There is no significant effect of study skills counselling on the five (5) components (i.e. time management, concentration, note-taking, consultation, reading and library use) of student study behaviour.

The objective of this hypothesis was to determine whether significant difference exists between the experimental and control groups on each of the five dimensions of study behaviour at post-test. Independent samples t-test was used to test hypothesis 2. The results are shown in Table 2.

Table 2: Independent samples t-test on Post-test Scores of Control and Experimental Groups on the basis of five components of study behaviour

Dimensions	Groups	N	Mean	SD	df	t-value	Sig (2-tailed)
Time Management	Control	20	27.95	5.91	38	7.351	.000
	Experimental	20	16.50	3.69			
Concentration	Control	20	24.95	6.53	38	5.523	.000
	Experimental	20	15.65	3.76			
Note Taking	Control	20	24.90	7.35	38	4.925	.000
	Experimental	20	15.70	3.98			
Consultation	Control	20	25.35	5.88	38	5.490	.000
	Experimental	20	16.35	4.38			
Reading and Library Use	Control	20	23.95	5.25	38	5.188	.000
	Experimental	20	16.95	2.98			

Significant, $p<0.05$

Table 2 shows that across all the five components of students' study behaviour, the p values are less than the 0.05 level of significance implying that there are significant differences in the mean scores on all dimensions of study behaviour between the experimental and control groups at post-test. In view of this, the null hypothesis which states that there is no significant effect of study skills counselling across the five components of study behaviour is rejected. This result means that the

experimental group has improved greatly in all components of study behaviour when compared with the control group.

Hypothesis 3: There is no significant difference in the study behaviour of participants in the experimental group on the basis of gender.

The purpose of this hypothesis was to find out whether significant difference exists in the study behaviour of participants in the experimental group at post-test on the basis of gender. In testing this hypothesis, the independent samples t-test was computed to ascertain whether significant difference exists. The results are presented in Table 3.

Table 3: Independent samples t-test on Post-test Scores of Experimental Group on the basis of Gender

Groups	N	Mean	SD	df	t-value	Sig (2-tailed)
Male	10	78.40	6.910	18	-.874	.394
Female	10	84.10	5.183			

Table 3 shows that there is no significant difference in the study behaviour of participants in the experimental group on the basis of gender at post-test (t= -.874, df= 18, p=.394, 2-tailed), since the p value of 0.394 is greater than the 0.05 level of significance. Consequently, the null hypothesis is retained. It, therefore, means that gender is not a significant determinant of students' study behaviour.

Discussion of Findings

The study revealed that significant difference exists between the experimental and control groups on study behaviour at post-test. This finding confirms the findings of Kagu (as cited in Kagu, 2004), Olayinka (2008) and Awabil, Kolo, Bello, and Oliagba (2013a) who found that there was a significant difference between the post-test scores of participants in the control and experimental groups regarding study behaviour. Again, the findings are consistent with the findings of Awabil, Kolo, Bello and Oliagba (2013b) who studied the effect of study skills counselling on the five dimensions of the study behaviour, namely, time management, note-taking, concentration, consultation, reading and library use and discovered that there were significant differences in the post-test scores of the control and experimental

groups across the five components of study behaviour. The reason for the current finding could be due to the fact that participants strongly desired to improve their academic performance through the acquisition of good study behaviour.

The result further showed that there is no significant difference in the mean scores on study behaviour at post-test with respect to gender. The findings of the current study are in line with the findings of Awabil et al., (2013a) that there was no significant difference between the study behaviour of male and female participants in the experimental group at post-test. In a similar vein, the findings of the current study give support to the findings of Kagu (2003) and Ohanaka and Ofuani (2010) that there was no significant difference in the post-test scores on the study behaviour of male and female students. The reason for this finding may be as a result of the fact both genders had similar level of motivation to receive counselling to improve their study behaviour, hence the lack of significant difference**.** The implication is that gender is not a barrier to counselling on study behaviour, since neither of the sexes responded significantly different to the counselling intervention.

Conclusions and Recommendations

Based on the findings, the following conclusions and recommendations are made.

Study skills counselling is effective in improving study behaviour. Again, gender is not a significant determinant of the study behaviour of students. It is recommended that counsellors should organise study skills counselling for students to enable them to improve their study behaviour so as to enhance their academic performance. Teachers should also provide study skills instruction to students on time management, concentration, note-taking, consultation, reading and library use and other study strategies with the viewing to improving student study behaviour. It is also recommended that study skills counselling can be carried out without gender consideration, since gender did not have significant influence on study behaviour at post-test.

Implications for counselling

The current findings have a number of implications for the practice of counselling and the education of counsellors. Since the counselling intervention was effective, counsellors should adopt the treatment plan in order to improve study behaviour in schools, colleges and universities. Again, counsellors should organise seminars and workshops on study skills for teachers with the view to equipping them with knowledge and skills on how to improve study behaviour. Consequently, teachers would be able to assist in the provision of effective study skills training for students. Finally, study skills should be included in the curricula of counsellors and teachers so that upon completion they could transfer the skills to their students.

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Effectiveness of frequency of Testing on Anxiety and Achievement in Mathematics among Secondary School Students in Ogun State, Nigeria

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Abstract

Achievement Testing is the general means of finding out how much the students have learnt, but it could lead to test anxiety, which may affect students' achievement. Thus, this study examined the effectiveness of frequency of testing on test anxiety and academic achievement in mathematics among secondary school students in Ogun State, Nigeria. Four research hypotheses were postulated to direct the study. Quasi experimental pre-test/post-test control group research design was used for the study. The population of the study comprised all Senior Secondary II Students in Ogun State. The sample for the study comprised 157 (76 male and 81 female) Senior Secondary II students selected using multistage sampling process. The study used five Schools as experimental groups and each of these schools was tested at varying test frequencies. The Mathematics Achievement Test (MAT) and Mathematics Anxiety Rating Scale (MARS) were the instruments used for collecting data for the study. The data generated were analysed using Analysis of Covariance (ANCOVA), tested at 0.05 level of significance. The findings showed that there were significant differences in the mean scores of students experiencing test Anxiety and Achievement in Mathematics as a result of exposing students to varying test frequencies. In addition, the study revealed that gender was not a significant factor when planning to moderate students' Mathematics Anxiety and improving Achievement in Mathematics. A periodic testing of every two weeks was recommended for students experiencing poor achievement in Mathematics. Also, weekly testing was recommended for students experiencing test anxiety.

Key words: Frequency of Testing, Test Anxiety, Academic Achievement, Gender.

Introduction

Test is used for several purposes in the school system. Some of the most important purposes a test serves include the measurement of skills and knowledge learnt after instructions, reporting instructional progress in a subject area which serves as a basis for the evaluation of learners' academic progress and determining learners' difficulties during lessons for the teachers to assist. However, giving such test often trigger anxiety which can affect the academic achievement of students (Kuku, 2016). Despite the importance of a mild level of anxiety which could drive learners towards better performance, some learners often feel intense nervousness such that it affects learners' mood during testing and achievement in school subjects (Aletan, 2000).

Mathematics is an importance school subject which has great impact and application to learners' immediate environment, employability and the development of a nation. However, several researchers have reported an inverse relationship between test anxiety and academic achievement (Yara, 2009; Zaheri, Shahoei, & Zaheri, 2012; Iroegbu, 2013; Park, Ramirez & Beilock 2014; Kuku, 2016). Seligman, Walker and Rosenthal (2001) perceived anxiety as a physiological state characterized by cognitive, somatic, emotional and behavioural components which combine to create sweating, dizziness, headaches, racing heartbeats, nausea, fidgeting, drumming on a desk, fear, apprehension and worry. Test anxiety can be perceived as behavioural changes such as uneasiness or apprehension experienced before, during or after examination (Kuku, 2016). Poor learning or study habit may lead to test anxiety (Yara, 2009), while test anxiety negatively affects academic achievement.

Alade and Kuku (2017) observed that the extent to which classroom activities and learning take place is judged using the students' academic achievement. Nuthanap (2007) denotes academic achievement as the knowledge attained and skill developed in the school subject, usually designated by test scores. Besides, the achievement of students in their secondary school certificate examination with at least credit level pass determine if their achievement can further be used for higher studies as well as for employment. However, students' achievements in mathematics have

been low despite the importance of the subject on individual learner and the nation.

Table 1*:* Statistics of May/June (Senior Secondary Certificate Examination) Mathematics Performance (Nigeria) From 2010 to 2014

Year	Total Entry	Total Pass at Credit Level and Above	Percentage Pass
2010	1,351,557	534,841	40%
2011	1,540,250	587,630	38%
2012	1,672,224	649,156	39%
2013	1,543,683	889,636	58%
2014	1,692,435	529,427	31%
Average	1,560,030	638,138	41%

Source: West African Examination Council, Research Division Annual Reports.

Students' low achievement in mathematics is evident in the West African Examination Council's report between 2010 and 2014 presented in Table 1, which shows that out of an average enrolment of 1.5 million entrants, an average of 41% had credit pass and above. The low achievement in mathematics in West African Senior Secondary Certificate Examination (WASSCE) has been great concern to stakeholders. Maliki, Ngba and Ibu (2009) reported that the poor performance in mathematics over the years has been attributed to the fact that the subject is difficult as well as students' performance in the mathematics test vary from person to person and from school to school. However, studies have proved that test anxiety varies negatively with academic achievement.

Achievement test given to students is part of assessment and the method of usage may vary across schools. Assessment measures if and how students are learning and if the teaching methods are effectively relaying the intended messages (Kuku, 2016) and it is a process through which the quality of an individual's work or performance is judged (Mwebaza, 2010). Assessment techniques include test, project, observation, sociometric rating scale, checklist, inventory and questionnaire. Test is carried out during and at the end of the term. Before the use of continuous assessment in Nigeria

secondary schools, one-shot examination was in use. It involves administering test at the end of the term or the school year. Its several defects which include poorly accounting for students' cognitive, affective and psychomotor abilities throughout the entire academic period led to the introduction of continuous assessment (Obioma, 1984; Ononyumolo, 2012; O'Kwu & Orum, 2012). However, Section 1 of the National Policy on Education (Federal Republic of Nigeria, 2013), which deals with the philosophy and goals of Education in Nigeria, paragraph 9(g) states that "educational assessment and evaluation shall be liberalised by their being based in whole or in part on continuous assessment of the progress of the individual" (p.9).

In the school system, when using test (which is an assessment tool), it could be observed that giving students continuous short tests and exams during the school year should not put students under great pressure as final examination does at the end of the term and during school certificate examination. Therefore, every institution (primary, secondary and tertiary) spelt out the weight of Continuous Assessment out of the entire hundred percent score (100) in each subject taken. Continuous Assessment is usually either thirty (30%) or forty (40%) of the entire one hundred (100%) score in every subject taken during the term. These efforts can be seen to be able to provide the necessary feedback required in order to maximize the outcomes of educational efforts and programmes. The assessment of students' learning provides the objective evidence necessary in the decision making process in education.

As a result of the frequent feedback for the teachers and students during instruction, students' test anxiety would be mild and improved achievement will be experience if the students are tested frequently. The Nigerian National Policy on Education support the use of test as one of the continuous assessment tools, but have not specified the ideal rate to test learner such that anxiety experienced during mathematics test is mild as well as improvement in achievement. It against this backdrop that this study intends to study the ideal frequency students should be tested in other to achieve greater achievement in mathematics test and moderation in students' anxiety during testing.

Research Hypotheses

The following hypotheses guided the study:

1. Test anxiety scores will not significantly differ among students exposed to the varying frequency of test.
2. There is no significant difference in the achievement scores in mathematics of students exposed to varying frequency of test.
3. Test anxiety scores will not differ significantly among students exposed to the varying frequency of test due to gender.
4. Achievement scores in mathematics will not significantly differ among students exposed to the varying frequency of test due to gender.

Methodology

The research design adopted for this study was quasi experimental pre-test/post-test control group. The quasi experimental pre-test/post-test control group design was considered appropriate for the study due the introduction of intervention (which is testing at varying frequency) and inability to fully randomize. The population of the study consisted of all Public Senior Secondary School Students in Ogun State. The target population was all senior secondary school II students (SS II) in public secondary schools.

Multistage sampling process was used for this study due to different stages undergone to select participants. At the first stage, simple random sampling method was used to select one of the four geo-political regions in Ogun State (that is, Remo, Ijebu, Yewa and Egba). Ijebu geo-political region was selected through hat and draw method. Ijebu geo-political region has six Educational Zones. Five Education Zones were selected through simple random sampling from Ijebu geo-political zone.

The next step of sampling was selecting one co-educational public secondary school from each Local Education Zone through simple random sampling. Four of the five schools selected for the study were used as the periodic testing groups while the remaining one was used as the control group. The assignment of the schools into experimental (periodic testing) groups was randomly done.

Furthermore, a number of criteria were met by the participants before they were deemed qualified for selection into experimental groups. These were:

(1) All the participants scored below forty per cent in their Mathematics Achievement Test (MAT); and (2) The Students scored above sixty per cent in the Mathematics Anxiety Rating Scale (MARS);

The participants who qualified for inclusion in the experimental programme were randomly assigned into the experimental groups as shown in Table 2. Figures in Table 2 describe the number of students who participated in the Baseline assessment (Pre-Testing Periods) and those who actually completed the Periodic Testing Conditions in this study. From Table 2, a total sample of 250 students was pre-tested on the MAT, MARS and SHI instruments. A total of 187 students qualified and started the periodic testing conditions.

Table 2: Distribution of Students in the Baseline Assessment and Experimental Groups

Schools (Testing Groups)	***Pre-Assessment Participants***			***Frequency of Testing***	***Experimental Participants***		
	M	***F***	***Total***		***M***	***F***	***Total***
School A	27	31	58	Weekly Testing	16	17	33
School B	23	26	49	Two Weeks Testing	14	17	31
School C	26	22	48	Three Weeks Testing	16	15	31
School D	22	21	43	Four Weeks Testing	16	16	32
School E	23	29	52	Control (No Test)	14	16	30
Total	***121***	***129***	***250***	***Total***	***76***	***81***	***157***

Note: Male - M, Female - F

However, only 157 students completed the periodic testing programme due to experimental mortality. In addition, of the participants who completed the periodic testing conditions (that is, 157 participants), 76 were male while 81 were female. The distribution of the participants across the five selected schools was as shown in Table 2.

The following research instruments were used to obtain relevant data for the study.

1. Mathematics Achievement Tests (MAT) and
2. Mathematics Anxiety Rating Scale (MARS).

Mathematics Achievement Test was constructed and refined by the researcher. The instrument comprised three sections (Sections A, B and C). Section A aimed at getting the background data of students. Section B had fifty multiple choice items which attracted fifty marks while Section C was the Theory part consisting of three questions which attracted fifty marks. A test blueprint was used to align the content covered, objectives and assessment based on the Ogun State Ministry of Education, Science and Technology First Term Scheme of Work shown in Table 3. However, only the topics taught during the study were included and validated using the Test Blueprint (in Table 3). These items were also validated by experts in Mathematics Education and Measurement and Evaluation. Item analysis was carried out during the pilot study and the indices of difficulty ranged from 0.2 to 0.8. All the discrimination indices were positive values (Ilogu, 2005). Test-retest reliability was used to measure the consistency of the instruments which generated a reliability coefficient of 0.81.

Table 3: The Test Blueprint for the 50-item Multiple Choice Objective Mathematics Test

Item	Topics	School Testing Rate	Week(s) Schedule	Weight (%)	Knowledge 22%	Comprehension 34%	Application 44%	Total
1	Logarithm	A	2	24	3	4	5	12
2	Logarithm	A, B						
3	Circle theorem	A, C	3	22	2	4	5	11
4	Circle theorem	A, B, D						
5	Circle theorem	A						
6	Approximation and error	A, B, C	1	16	2	3	3	8
7	Quadratic equation	A	2	18	2	3	4	9
8	Quadratic equation	A, B						
9	Measure of central tendency	A, C, D	1	20	2	3	5	10
	Total		9	100	11	17	22	50

Mathematics Anxiety Rating Scale Revised by Plate and Parker (1982) was adapted for the study to measure the Mathematics anxiety of participants. The scale has 24 statements and is scored from 1 to 4; where *1* indicates *not at all* ," *2* indicates "*a little* ," *3* indicates "

much " and *4* indicates "*very much"*. There are two factors in the scale. The first factor is the Learning Mathematics Anxiety, which has 14 statements measuring anxiety experienced during activities that deal with learning mathematics. The second factor is the Mathematics Evaluation Anxiety, which contains 8 statements measuring the anxiety experienced during evaluation. The instrument has a minimum score of 22 points and a maximum score of 88 points. The adaptation process involved contextualizing and varying the statements in the MARS into Nigerian education system. The reliability coefficients of the Learning Mathematics Anxiety and Mathematics Evaluation Anxiety yielded 0.79 and 0.75 respective. As a result, the validation process produced an average reliability coefficient 0.77. Besides, the concurrent validity was used to determine the validity of the MARS and the process produced concurrent validity coefficient value of 0.76.

The administration of the instruments lasted for eleven (11) weeks, which occurred in three phases. The instruments were administered to the participants in groups by the researchers with the help of the research assistants. The details of the experiment procedure are as follows:

Phase One: Pre-Testing Periods: On resumption for the first term 2014/2015 academic session, a baseline assessment (or pre-test) was conducted for all the two hundred and fifty students selected across the five secondary schools. The researcher administered the pre-test using MARS and MAT.

Phase Two: Testing Periods: There were five experimental groups. Four groups were exposed to varying frequencies of testing during teaching/instruction in the course of the study, while the fifth group (that is, control group) was not given test. Group one was tested every week. Group two was tested every two weeks. Groups three and four were tested every three and four weeks respectively. The classes met four times in a week for nine weeks with a total of 160 minutes lesson session per week to teach students based on topics in the Ogun State Ministry of Education, Science and Technology's Scheme of Work for first term in Senior Secondary Schools in the State. However, apart from teaching the term's topics, the control group was not given any test during the study period.

Phase Three: Post-Testing Periods. In the eleventh week after the experiment was completed, the researcher re-administered MARS

and MAT to all the participants in both the experimental and control group in order to gather post-test data.

Descriptive and inferential statistical tools were used. Mean and Standard Deviation were computed for all the groups where applicable. The Statistical Package for Social Sciences (SPSS) was used for the analysis. All the hypotheses were tested with Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Results

Hypothesis 1: Test anxiety scores will not significantly differ among students exposed to the varying frequency of test.

Table 4: Descriptive Data on Pre-test and Post test scores on Test Anxiety among students exposed to the experimental conditions.

School Category	Testing Periods	PRE TEST			POST TEST			Mean Difference
		N	MEAN	STD	N	MEAN	STD	
School A	One Week Testing	33	65.88	6.3	33	51.45	5.57	-14.43
School B	Two Weeks Testing	31	65.74	7.45	31	55.06	5.99	-10.68
School C	Three Weeks Testing	31	65.52	6.89	31	57.42	12.64	-8.1
School D	Four Weeks Testing	32	66.13	6.88	32	60.16	6.63	-5.97
School E	Control Group	30	65.73	6.23	30	62.87	7.53	-2.86
Grand Total / Average		**157**	**65.8**	**6.68**	**157**	**57.3**	**7.26**	**-8.5**

The result in Table 4 shows that at pre-test, the mean scores of the participants in the experimental groups were 65.88 for School A, 65.74 for School B, 65.52 for School C, 66.13 for School D and 65.73 for School E. It also shows that at post-test, Schools A, B, C, D and E recorded lower mean score of 51.45, 55.06, 57.42, 60.16 and 62.87 respectively. School A (One Week Testing) had the highest reduction in anxiety level of -14.43 below the average Mean Difference of -8.5 as a result of frequent testing. To determine if these differences were statistically significant, the Analysis of Covariance (ANCOVA) was carried out and the result is shown in Table 5.

Table 5: Analysis of Covariance (ANCOVA) on Test Anxiety among the Experimental Groups.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	4632.67	5	926.54	39.08	*
Intercept	683.32	1	683.32	28.82	*
Covariates	2159.03	1	2159.03	91.06	*
Experimental Groups	2468.53	4	617.13	26.03	*
Error	3580.26	151	23.71		
Corrected Total	8212.93	156			

*Significant at 0.05; Fcritical at 0.05 (4, 151) = 2.37

The result in Table 5 shows that a calculated F-value of 26.03 resulted as the difference in post test scores on test anxiety across experimental groups. This F-value is statistically significant since it is greater than the critical F-value of 2.37, given 4 and 151 degrees of freedom at 0.05 level of significance. Thus, hypothesis 1 was rejected, which implies that test anxiety scores significantly differ among students exposed to the varying frequency of test. To determine where the significance of the group differences lies, post-hoc analysis was performed using the Least Significant Difference's (LSD) Post Hoc Multiple Comparism tool and the outcome of the statistical analysis is shown in Table 6.

Table 6: **Multiple Comparison of Test Anxiety among the Experimental Groups**

(I) Experimental Groups	(J) Experimental Groups	Mean Difference (I-J)	Sig.
SCHOOL E	SCHOOL A	11.493*	0.000
	SCHOOL B	7.807*	0.000
	SCHOOL C	5.326*	0.000
	SCHOOL D	2.929*	0.019

*. The mean difference is significant at the 0.05 level.

Evidence from Table 6 shows that School A (Mean diff = 11.493, p = 0.000), School B (Mean diff. = 7.807, p = 0.000), School C (Mean diff = 5.326, p = 0.000) and School D (Mean diff = 2.929, p = 0.000) all had significant reduction in test anxiety than School E (the

control group). This implies that School tested periodically more frequently had significant reduction in mathematics test anxiety (with School A having the highest reduction) than Schools tested less frequently.

Hypothesis 2: There is no significant difference in the achievement scores in mathematics of students exposed to varying frequency of test.

Table 7: **Descriptive Data on Pre-test and Post test scores on the Mathematics Achievement Test among students exposed to the experimental conditions**

School Category	Testing Period	PRE TEST			POST TEST			Mean Difference
		N	MEAN	STD	N	MEAN	STD	
School A	One Week Testing	33	20.55	5.61	33	60.6	9.24	40.05
School B	Two Weeks Testing	31	20.03	2.63	31	61.1	6.7	41.07
School C	Three Weeks Testing	31	20.06	4.49	31	42.65	8.01	22.59
School D	Four Weeks Testing	32	20.87	6.17	32	40.13	6.5	19.26
School E	Control Group	30	20.77	4.21	30	39.17	11.46	18.4
Grand Total / Average		**157**	**20.46**	**4.76**	**157**	**48.89**	**13.1**	**28.43**

Figures in Table 7 show School A has a pre-test score of 20.55 and School B has a pre-test score of 20.03. School C, School D and School E have 20.06, 20.87 and 20.77 respective. Also at post-test, Schools A, B, C, D and E had mean score of 60.6, 61.1, 42.65, 40.13 and 39.17 respectively. The table further shows that School B (Two Weeks Testing) had the highest mean difference of 41.07 above the average Mean Difference of 28.43. To determine whether there was significant difference in mathematics achievement test as a result of experimental conditions, an Analysis of Covariance (ANCOVA) was done and the results are presented in Table 8.

Table 8: Analysis of Covariance (ANCOVA) on Mathematics Achievement Test among the Experimental Groups

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	16237.61	5	3247.52	46.55	*
Intercept	12987.61	1	12987.61	186.17	*
Covariate	585.03	1	585.03	8.39	*
Experimental Groups	15846.44	4	3961.61	56.79	*
Error	10534.32	151	69.76		
Corrected Total	26771.94	156			

*Significant at 0.05; Fcritical at 0.05 (4, 151) = 2.37

The data in Table 8 shows that a calculated F-value of 56.79 resulted as the difference in achievement in mathematics test among the experimental groups. Since the F-value of 56.79 is greater than the critical F-value of 2.37, given 4 and 151 degrees of freedom at 0.05 level of significance, the null hypothesis was rejected. This indicates that students' achievement in the mathematics test significantly differed as a result of the exposing them to varying frequency of test. In order to determine the degree of difference in the experimental conditions in Mathematics Achievement Test, LSD's Post Hoc Multiple Comparison was carried out and the outcome is presented in Table 9.

Table 9: **Multiple Comparison of Mathematics Achievement Test and Experimental Groups**

(I) Experimental Groups	(J) Experimental Groups	Mean Difference (I-J)	Sig.
SCHOOL A	SCHOOL C	17.765*	0.000
	SCHOOL D	20.616*	0.000
	SCHOOL E	21.530*	0.000
SCHOOL B	SCHOOL C	18.465*	0.000
	SCHOOL D	21.316*	0.000
	SCHOOL E	22.230*	0.000

*. The mean difference is significant at the 0.05 level.

Table 9 shows that participants in School A had significant mean difference when compared to Schools C (Mean diff. = 17.765; p = 0.000), D (Mean diff. = 20.616; p = 0.000) and E (Mean diff. = 21.530; p = 0.000). Also, School B had significant mean difference when compared to Schools C (Mean diff. = 18.465; p = 0.000), D (Mean diff. = 21.316; p = 0.000) and E (Mean diff. = 22.230; p = 0.000). This indicates that participants tested weekly and every two weeks (that is, School A and B) had significant achievement in Mathematics when compared with other experimental groups. Besides, the result shows no significant difference in the achievement of Schools exposed to weekly (School A) and two weeks testing (School B).

Hypothesis 3: Test anxiety scores will not differ significantly among students exposed to the varying frequency of test due to gender.

Table 10: Descriptive Data on Pre-test and Post test scores on Mathematics Anxiety among students exposed to the experimental conditions

EXPERIMENTAL GROUPS	GENDER	N	PRE TEST		POST TEST		MEAN DIFFERENCE
			MEAN	STD	MEAN	STD	
SCHOOL A (Weekly Test)	MALE	16	65.38	5.6	50.31	6.14	-15.07
	FEMALE	17	66.35	7.04	52.53	4.93	-13.82
	TOTAL	**33**	**65.88**	**6.3**	**51.45**	**5.57**	**-14.43**
SCHOOL B (Two Weeks Test)	MALE	14	65.79	5.52	57.07	5.73	-8.72
	FEMALE	17	65.71	8.91	53.41	5.84	-12.3
	TOTAL	**31**	**65.74**	**7.45**	**55.06**	**5.99**	**-10.68**
SCHOOL C (Three Weeks Test)	MALE	16	64.06	5.98	57.06	5.56	-7
	FEMALE	15	67.07	7.65	57.8	4.66	-9.27
	TOTAL	**31**	**65.52**	**6.89**	**57.42**	**5.07**	**-8.1**
SCHOOL D (Four Weeks Test)	MALE	16	63.75	5.6	57.69	5.51	-6.06
	FEMALE	16	68.5	7.37	62.63	6.34	-5.87
	TOTAL	**32**	**66.13**	**6.88**	**60.16**	**6.36**	**-5.97**
SCHOOL E (Control Group)	MALE	14	65.57	6.8	63.64	5.5	-1.93
	FEMALE	16	65.88	5.91	62.19	9.07	-3.69
	TOTAL	**30**	**65.73**	**6.23**	**62.87**	**7.53**	**-2.86**
Grand Total / Average	**MALE**	**76**	**64.91**	**5.9**	**56.16**	**5.69**	**-8.75**
	FEMALE	**81**	**66.7**	**7.38**	**57.71**	**6.17**	**-8.99**
	TOTAL	**157**	**65.8**	**6.68**	**57.3**	**5.93**	**-8.5**

Figures from Table 10 shows that the pre-test mean value of Mathematics Anxiety for male participants were 65.38 in School A, 65.79 in School B, 64.06 in School C, 63.75 in School D and 65.57 in School E. Similarly, pre-test mean value of Mathematics Anxiety for female participants were 66.35 for School A, 65.71 for School B, 67.07 for School C, 68.5 for School D and 65.88 for School E.

The Table also indicates that (at post-test), the mean scores for male students ranged from 50.31 in School A, 57.07 in School B, 57.06 in School C, 57.69 in School D and 63.64 in School E. Similarly, post-test mean value of Mathematics Anxiety for female participants were 52.53 for School A, 53.41 for School B, 57.8 for School C, 62.63 for School D and 62.19 for School E.

Table 10 further shows that for School A male (-15.07) had the highest reduction in test anxiety below the average Mean Difference (-8.75). Also, School A female (-13.82) recorded the highest reduction in test anxiety below the average Mean Difference (-8.99). As a result, it is observed that School A (with weekly testing) had the highest reduction Mathematics Anxiety test for both male and female participants. To determine if these differences were statistically significant, ANCOVA was used to analyse the data as presented in Table 11.

Table 11: Analysis of Covariance (ANCOVA) on effect of Gender and Experimental Conditions on Test Anxiety

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4825.43	10	482.54	20.80	*
Intercept	709.58	1	709.58	30.58	*
Covariate	1993.39	1	1993.39	85.91	*
Experimental Groups	2466.87	4	616.72	26.58	*
Gender	6.83	1	6.83	0.29	ns
Experimental Groups / Gender	186.88	4	46.72	2.01	ns
Error	3387.50	146	23.20		
Corrected Total	8212.93	156			

*Significant at 0.05; ns = Not Significant; Fcritical at 0.05 (1, 146) = 2.37

Evidence from Table 11 shows that a calculated F-value of 2.01 resulted as the interaction effect of gender and Test Anxiety. This calculated F-value is not significant since it is lower than the critical F-value of 2.37 given 4 and 146 degree of freedom at 0.05 level of significance. Thus, the null hypothesis was upheld, indicating that there

is no significant difference in Test Anxiety in the experimental conditions due to gender.

Hypothesis 4: Achievement scores in mathematics will not significantly differ among students exposed to the varying frequency of test due to gender.

Table 12: Descriptive Data on effect of Gender and Experimental Conditions on Mathematics Achievement Test among participants

SCHOOL	GENDER	N	PRE TEST		POST TEST		MEAN
			MEAN	STD	MEAN	STD	DIFFERENCE
SCHOOL A (Weekly Test)	MALE	16	21.56	5.19	62.69	10.17	41.13
	FEMALE	17	19.59	5.97	58.65	8.08	39.06
	TOTAL	**33**	**20.55**	**5.61**	**60.61**	**9.24**	**40.06**
SCHOOL B (Two Weeks Test)	MALE	14	20.29	3.00	62.29	5.88	42.00
	FEMALE	17	19.82	2.35	60.12	7.33	40.29
	TOTAL	**31**	**20.03**	**2.63**	**61.10**	**6.70**	**41.06**
SCHOOL C (Three Weeks Test)	MALE	16	21.38	5.24	46.56	6.23	25.19
	FEMALE	15	18.67	3.11	38.47	7.74	19.80
	TOTAL	**31**	**20.06**	**4.49**	**42.65**	**8.01**	**22.58**
SCHOOL D (Four Weeks Test)	MALE	16	22.38	7.07	41.00	8.63	18.63
	FEMALE	16	19.38	4.90	39.25	3.36	19.88
	TOTAL	**32**	**20.88**	**6.17**	**40.13**	**6.50**	**19.25**
SCHOOL E (Control Group)	MALE	14	21.00	4.47	39.57	13.70	18.57
	FEMALE	16	20.56	4.10	38.81	9.52	18.25
	TOTAL	**30**	**20.77**	**4.21**	**39.17**	**11.46**	**18.40**
Grand Total / Average	**MALE**	**76**	**21.32**	**4.99**	**50.42**	**8.92**	**29.10**
	FEMALE	**81**	**19.6**	**4.09**	**47.06**	**7.2**	**27.46**
	TOTAL	**157**	**20.46**	**4.76**	**48.89**	**8.06**	**28.43**

Evidence from Table 12 shows that the mean achievement scores in mathematics for male participants at pre-test was 21.56 for School A, 20.29 for School B, 21.38 for School C, 22.38 for School D while School E scored 21. Likewise, pre-test mean values of Mathematics Achievement Test for the female participants were 19.59 for School A, 19.82 for School B, 18.67 for School C, 19.38 for School D and 20.56 for School E.

The Table further shows that at post-test, the male participants in School A has 62.69, School B has 62.29, School C has 46.56, School D has 41.00 and School E has 39.57. The post-test mean scores for female participants shows that School A, B, C, D and E have 58.65, 60.12, 38.47, 39.25 and 38.81.

Thus, it is observed that male (42.0) and female (40.29) participants in School B with periodic test every two weeks had the highest achievement above the average Mean Difference of 29.1 and

27.46 respectively. To determine whether significant difference existed on Mathematics Achievement due to gender and experimental conditions, analysis of covariance (ANCOVA) statistics was used. The result is presented in Table 13.

Table 13: **Analysis of Covariance on the effect of Gender and Experimental Conditions on Mathematics Achievement Test.**

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	16751.53	10	1675.15	24.41	*
Intercept	13252.51	1	13252.51	193.09	*
Covariate	392.07	1	392.07	5.71	*
Experimental Groups	15897.83	4	3974.46	57.91	*
Gender	291.01	1	291.01	4.24	*
Experimental Groups / Gender	225.01	4	56.25	0.82	ns
Error	10020.41	146	68.63		
Corrected Total	26771.94	156			

*Significant at 0.05; ns = Not Significant; Fcritical at 0.05 (4, 146) = 2.37

The result in Table 13 shows that a calculated F-value of 0.82 as the interaction effect between gender and the experimental conditions. This calculated F-value of 0.82 is not significant since it is less than the critical F-value of 2.37 given 4 and 146 degrees of freedom at 0.05 level of significance. Thus, the null hypothesis was accepted, indicating that achievement scores in mathematics will not significantly differ among students exposed to the varying frequency of test due to gender.

Discussion of Findings

Hypothesis one stated that test anxiety scores will not significantly differ among students exposed to the varying frequency of test. The finding revealed that there was a significant difference in the mathematics test anxiety scores among students exposed to the varying frequency of testing. In addition, School A (given weekly test) followed by School B (given test every two weeks) had the highest reduction in test anxiety than those of Schools C (given every three weeks test), D (given every four weeks test) and E (control group). This finding aligns with findings of Shirvani (2009) who conducted a study

on the assessment and strategy on High School Hispanic Students. The researcher reported that frequent testing helps students to better monitor their learning when they pretend they understand a concept, yet are afraid to ask questions because they may be embarrassed or feel shy to ask questions. However, the findings contrast with the observation of Kimber (2009) during the study of the effect of training in self-regulated learning on Mathematics anxiety and achievement among preservice elementary Teachers in a freshman course in mathematics concepts. The researcher observed that the self-regulated learning strategies were not effective in reducing math anxiety among pre-service teacher.

Hypothesis two stated that there is no significant difference in the achievement scores in mathematics of students exposed to varying frequency of test. This research showed that significant difference exist in the students' achievement scores in mathematics when exposed to varying frequency of testing. The findings showed Schools tested every two weeks followed by School tested weekly yielded most impact towards achieving improved academic achievement than the other experimental groups (i.e. Schools tested every three weeks and four weeks), while the control group had the least achievement. The finding is in line with the study of Deck (2008) who found significant difference in achievement in the students tested weekly as against the monthly group. In other similar studies, it was observed that students in the treated group undertaking the intermediate examination performed better and got better grades than obtained by those in the control group (Shirvani, 2009; De Paola & Scoppa, 2010). In addition, the findings align with Zgraggen's (2009) view when he observed that students who were tested on a bi-weekly basis scored better in the final exam than the weekly tested group.

Hypothesis three states that test anxiety scores will not differ significantly among students exposed to the varying frequency of test due to gender. The findings showed that there exists no significant difference in the test anxiety scores among students exposed to the varying frequency of testing due to gender. The finding aligns with Iroegbu (2013), who reported no interaction effect of gender and test anxiety. However, the findings contrast Devine, Fawcett, Szucs, and Dowker (2012) who reported that test anxiety was higher for girls than for boys

Hypothesis four stated that achievement scores in mathematics will not significantly differ among students exposed to the varying frequency of test due to gender. The findings showed achievement scores in mathematics do not significantly differ among students exposed to the varying frequency of test due to gender. The findings align with those Parveen, Noor-Ul-Amin, and Nazir (2013), Devine, Fawcett, Szucs, and Dowker (2012), Ayodele (2011), Zhu (2007), Nuthanap (2007) and Joshi (2000) in their separate studies to determine whether gender difference in Mathematics performance existed among secondary school students', they all observed that there exists no difference between the performance of male and female students. However, the finding is in contrast with Tella (2007) who observed significant difference in academic achievement with respect to gender.

Conclusion

The study observed that frequency of testing will moderate anxiety among students who are experiencing test anxiety in mathematics. A weekly test after lesson is the ideal rate to moderate students' test anxiety in mathematics. Also, frequency of testing is an efficacious tool for improving students' achievement in mathematics. Giving test fortnightly is the most ideal rate for improving students' achievement in mathematics. However, frequency of testing is not an efficacious tool to adopt in order to improve both achievement and test anxiety in mathematics due to gender.

Recommendations

The following was recommended based on the findings from the study.

1. Students who experience anxiety in mathematics should be exposed to test every week after classroom instructions.
2. In other to improve achievement, students should be exposed to test after lessons every two weeks.
3. Besides, students experiencing test anxiety and low achievement in mathematics should be exposed to test every two weeks

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Relationship between Complications of Disease, Depression and Quality of Life of Type 2 Diabetes Patients in Ghana

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Abstract

This study sought to understand the relationship between depression, complication of disease and quality of life of type 2 Diabetes Mellitus patients in some selected hospitals in the Central Region of Ghana. The cross-sectional survey design was adopted for the study. A sample of 307 Diabetes patients from 4 hospitals across the Central Region of Ghana were assessed using depression in Diabetes self-rating scale and the Diabetes 39 scales. The purposive sampling technique was used for the selection of the hospitals whilst the convenience sampling method was used for the selection of the participants. One-way analysis of variance and the Pearson Product Moment correlation coefficient were used in the analysis. The study revealed a significant difference between complications of disease and the quality of life of type 2 diabetic patients. It concluded that clinicians perform regular checks to quickly identify and treat complications that arise from the disease to reduce its physical and psychological effect. The need for parents and teachers to ensure that they take good care of their health in order to prevent diabetes and its effects on the education of learners was underscored.

Key words: Diabetes Mellitus, depression, complications, quality of life, education, learners.

Introduction

Diabetes Mellitus is described as a chronic metabolic disease, characterized by a disorder in the metabolism of carbohydrates, lipids

and amino acids, either as a result of decreased insulin secretion, or due to a reduction in insulin sensitivity of the cells of the body cell (Papazafiropoulou, Tamvakos, & Pappas, 2008). The cardinal clinical symptoms used as indications for diagnosis include polyuria (frequent urination), polydipsia (increased thirst), polyphagia (increased hunger) and unexplained weight loss. These indications, although may vary in intensity and frequency among patients with *Diabetes Mellitus*, still serve as one of the clinical measures through which diagnosis may be reached (World Health Organisation [WHO], 2006).

The classification of *Diabetes Mellitus* may vary across scope; it is predominantly classified into several different types based on its cause, pathophysiology, and management. The major classifications of Diabetes are Type 1 Diabetes (formerly called *Insulin-Dependent Diabetes Mellitus)*, Type 2 Diabetes (formerly called *Non-Insulin Dependent Diabetes Mellitus*), and *Gestational Diabetes Mellitus* (which occurs during pregnancy) (ADA, 2003a). Type 1 *Diabetes Mellitus* is noted to account for about 5% to 10% diabetic cases. It has an acute onset and predominantly occurs before 30 years of age (Centres for Disease Control and Prevention [CDC], 2002). This type affects the pancreatic beta cells, which produces insulin in the human gastrointestinal system for the metabolism of ingested food as digestion ensues. On the other hand, about 90% to 95% diabetic cases are Type 2 *Diabetes Mellitus* (CDC, 2002). This mostly occurs as an effect of diminished sensitivity to insulin and damaged pancreatic beta cells which lead to a low level of insulin (Quinn, 2001). Due to its pathophysiology and its late occurrence (usually after 30 years), Type 2 Diabetes is managed with diet, exercise, oral agents and insulin injection therapy (ADA, 2003a).

A well-noted aspect of both Type 1 and Type 2 Diabetes is that both can result in serious complications if the right precautions in care are not taken. These complications are broadly classified into retinopathy (damage to the eyes), nephropathy (damage to the kidneys), and neuropathy (damage to the nerves), for which a careful glucose control is needed (ADA, 2003b). A common clinical manifestation arising from retinopathy may be an increase from a subtle vision problem to potential and/or complete vision loss. Neuropathic complications are also manifested in the forms of foot ulcers, and poor healing which may later require amputations. In some neuropathic cases

too, sexual problems like erectile dysfunctions are evident. Nephropathic disorders leading to various types of renal disorders like kidney failure are also possible. Owing to the devastating nature of *Diabetes Mellitus*, the central goal of treatment has been focused on reducing the risk of patients clinically diagnosed with Diabetes from developing any of these main vascular and neuropathic complications (ADA, 2003b).

Quality of life is noted to be greatly reduced in patients with chronic diseases such as *Diabetes Mellitus*. The concept of Quality of life (QoL) is associated with the subjective perception of people about their lives, within specific cultural and social systems. Quality of life issues as denoted by Maatouk et al., (2012) indicate the state of loss and decline in a person's perception of life's goodness with influences from past and/or present life events. They expanded these perceptions that the quality of life of adult patients with Diabetes was affected by some factors like mood, physical and other problems. Significant among these factors were depression, Diabetes related complications and other negative lifestyle behaviours which served as a way of adjusting to their perceived loss.

Quality of life varies with individuals, societies, people with Diabetes and non-Diabetes and it depends on diet and physical activity, controlling the disease complications and health improvements accomplished (Hu, Gruber, & Hsueh, 2010; Rubin & Peyrot, 1999). It is known to affect mental, physical, social wellbeing and daily lives. Psychological distresses such as depression, anxiety and sleep disturbances can have a negative impact on quality of life. The risk of depression is higher in individuals living with Diabetes, undiagnosed Diabetes and impaired glucose metabolism that have serious threat to quality of life (Nouwen et al., 2011). The prevalence of depression is also higher in diabetic (24%) than the non-diabetic (17%) with significant differences in quality of life indices between depression with Diabetes and non-Diabetes (Goldney et al., 2004).

In 2012 and 2013, Diabetes resulted in 1.5 to 5.1 million deaths per year, making it the 8th leading cause of death in the world (World Health Organization [WHO], (2006), International Diabetes Federation [IDF], 2013). Currently, it is reported that 387 million people have Diabetes in the world of which more than 22 million people are within the African region (International Diabetes Federation [IDF], 2015).

In Ghana, there is a growing increase of *Diabetes Mellitus* with patients suffering various complication and high rate of mortality (IDF, 2015; de-Graft 2003). According to the International Diabetes Federation (IDF) (2015), about 450,000 Ghanaians are now living with diagnosed *Diabetes Mellitus* with a prevalence rate of 3.3% at the end of 2014. The effects of such ill-health on the education of learners have also been reported. For example, School and Health (2018) states in general that improving health and nutrition brings the greatest education benefits to the poor and most vulnerable. More important, education can contribute to psychological development through enhancing an individual's self-efficacy, apart from increasing psychological resilience and improving coping mechanisms (Higgins, Lavin & Metcalfe, 2008).

Most diabetic patients are subjected to extreme stress when accessing treatment for their health condition which is enough to cause psychological distress (de-Graft, 2003). However, the treatment that is provided to these patients tends to focus on the physical illness neglecting the psychological issues that accompany diabetes. It also appears that not many studies have been conducted to explore the relationship of these psychological challenges on the quality of life of the type 2 Diabetes patients in Ghana. Understanding these constructs in relation to the disease is unclear. Therefore, a study specifically designed to identify these among Ghanaians is essential. This will help understand the relationship of these variables to the disease and more important help identify the implications to education. This study thus looked at:

1. the difference between the various complications of the disease and quality of life of type 2 *Diabetes Mellitus* patients.
2. the relationship between complications of type 2 *Diabetes Mellitus* patients and depression.
3. the relationship between depression and quality of life of type 2 *Diabetes Mellitus* patients.

Methodology

This study employed the cross-sectional survey as its research design. A cross sectional survey collects information from a sample that has been drawn from a predestined population and is collected at just one point in time (Dillman, 2000; Groves, Cialdini, & Couper, 1992).

This type of design was selected because of its ability to measure relationship between variables. It enables researchers to recognize trends and patterns in data collected as expected in this study.

The target population for this study comprised diabetic patients who had been registered with the Diabetic Clinic of the Cape Coast Teaching Hospital (CCTH), Agona Swedru District Hospital, Winneba Government Hospital, and St. Luke's Catholic Hospital (Apam) from January 2014 to December, 2015. This population was chosen due to the fact that it covered individuals with various socioeconomic and disease characteristics across the Central Region. The total population registered in the various diabetic clinics within the period was 1,542. At the Agona Swedru District Hospital and Cape Coast Teaching Hospital, 315 and 737 patients were recorded respectively. Again, 291 patients were recorded at the Winneba Government hospital and 199 patients for St. Luke's Catholic Hospital at Apam (The client register of the various diabetic clinics, 2015)

The study sample consisted of only type 2 diabetic out-patients currently on treatment at the diabetic clinics in the four selected hospitals in the Central Region. According to Krejcie and Morgan (1970), out of a given a total population of one thousand five hundred and forty two (1,542) diabetic patients, a sample of 307 can be used for the study. An additional thirty (30) respondents representing 10% of the sample obtained were added to decrease the chances of non-response case effects on the test outcomes making a total of 337 respondents.

Purposive sampling was used to select four Hospitals namely Cape Coast Teaching Hospital (CCTH), Agona Swedru District Hospital, Winneba Government Hospital, and St. Luke's Catholic Hospital (Apam). Purposive sampling is a qualitative sampling procedure in which researchers internally select individuals or sites to learn about or understand the central phenomena. In selecting participants for the study, the convenience sampling approach was used. Convenience sampling or accidental sampling involves choosing the nearest individuals to serve as respondents and continuing the process until the required sample has been obtained or those who happen to be available or accessible at the time (Cohen, Manion & Morrison, 2007). This technique was chosen because the participants in the study were out-patients and only visited the facilities when it was time for their review. At the Agona Swedru District Hospital and Cape

Coast Teaching Hospital, 64 and 146 respondents were selected, respectively. Also, 58 respondents were selected at the Winneba Government hospital and 39 respondents for St. Luke's Catholic Hospital at Apam giving a total of 307 respondents for the study.

The inclusion criteria established for participation in the study incorporated: participants aged between 20 and 65 years who were willing to participate, meet the clinical medical diagnosis for Type 2 Diabetes (Fasting Blood Sugar (FBS) ≥7.0 mmol/l or Random Blood sugar (RBS) ≥11.1 mmol/l), had started biomedical therapy for Diabetes and could read and write.

The instruments used in data collection were a 7-item self-designed questionnaire for collecting background data and disease-specific tools for assessing the psychological constructs. The disease-specific tools were employed in the study for us to be able to assess and understand the psychological condition as it pertains to the patients with the disease under study. The tools used were: the Depression in Diabetes Self-Rating Scale and Diabetes 39 Scale (Kokoszka, 2008).

The depression in Diabetes self-rating scale is a self-report measure designed by Kokoszka (2008) to assess depression in type 2 Diabetes patients. The scale is made up of 6 items. A respondent is asked to rate how much he/she agrees with the statements on a 5-point likert scale response format. The scores ranged from 1, I fully agree; 2, I partially agree, 3, hard to say; 4, I partially disagree; to 5, I fully disagree. The scale also yields a total score of depression in patients. The reliability of the Depression in Diabetes Self-Rating Scale is high (Cronbach's alpha= 0.81). The scale also demonstrates a good validity, as measured by Pearson's coefficient of correlation with the overall Becks Depression Inventory (BDI) score (r = 0.72), overall Hamilton Depression Rating Scale (HDRS) score (r = 0.68) and the Hospital Anxiety Depression Scale (HADS) score (r = 0.68). A pilot-test conducted at the University of Cape Coast Hospital of the scale yielded a Cronbach's coefficient alpha of 0.71.

The Diabetes-39 questionnaire was developed to specifically assess the quality of life of diabetic patients. The tool uses a visual analogue scale for each question on which the respondent places an 'X' to indicate level of agreement to the question. The scale ranges from not at all affected to extremely affected. It is made up of 39 items that assess the diabetic patients' quality of life based on five subscales:

Energy and Mobility, Diabetes Control, Anxiety and Worry, Social Burden, and Sexual Functioning. Reliability of the 39-item instrument as measured by Cronbach's coefficient alpha ranged from 0.82 to 0.93. The pre-test of the instrument also produced a Cronbach alpha of 0.82 and was considered very good for the study.

Data Analysis

In the descriptive statistics, means, standard deviations and frequencies were calculated. One way analysis of variance was used for the comparison of mean score values between complications of disease and quality of life whereas Pearson correlation coefficient was used to assess the relationship between depression and complication of disease and quality of life respectively.

Results

Table 1: Socio-demographic characteristics of Respondents (n=307)

Variables	Sub-scale	Frequency	Percentage
Gender	Male	70	22.8
	Female	237	77.2
Age group	20-29 years	3	1.0
	30-39 years	14	4.6
	40-49 years	35	11.4
	50+ years	255	83.0
Marital Status	Single	24	7.8
	Married	167	54.4
	Divorced	33	10.7
	Widowed	83	27.1
Educational Level	No Formal	81	26.4
	Education	84	27.4
	Basic	103	33.6
	Secondary	39	12.6
	Tertiary		
Occupation	Unemployed	99	32.2
	Self employed	138	45.0
	Public servant	70	22.8

Years lived with Diabetes	6months-10 years	231	75.3
	11-20 years	62	20.2
	21-30 years	10	3.2
	31-40 years	4	1.3
Complication of disease	Hypoglycaemia	16	5.2
	Hyperglycaemia	21	6.8
	Ulcers	16	5.2
	Kidney problems	11	3.6
	Loss of feeling	79	25.7
	Eye problems	164	53.5

Table 1 represents the socio-demographic characteristics of patients who completed the study questionnaire expressed in frequencies and percentages. The mean age of respondents was 6.64 (SD=0.94), 22.8% were males, 77.2% females and the mean duration of Diabetes was 7.8years (SD=7.1). About 33% had obtained secondary education, 45% were self-employed. 75% had lived with the disease for < 10years. 55.5 % were married whiles 53.5% suffered complications of the eye (retinopathy).

Table 2: Type 2 Diabetic Patients' State of Depression (n=307)

Variables	Frequency	Percentage (%)
Low severity of depression	0	0.0
Moderate severity of depression	13	4.2
High severity of depression	294	95.8

Source: Field survey (2016)

Table 2 indicates the state of depression of Type 2 diabetic patients. Majority of the respondents had high severity of depression. Out of the 307 respondents who were involved in the study, none of the respondents had low severity of depression, 13 respondents representing 4.2% had moderate severity of depression, and 294 respondents representing 95.8% had high severity of respondents.

Table 3: ***Quality of Life of Type 2 Diabetic Patients (n=307)***

Variables	M	SD
Energy and Mobility	21.88	11.67
Diabetes control	26.59	12.32
Worry and anxiety	20.70	10.03
Social functioning	18.32	9.94
Sexual functioning	6.39	5.38

Source: Field survey (2016)

As evident in Table 3, a high mean of 26.88 (SD= 12.32), 21.88 (11.67), 20.70 (SD= 10.03), and 18.32 (9.94) were recorded for the items under the themes Diabetes control, energy and mobility, worry and anxiety, and social functioning respectively. This indicates that majority of the respondents indicated that their diabetic condition had not affected their quality of life in terms of Diabetes control, energy and mobility, worry and anxiety, as well as social functioning. However, the high standard deviations of 12.32, 11.67, 10.03, as well as 9.94 recorded for the items Diabetes control, energy and mobility, worry and anxiety, and social functioning respectively implies that there were variations in the responses recorded and that, some of the respondents conceded that their diabetic condition had affected their Diabetes control, energy and mobility, worry and anxiety, and social functioning. Yet, it still holds that majority of the respondents agreed that, their diabetic condition had not affected their quality of life in terms of Diabetes control, energy and mobility, worry and anxiety, as well as social functioning. A low mean of 6.39 (SD=5.38) was recorded for items under the theme sexual functioning indicating that the respondents conceded that their quality of life in terms of sexual functioning was affected. The low standard deviation of 5.38 shows that there were little variations in the responses recorded for this item and that the respondents agreed to the statement to a high extent.

The One-way analysis of variance (ANOVA) was used in the analysis of the difference between the complications suffered by the diabetic patients and quality of life of the respondents.

Table 4: Descriptive Statistics of Quality of Life of Diabetic Patients regarding Complications

Educational Level	N	Mean	Std. Dev.	Min	Max
Hypoglycaemia	16	61.00	20.97	39.00	105.00
Hyperglycaemia	21	97.00	42.01	4.00	169.00
Ulcers	16	1.25	52.33	52.00	210.00
Kidney Problems	11	90.82	37.66	40.00	150.00
Loss of feelings	79	97.85	39.87	39.00	200.00
Eye Problems	164	94.36	37.02	39.00	196.00
Total	307	93.78	39.35	4.00	210.00

Source: Field survey (2016)

Table 4 gives information about the complications of the diabetic patients in relation to their quality of life. From the statistics on the complications of the diabetic patients, respondents with loss of feelings complication had the highest mean score regarding quality of life, followed by hyperglycaemia complication, eye problem complication, kidney problem complication, hypoglycaemia complication as well as ulcer complications respectively.

From the preliminary analysis, the Levene's test was used to ascertain whether the variance in the scores is the same for each of the complications suffered by the Diabetes patients. From the analysis, the Significance value for Levene' test is 2.382 which is greater than the alpha or critical value of 0.05. This implies that the assumption of homogeneity has not been violated for this sample [F (6, 300) = 4. 897, p = .0.000 at the 0.05 alpha level

Table 5: Summary of One-way ANOVA

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	42269.102	6	7044.850	4.897	.000
Within Groups	431609.836	300	1438.699		
Total	129483.642	306			

Source: Field survey (2016)

The Table 5 shows whether the overall *F* ratio for the one-way ANOVA is significant. The F ratio (4.897) is significant (p = .000) at the .05 alpha level. This implies that there is a statistical significant difference among the mean scores on the complications suffered by the diabetic patients in relation to their quality of life. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for hypoglycaemia (M = 61.00, SD = 20.97) was different from ulcers (M = 1.25, SD = 52.33), loss of feelings (M = 97.85, SD = 38.87) and eye problems (M = 94.36, SD = 37.02). However, Hyperglycaemia (M = 97.00, SD = 42.01) and kidney problems (M = 90.83, SD = 37.66) did not differ from the various complications. The effect size, calculated using eta squared, was 0.33. This implies that the actual difference in mean scores between the groups was moderate based on Cohen's *d* (1988, pp. 284–287) interpretation of effect size. Therefore, there is a statistically significant difference at the $p < 0.05$ level in the complications of diabetic patients regarding the quality of life they lived. [F (6, 300) = 4.897, p = 0.000].

Table 6: Correlational Analysis between Depression, Complications and Quality of Life of Type 2 Diabetes Mellitus Patients

		Complications	Quality Of Life
Depression	Pearson Correlation	.027	.120**
	Sig. (2-tailed)	.632	.036
	N	307	307

** Correlation is significant at the 0.05 level (2-tailed).
Source: Field survey (2016)

Table 6 indicates correlation analysis between depression and complications of Type 2 *Diabetes Mellitus* patients. The relationship between Depression and Diabetes complications was analysed and discussed using Pearson product-moment correlation co-efficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a low, positive correlation between the two variables, r = .027, n = 307, $p > 0.05$, with high levels of depression associated with high levels of Diabetes complications. The correlation between depression and

Diabetes complications was not statistically significant with a *p*-value of more than 0.05. This implies that depression is not a significant factor that influences Diabetes complications. The correlation co-efficient (r^2) between depression and Diabetes complications was 0.0007. Depression explained nearly 1 per cent of the variance in respondents' scores on Diabetes complications. It is concluded that depression is positively related to Diabetes complications and for that matter, depression is not a significant factor in influencing Diabetes complications; hence the hypothesis which stated that depression is significantly related to Diabetes complications is rejected.

Again, Table 6 indicates correlation analysis between depression and quality of life of patients living with type 2 *Diabetes Mellitus*. The relationship between depression (as measured by depression in Diabetes self-rating scale) and quality of life (as measured by the Diabetes 39) was analysed and discussed using Pearson product-moment correlation co-efficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a low, positive correlation between the two variables, $r = .120$, $n = 307$, $p < 0.05$, with high levels of depression associated with high levels of quality of life of diabetic patients.

Discussion

The cross-sectional survey was used to examine the relationship between depression, complication of disease and the quality of life of type 2 *Diabetes Mellitus* patients in the central region of Ghana. The results indicated that patients' quality of life was significantly affected by the complications they suffered. There were significant differences in the type of complications and the quality of life patients lived.

Generally, the quality of life of type 2 *Diabetes Mellitus* patients as measured by the Diabetes 39 was relatively high. These findings were in contradiction to a number of studies conducted to assess health-related quality of life in patients with Diabetes (Koopmanschap, 2002; UK Prospective Diabetes Study Group, 1999; Vileikyte, 2001). These studies demonstrate a reduced quality of life in patients with Diabetes (Peyrot, Rubin, Lauritzen, et al., 2005). A study of the impact of Diabetes on overall quality of life identified four major themes (Faro, 1999): restriction, being different from others, negative emotion, and adaptation. Adolescents were most bothered about dietary restrictions,

and were worried most about the future, specifically diabetic complications. Older adolescents, however, had lower worry and had a better quality of life.

Depression as measured by the depression in Diabetes self-rating scale report was seen to be high among type 2 *Diabetes Mellitus* patients who participated in the study. These findings were in congruence to the view that, the depression appears to be linked with the occurrence of Diabetes. In 1684, Thomas Willis, the physician who first identified glycosuria as a sign of Diabetes, suggested that Diabetes resulted from sadness or long sorrow and other depressions or disorders (Rubin & Peyrot, 1992). Further studies have demonstrated that a comorbid state of depression incrementally worsens health compared with depression alone (Moussavi, Chatterji, Verdes, Tandon, Patel, & Ustun, 2007). According to the latest global burden of disease estimates unipolar depressive disorder are third in the ranking (65.5 mil DALY worldwide). Unipolar depressive disorders are set to become the leading disease in 2030 with 6.3% of the overall burden and Diabetes the 10th place with 2.3% as a percentage of the overall DALYs (World Health Organization, 2008).

Additionally, several studies also confirm this finding. A study by Raval, Dhanaraj, Bhansali, Grover and Tiwari (2009) on the prevalence and determinants of depression in patients with established type 2 Diabetes (T2DM) attending a tertiary care hospital in North India, showed high prevalence of depression in patients with type 2 *Diabetes Mellitus*. Other studies conducted to explore the association of Diabetes with depression and the bidirectional nature of this relationship; considering that depression may occur as a consequence of having Diabetes, but may also be a risk factor for the onset of type 2 Diabetes (Eaton, 2002; Knol, Twisk, et al., 2006). One study showed how there is a higher risk of mood and anxiety disorders among individuals with Diabetes relative to those without (Lin, & Von Korff, 2008). A meta-analysis also concluded that the presence of Diabetes doubles the odds of comorbid depression and the prevalence of comorbid depression among people with Diabetes was 11% (Anderson, Freedland, et al., 2001).

Complications of Diabetes and Quality of life

The difference between complications of Diabetes and quality of life of type 2 Diabetes patients was assessed and a statistically significant difference was found at the $p < 0.05$ level in the complications of diabetic patients regarding the quality of life they lived. [$F (6, 300) = 4.897$, $p = 0.000$]. Findings from the One-Way ANOVA is in line with studies that, the quality of life of diabetic patients is significantly reduced in the presence of both microvascular and macrovascular complications (Rubin, & Peyrot, 1992; The Oxford International Diabetes Summit, 2002; Peyrot, Rubin, Lauritzen, et al., 2005). In addition, peripheral neuropathy complications affects health related quality of life in diabetics as well as retinopathy, coronary disease, and kidney disease (Venkataraman et al., 2012).

A study conducted by Luk, Zhang, Ko, Brown, Ozaki, Tong, Ma, Tsang, Cheung, Kong et al., (2014) aimed at examining clinical factors associated with Health Related Quality of Life (HRQOL) also revealed that age, female gender, obesity, hypoglycemia at least once monthly, presence of cardiovascular disease, nephropathy and sensory neuropathy were independently associated with lower quality of life, while hypertension and use of insulin were associated with higher quality of life. Apart from demographic characteristics, risk factors, complications and treatment all influenced HRQoL.

Again, contrary to the findings, studies by Lustman et al., (2000) in their meta-analysis noted that depression is associated with hyperglycemia in persons with type 1 and type 2 Diabetes. De Groot, Anderson, Freedland, Clouse, and Lustman (2001) in their meta-analysis to further explore the association between depression and diabetic complications showed significant relationships between depression and a variety of Diabetes complications such as diabetic retinopathy, nephropathy, neuropathy, macrovascular complications, and sexual dysfunction.

Implications/Recommendations

Though the study was based on clinical settings, it has several practical implications not only in Health delivery, but also education. In terms of health, it establishes that there is a statistically significant difference in the complications of diabetic patients regarding the quality of life they lived. Secondly, it identifies that depression is significantly

related to the quality of life of type Diabetes patients. However, though it found a positive relationship between depression and complications of disease it was not significant factor. Clinicians should therefore actively perform regular checks to quickly identify and treat complications that arise from the disease to reduce its physical and psychological effect. Regular psychological screening should also be conducted at the various facilities to identify depressive symptoms related to the development of complications. Psychologist must be involved in the management of the diabetic clinics to facilitate these activities.

In the area of education, the impact of parental involvement in their children's education is generally acknowledged by all. If parents are in good health and not prone to diabetes with its associated complications, they can provide better care for their wards. In another context, where teachers are diabetic and have to report regularly at the clinic/hospital, his or her continuous absence from school could seriously affect the pupils' academic work. It therefore behooves parents and teachers to ensure that they take good care of their health in order to prevent diabetes and its effects.

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Effects of Three Counselling Interventions on Attitude to and Involvement in Bullying among Senior Secondary Students in Owerri, Nigeria

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Abstract

This study investigated the effects of three counselling interventions on attitude to and involvement in bullying among senior secondary students in Owerri, Nigeria. Four hundred and twenty students drawn from twelve senior secondary schools were chosen for the study. The schools were assigned the social skills training, inhibitory modelling, persuasion or the waiting-list control. The participants were exposed to 6 weeks, one-hour weekly, training designed to change their attitude to and involvement in bulling behaviours. Two research instruments were used for data collection. Similarly, two research hypotheses were formulated in the study. The hypotheses were tested using 2 x 4 Analysis of Covariance (ANCOVA). The findings show that the counselling interventions successfully modified students' attitude to bullying. The counselling interventions were equally effective in reducing the students' involvement in bullying. However, the inhibitory modelling was superior to persuasion and social skills training in modifying the participants' involvement in bullying. Based on the findings, it is recommended that an anti-bullying policy be formulated at both junior and secondary school levels.

Key words: Bullying; attitude to bullying; social skills training; inhibitory modelling; persuasion; counselling.

Introduction

Bullying has been identified as one of the world's most pervasive anti-social behaviour. It is observable in the family, public sector, military, social services, political dimension, primary, secondary and tertiary schools. Hence it is generally classified as workplace bullying, school bullying and family bullying (Mellor, 2005). It has even been shown that young children (toddlers) in the kindergarten are also involved in bullying (Rigby, 2005). The involvement of people in bullying is diversified in the sense that bullying takes different forms and inflicts varying degrees of physical, psychological and emotional pains on the victims.

Bullying is often erroneously thought of in terms of only physical assaults, but Swearer, Espelage and Napolitano (2009) make it clear that relational, verbal and /or social bullying can be just as damaging as or even more damaging than physical bullying. According to them, the old adage ''Sticks and stones may break my bones, but words will never hurt me,'' is untrue. They further asserted that the negative effects of these less overt forms of bullying can last well into adulthood.

According to Espelage and Swearer (2010), bullying is highly entrenched among secondary school children. School bullying has attracted a lot of national and international concerns in recent years because of its multi-dimensional destructive effects on school children and society at large (Sullivan, Cleary & Sullivan, 2005; Superville, 2011). The pervasiveness of bullying in secondary schools is attributable to several factors. One of these factors, according to Sullivan et al., (2005), is the age of the students - adolescent age - a period of stress and storms, mood swings, identity crises and when there is intense need to be part of a group, to be accepted, defined and mirrored by a cohort of peers. Erikson (as cited in Corey, 2008) tries to throw light into the forces influencing adolescent development. According to him, the major developmental conflicts are related to the development of personal identity. The diverse pressures from parents, peers and society make it difficult for them to get clear sense of identity and if they fail to achieve a sense of identity, role confusion is the result. Erikson strongly opines that models are very important in this search of identity (Corey, 2008). When wrong models like bullies are available, then the adolescents are likely to be bound to identify with them and engage in bullying.

Some other factors have been identified as being significant predictors of bullying among school children include low self-esteem, lack of self-confidence, negative interpersonal orientation and poor social skills among others. Sullivan et al., (2005) opine that certain set of bullies whom they identified as "not-so-clever" bullies are often mean minded and have negative view of the world. They are frequently failures at school and direct their anger at people they see as weak, but their anger and bullying behaviour is often a displacement of their own lack of self-esteem and self-confidence. This assertion is opposed by Limber, Agatston and Kowalski (2008) who posit that bullies tend to be confident, with high self-esteem, contrary to many people's belief that bullies act tough in order to hide feelings of insecurity and self-loathing. On the other hand, Rigby (2005) reports that being victimized by peers was found to be significantly and independently associated with low self-esteem. By this, he implies that victims, rather than bullies, possess low self-esteem. It seems that there are differing opinions pertaining to whether lack of self-esteem is more associated with bullies than victims or otherwise. The opinion of Taylor, Peplau and Sears (2006) that people with low self-esteem are more concerned about their social impact on other people appears to suggest that helping students to improve their self-esteem might reduce students' involvement in bullying either as victims or as bullies.

Statistics show that bullying is highly endemic among children all over the world. A survey of 130,000 Norwegian students by the world renowned pioneer researcher in bullying behaviour, Olweus (1994), shows that one student in seven or approximately 84,000 were involved in bullying / victim problems with some regularity. Similarly, thirty percent (30%) of U.S. students in grades six through ten are involved in moderate or frequent bullying — as bullies, as victims, or as both — according to the results of the first national school bullying statistics and cyber bullying statistics survey on this subject (Lumsden, 2002; www.how-to-stop-bullying.com, 2017).

The study of Lind and Maxwell (as cited by Sullivan et al., 2005) reveals that among the three worst experiences of secondary school students in New Zealand, bullying came second, while the death of someone very close (e.g. mother, father, sibling) came first. The investigation of Greeff and Grobler (2008) on the nature and prevalence of bullying behaviour as experienced and reported by pupils in upper middle-class, single-sex, English-medium primary schools in

Bloemfontein, South Africa reflected that 203 students out of the 360 students (56.4 percent) who were tested had indeed reported experiencing some form of bullying since the beginning of the academic year under investigation. Badejo and Ubangha (2002) found out from their research among students in Lagos that over 60% of their respondents admitted to have been involved in one form of bullying or the other. Egbochukwu (2007) found out that from the sample of 300 secondary school students studied in Benin, Nigeria, almost four in every five participants (78%) reported being bullied to some degree and 85% of the children admitted to bullying others at least once. Omoteso (2010) found from a sample of 750 secondary school students studied in Ile-Ife that 88.1% (444) of the students had been bullied by other students, 11.9% (60) had not, 33.19% (167) had taken part in bullying other students and 66.9% (337) had not. According to Nwankwo and Unachukwu (2006), in Anambra State, 76.81% and 92.50% of primary and post primary school teachers respectively identified bullying as a disruptive disorder in school. In a study on curbing deviance through peace education by Jegede, Ememe and Gami (2008) carried out in Lagos, 41.5% and 39.4% of the teachers and students respectively identified bullying as frequent deviant behaviour existing in schools. Eneh (1999) agrees that out of major anti-social behaviour tested among adolescents in Nigeria, bullying other children ranks second, while stealing is the highest. All these show that bullying is indeed very prevalence among secondary school students.

Researchers have shown that it is not only the victims that suffer from the problems of bullying, rather, bullying also poses a lot of problems to the bully, the bystander, the entire school programme and the larger society (Barbra, 2001; Coloroso, 2008; Field, 2007; Khan, 2006). It is a problem to the victim because he is made to feel hurt, worried, disturbed, depressed, insecure or lose property (Khan, 2006; Nwankwo & Unachukwu, 2006). Sometimes the victim tends to have lower level of self-esteem (Aluede, 2011; Marzano, 2003; Obe, 2009; & Rigby, 2005). Bullying has also led to loss of lives (Coloroso, 2008; Haber & Glatzer, 2007). The death of ten years old Damilola Taylor in Peckham, UK on the 27th, November 2000 still sends ripples of pain through the heart and marrows of many people (Wikipedia, 2018). Many children have attempted or committed suicide, sustained permanent injuries and dropped out of school as a result of bullying (Field, 2007; Swearer, Espelage & Napolitano, 2009), hence their

future was marred. The Popular Peaceful Schools International (PSI), a Canadian Charitable Organization was established in 2001 by Hetty van Gurp (an internationally recognized educator and author), as a result of her son, Ben, who died due to an incident of aggression by a boy who had been bullying him (Gurp & Levin, 2009).

The bullies often graduate into criminal behaviour that requires the use of weapons (Ekeh, 2007; Olweus, 2003). They may be highly distracted from serious academic work since they spend much of their time scheming and strategizing on whom, how, and when to bully. The researchers recall clearly the case of one student in a secondary school in Owerri, Imo State in 1998, who was hit to death by his classmate. His classmate (a reactive bully) hit the deceased to retaliate for being bullied by the deceased the previous day. Though the reactive bully was sentenced to life imprisonment for manslaughter, the original active, initiative-perpetrator (the deceased) has long ended his own life and caused his parents much sorrow. Indeed bullying has lifelong debilitating consequences in the life of the bully himself.

The bystanders have their own share of the negative consequences of bullying. Bystanders who frequently observe bullying may also imbibe bullying culture as a result of social learning. According to Taylor, Peplau and Sears (2006), people often learn social attitude and behaviour simply by watching other people, known technically as "models". There are also occasions that bullying ends up in serious violent conflicts involving the use of weapons among adolescents in such ways that bystanders get injured. From the foregoing, one could liken bullying to 'an evil wind that blows no man any good'.

Various attempts are being made in the Western world to curb the incident of bullying among students. The renowned Olweus Bullying Prevention Programme (OBPP) is now in use in Europe and North America (Olweus, 1994). Social-Skills training is recommended and used by Wong (2004) as part of the techniques for modifying bullying. Different types of anti-bullying campaign strategies are mounted by both governmental and non-governmental agencies to help the victims of bullying and to also stop bullies from perpetrating bullying behaviour. Some states in U.S.A are beginning to require schools to adopt anti-bullying policies (Lumsden, 2002 and Rigby, 2005). According to Khan (2006) and Obe (2009), Colorado, New Hampshire, and West Virginia have passed legislation that makes it

mandatory for schools to have anti-bullying policies; Massachusetts has allocated one million dollars to "bully-proof" its schools and several websites and telephone lines are made available to children and parents for the purposes of reporting bullying cases and also for receiving counselling. National Education Protocol Against Bullying has been initiated in the Netherlands (Wong, 2004). Government funded camps are organised to equip children with skills that will help them to stop bullying and /or avoid being bullied. It seems that any form of bullying at any level is viewed as a serious offence because of the government's sensitivity to its attendant consequences on the children and the larger society.

In Nigeria, Aluede (2011) and Egbochukwu (2007) have examined bullying behaviour among secondary school students in Benin. Badejo and Ubangha (2002) assessed and managed bullying among secondary school students in Lagos. Omoteso (2010) studied bullying among secondary school students in Ile-Ife, Osun State. Ikeagu (2006) carried out a study on the incidence and consequences of bullying in schools as perceived by students in Imo State. All these have not aroused the desired attention from the stake-holders and the government against bullying. It still seems as if our attention to bullying only arises when it erupts into severe violent conflicts and formation of cultic groups as it appears to be the present situation in Imo State and Owerri Metropolis in particular. Series of killings and cultic movements in Owerri Metropolis among students (Ministry of Education, 2003) are not un-associated to bullying. The Imo State Government through the Special Adviser for Security matters issued a white paper on the measures to combat cultism in secondary schools which include the following: abolition of use of handsets, immediate creation of security committee in all schools, compilation of names of student cultists and those of their parents for forwarding to the Security Bureau for appropriate action, creation of more recreational activities, introduction of excellent /good behaviour awards in all schools and prosecution of any teacher confirmed as a cult member, among other things (Eguh, 2009). In addition, the 'New Face Vigilante', a security outfit established by Imo State Government was mandated to arrest and discipline students who are reported to be cultists. On the face value it appears as if the visits and disciplinary measures of the New Face Vigilante are reducing the rate of violent inter-cult and inter-school fights. However, the entrenched bullying culture has not been handled.

A lot of work is required to instil in the students the appropriate attitude to bullying behaviour and modify the acquired bullying behaviour in order to have a lasting behavioural change since most students join cults in order to fight, retaliate or shield themselves from bullies.

Bullying behaviour disrupts the peace and tranquillity necessary for the normal functioning of our schools. It interferes with the normal developmental processes of children and hinders their smooth passage through adolescence, thereby rendering them dysfunctional in the society (Sullivan et al, 2005). In Imo state and Owerri Metropolis in particular, most of the violent behaviour prevalent in the public secondary schools are traceable to bullying. Frequently, lessons are disrupted, lives of students and teachers are under threat and the school administrators spend ample time and money to address issues which arise from bullying.

This situation is made worse by the realization that despite the widespread nature of the bullying culture among secondary school students in Owerri, very insignificant attention is directed to the problem in the schools. The study of Badejo and Ubangha (2002) revealed that both bullies and victims of bullying can be successfully helped with a treatment package based on the principles of cognitive restructuring and assertiveness training. Ikeagu (2006), in her study, found that helping students to master difficult skills and concepts, introducing variety while teaching, using suspense, random recitation and presentation of unusual materials, firmness about reprimands, flogging and scolding, suspension and expulsion and provision of encouragement and praise among others are methods which are suggested by teachers and students as appropriate for managing bullying. Most of these appear to be at their best, appropriate for classroom management but may not be adequate for the inculcation of a lasting attitudinal and behavioural change required to reduce bullying behaviour to the barest minimum.

Previous research works had reported diverse findings on managing incidence of bullying among youths (Wong, 2004; Sullivan, et al., 2005; Egbochukwuu, 2007; Aluede, 2011). However, many of these studies did not report the combination of social skills training, inhibitory modelling and persuasion in changing secondary school students' attitude to and involvement in bullying. Social skills training is designed to help students develop, maintain or terminate relationships with other peers without causing any hurt, pains or

misunderstanding. Inhibitory modelling is designed to provide an avenue for the participants to listen to some of the terrible experiences narrated by prison inmates and ex-cultist(s) who bullied others in the past and are meant to pay enormous the price for their misdeeds. This would serve to restrain or inhibit bullying behaviours in the participants. The persuasion method assumes that people are rational in the way they process information. That they can be motivated to attend to a message, learn its contents, and incorporate it into their attitudes. Individuals sometimes change their attitudes because they have been persuaded by information received from others to acquire the attitudes you wish to promote.

Purpose of the Study

The main objective of the study was to investigate the relative effectiveness of social skills training, inhibitory modelling and persuasion as counselling interventions to manage the attitude to and involvement in bullying behaviour among senior secondary school students in Owerri Metropolis. Specifically, the study sought to:

1. Investigate the relative effectiveness of social skills training, inhibitory modelling and persuasion in modifying the attitude of senior secondary school students to bullying behaviour.
2. Appraise the relative effectiveness of social skills training, inhibitory modelling and persuasion in modifying the involvement of senior secondary school students in bullying behaviour.

Research Questions

The following research questions are raised to guide the study:

1. To what extent will participants exposed to three counselling interventions and waiting-list control differ in attitude to bullying behaviour?
2. What is the effectiveness of social skills training, inhibitory modelling, persuasion and waiting-list control in reducing the involvement of senior secondary school students in bullying behaviour?

Research Hypotheses

The following hypotheses were tested in the study:

1. There is no significant difference in post-test mean scores on the attitude to bullying behaviour among participants in the four experimental groups (three counselling interventions and waiting-list control).
2. There is no significant difference in post-test mean scores on the involvement in bullying among participants in the four experimental groups.

Methodology

Research Design

This study adopted the quasi-experimental research design. The quasi-experimental design was appropriate for this study because it involved human behaviour and did not permit complete randomization of subjects to the conditions and control of all variables (Ilogu, 2005; Nwadinigwe, 2005).

Area of Study

The study was carried out in four Local Government Areas in Owerri Metropolis, Imo State. Owerri is the capital of Imo State, Nigeria. It is the most densely populated town in the state and is inhabited by a good representation of all the people of the state and other foreigners from within and outside Nigeria who are mostly civil servants and private business men and women. Imo State is in the South East Geopolitical Zone of Nigeria.

Sample

The study sample comprised 420 senior secondary two students (SS 2) drawn from twelve senior secondary schools in Owerri Metropolis. This was made up of 215 boys and 205 girls. The age range of the students was 15 to 19 years, while the mean ages for the male and female participants were 16.65 years and 16.37 years respectively. The SS 2 students were chosen, firstly, because they were not preparing for senior school certificate examination and therefore likely to be more available for the study. Secondly, senior students seem to be more involved in bullying than junior students.

The procedure adopted was simple random sampling. Firstly, three schools were selected from each of the four Local Government Areas that make up Owerri Metropolis. Secondly, one intact SS 2 class was randomly selected from each school bringing the total to 12 intact

classes. The total number of students in the intact classes chosen was 592. The students who scored at least 40 on Involvement in Bullying Rating Scale met the criterion for inclusion in the study. Consequently, 420 students from the twelve schools qualified for inclusion in the study. Thirdly, the four experimental conditions (three treatment and one waiting-list control) were randomly assigned to the four Local Government Areas. The schools in the same Local Government Area were exposed to similar experimental condition.

Instruments

The following instruments were used to collect data for this study:

Involvement in Bullying Rating Scale

The instrument was designed to obtain information on the participants' involvement in bullying as a victim, a bully and a bystander respectively. It also provides information on the prevailing types of bullying behaviour (physical, verbal, social and emotional). The test-retest reliability coefficient of the instrument obtained at three weeks interval was 0.61.

Attitude to Bullying Rating Scale

This is 20-item, 4-point Likert scale instrument designed to provide information on the attitude of participants to the various types of bullying behaviour. The test-retest reliability coefficient obtained at three weeks interval was 0.75.

Procedure

Two weeks before the commencement of the treatments, the researchers administered the Involvement in Bullying Rating Scale and Attitude to Bullying Rating Scale to the participants in the twelve intact classes. The three treatments ran almost concurrently, except in some cases where some groups were ahead of others in the administration of some treatment packages due to certain logistics. Every treatment group met once every week for six weeks and each session lasted for 60 minutes. Two weeks after the treatments, the assessment instruments were re-administered to the participants in all the experimental groups.

Treatments

Social Skills Training

The objectives of this treatment were to inculcate social skills in the participants in order to help them to cultivate/develop, maintain or terminate relationships with other peers without causing any hurt, pains or misunderstanding. The participants were helped to acquire the core values necessary for the attainment of responsible citizenship in the community; and help them to strive for wholesome social interaction in order to gain lasting acceptance and respect from their peers.

Inhibitory Modelling

This intervention was designed to provide an avenue for the participants to listen to some of the terrible experiences narrated by prison inmates and ex-cultist(s) who bullied others in the past and are meant to pay enormous the price for their misdeeds. This would serve to restrain or inhibit bullying behaviours in the participants. The prison inmates and ex-cultist(s) were the inhibitory models.

Persuasion

The persuasion method assumes that people are rational in the way they process information. That they can be motivated to attend to a message, learn its contents, and incorporate it into their attitudes. By controlling the way clients perceive you, the way your messages are organized and presented, and who your clients are, you may persuade them to change their attitudes. Individuals sometimes change their attitudes because they have been persuaded by information received from others to acquire the attitudes you wish to promote. In this study, persuasion was in the form of talk given to the participants on the dangers of involvement in bullying.

Waiting List Control

The participants in the waiting-list control group did not receive any treatment. They were told that owing to logistic problems their intervention will come at a later date. However, they were administered the pre- and post-test assessment measures.

Method of Data Analysis

The data analysis was carried out by the means of both descriptive and inferential statistical methods. The means, mean differences and standard deviations for pre- and post-treatment

assessment scores were computed. All the hypotheses were tested using the 2 x 4 Analysis of Covariance (ANCOVA).

Results

Table 1 presents the means, standard deviations and mean differences for pre-test and post-test scores of the participants' attitude to bullying behaviour based on experimental groups and gender. From the results in Table 2, there is significant difference in the post-test mean scores in attitude to bullying behaviour among the four experimental groups ($F_{caculated}$ = 1037.47, $F_{critical}$ = 2.62, $p<0.05$). The hypothesis one is therefore rejected. The pair wise comparisons in Table 3 using the Fisher's protected t test indicate that inhibitory modelling evidenced superiority over social skills training in changing attitudes to bullying. In the same vein the persuasion technique was superior to the social skills training; while no significant difference exists between inhibitory modelling group and the persuasion group.

Table 4 presents the means, standard deviations and mean differences for pre-test and post-test scores of participants' involvement in bullying based on experimental conditions and gender. As shown in Table 5, there is significant difference in the post-test scores on involvement in bullying among the participants in the four experimental groups ($F_{caculated}$ = 479.47, $F_{critical}$ = 2.62, $p<0.05$). Hypothesis two is, therefore, rejected. In order to determine where the significance between experimental groups lies, post hoc comparisons were conducted using the Fisher's protected t-test. The results in Table 6 show that inhibitory modelling emerged the most effective technique for modifying participants' involvement in bullying, followed by persuasion and finally social skills training.

Table 1: Pre-test and Post-test mean scores on the Participants' Attitude to bullying based on Experimental Conditions and Gender

Experimental Groups	Gender	N	Pre-test		Post-test		Mean difference
			Mean	SD	Mean	SD	
Social Skills Training	Male	50	45.10	8.49	22.60	1.50	22.50
	Female	55	44.11	7.40	23.95	1.64	20.16
	Total	105	44.58	7.75	23.30	1.70	21.28
Inhibitory Modelling	Male	59	42.20	6.67	22.00	1.74	20.20
	Female	46	45.37	6.85	21.91	1.56	23.46
	Total	105	43.60	6.90	21.96	1.65	21.64
Persuasion	Male	60	45.88	7.25	21.72	1.25	24.16
	Female	45	45.04	7.17	21.80	1.32	23.24
	Total	105	45.52	7.20	21.75	1.28	23.77
Waiting List Control	Male	46	42.89	7.96	43.22	7.94	-0.33
	Female	59	44.56	8.09	48.85	7.42	-4.29
	Total	105	43.83	8.04	46.38	8.12	-2.55
Total	Male	215	44.05	7.64	26.62	9.54	17.43
	Female	205	44.73	7.35	30.18	12.63	14.55
	Total	420	44.38	7.50	28.37	11.28	16.01

Table 2: 2 x 4 Analysis of Covariance (ANCOVA) on Influence of experimental conditions and Gender on Attitude to Bullying Behaviour among Participants

Source of Variation	Sum of Squares	Df	Mean square	f cal
Main effects	46753.94	5	9350.79	645.41
Covariate	813.55	4	813.55	56.15
Experimental Groups	45092.99	3	15030.10	1037.47*
Gender	267.66	1	267.66	18.47
2 Way Interactions				
Experimental Groups versus Gender	35537.04	3	179.01	12.36
Residual	5940.16	411	14.49	
Total	53231.13	419	127.35	

* Significant, $p < 0.05$, F critical at 0.05 (1,411) = 3.86

Table 3: Pair-wise comparison of the influence of the experimental conditions on the attitude of the participants' attitude to bullying behaviour

Experimental Conditions	Social Skills Training (n=105)	Inhibitory Modelling (n=105)	Persuasion (n=105)	Waiting-List Control (n=105)
Social Skills Training	23.30	2.55*	2.95*	-43.88*
Inhibitory Modelling	1.34	21.96	0.40	-46.43*
Persuasion	1.55	0.21	21.75	-46.83*
Waiting-List Control	-23.08	-24.42	-24.63	46.28

Note: Group means are in the diagonal; mean differences are below the diagonal; while the protected t values are above the diagonal.
* Significant at 0.05; d.f. = 208; t critical = 1.96.

Table 4: Pre-test and Post-test mean scores on the Participants' Involvement in Bullying Behaviour Based on Intervention Type and Gender

Experimental Groups	Gender	N	Pre-test		Post-test		Mean difference
			Mean	SD	Mean	SD	
Social Skills Training	Male	50	39.02	7.26	23.34	3.29	15.68
	Female	55	41.04	7.02	26.00	4.50	15.04
	Total	105	40.08	7.17	24.73	4.17	15.35
Inhibitory Modelling	Male	59	37.83	5.27	21.07	4.03	16.76
	Female	46	43.04	7.97	21.98	3.86	21.06
	Total	105	40.11	7.05	21.47	3.97	18.64
Persuasion	Male	60	39.17	4.52	23.08	3.19	16.09
	Female	45	39.49	5.47	23.64	4.20	15.85
	Total	105	39.30	4.93	23.32	3.65	15.98
Waiting List Control	Male	46	40.39	4.80	42.02	4.36	-1.63
	Female	59	41.54	5.67	38.63	5.01	2.91
	Total	105	41.04	5.31	40.12	5.01	0.92
Total	Male	215	39.02	5.56	26.65	9.53	12.37
	Female	205	41.29	6.64	28.21	12.63	13.08
	Total	420	40.13	6.21	27.41	11.28	12.72

Table 5: 2x4 Analysis of Covariance (ANCOVA) on Influence of Experimental Conditions and Gender on Involvement in Bullying Behaviour among Participants

Source of Variation	Sum of squares	Df	Mean square	f –cal
Main effects	23764.27	5	4752.85	305.85
Covariate	573.97	1	573.97	36.94
Experimental Groups	22352.80	3	7450.93	479.47*
Gender	5.43	1	5.43	0.35
2 Way Interactions				
Experimental Groups versus Gender	478.49	3	159.50	10.26
Residual	6386.98	411	15.54	
Total	30629.74	419	73.10	

* Significant, $p < 0.05$, F critical at 0.05 (1,411) = 3.86

Table 6: Pair-wise comparison of the influence of the experimental conditions on the involvement of the participants in bullying

Experimental Conditions	**Social Skills Training (n=105)**	**Inhibitory Modelling (n=105)**	**Persuasion (n=105)**	**Waiting-List Control (n=105)**
Social Skills Training	24.73	5.60*	2.59*	-28.29*
Inhibitory Modelling	3.30	21.43	-3.40*	-34.28*
Persuasion	1.41	0,21	23.32	-30.88*
Waiting-List Control	-15.39	-18.66	-16.80	40.12

Note: Group means are in the diagonal; mean differences are below the diagonal; while the protected t values are above the diagonal.
* Significant at 0.05; d.f. = 208; t critical = 1.96.

Summary of the Findings

The following are the highlight of the findings:

1. Social skills training, inhibitory modelling and persuasion were effective in modifying the attitude of participants to bullying behaviour.

2. The participants in the three counselling interventions recorded fewer tendencies to be involved in bullying behaviour than those in waiting-list control.
3. The inhibitory modelling was superior to persuasion and social skills training in reducing the participants' involvement in bullying.

Discussion and Conclusion

It is evident from the findings that social skills training, inhibitory modelling and persuasion are all significantly effective in modifying the attitudes of the participants to, and their involvement in bullying behaviour. The effectiveness of Social skills training in modifying the attitude and involvement of the participants in bullying behaviour supports the prescription of Wong (2004), who embarked on exploring effective ways to tackle bullying problems in Hong Kong. He referred to the elements adopted by National Education Protocol against Bullying initiated in the Netherlands which included social skills training for bullies and victims among others. He recommended from his findings that providing students with social skills and emotional-control training packages, among other elements are essential for dealing with problems of school violence. Though, Wong (2004) used all the students in the junior classes of secondary schools in Hong Kong, this study focussed on all senior secondary two students in Owerri, Nigeria. There still exists a great deal of agreement between the results of his work and the present one with regard to the efficacy of Social Skills Training in modifying bullying behaviour.

The observation that inhibitory modelling was effective in modifying the attitude to, and involvement of the participants in bullying behaviour supports the assertion of Corey (2008), that the behaviour of an individual or a group (the model) acts as a stimulus for similar attitudes, and behaviour on the part of observers. It is a generally accepted fact that people often learn social attitude and behaviour simply by watching other people, known technically as "models "(Cardwell & Flanagan, 2003; Haralambos, Holborn & Heald, 2008; Taylor, Peplau & Sears, 2006). Many of the students imbibed bullying attitude and behaviour from observing the seniors who serve as disinhibitory models bullying others, they tend to imitate them. This was more facilitated when the seniors' bullying behaviour was not

punished but they were rather hailed by their peers and the bullies were accorded much 'respect' by both their mates and the juniors.

When the students were presented with inhibitory models (ex-cultists, well known miscreants in their environments and teenage prison inmates) in the treatment package, the paradigm appeared to have shifted from hailing and respecting the bullies to feelings of disgust, regrets and pity. The use of teenage prison inmates was very captivating because the students were apt to identify with them. This may have influenced the observed change in attitude and behaviour towards bullying by the participants in this study. It is not, therefore, surprising that inhibitory modelling emerged the most superior technique among the three for modifying the involvement of the participants in bullying behaviour.

The effectiveness of persuasion in modifying the attitude of the participants to, and involvement in bullying behaviour is not surprising because the persuasion technique involved such elements which stimulated and tasked the students' thoughtful involvement and contributions in the treatment package. The debates and group assignments seriously engaged their minds and those who spoke in favour of bullying decided to change their stands half-way in the debate in order not to lose abysmally. Persuasion technique also appears to have intensely drawn the participants' attention to the numerous irrational thoughts and illogical beliefs that kick-start and maintain bullying among students. At the same time, participants were helped to appreciate what they stand to benefit when they desist from bullying.

Recommendations

Based on the findings of the study, the following recommendations are proffered:

1. Teachers, counsellors, school heads and administrators should devote ample time to inculcate appropriate social skills into the students by deliberately teaching these social skills during moral instructions, orientation weeks and special school programmes.
2. Adequate class supervisions are recommended for both the junior and senior students since bullying is least experienced when teachers are in the classroom. If possible, teachers' offices should be sandwiched between classrooms, instead of being far away and secluded from the classrooms.

3. Students who are actively involved in bullying and are rated as potential criminals should be helped with special programmes that will enable them appreciate that bullying is an evil wind that blows no man any good. They should be taken to visit teenage inmates in the prisons to see for themselves some of the consequences of their present behaviour.
4. Counsellors can utilise the inhibitory modelling technique to help students who are highly involved in bullying and are rated as potential criminals, instead of waiting till the time such students will be arrested and put in prison cells. This could be done with video tapes, visits to prison, visits to motor parks and by bringing a willing model to the school.

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Tutor Management Support Services in Colleges of Education in Ashanti Region, Ghana

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Abstract

The availability of tutor management support services provide the needed guidance, direction and assistance to tutors in the performance of their duties and help overcome diverse challenges they face – professional, personal, material and emotional that can potentially affect their work. The study explored management support services in public colleges of education in the Ashanti Region of Ghana. Four research questions and a hypothesis guided the study. Using the census sampling technique all tutors and all principals were used for the study. Data were collected using the questionnaire, and analysed using means and standard deviations, and chi square. Findings include existence of orientation for new tutors and performance appraisal. It was concluded that in-service programmes help tutors to improve upon their skills, and study leave is the preferred incentive for tutors. It is recommended that principals in colleges of education in the Ashanti Region should ensure that orientation programmes are organised for newly recruited tutors. Again, principals of the colleges should be encouraged to continually ensure that tutors are appraised on their performance.

Key words: Management support services, colleges of education, induction/orientation, performance appraisal, in-service training, incentives (motivation).

Introduction

The human resource in every organisation serves as the lifeblood that keeps the organization moving. It provides the knowledge, skills and drive that create, maintain and advance

organizations towards the achievement of set goals and objectives. It needs considerable attention from the organization's management if they are to realise their full potential in their work. To be successful, therefore, organizations make every effort to attract, develop and retain individual employees they need. The school, as an organization, has teachers as the core of its human resource. They are the greatest aid to teaching and every educational system at every level depends heavily on teachers for the execution of its programmes (Musaazi, 1982). In educational institutions, it is largely the work of the teacher that determines the degree of success or failure in the institution's efforts to achieving its goals and objectives. From 1848 when catechists and teachers were trained to support the system of education (Macwilliam & Kwamena-Poh, 1975), various education reforms have called for quality teachers (Ministry of Education, 1974; Educational Reform Programme, 1987).

According to Owolabi and Edzii (2000), teacher management support services include systems and structures put in place to direct, guide and assist the teacher in playing his role so that the primary objective of promoting teaching and learning can be achieved. These support services aim at showing concern for and assisting the teacher to overcome life challenges that confront him. Musaazi (1982) adds that teacher management support services deal with the establishment of procedures and arrangement of conditions that make possible greater self-direction by staff in the performance of their duties. These according to Musaazi, include the provision of opportunities for the teacher to develop professionally and academically, monitoring and supervising teachers' output, performing staff appraisal, induction and orientation of new teachers and improving staff motivation. Others include the supply of teaching and learning materials, providing financial and health support services, incentive packages, teacher resource centres and staff development. In addition, they involve promoting good relationship between the teacher and the community and showing concern for and assisting the teacher to overcome the life challenges that confront him.

Management support services are therefore an important function in the context of an administrative responsibility. All these are structures and forms of teacher management and support services, which are in line with Musaazi's view on teacher management and support services. Such management support services notwithstanding,

Avalos (1991) contends that a set of factors which affects the supply, retention and performance of teachers are those related to status and conditions of service, including salaries, housing, student/teacher ratios and working environment. Low salaries and few opportunities for professional advancement affect both teacher morale and their status amongst other professionals as well as their teaching performance. Lockhead and Verspoor (1990) allude to the fact that these factors contribute to the relatively high rate of teacher attrition, which in some countries reaches 9% or 10%. Harbison (1973) also observes that teachers tend to leave the teaching profession as and when more attractive jobs become available in government, politics, or in the private sector resulting in shortage of teachers especially in developing countries.

Yong (1984), reports that there has been a serious downward trend of the appeal of the teaching profession and few people are choosing to teach. This according to him is due to the fact that, even though the teacher is expected to perform his duties and is expected to help his students, he is rewarded with relatively low pay, minimal social prestige and generally poor conditions of service. He continues that if a teacher feels cared for or has his needs met, or given the chance to improve, he will be anxious to give off his best. Also if adequate resources and facilities in the school are available, teachers are encouraged to put up their maximum best.

The International Institute for Educational Planning (IIEP, 1998) also observes that considering the imbalances in teacher provision, that is, overstaffing and concentration of qualified teachers in privileged areas, long term vacancies in some schools and colleges and the shortage of experienced staff in schools in remote areas, together with the high rate of teacher absenteeism in some areas, are at least partially induced by problems of teacher management and support services. Darling-Hammond (1984) observes that career satisfaction is a major contributing factor that determines teachers' commitment to teaching. She is of the view that if teachers are satisfied at their work place, they are more likely to be successful and so it is very important that teachers are managed and supported to perform effectively and also make them stay on the job.

Induction as one of the very important stages in the staffing process of any institution or organisation, is identified as one of the

management support services needed for the college tutor. As a process, induction involves preparing, supporting and retaining new teachers (Wong & Wong, 2003). The purpose of induction, according to Rebore (2007), includes making the employees feel welcome and secure, helping the employee become a member of the "team", and inspiring the employee towards excellence in performance. It involves helping the employee adjust to the work environment, providing information about the community, school systems, school building, faculty, and students, acquainting the individual with other employees with whom he or she will be associated, and, facilitating the opening of the school each year.

The inductee(s), in the view of Castetter (1981) should therefore be furnished with whatever information is necessary to facilitate their adjustment. They should be fully informed about the community, about duties, relationships and responsibilities of the position, about characteristics of the system, purpose, policies, procedures, personnel, customs, missions, and about the building unit he or she is assigned. Rebore (2007) observes however that, induction is an administrative function that is often neglected or loosely organised in many schools. Stuart, Kunje and Lefoka (2000) found out in their study in Malawi and Lesotho that no formal induction was offered to new tutors. In the National Teachers Training College in Lesotho for example, Stuart et al., found that tutors had not been specifically prepared for their role as teacher educators.

Performance appraisal also serves as a support for tutors as it helps determine the effectiveness of the tutors in the teaching and learning process. Performance appraisal helps to identify the tutors' current level of performance, strengths and weaknesses, improve their performance, motivate them, identify training and development needs, identify potential performance and information for succession planning (Cole, 1993). Pasiardis (2002) suggests that the appraisal should include professional training and performance/teaching ability in teaching techniques, teaching organisation, presentation of teaching materials, organisation and management of the classroom and school climate. He adds that the appraisal reports (feedback) must be known and signed by the teachers who should declare that they are aware of, without necessarily agreeing with the content and the report should be discussed with the teacher. Stembridge (1983) indicates that the provision of feedback to the teachers regarding their performance is

critical as far as appraisal is concerned. This is because to him it forms the basis of any corrective action on professional development and the growth of the individual. Stembridge continues that the quality as perceived by the teachers of the feedback they receive in the course of the appraisal process is likely to substantially affect their perception of the effectiveness of the appraisal process. Musaazi (1982) adds that appraisal (evaluation) like learning should be a continuous process. He continues that at the end of the year, the school head is required to report to the Ministry of Education or its agency on the performance of each teacher. Donnelly, Gibson and Ivancevich (1992) conclude that heads must be able to take the corrective action based on discussions on appraisal outcomes, to restore any imbalances between actual performance of the appraisees and the set standards.

Provision of in-service training to teachers has also been identified as one of the support services for teachers. It involves an on-going process of education, training, learning and supporting activities and is concerned with helping people to grow within the organisation in which they are employed (Marriss, 2010). Musaazi (1982) adds that in-service training programmes may include workshops, seminars, refresher courses, exchange teaching, professional writing, visits to other schools to observe teaching methods in those schools, staff meetings, courses of study at colleges of education, post-graduate work at university, and participation in the evaluation of the school programmes, which are organised by the employing authorities, tertiary institutions, teachers' subject associations and other individuals and groups. Rebore (2007) outlines opportunities in-service training programmes can offer teachers. They include: upgrading of skills and knowledge in a subject area, keeping abreast with societal demands, becoming acquainted with the advances in instructional materials and equipment becoming acquainted with research on the instructional process and on new methods of teaching.

Another support service worth noting is the availability of teacher incentives (motivation). Pasiardis (2002) emphasises the availability of a variety of reward systems but makes a classification between intrinsic and extrinsic rewards. He explains that intrinsic rewards refer to the feelings of job satisfaction that is derived from a range of activities in the work place. He goes on to say that though intrinsic rewards are desired, extrinsic rewards seem more important

nowadays because, like any worker, a teacher has to pay electricity and telephone bills, buy a car, cloth and educate his or her children. Consequently, extrinsic and other tangible and material rewards are indispensable. Chapman and Carrier (1990) add that teachers are not different from workers in other occupations where money and other forms of rewards are effectively used as incentives. They continue that when incentive packages are adequately provided there is high morale and job commitment among teachers.

Musaazi (1982) reports that under their conditions of services, teachers in Nigeria are entitled to certain allowances and benefits. These include among others, responsibility allowance and subsidised rented houses. He indicates that responsibility allowance includes housemaster and housemistress allowance, head of department allowance, games master's and science master's allowance. He continues that secondary school teachers are provided with subsidised rented houses so that they do not have accommodation problems. Stembridge (1983) adds that motivators may differ from one teacher to the other. Some will be intrinsically motivated by feedback which indicates improved or superior performance, whiles, others may be equally or more effectively motivated by extrinsic rewards like promotion, or salary increment, subsidised accommodation, free meals and access to transportation. To this end, Stembridge is of the view that the role, then, of the college administrator is to pay attention to extrinsic factors in order to create an environment in which teachers' intrinsic motivation may be released and then to guide and sustain that motivation.

The nature of the college of education programme makes greater demand on tutors. Teacher trainees now study on campus for two years for their content course after which they go for a year's teaching practice in basic schools in communities around the college; and return to the college for some time before finally completing the three-year programme. Tutors are therefore expected to go for off-campus teaching practice observation at least twice in a week, teach their normal classes which are usually a minimum of 25 periods a week, mark quizzes, assignments, exercises and examinations, and supervise project work of third year students. They also vet lesson notes and observe on-campus teaching practice for second year students preparing for their "out" teaching practice; among the co-curricular activities in the college which the teacher is expected to be a part. With

the upgrading of Teacher Training Colleges to Diploma Awarding Institutions (The Colleges of Education Act 2012, Act 847), tutors are expected to take up new roles and additional responsibilities. All these issues raise questions regarding the management support services provided for tutors in colleges of education.

Statement of the Problem

It is obvious that the teacher stands at a focal point, delivering the teaching services without which the school will be non-existent. To enhance the effectiveness of teachers, structures need to be put in place to guide and assist them. New teaching strategies now make new and extra demands on teachers, which necessitate an improvement in their basic philosophy, to stimulate as well as release the energies of teachers to achieve the present aims of education. This has become necessary because teachers face diverse forms and levels of challenges bordering on personal, material, emotional and professional needs. Lack of management support services could make it difficult to maintain and attract the best teachers in education. All these, call for teacher management support services to be put in place to give the needed guidance, direction and assistance to the teacher in the performance of his or her duties.

There is the need to know the management support services available for tutors in the colleges of education in the Ashanti Region in particular and Ghana in general. For instance, what opportunities are there for the tutors' professional and academic development and how often are the tutors' work appraised. Are newly recruited tutors properly inducted and orientated to help them fully adjust in the work environment, and are the tutors given other responsibilities to enable them develop their full potentials. Also, what are the available incentives for the tutors in the colleges of education?

There have been researches on the management support systems for teachers in schools. However, research in this area has typically concentrated mostly at the junior and senior high school levels (Somuah & Agyenim- Boateng, 2014; Owolabi & Edzii, 2000). Little is known about management support services for tutors at the college of education level. Indeed, Stuart, Kunje and Lefoka (2000) comment that "from an academic point of view, little research has been carried out in this field, and available literature even in the West is sparse" (p.2). In a

similar vein, evidence of management support services for tutors in colleges of education in Ghana and in the Ashanti Region in particular is scanty. First, there is the need to know what management support services currently exist for the tutors in colleges of education in the Ashanti Region of Ghana. Second, to what extent are these management support services being provided to assist the tutors in their professional work? To fill the void in research in this area, this study sought to find out the issues pertaining to tutor management support services in colleges of education in Ashanti Region of Ghana.

Research Questions

The following research questions were raised to guide the study:

1. How do tutors and principals in Colleges of Education in the Ashanti Region view management support services in terms of induction/orientation for new tutors?
2. What are the views of tutors and principals in Colleges of Education in the Ashanti Region about performance appraisal of tutors as a management support services tool?
3. How do tutors and principals in Colleges of Education in the Ashanti Region view the impact of in-service training programmes available on tutors' work?
4. What are the views of tutors and principals in Colleges of Education in the Ashanti Region on tutors' preferred incentives (motivation) as a management support services tool?

Hypothesis

The following hypothesis was tested in the study.

H_o: There are no significant differences in management support services available to the tutors in the colleges of education in the Ashanti Region of Ghana.

H_1: There are significant differences in management support services available to the tutors in the colleges of education in the Ashanti Region of Ghana.

Methodology

Research Design

The design for the study was descriptive survey. This design involves collecting data through questionnaire to test hypotheses or answer research questions concerning the current status of the subjects

of study. In descriptive surveys, the events or conditions either already exist or have occurred and the researcher merely selects the relevant variables for an analysis of their relationships and reports the way things are (Bartels, 1997; Gay, 1992). The research design was therefore appropriate for the study since the researcher also collected data through questionnaire and interviews to test hypothesis and address research questions concerning the current status of teacher management support services in colleges of education in Ashanti Region. It explained the extent to which these services are being provided to assist tutors of colleges of education in their work.

Population and Sampling

The population for the study comprised all tutors and principals in the seven public colleges of education in the Ashanti Region of Ghana. This was made up of 250 tutors and seven principals. Using the census sampling technique, all 250 tutors and seven principals were involved in the study. This was also to enable the researcher get the views of everybody in the population for clearer conclusions to be made on tutor management support services in colleges of education in the Ashanti Region of Ghana.

Instrument

The instrument used for the study was a questionnaire. The researcher used this instrument because it is the one mostly used in similar studies (Owolabi & Edzii, 2000; Stuart, Kunje & Lefoka, 2000). The questionnaire had five main sections; A, B, C, D, and E. Section A elicited demographic information on respondents; Section B sought teachers' views about induction/orientation programmes organized for new tutors; whilst Section C elicited information on tutors' views about performance appraisal of tutors in college of education in Ashanti Region. Section D sought respondents' views on in-service training programmes available to them in the tutors in college of education in Ashanti Region, and their level of satisfaction with these in-service programmes. Section E elicited views on preferred incentives (motivation) for tutors in college of education in Ashanti Region. Content validity was established for the questionnaire, whilst reliability was established through a test-retest with an overall Cronbach alpha co-efficient of 0.75.

Data Analysis

Descriptive statistics such as frequencies, percentages, means, standard deviations and cross-tabulations were used to analyse the data with the use of the Statistical Package for the Social Sciences (SPSS). These were presented in tables for the description of the data which were used in answering the research questions. The chi-square was used to test the hypothesis.

Results and Discussions

Research question 1: How do tutors and principals in Colleges of Education in the Ashanti Region view management support services in terms of induction/orientation for new tutors?

Research question one sought to explore the views of tutors and the principals with regard to management support services in terms of induction /orientation for new tutors in the colleges. The results, in means and standard deviations of the views of the tutors and the principals, are presented in Table 1.

Table 1: Means and Standard Deviations of Respondents' Opinions about Orientation Organized for New Tutors

Statement	Tutors		Principals	
	M	SD	M	SD
The orientation makes tutors feel welcomed and secured	4.15	0.58	4.29	0.43
The orientation helps tutors to become members of the team.	4.05	0.60	4.00	0.01
It inspires tutors towards excellence in performance	3.90	0.68	3.86	0.38
It helps tutors adjust to the work environment	4.08	0.60	4.29	0.49
It provides tutors with information on the compound.	4.14	0.75	4.29	0.49
It provides tutors with information on college policies and procedures.	4.05	0.66	4.14	0.38
The orientation provides tutors with information on students.	3.63	0.93	3.86	0.90
The orientation provides tutors with information about community.	3.56	0.88	4.29	0.49

It acquaints new tutors with other tutors in the college.	3.91	0.72	4.14	0.38

Key to the Table: M- Mean SD - Standard Deviation

Table 1 reveals that with the highest mean value of 4.15, the tutors agree that the orientation they received indeed made them feel welcome and secured. The corresponding standard deviation of 0.58 shows a consensus in the responses. The data from the table show that generally respondents are of the opinion that the orientation also helped them among other things to become members of the team, inspired them towards excellent performance, helped them to adjust to the environment and also acquainted them with other teachers in the college. These have mean values ranging from 3.90 to 4.08. The standard deviations also show that respondents are unanimous in their opinions, with figures ranging from 0.58 to 0.93.

On the part of the principals, the mean values of four out of the nine items listed that is, orientation makes tutors feel welcome and secured, helps tutors adjust to the work environment, provides teachers with information on the compound and, provides tutors with information about the community are incidentally the same (4.29). These are the highest among the means. Generally there are high mean scores in all the responses, meaning they are of the opinion that the orientation organized for the tutors help them (tutors) in a number of ways. With regard to the standard deviations, there is a general agreement among the principals in their responses, with figures ranging from 0.01 to 0.90.

This finding confirms Castetter's (1981) assertion that the new comer is generally unaware of "the way things are done here" (p.190) and is ordinarily uninformed about school objectives, specific duties and responsibilities, school and community traditions, taboos and personal standards to which members are expected to adhere. This finding also supports the views of Stuart, Kunje and Lefoka (2000) who found out that it was clear that many new teachers in the National Teacher Training College (NTTC) in Lesotho had not known what to do. The findings here indicate that generally, the principals share similar views with the tutors on the importance or benefits of orientation on new tutors.

Research question 2: What are the views of tutors and principals in Colleges of Education in the Ashanti Region about performance appraisal of tutors as a management support services tool?

Research question 2 sought tutors' views on the impact of the appraisal on tutors' work. Respondents' views are presented in Table 2.

Table 2: Means and Standard Deviations of Respondents' Views on Tutors' Appraisal

Statement	Tutors		Principals	
	M	SD	M	SD
Help to identify tutors' current level of performance	3.94	0.66	4.00	1.00
Help to identify tutors' strengths and weaknesses	3.92	0.59	4.43	0.53
Help to enhance tutors' performance	3.87	0.75	4.43	0.53
Help to identify training and development needs of tutors	3.76	0.73	4.29	0.49
Help to identify tutors' potential performance	3.63	0.80	4.29	0.49
Assessor sits down with tutors to discuss outcome of appraisals (feedback)	3.27	1.05	4.00	1.15

Key to the Table: M – Mean SD – Standard Deviation

Table 2 shows that with means values ranging from 3.63 to 3.94, the tutors agree that appraisal helps them to identify their current level of performance, helps to identify their strengths and weaknesses, helps to identify their training and development needs, help to identify their potential performance and also help to enhance their performance. Figures for the corresponding standard deviations which are below 1.0 (0.59-0.80), indicate that tutors are unanimous in their responses on the impact of performance appraisal.

This finding is in line with Cole's (1993) assertion that performance appraisal helps, among other things, to identify individual's current level of performance, strengths and weaknesses, improve their performance and identify training and development needs. The finding in Table 2 also supports Musaazi's (1982) view that if properly carried out, teacher appraisal helps improve performance

and provides a means of identifying not only what teachers' performance levels are but in which areas those levels need to be improved for maximum use to be made of tutors.

The data further indicate that with a mean value of 3.27 the tutors indicate that appraisers (principals) also sit down with them to discuss the outcome of appraisals as feedback for them. This finding supports Pasiardis' (2002) view that performance appraisal should include feedback to teachers to enable them become as effective as possible in the teaching learning process and also to meet their needs towards professional development. This finding also agrees with Cole's suggestion that in the appraisal process, both the appraiser and appraisee should jointly discuss the progress of the appraisal and arrive at a form of agreed action, which generally materializes in the form of a job improvement plan or promotion to another job. A standard deviation of 1.05 however, suggests higher dispersion in their responses to that item. From the analyses, it is observed that appraisal help the tutors in a number of ways, providing feedback to them to help improve upon their performance. The data in Table 2 also reveal that the principals' opinions on the teaching effectiveness of the tutors who have been appraised are not very different from that of the tutors.

Table 2 further indicates the principals agree with the tutors that performance appraisal has helped among other things to identify tutors' strengths and weaknesses, enhanced their performance and identified their training and development needs. This is seen in the high mean values ranging from 4.00 to 4.43. The standard deviations show homogeneity in four of the responses which are: "identifying tutors' strengths and weaknesses", "enhancing tutors' performance", "identifying training and development needs of tutors" and "identifying potential performance" with standard deviations of 0.53, 0.53, 0.49 and 0.49 respectively. They also confirm the tutors' observation that assessors do sit down with them to discuss the outcome of their appraisals. This has a high mean value of 4.00.

This finding supports the views of Donnelly, Gibson and Ivancevich (1992), that heads must be able to take the corrective action based on discussions on appraisal outcomes, to restore any imbalances between actual performance of the appraisees and the set standards. The finding is also in line with Stembridge's (1983) assertion that the provision of feedback to teachers regarding their performance is critical

as far as appraisal is concerned since feedback forms the basis of any corrective action on performance, development and growth of the individual. The analyses indicate that the tutors and the principals share similar views on the effectiveness of the appraisal of tutors' work in the colleges of education.

Research question 3: How do tutors and principals in Colleges of Education in the Ashanti Region view the impact of in-service training programmes available on tutors' work?

Research question 3 elicited views on the impact of in-service training on tutors work. Respondents' views are presented in Table 3.

Table 3: Means and Standard Deviations of Respondents' Views on Impact of In-service Training Programmes on Tutors Work

Statement	Tutors		Principals	
	M	SD	M	SD
Update of knowledge in subject area	4.00	0.76	4.43	0.53
Improve skills in teaching	4.04	0.71	4.29	0.49
Keep abreast with new developments in GES	3.89	0.76	4.14	0.38
Exposure to new teaching methods	3.90	0.67	4.43	0.53
Do effective evaluation of students performance	3.71	0.74	4.29	0.49
Acquaint tutors with research findings on instructional process	3.55	0.89	4.00	0.82

Key to the Table: M- Mean SD- Standard Deviation

Data in Table 3 show that both tutors and principals agree that in-service training programmes tutors attended have helped them to improve their skills in teaching, updated their knowledge in their subject areas, exposed them to new methods of teaching, kept them abreast with new developments in tertiary education, and acquainted them with research findings on instructional issues. This can be seen in the high mean values ranging from 4.43 to 3.55. The corresponding standard deviations, which range from 0.38 to 0.89, also indicate that respondents are unanimous in their responses. This finding supports Rebore's (2007) assertion that in-service training programmes help tutors upgrade their skills and knowledge in a subject area, keep abreast of societal demands, become acquainted with the advances in instructional materials and equipment, and become acquainted with

research on the instructional process and on new methods of teaching. It is consistent with Musaazi's (1982) views that professional development aims at helping teachers improve and update their techniques appropriate for different teaching learning situations and to strengthen their capacity to apply teaching techniques effectively. It also improves teachers' abilities and skills to teach, manage, and effectively participate in classroom and school activities. It increases teachers' self-esteem and credibility, improves their professional ethics and enables them to develop professional qualities based on their own current levels. It can therefore be observed that tutors and principals agree that in-service training programmes help tutors them in their work.

Research question 4: What are the views of tutors and principals in Colleges of Education in the Ashanti Region on tutors' preferred incentives (motivation) as a management support services tool?

Research question 4 sought the views of respondents on what tutors in colleges of education in the Ashanti Region prefer as motivation (incentives). The results are presented in Table 4.

Table 4: Means and Standard Deviations of Preferred Incentives (Motivation) to Tutors

Statement	Tutors		Principals	
	M	SD	M	SD
Study leave with pay	5.33	1.73	5.86	1.68
Provision of accommodation	5.06	1.78	5.00	2.45
Payment of hospital bills	5.00	1.82	5.29	2.21
Payment of responsibility allowances	4.53	1.69	5.29	1.89
Free meals (breakfast &lunch)	3.45	1.86	4.43	2.07
Vehicle maintenance allowance	3.39	2.42	4.14	2.19
Free transportation to and from college for tutors living outside the college	3.35	2.03	3.29	2.14

Key to the Table: M – Mean SD – Standard Deviation

Table 4 shows that tutors consider free transportation for tutors living outside the college highest. This has a mean value of 3.35. The implication is that free transportation for tutors living outside the college is the most preferred incentive among a lot of the tutors. However, with a standard deviation of 2.03, there is higher dispersion

in respondents' responses. With a mean value of 5.00, payment of hospital bills is ranked fifth by the tutors, with a standard deviation of 1.78 indicating unanimity in their responses. With an earlier finding that the teachers are not satisfied with the provision of this incentive, one would assume that it would be ranked high. However, the reason for this stand may be that, with the introduction of the National Health Insurance Scheme, medical bills of the tutors would be catered for by the scheme and hence it will no longer be a concern for the tutors. Table 4 also reveals that with a mean value of 5.33 the teachers rank study leave with pay seventh. This suggests that it is the least preferred incentive and probably pre-supposes that the incentive is already available and the teachers do enjoy it. A standard deviation of 1.73 however shows higher dispersions in their responses. The rankings of the other incentives are: vehicle maintenance allowance, second with a mean value of 3.39; free meals, third with a mean value of 3.45; payment of responsibility allowances, fourth with a mean value of 4.53; and, provision of accommodation, sixth with a mean value of 5.06. A closer look at figures from the table indicates corresponding standard deviations of more than 1.00, showing higher dispersions in their responses.

The data from the table indicate that the principals also considered free transportation for tutors living outside the college highest. This recorded a mean value of 3.29. Payment of hospital bills and payment of responsibility allowances have the same mean value of 5.29, ranking fifth. Study leave with pay, with a mean value of 5.86 ranks seventh. The corresponding standard deviations, which are all above 1.00, show dispersions in the principals' responses. The others rankings by the principals are; vehicle maintenance allowance, second; free meals, third; and, provision of accommodation, fourth, with respective mean values of 4.14, 4.34 and, 5.00. The table also shows corresponding standard deviations of more than 1.00 indicating higher dispersions in their responses.

This supports the views of Chapman and Carrier (1990) that teachers are not different from workers in other occupations where money and other forms of rewards are effectively used as incentives. They continue that when incentive packages are adequately provided there is high morale and job commitment among teachers. The findings also support Pasiardis' (2002) assertion that extrinsic rewards seem more important nowadays because, like any other worker, a teacher has

to pay electricity and telephone bills, buy a car, cloth and educate his or her children. Consequently, he considers extrinsic and other tangible rewards to be indispensable. From the analysis, it could be observed that the tutors as well as the principals agree that other incentives like car and housing loans, scholarship for teachers' wards in school, risk allowances and end- of-service benefits should be provided for the teachers to motivate them in their work.

Hypothesis Testing

H_o: There are no significant differences in management support services available to the tutors in colleges of education in the Ashanti Region of Ghana.

The chi–square test for independence was performed to determine whether there are any differences in management support services available to the training colleges. Results of the test are presented in Table 5.

Table 5: Results of the hypothesis testing of management support services available to the tutors in colleges of education

Management support services	χ^2 value	χ^2 critical	df	Significance (2-tailed)	Decision	Conclusion
Participation in induction	12.24	21.03	12	.426	Fail to reject Ho	No Significant Differences
Performance appraisal	18.55	21.03	12	.100	Fail to reject Ho	No Significant Differences
Impact of training programmes on tutors	18.52	21.03	12	.101	Fail to reject Ho	No Significant Differences
Incentives preferred	41.19	21.03	12	.000	Reject Ho in favour of H_1	Significant Differences

Table 5 shows that even though there are variations in the data, the χ^2 test suggests that the variations or differences are not significant for the following management support services available to the tutors in the colleges of education in the Ashanti Region: "participation in induction", "non-participation in induction", "performance appraisal"

and "impact of training programmes on tutors". The chi-square values for these are: χ^2 (12, N=232) = 12.24, p>0.05; χ^2 (12, N=232) = 9.62, p>0.05; χ^2 (12, N=232) = 18.55, p>0.05; χ^2 (12, N=232) =18.52, p>0.05 respectively. The aspects where significant differences are observed are satisfaction with in-service training programmes and incentives preferred. The data in the table indicate that there is a statistically significant difference in management support services in terms of satisfaction with in-service training programmes, χ^2 (12,N=232) = 52.14, p< 0.05. The results of the hypothesis testing also indicate that there is a statistically significant difference in management support services in terms of incentives tutors prefer, χ^2 (12,N=232) = 41.19, p< 0.05.

The differences indicated in the incentives preferred might be the result of the fact that some of the incentives are provided by the colleges and this may differ from college to college, based on the colleges' ability to provide them. Provision of free breakfast and lunch, free transportation to and from college for tutors living outside the college and provision of accommodation, for example, are mostly college based and may differ from college to college. It is also possible that the differences might have come about as a result of the fact that some conditions must be met before tutors can enjoy some of these incentives. For example, one must own a vehicle before one can enjoy the vehicle maintenance allowance. One must also hold an additional responsibility like being a hall master or mistress, head of department, and guidance and counselling coordinator among, others, to enjoy responsibility allowances. The approval of study leave with pay for tutors who qualify for further studies depends on whether the individual tutor qualifies, in terms of entry requirements of the institution he or she plans to attend, or the programme one plans to pursue, and also whether one meets the minimum number of years after completion of previous course to qualify for the incentive. Presently, study leave with pay is approved for selected courses. If one's course of study falls outside the selected courses, it is obvious that one cannot enjoy the incentive.

With regard to the level of satisfaction with in-service training programmes, the differences may be as a result of the fact that in-service training programmes are not equally organized for the tutors. An earlier finding indicates that with the exception of workshops and refresher courses which are often organized for the tutors in the

colleges, the others which are seminars and conferences are not often organized. The study therefore rejects the null hypothesis that there are no differences in management support services available to tutors in colleges of education in the Ashanti Region of Ghana.

Conclusions

Based on the findings of the study the following conclusions are made:

1. Orientation organized for the tutors help them (tutors) in a number of ways.
2. Tutors had a positive view of performance appraisal, as helping them to improve upon themselves and their skills. These include "identifying tutors' strengths and weaknesses", "enhancing tutors' performance", "identifying training and development needs of tutors" and "identifying potential performance"
3. In-service training programmes help tutors to improve upon their skills in teaching, updated their knowledge in their subject areas, exposed them to new methods of teaching, kept them abreast with new developments in tertiary education, and acquainted them with research findings on instructional issues.
4. Tutors' most preferred incentive (motivation) is study leave with pay. Others include free transportation for tutors living outside the college, vehicle maintenance allowance, free meals, payment of responsibility allowances, and, provision of accommodation.

Recommendations

From the conclusions, it is recommended that

1. Principals in colleges of education in the Ashanti Region should ensure that orientation programmes are organised for newly recruited tutors.
2. The Principals of the colleges of education in the Ashanti Region should be encouraged to continually ensure that tutors are appraised to serve as a form of feedback on the tutors' performance.
3. Principals of colleges of education in the Ashanti Region should design detailed and well laid out college-based in-service training programmes to help tutors to improve upon their skills

in teaching, and encourage them to attend continuous professional development courses to update their knowledge in their subject areas.

4. The National Council for Tertiary Education (NCTE) in the Ashanti Region and other stakeholders in the education system should also take a closer look at the other incentives the teachers have indicated should be provided for them, and make every effort to provide these incentives to further motivate the teachers in their work.

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Impact of School Feeding Programme on Access to Basic Education: The Case of South Tongu District of the Volta Region, Ghana

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Abstract

The study examined the influence of the school feeding programme on access to basic education in the South Tongu District in the Volta Region, Ghana. Mixed method research approach was employed to conduct the study. Stratified random sampling and purposive sampling procedures were used to select 213 respondents for the study. Questionnaires and interviews were used to collect the data for the study. Data gathered through questionnaires were analysed using descriptive statistics such as percentages and frequencies while interview data analysis was done using the thematic approach. The results of the study showed that the school feeding programme has a significant influence on increased enrolment, attendance and retention of pupils in the South Tongu District. However, the implementation of the programme has put pressure on teaching and learning resources as well as increased teacher-pupil ratio. The study therefore, recommended that the government, implementation ministries and agencies should increase the existing human, physical and financial resources for the school feeding programme to be sustained.

Key words: School feeding programme, Enrolment, Attendance, Retention, and Education

Introduction

Education is appreciated as a source of economic growth and development owing to the enormous expansion in the number of

applications for its products and services worldwide (Ahmed & Arends-Kuenning, 2003). Countries belonging to the United Nations have given considerable attention to programmes in educational institutions that aimed at improving the health and nutritional status of learners especially at the basic school level. One of these programmes implemented is the in-school feeding programme. The school feeding concept originated from the activities of the European charitable donors in the 1700s. The concept was later adopted by the United States of America and the United Kingdom in the 1930s as a social safety net to improve the health outcomes of children (Gokah, 2008).

Successive governments in Ghana have instituted programmes and policies to make education, affordable and accessible to all children of school going age especially at the basic level and to improve educational outcomes. Examples included the free education in the Northern, Upper East and Upper West Regions of Ghana, the supply of free textbooks and stationery to basic school pupils and the capitation grant to reduce the financial burden on parents towards their children's education (Osei-Fosu, 2011). Having implemented these policies over the years, several questions still remain unresolved. The Government of Ghana introduced the National School Feeding Programme (NSFP) in the 2005/2006 academic year where each pupil under the scheme was covered by a feeding grant of GH¢ 0.30 a day in pursuance of the universal primary education by 2015 and the Millennium Development Goals on education (Nsowah, 2008). These interventions led to substantial progress in expanding enrolment and increasing years of schooling as well as participation in primary education.

Despite these favourable progress reports, access to quality basic education by children of school going age remains a hurdle. A 2002 study by the World Bank's Independent Evaluation Group reported that more than seventy percent (70%) of such children live in Sub-Saharan Africa and South Asia. Many children from low socioeconomic backgrounds, especially, those in rural areas are usually unable to progress beyond the first few years of schooling, a situation the World Bank's Independent Evaluation Group (2002) attributed to their disadvantaged economic circumstances.

Lockheed and Verspoor (1991) also observed that the quality of schooling in developing countries is often very low due to class repetition and high drop out at an early age, teacher absenteeism from

classrooms, and the fact that many children learn much less than the learning objectives set in the official curricula. In tandem with the foregoing arguments, UNESCO asserted that while many national governments recognise universal primary school attendance as contained in the Millennium Development Goals (MDGs), enrolment rates continue to be low in many developing countries (UNESCO, 2007). Research suggests that there is a correlation between nutritional and health status and school attendance and academic performance of children. Weak health and poor nutrition among school-age children reduce their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences. Consequently, nutrition-based development programmes such as school feeding during their formative years is a critical contribution to fighting malnutrition while at the same time improving their ability to learn (Buhl, 2009).

In order to improve enrolment, the Government of Ghana has eliminated primary school fees and established programmes such as school feeding basically to provide solutions to some of these problems (Osei-Fosu, 2011). Statistics indicate that the average number of pupil enrolment in GSFP schools increased by 18% between 2005 and 2011. The programme has helped to improve attendance and reduced drop-out rates. However, the allocation of fifty (50) pesewas per child is inadequate as it has not kept pace with the economic situation in the country. This allocation, coupled with the need to pre-finance meals has become a problem to caterers, who often resort to credit facilities at high interest rates. This in many cases, has led to reduction in the quality and quantity of meals served to pupils (GSFP, 2014).

Influence of school feeding on attendance, enrolment and retention

Empirical evidence suggests that school feeding has a positive influence on school participation and attendance in areas where initial indicators of school participation and attendance are low. For example, Ahmed and Billah (1994) in a study found that school-based food distribution in Bangladesh increased enrolment by 20% as against 2% decline in non-participating schools. Similarly, the World Food Programme (1996) recorded 76% increase in enrolment while attendance increased by 95% after introducing a school feeding programme in Pakistan. To enjoy this benefit, girls were given one or

two tins of oil for not missing school for 20 days or more per month. In Burkina Faso, SFP schools reported 5% increase in girls' enrolment (Kazianga, Del Walque & Alderman 2009), while in Ghana, Osei-Fosu, (2011) reported that the school feeding programme had a high positive and significant effect on school enrolment, attendance and retention. However, Adelman, Gilligan and Lehrer (2007) in a study did not find any evidence that school feeding has increased primary school attendance rates for all school-age children in Bolivia.

Influence of school feeding on academic performance

Poor health and nutrition are known to affect children's ability to learn (Pollit 1990; Simeon & Grantham-McGregor 1989). It is therefore, important to include health and nutrition inputs as strategies to improve academic performance. Studies in Chile, the United Kingdom, and the United States between 1978 and 1995 revealed that brain functioning is sensitive to short-term variations in the availability of nutrient supplies (Pollit, 1995). Similarly, Moore and Kunze (1994) in a study reported that the success rate in national examinations were high in schools that had school feeding programmes than those schools without feeding programmes. They argued that providing children with daily breakfast or a meal at school could improve their scholastic achievement through several mechanisms such as increasing the time spent in school, improving certain cognitive functions and attention to tasks, and perhaps indirectly improving nutritional status. However, in contrast, Simeon and Grantham-McGregor (1989) in a study reported that in Jamaica learning outcomes deteriorated in less well-organized schools following the introduction of a school breakfast programme.

Influence of school feeding programme on teaching and learning

Availability and effective management of resources greatly influence effective teaching and learning. Research has proved that schools without adequate teachers and teaching and learning materials would not be effective (Mantey, 2012). While the school feeding programme has been hailed for its prowess to increase enrolment and retention, further measures to preserve the quality of education for beneficiaries have not been critically taken into consideration. Studies have shown that, there was a deficit of 20,000 teachers in Ghana which had resulted in almost 15,000 classrooms being empty, with most

classes merged for teachers to handle (Mantey, 2012). This led to the hiring of unqualified teachers to fill the gap. This can adversely affect the quality of basic school education and academic performance of children in the country. Uduku (2011) in a study submitted that there were inadequate teaching and learning materials in basic schools in Ghana and South Africa in the face of growing pupils' population. Similarly, Ampratwum et al, (2012) in their research on education resources management in public primary schools in Ghana reported that textbooks were insufficient and as a result pupils were compelled to share textbooks during lessons in the classroom and for homework. The literature implies that with the increase in school enrolment as a result of the implementation of the school feeding programme, there is the likelihood that pressure will be put on the limited education resources if supplies do not commensurate with the level of enrolment.

Perception of community members about the school feeding programme

Although several studies have assessed the quantitative outcomes of school feeding programmes, studies on the perceptions and expectations of a feeding programme using qualitative data are rare (Masset & Gelli, 2013). They argued that most of the studies were focused on nutritional outcomes rather than the perceptions of the people involved in the intervention. They noted that the reluctance of stakeholders to talk to investigators about problems that exist within new school feeding programmes could be blamed for the situation. Research has also shown that stakeholders hold varied perceptions about the school feeding programme. While some stakeholders held the programme in high esteem because their livelihoods depended on the success of the programme (Williams, McIntyre, Dayle & Raine, 2003), other community members expected more involvement in order to improve the outcomes of the school feeding intervention (Pappas et al., 2008). In another study, community members requested for the need to hire qualified cooks, increased use of locally produced foods and the attachment of school farms to existing school feeding programmes (Quaye, Essegbey, Frempong, & Ruivenkamp, 2010). Community participation is therefore critical to the sustainability of school feeding programmes. When stakeholders have a sense of ownership in a programme, they are more likely to advocate for the programme during

difficult times (Quaye et al., 2010). Fowler (2012) in a study found that stakeholders perceived the school feeding programme to have contributed to improved disposable income of beneficiaries, reduced truancy and improved behaviour both at school and at home.

Challenges of the school feeding programme

Empirical evidence suggests that school feeding programmes in various parts of the world have faced numerous challenges, in spite of its growing benefits. The school feeding programme has been cited to increase the cost of schooling by requiring that beneficiary communities provide fuel for cooking as well as other items such as vegetables (Masset & Gelli, 2013). According to Tomlinson (2007), in South Africa, the school feeding programme was criticised for its poor management, poor coverage, inconsistencies and high-cost . Tomlinson further argued that an increase in enrolment meant that teacher-pupil ratio would subsequently increase, thereby putting pressure on teachers as well as learning materials.

From the foregoing review, it has been observed that since the implementation of the Ghana school feeding programme in 2005, beneficiary communities have raised various concerns about the inefficiencies in its implementation as a social intervention programme. It has also been observed from the literature that, although, previous researchers have assessed the impact of the school feeding programme, the majority of studies by researchers such as (Osei-Fosu,2011; Mantey, 2012; Polit, 1995) have employed only quantitative method and relied extensively on secondary sources of data. However, it appears limited studies have been done on the impact of the school feeding programme within the Ghanaian context by using both quantitative and qualitative research design. Also, it appears that research so far has not been fully devoted to explore the influence of the school feeding programme on enrolment, attendance and retention of pupils in the South Tongu District of the Volta Region in Ghana. The study was guided by the following research questions:

1. How has the school feeding programme affected primary school enrolment, attendance and retention in the South Tongu District?
2. How has the school feeding programme affected pupils' academic performance?

3. How do communities in the South Tongu District perceive the school feeding programme?
4. What factors impede the implementation of the school feeding programme in the South Tongu District?

Methodology

Research Design and Sample

Mixed method research approach was adopted for the study. The study also adopted the cross sectional and descriptive study designs. In mixed method approach, the researchers employed quantitative methods to assess magnitude and frequency of constructs and qualitative methods to explore meaning and understanding of constructs (Creswel, 2014). The rationale for using the mixed method research approach for the study was to obtain a variety of information in order to achieve a higher degree of validity and reliability of data and overcome the deficiencies of a single method studies. The mixed method approach, was therefore, applied in this study by collecting both quantitative and qualitative data from the selected sample through questionnaires and interviews on the influence of school feeding programme on access, enrolment and retention of pupils and analysing the responses. The study was also cross sectional and descriptive because data were gathered at a particular point in time from teachers, headteachers, pupils and School Management Committee members. According to Fraenkel and Wallen (2009), descriptive and cross-sectional studies gather data at a particular point in time when there is an intention of describing the nature of existing conditions.

The target population of the study consisted of schools and communities in the South Tongu District in the Volta Region of Ghana where the GSFP is being implemented. Both probability and non-probability sampling techniques were used to draw the sample for the study. On the probability side, stratified sampling and simple random sampling techniques were adopted while purposive sampling was used for the non-probability technique. Stratified random sampling was used to select 15 schools out of 48 schools under the school feeding programme in the district. The schools were grouped into 5 layers based on circuits and simple random sampling was used to select 3 schools from each layer. Purposive sampling technique which is normally employed when dealing with a sample that has persons with special

knowledge or characteristics (Creswell, 2014) was used to select 60 pupils out of which 18 were in primary four; 21 were in primary five and 21 were in primary six for the focused group discussion. The use of primary 4, 5 and 6 pupils was based on the reason that these pupils were in the upper primary category and they were matured and have spent three or more academic years in the school and were therefore well informed on issues of school feeding programme. Again, (four) 4 School Management Committee (SMC) members were selected by the use of purposive sampling procedure because these people were Unit Committee members and they were directly incharge of community development. They were also chosen based on their leadership role in the implementation of the SFP and were believed to be better informed about issues regarding school feeding programme in their communities. In all, the unit of analysis was made of 60 pupils, 149 teachers and 4 SMC members. Therefore, the total sample for the study was 213.

Instruments and Data Collection Procedure

Questionnaires and interviews were used to solicit information from the participants. Semi-structured questionnaire which involved both closed-ended and open-ended questions were used to solicit information from teachers and headteachers of the sampled schools. The closed-ended items took the form of a four-point Likert scale with such responses as strongly agree to strongly disagree. The open-ended items provided opportunities for respondents to express other views that were not captured in the structured items. The main issues that were covered in the questionnaire were influence of SFP on enrolment, attendance and retention of pupils; influence of SFP on pupils academic performance and challenges in the implementation of SFP. Also, semi-structured interview guides were prepared and used to collect data from School Management Committee members and pupils. This method enabled the researchers to probe further where necessary. The interview questions were prepared based on the same themes as the questionnaire.

In establishing face validity, the questionnaires were first given out to five colleague senior lecturers at the College of Education Studies, University of Cape Coast, Ghana for their assessment and comments on the items. Their inputs in terms of comments helped to improve the quality of the items. The questionnaires were pre-tested in

the Central Tongu district because of its proximity to the South Tongu district and also because it was not part of the study area. The Cronbach's coefficient alpha was used to establish the internal consistency of the items and this yielded high reliability of .87 which is an indication of high quality items (Field, 2005). Also, when the semi-structured interviews schedules were administered in the interview sessions, it was realised that interviewees provided similar responses, which implied that the questions were good.

Permission to conduct the study was obtained from the South Tongu District Education Directorate as well as the heads of the basic schools sampled for the study. The researchers arranged a session for all the participants selected for the study. The purpose of the study was explained to the participants. The data collection was done by the researchers with the help of four field assistants who were trained on the procedures involved in the administration and collection of questionnaires as well as how to conduct interviews. The questionnaires were first administered to the teachers and headteachers of the sampled schools. This was followed by one-on-one interviews of School Management Committee members while for pupils, focus group discussions were conducted due to their large number.

Ethical Considerations

With regard to ethical measures, the researchers obtained a written permission from the South Tongu District Education Directorate. Ethical clearance to conduct the study was obtained from the Institutional Review Board of the University of Cape Coast, Ghana. The participants were informed and asked to sign a consent form. Participation in the study was voluntary and confidentiality was maintained during data collection. Names of individuals were not used and numbers were assigned to participants.

Data Analysis

The retrieved questionnaires were coded and data cleaning was conducted to examine the questionnaires for duplications and missing values. Data from closed-ended items in the questionnaires were analysed using the Statistical Product and Service Solutions (SPSS) version 19.0 for Windows. Descriptive statistics in the form of percentages and frequencies were determined and presented in tables.

On the other hand, the thematic data analysis approach was employed to analyse the data gathered from open-ended items in the questionnaires as well as the qualitative data gathered through interviews. According to Braun and Clarke (2006), in using the thematic data analysis strategy, the tool for analysis is for researchers to identify, organize, describe and report on themes within the data set. In using the thematic approach, we first transcribed and grouped all the interviews into the various themes formulated based on the research questions to help in creating familiarity of the data. Responses to the items on each research question were grouped and paraphrased looking for patterns and relationships. In some instances, the verbatim comments of participants were reported to explain general observations about the influence of school feeding programme on access to education in the South Tongu district.

Findings and Discussion

The findings of the study are presented and discussed in line with the research questions.

Research Question 1: How has the school feeding programme affected primary school enrolment, attendance and retention of pupls in the South Tongu District?

Three items were used to solicit the views of respondents on whether enrolment and retention of pupils in the South Tongu District had increased, static or decreased. The results are presented in Table1

Table 1: Effects of the SFP on Enrolment and Retention of Pupils

Statement	Increased F (%)	Static F (%)	Decreased F (%)
How would you describe the enrolment of pupils since the SFP started in your school?	133 (89.3)	12 (8.0)	4 (2.7)
How would you describe the attendance of pupils since the SFP started?	136 (91.3)	13 (8.7)	0(0)
How would you describe the SFP influence on pupils staying in school throughout the academic year?	113 (75.8)	27 (18.1)	9 (6.1)

(N = 149)

From Table 1, 89.3% of the respondents who were teachers and headteachers attributed increased enrolment to the introduction of the SFP, with 8.0% indicating static enrolment. This implies that majority of the respondents attributed the increased in enrolment to the introduction of SFP. Respondents gave varied reasons such as affordable education, parental responsibility and community appreciation of education among others as being the reasons for the increased in enrolment. With regard to attendance, 91.3% of the respondents indicated that attendance of pupils has increased since the SFP started in the South Tongu district. The findings of the current study that the school feeding programme has contributed to increase in school enrolment and attendance are in consonance with earlier studies by Ahmed and Billah (1994), Adelman et al., (2008) and Kazianga et al, (2009) who respectively concluded that there existed a nexus between school feeding programme and increased enrolment. Specifically, Adelman et al., (2008) reported that there is a strong association between participation in a school meal programme and school attendance. Meanwhile, Ahmed and Billah (1994) concluded that school-based food distribution in Bangladesh increased enrolment by 20% as against 2% decline in non-participating schools. According to Kazianga et. el, (2009), school feeding programme had a strong positive and significant influence on school enrolment, attendance and retention. The result of the current study gives the impression that serving food or meal in schools especially in rural areas will increase school attendance and retention of pupils.

The study further used six items measured on a 4-point Likert scale to elicit the views of respondents on the influence of school feeding programme on increased enrolment, attendance and retention of pupils. The result is presented in Table 2.

Table 2: SFP Increased Enrolment, Attendance and Retention of Pupils

Statement	Strongly Agree F (%)	Agree F (%)	Disagree F (%)	Strongly Disagree F (%)
The enrolment of pupils increased with the introduction of the SFP	64 (42.9)	79 (53.0)	5 (3.4)	1 (0.7)
The attendance of pupils has increased due to the SFP.	64 (43.0)	77 (51.7)	7 (4.7)	1 (0.7)
Nutritious food served will entice more pupils to attend school.	63 (42.3)	73 (49.0)	9 (6.0)	4 (2.7)
SFP does not influence pupils' retention in school throughout the academic year.	11 (7.4)	44 (29.5)	72 (48.3)	22 (14.8)
Pupils are likely to stay in school since they eat in school together.	51 (34.2)	85 (57.1)	13 (8.7)	0 (0)
Highly nutritious food served will encourage pupils to stay in school.	36 (24.1)	99 (66.4)	12 (8.1)	2 (1.3)

(N = 149)

As shown in Table 2, 53% of the respondents agreed and 42.9% strongly agreed with the statement that enrolment of pupils increased following the introduction of the school feeding programme. On the issue of the influence of school feeding programme on increase in enrolment, the result of the current study gives credence to the study by Afridi (2007) which established significant influence of school feeding programme on school enrolment and attendance in India. The implication of the present study is that majority of the respondents in the study area believed that the SFP has contributed to school enrolment and attendance, hence, there is the need to sustain the programme which is consistent with the perspectives of Osei-Fosu (2011) who reported that school feeding programme has a strong positive and significant effect on school enrolment, attendance and retention of pupils. As Table 2 shows, 49% of the respondents strongly

agreed and 42% agreed with the statement that nutritious meals served helped to entice more pupils to attend school regularly while only 6% disagreed with the statement. According to Arsenault et al., (2009), the number of days absent from school was 23% lower in public primary schools in Bogotá, Colombia that received nutritious mid-morning snack than those that did not receive mid-morning snack which also underscores the results revealed in a study conducted in 32 African countries where the World Food Programme operated school feeding programmes in primary schools. The results indicated that in the first year of the intervention, average enrolment and attendance increased by twenty-two 22% for boys and twenty-eight 28% for girls (Gelli, Meir & Espejo (2007). With regard to pupils staying in school, Table 2 shows that 57.1% of the respondents agreed and 34.2% strongly agreed while only 8.7% disagreed with the statement that pupils are likely to stay in school since they eat together. The implication is that, majority of the respondents in the study area were of the view that pupils are likely to stay in school as a result of the introduction of the school feeding programme.

Research Question 2: How has the school feeding programme affected pupils academic performance in the South Tongu District?

Nine items measured on a 4-point Likert scale were used to elicit information from respondents. The results are shown in Table 3.

Table 3: Impact of SFP on Pupils Academic Performance

Statement	Strongly Agree F (%)	Agree F (%)	Disagree F (%)	Strongly Disagree F (%)
The performance of pupils increased with the starting of the SFP.	25 (16.8)	75 (50.3)	43 (28.9)	6 (4.0)
The concentration of pupils in class has increased with the introduction of the SFP.	24 (16.1)	82 (55)	37 (24.8)	6 (4.1)
The performance of pupils in schools with SFP is better than the performance of pupils in schools without SFP	40 (26.8)	85 (57.0)	18 (12.0)	6 (4.2)
The SFP has created equal opportunities in schools	17 (11.4)	85 (57.0)	43 (28.9)	4 (2.7)

Pupils' academic performance is improving due to the SFP.	18 (12.1)	86 (57.7)	41 (27.5)	4 (2.7)
School feeding has influence pupils' studies in school	19 (12.7)	98 (65.8)	27 (18.1)	5 (3.4)
Pupils would concentrate on their books better due to the SFP	25 (16.8)	101 (67.8.)	20 (13.4)	3 (2.0)
Pupils' participation in school activities has improved with SFP.	20 (13.4)	86 (57.7)	35 (23.5)	8 (5.4)

(N = 149)

As shown in Table 3, 50.3% of the respondents agreed and 16.8% strongly agreed with the statement that the academic performance of pupils increased with the starting of the SFP. However, 24.8% of the respondents disagreed with the statement. It can also be seen from Table 3 that 55% of the respondents were of the view that pupils' concentration in class had increased following the introduction of the SFP. In support of these findings, one participant who was a class five pupil asserted that:

"*When I eat, I become alert and able to concentrate. And when I eat, I become happy and able to focus on classroom activities".*

Another participant who was a class four pupil stated that:

"*When I eat, I am able to concentrate on learning and perform better but my mind stays on the food when I am hungry and I lose concentration".*

A School Management Committee member during the interview had this to say:

"The pupils can focus and concentrate in class when they have eaten. When children are hungry, they have divided attention in the classroom. A well-fed child is well focused".

The World Food Programme and its development partners have been promoting school feeding in its different modalities as effective interventions that alleviate hunger and improve cognitive and educational abilities and learning outcomes of children. According to Jomma, MacDonnell and Probat (2011), school feeding had a significant impact on increased educational outcomes of school

children in Bangladesh. Feeding programmes have been shown to improve cognitive, health and well-being of students because certain minerals and vitamins are necessary for brain development and function (Masset & Gelli, 2013).

The outcome of this study corroborates the findings reported by Pollit (1995) and other studies conducted in Chile, the United Kingdom, and the United States that brain functioning is sensitive to short-term variations in the availability of nutrient supplies, particularly for undernourished children for whom omitting breakfast alters brain function and limits their speed and accuracy of information retrieval in working memory. This is also underscored by Moore and Kunze (1994) who found in a study that the success rate on a national examination for sixth-grade pupils in Burkina Faso was higher for schools that had school feeding programmes than those schools without feeding programmes. A class six pupil who was a participant in the focus group discussions reported as follows:

"*These days, I perform better because I no longer think of food in class. I'm able to concentrate".*

It has been accentuated that nutritional and health status are potential influences on a child's learning and how well a child performs in school and that weak health and poor nutrition among school-age children diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences (Pollitt, 1995). Temporary hunger, particularly common in children who are not fed before going to school can have adverse effect on learning. Hungry children have more difficulty concentrating and performing complex tasks in the classroom (Buhl, 2009). According to Gunderson (2012), school feeding programmes are now being implemented around the world to improve educational outcomes by reducing short-term hunger during the school day. The outcome of this study gives the impression that children who are well-nourished will exhibit better classroom behaviour, specifically, better concentration and participation in classroom activities which will in turn result in better learning outcomes (Kazianga, et al., (2009). If children in the community are able to learn, they can improve their literacy level in the South Tongu district and reduce the cycle of

poverty and this will uplift the community thereby making it a better place to live.

Research Question 3: How do communities in the South Tongu District perceive the school feeding programme?

This research question sought to explore the views of community members about the school feeding programme in the South Tongu district. Semi-structured interviews were conducted using School Management Committee members. The results from the interviews revealed that the school feeding programme is a good social intervention programme and it is beneficial to the communities. This is because the implementation of the programme has helped to alleviate poverty in the communities by reducing the heavy burden of responsibility on parents towards their wards. This was evident when a School Management Committee member during the interview indicated that:

"*The programme has reduced poverty and increased enrolment because a lot of pupils now come to school, so, at least, it's helping to reduce the burden on parents*".

Another School Management Committee member had this to say:

"*Even parents who were previously not able to give their wards money for feeding in school now send their wards to school because they know the children will be fed in school"*.

This is in line with the works of Fowler (2012) that stakeholders were of the view that the school feeding programme made it possible for families to have more disposable income. The outcome of the current study is also in line with the findings reported by Anderson, Moreen, Petersen and Tobey (2005) who reported that due to the positive perceptions of the school feeding programme and the benefits to the various communities, the communities were much involved by building kitchens and store rooms, volunteering, providing security, monitoring and oversight responsibilities.

Research Question 4: What factors impede the implementation of the school feeding programme in the South Tongu District?

Research participants were asked to share their views on the challenges of the SFP in the study area. The study participants identified factors such as untrained cooking staff, delay in serving meals to pupils, lack of portable water for cooking in some of the villages, lack of dining areas as well as lack of hygienic place for cooking. A class five pupil reported as follows:

"*We do not have a good place to eat. When we finish eating, there is no water to wash our hands".*

The implication of this finding is that the lack of permanent dwelling place means that the pupils probably learn and handle food in dusty and un-hygienic environment. The results of the study also revealed that the SFP was not regular in the study area. Participants identified lack of funds had led to shortage of food items, irregularity in the preparation of food, inadequate cooking facilities, sub-standard quality of the meals and inadequate cooking staff in the study area. The participants believed that inadequate funding and delay in releasing funds have consequently resulted in delay in paying the caterers. A school Management Committee member had this to say:

"*When enrolment increased, it takes time for the change in enrolment to be detected and this affects the programme because funding for the increased enrolment does not come as soon as enrolment increased*".

Another participant said:

"*Funds are not available so the number of cooks to employ that can serve the pupils quickly has been limited. This affects the contact hours for teaching and learning*".

Another participant reported as follows:

"*The school feeding programme in the district is actually on-and-off. For instance, this week the pupils have not been served with food"*

According to Kedze, (2013), salaries of caterers contracted for the Ghana School Feeding Programme had been in arrears over a six-month period which is also consistent with what was reported by Bonney (2013) that about five thousand caterers under the Ghana School Feeding Programme had not been paid for the last six months.

It should be noted that the lack of funds compelled some caterers to feed the beneficiaries twice a week instead of five times in a week (GSFP, 2011).

The study participants have also identified issues of mismanagement and corruption in the form of stealing of food stuff as well as improper selection of caterers as some of the factors that impede the implementation of the SFP in the study area. A School Management Committee member had this to say:

"Mismanagement including corrupting and stealing of food stuffs are slowly binging the school feeding programme to its knees in the South Tongu district".

According to Tomlinson (2007), although the school feeding programme contributed to an increase in enrolment and attendance, enhanced participation of beneficiaries in the classroom and generated jobs in the communities, it has come under criticism for its poor management, poor coverage, inconsistencies and high-cost.

Finally, participants have identified lack of monitoring and supervision of the SFP as one of the factors that impede its implementation in the study area. According to WFP (2010) and GSFP (2011), there had been serious concerns about lack of monitoring and supervision of the SFP. A participant who is a School Management Committee member indicated that:

"*Local managers of the SFP who perform monitoring and evaluation practices to support the execution of the programme are over-burdened with other responsibilities. Therefore, there is no proper monitoring of the SFP in the district".*

Gokah (2008) has underscored the lack of basic logistics to effectively monitor the operation of the school feeding programme in Ghana. It should be noted that regional coordinators and monitors need basic logistics such as means of transport as well as office equipment to enable them report effectively on their activities, yet the inadequacy of these logistics make their work difficult (GSFP, 2014). This corroborates what was reported by Bonney (2013) that in some jurisdiction, only the District Chief Executive and a couple of persons were actually working during the review process of the Ghana School Feeding Programme.

Conclusions and Recommendations

School feeding programme is an intervention used by policy makers and non-governmental organizations as social safety net in developing nations to aid several policy areas such as school attendance, retention of pupils as well as poverty reduction. School feeding is believed to be effective because of its ability to target a specific population such as vulnerable-school-aged children. This study examined the influence of school feeding programme on access to basic education in the South Tongu District in the Volta Region. Based on the findings of this study, one might be tempted to state unequivocally that school feeding has a direct critical influence on increased enrolment, attendance and retention of pupils in the study area. A likely reason for this is that throughout the length and breadth of the globe and particularly in developing countries where school feeding programmes are being implemented, school enrolment, attendance and retention rates are particularly high among pupils (Jomaa, et al., 2011). The study has also shown that the challenges facing the implementation of the SFP in the South Tongu District are diverse. The sustainability of the SFP as currently implemented seems uncertain largely due to inadequate financial allocation.

On the basis of the findings of this study, it can be concluded that although, the school feeding programme is still facing some challenges due to its complex nature that requires financial and institutional capacity to run, it is still an important programme to improve access and participation in basic education as well as pupils' learning in the South Tongu District. Therefore, the resources, the technical know-how, the systems, the number of staff as well as the infrastructure required should not be underestimated by ministries involved and stakeholders in its implementation. The study therefore recommends that the government, the implementation ministries and agencies should increase the existing human, physical and financial resources. Adequate sensitization and involvement of all stakeholders at all levels is important for ownership of the SFP in the study area. This is because school feeding models embrace multi-sectoral coordination since SFP starts from production to utilization, hence the need to involve as many stakeholders as possible.

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Perception of JHS Students and Parents about Technical and Vocational Education in Cape Coast Metropolis, Ghana

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Abstract

Despite the numerous benefits of technical vocational education and training (TVET), most students and parents still prefer the traditional academic education. This study investigated the views of students and parents about TVET in Cape Coast metropolis of Ghana. The study employed cross-sectional descriptive quantitative survey approach. A total of 395 questionnaire forms were recovered (out of 570), making a return rate of 69 %. Of these, 242 were administered to students (132 from public schools and 110 from private schools) and 153 were administered to parents. The respondents were selected through stratified random sampling technique. The data were analysed using percentages, mean and standard deviation as well as t-test of independent samples. The results of this study revealed divergent views: findings indicated that the JHS students' response generally indicated negative perception towards TVET, while their parents' response generally indicated positive perception of TVET. The study finally offered some recommendations that can enhance the outlook of TVET programmes in the minds of younger people and parents.

Key words: Technical Vocational Education and training, JHS Students, Parents, Ghana.

Introduction

Several developing countries including Ghana have recognized the need to prepare young people for various levels of socio-economic development with knowledge and skills which reflect the full range of human difference, interest, abilities, and needs. Technical and vocational education and training (TVET) is a means-to-an-end that may address the challenges of poverty, unemployment, low technological progress and slow national development. Studies indicate that TVET, if well positioned could play multidimensional roles of

stimulating economic growth, wealth creation, and empowering the citizenry through skills enhancement. TVET greatly improves efficiency and leads to brilliant innovation, increases government revenue on taxes and makes a country a haven for investment. TVET also serves as an instrument for curbing social exclusion, youth restiveness, eliminating youth unemployment, and for addressing social crises that threaten the political and economic stability of a nation (Kemevor & Kassah, 2015; Laing, 2013; Akplu & Amankrah, 2008). Indeed, it is reported that many of the high performing economies in the world have sizable proportion of their youth enrolled in TVET programmes (Ankomah, 2016).

In Ghana, technical and vocational education and training are delivered at three levels: Basic Education, Second-Cycle and Tertiary Education levels. At the Basic Education level, technical education starts from Junior High School while vocational education starts from the Primary School (1-6) and it is termed Creative Arts (Kemevor & Kassah, 2015).

At the Second-Cycle level, Ghana uses a combination of two approaches to organise vocational technical education:

- There is a parallel approach where vocational technical institutions exist alongside the senior high school system. Graduates from the basic level can enter the technical institutes or the senior high schools.
- The core curriculum approach is also used in the conventional senior high school system. For those who enter the senior high school after the basic level education, there exist a core curriculum and a cluster of elective subjects, which could be vocational technical in nature. Any student interested in a career in vocational technical could select at least three elective subjects in any particular vocational technical field, which the individual will have to study in addition to the four core liberal subjects (Boateng, 2012).

Technical and vocational education at the tertiary level is organised within post-secondary institutions or tertiary institutions. This is the highest level of technical and vocational education in the country. Universities, polytechnics/technical universities, and other post-secondary training institutions provide it.

Despite the benefits and prospects of TVET, there are a lot of issues confronting its successful implementation in Ghana. Atchoarena and Delluc (2001), and Amedorme and Fiagbe (2013) highlight the following challenges confronting technical and vocational education in Ghana:

- lack of facilities and materials for training students,
- inadequate technical teachers or facilitators,
- limited number of training institutions for technical teachers
- difficulty in career progression.
- mismatch between acquired skills and market needs,
- negative public attitudes and perceptions regarding technical and vocational education and training.

However, to partly address these problems, the government of Ghana, through an Act of Parliament in 2006, established a Council for Technical and Vocational Education and Training (COTVET) which has an overall responsibility for skills development and co-ordination and overseeing of all aspects of technical and vocational education and training in the country**.** Also, the Government has taken the decision to align and bring all public TVET institutions in the country under the direct supervision of the Ministry of Education. This is to ensure effective monitoring and evaluation of policies and as well address pertinent challenges that confront TVET in Ghana.

Also, in an effort to enhance the status and attractiveness of TVET in Ghana, eight of the ten polytechnics in Ghana were upgraded to technical universities in the year 2016. The move was to strengthen the capacity of the polytechnic institutions to fulfill their role in industrial, technological and economic development. It was also to re-engineer their training programmes for greater relevance and higher quality. Finally, the move was to raise their status and attractiveness as higher institutions of choice for senior secondary/technical school leavers.

Addressing the issue of career progression that may hinder the progression of technical and vocational graduates, the Council for Technical and Vocational Education and Training (COTVET) of the Ministry of Education has now added English language, mathematics, science and social studies to technical students' curriculum so they can be admitted into degree and HND programmes direct. The trade area is conducted by the Technical Examination Unit of the Ghana Education

Service whilst the core subject is examined by NABPTEX. With this combination, graduates of technical institutes who have a minimum of six (6) credit passes in three electives (trade areas) and three core subjects: English, mathematics, integrated science or social studies are eligible to pursue degree programmes at university. However, those who have a minimum of six (6) passes in three electives (trade areas) and three core subjects are admitted into HND programmes at the polytechnic/technical universities. These interventions are aimed at making TVET in Ghana more pliable to meet national goals and aspirations as well as local and global demands.

Despite various efforts undertaken by the Ministry of Education and a number of related agencies to promote and inform the public on the benefits and importance of TVET in Ghana, most students and parents still prefer the academic education rather than the technical and vocational education. For instance, Global Education Monitory (GEM) (UNESCO, 2016) reports that only one percent of the students' population below the age of 25 years in Ghana is enrolled in technical and vocational education and training (TVET). Similarly, Okae-Adjei (2017) highlights low enrolment of students in technical and vocational programmes in Ghanaian polytechnics/technical universities and called for urgent attention to save the affected departments from collapse. Also, a survey of public TVET teachers reveals that none of the respondents wanted their own children to study TVET programmes (Anamuah-Mensah, 2004).

Graduate unemployment in Ghana has increased in recent years because most of the graduates do not have employable skills (Laing, 2013; Ali, 2015). These evidence show that TVET has been left to the periphery and its significance has not really been embraced in Ghana. As a consequence, streetism and its attended social vices such as stealing, drug abuse and prostitution are on the increase. This situation, undoubtedly, poses economic and security threats to the nation (Yarquah & Baafi-Frimpong, 2012). It is against this background that this study sought to investigate students' and parents' perception of TVET. Currently, there is paucity of research on perceptions of JHS students and parents about TVET in Ghana.

The Perception of TVET

Perception is defined as an idea, image or believe or view one has as a result of how one sees or understands something (Hornby, 2000). Conroy (1998) asserts that knowledge of student perceptions and aspirations plays an important role in education planning process. Therefore, it is vitally important that educational leaders gain understanding of Junior high school students' and their parents' perceptions of TVET education in order to design marketable programmes that satisfy students and parents aspirations.

The international context provides few studies on basic school students' perceptions of technical and vocational education. Studies suggest that basic school students perceive TVET as education designed for students from poor families. For instance, research by Ozioma (2011) on students' perception about TVET reveals that students view technical and vocational education as education designed for students from poor socio-economic background. Also, basic school students are skeptical about the job potential of TVET. In his study about the views of students (aged 11-17) towards TVET in rural Zimbabwe, Katsande (2016) indicates that the students were sceptical about the role of TVET in securing employment.

Contrary to the findings of the authors above, Awang, Sail, Alavi, and Ishmail (2011) in analyzing the perceptions of public form four secondary school students and apprentices of private institutes in Malaysia on image and loyalty towards TVET, indicate that secondary school students and apprentices recognise that TVET are accessible to all secondary school students including religious stream, low academic interest, low learning abilities and flexible entry requirements. Both groups were optimistic that TVET produces graduates with high future career and job potentials, highly employable and earned at par with other academic qualifications. Both groups also disagree that TVET students are of low quality, tend to be juvenile delinquents, problematic, and have low academic interest in furthering their study to advance or tertiary level.

In their study to determine parental perception of the education of their adolescent children of youths aged fifteen years in Greece involving 200 parents, Saiti and Mitrosili (2005) find that most of the parents in question (86.0%) encourage their children to follow general secondary education rather than technical education. Only a small

percentage of respondents (14.0%) advise their children to follow technical education. They further indicate that typically the socio-economic background of parents of a child determines the type of career one chooses to do; and that, the higher the parents' higher occupational background, the more positive their attitude towards academic education. Their study further reveals that parental preference of general education to technical and vocational education is attributed to four factors: technical education usually limits the opportunities for career development; it prevents children from continuing in higher education; it only offers children with low quality knowledge; and children who produce good school grades have the opportunity to continue their studies in higher education. Recent empirical survey by Raimi and Akhuemonkhan (2014) on parents' perception of technical and vocational education in Nigeria reveals that a total of 53.4% parents describe TVET as an educational option designed for students who cannot cope with the rigour of conventional education system, 43.4% note that brilliant students should not take-up TVET programmes and 40.6% perceive TVET as inferior education designed for students from poor families.

Purpose of the Study

This study sought to explore JHS students' and their parents' perceptions about TVET in Ghana. Thus, the study was set out specifically to address the following research questions and null hypotheses:

Research Questions

- How do Ghanaian Public JHS Students' perceive technical and vocational education?
- How do Ghanaian Private JHS Students' perceive technical and vocational education?
- What perceptions do parents of Ghanaian JHS students have of technical and vocational education?

Hypotheses

- There is no significant difference in the perceptions public and private school students have of TVET.

- There is no significant difference in the perceptions junior high school students and their parents have of TVET.

Methodology

Research Design

This study used cross-sectional descriptive survey method to explore JHS students' and their parents' perceptions of TVET. The population for the study comprised all the JHS 2 students in all the Government and Private owned junior high schools and their parents in the Cape Coast Metropolis of Ghana. The JHS 3 students had completed at the time of the sampling. Hence, JHS 2 students were chosen because it was perceived that they have been exposed to the study of some of the vocational/technical subjects more than the JHS1 students. There are 99 junior high schools in the Cape Coast Metropolis of Ghana. Of these, 61 are public schools whilst 38 are private schools. The stratified sampling technique was used to randomly select 10 schools out of the 99 schools, from above average, average and below average performing schools in the Cape Coast metropolis of Ghana, ensuring that both public school and private school types are represented (five of the 61 public schools and another five of the 38 private schools). In all, 570 research participants consisting of 285 students (155 from public school; 130 from private school) and their parents numbering 285 formed the sample for the study.

Instrument

Structured questionnaire was used to collect data for the study. The questionnaire consisted of two parts (parents and students). The questionnaire used a four-point, Likert-type scale where the respondents had to choose from strongly disagree, disagree, agree, and strongly agree. The items were also categorized as Access/Entry qualification, Quality of Curriculum, Qualification Recognition, Career and Job potential, Social Skills and Social Values. The items were adapted based on the framework devised by Awang et al., (2011) to investigate students' loyalty towards TVET in Malaysia and were

modified for use taking into account the Ghanaian context and culture. The questionnaire was given to two senior lecturers at University of Cape Coast in Ghana to evaluate the validity of the items. The few items that were not clear were revised. The instruments were pilot tested in one public school to ensure that they elicited valid responses. The reliability of the instrument was established using cronbach's coefficient alpha (Table 1). The Cronbach's alpha value for all constructs ranges between 0.78 and 0.88. All the values were above the value of 0.70, thus demonstrating that the scales are consistent and reliable (Pallant, 2013).

Table 1: Reliability tests for students' perception towards TVET scales

Scale	Items	Cronbach Alpha
Access/Entry qualification (EQ)	4	0.880
Quality of Curriculum (QC)	4	0.857
Recognition of qualification (RQ)	4	0.824
Career and Job potential (C&JP)	5	0.848
Social Skills and Soft Skills (SV &SS)	4	0.784

Definitions of Terms

Entry qualification (EQ): this dimension reflected students' and parents' perceptions about the level or standard of entry requirements for technical vocational educational and training courses and the type and quality of students' that are enrolled.

Quality of curriculum (QC): this dimension reflected perceptions of the curriculum content and its applicability to contemporary society's needs.

Recognition of qualification (RQ): this dimension reflected students and parents' perceptions of the status of a degree gained in TVET amongst employers and higher education providers, both in country and overseas.

Career and job potential (C&JP): this dimension reflected students and parents' perceptions of the employment potential following graduation from a TVET school.

Social skills (SS1): this dimension reflected perceptions about the degree of social skills that TVET graduates hold that are valued not only in skilled workers but also in society.

Soft skills (SS2): this dimension reflected perceptions about how effective TVET is at equipping graduates with the soft skills that facilitate effective interpersonal relationships in the workplace.

Data Collection Procedure

Data collection was done in the Cape Coast Metropolis by the author with the help of three trained research assistants. Permission was sought from the metropolitan education service and also at the level of the school to conduct the research during school hours. The permission was granted at both levels. In each of the schools, the research project was explained to the participants and their ascent was sought, while the consent of parent was also sought before the commencement of the data collection. Some of the questionnaire forms were completed in the presence of the researcher and his team, whilst the others including that of the parents were collected later by the author.

A total of 395 copies of the questionnaire were retrieved (out of the 570), making a return rate of 69 %. Two hundred and forty-two were from students (132 from public schools and 110 from private schools) and 153 from parents.

Data Analysis

The data was analysed using descriptive statistics (frequency, percentages, means and standard deviations). Independent samples t-test was used to determine whether there was significant difference in perception between students in public schools and students in private schools; and also between parents and students. The questionnaire was a four- point, Likert-type scale with 4 standing for strongly agree, 3 for agree, 2 for disagree and 1 for strongly disagree.

Results

The results are presented as follows:

Table 2 shows the overall means and standard deviations of the respondents for each of the various aspects of perceptions that were studied. The findings indicate that both public and private JHS participants have positive perception of TVET access/entry qualification [public (M=2.92, SD=0.66; private (M=2.82, SD=0.77)],

and quality of TVET curriculum [public (M=2.74, SD=0.80; private (M=2.71, SD=0.75)]. Also, both students' groups had negative perception towards TVET qualification recognition [public (M=2.32, SD=0.77; private (M=2.29, SD=0.75)], career and job potential of TVET [public (M=2.40, SD=0.80; private (M=2.34, SD=0.81)], social skills and soft skills [public (M=2.47, SD=0.80; private (M=2.38, SD=0.84)]. The means of public JHS participants were however, higher than the private JHS participants. The findings further show that with the exception of social and soft skills in TVET (M=2.22, SD=0.84), the JHS parents participants held a positive perception of TVET access/entry qualification (M=2.94, SD=0.80), quality of TVET curriculum (M=2.92, SD=0.72), TVET qualification recognition (M=2.77, SD=0.76), career and job potential of TVET (M=2.61, SD=0.67).

Table 2: Overall Scale Means and Standard deviation on TVET Perception based upon school-type and their Parents

Scale	Public Sch. Students (132)		Private Sch. Students (110)		Parents (153)	
	Mean (out of 4)	Std	Mean	Std	Mean	Std
Access/Entry Qualification	2.92	0.66	2.82	0.77	2.94	0.80
Quality of Curriculum	2.74	0.80	2.71	0.75	2.92	0.72
Recognition of Qualification	2.32	0.77	2.29	0.75	2.77	0.76
Career and Job Potential	2.40	0.80	2.34	0.81	2.61	0.67
Social Skills and Soft Skills	2.47	0.80	2.38	0.84	2.22	0.84

Note: A mean score of 2.5 or higher indicates positive perceptions; a mean of 2.4 or lower indicates a negative perception about TVET education.

Table 3 shows the result of the independent samples t-test on public JHS students and private JHS students' perceptions of TVET. The analysis revealed no significant mean difference between the perceptions of the public JHS students (M = 2.57, SD = 0.77) and the private JHS students (M = 2.51, SD = 0.78), (t = 246 df) =1.92, p>0.05.

This result suggests that students' perception about TVET from both public and private JHS were quite similar.

Table 3: Independent samples t-test on Public JHS students and Private JHS students' perception of TVET

	N	df	Mean	SD	t	Sig. (2-tailed)
Public JHS	132	246	2.57	0.77	1.92	0.146
Private JHS	110		2.51	0.78		

Table 4 shows the result of the independent samples t-test on JHS students and parents perception of TVET. The analysis revealed a significant mean difference (t 262 df) =2.89, p=0<0.05). The JHS parents' perception of TVET was better (M=2.69; SD =0.76) than that of the students (M=2.54, SD=0.78). This finding suggests that, generally, parents studied were found to have strong beliefs in favour of TVET. It is hoped that this positive perception could influence the perception of the students with time.

Table 4: Independent samples t-test on JHS students and Parents perception of TVET

	N	df	Mean	SD	t	Sig. (2-tailed)
Public JHS	242	262	2.54	0.78	2.89	0.041
Private JHS	153		2.69	0.76		

Discussion

Findings of how student participants and their parents perceived technical and vocational education are discussed based on access/entry qualification, and quality of curriculum, recognition of qualification, career and job potential, as well as social and soft skills of TVET.

Both public and private JHS students and their parents held similar view about TVET access/entry qualification and quality of curriculum. The respondents generally perceived that TVET has flexible entry requirements and easily accessible to all junior high school students including religious, ethnic, physical challenge, rural, urban, low and high learning abilities. Impliedly, all the respondents perceived that TVET is accessible to students of diverse learning abilities, religious and socio-economic background. Also, they viewed

TVET as an alternative educational choice, practically oriented that provides specific job skills needed for career. They were also optimistic that TVET produces creative and innovative graduates. These findings indicate that all the three groups held positive perception of TVET access/entry requirements, quality of curriculum and social values. This finding is consistent with the reported study of Awang et al., (2011).

All the three groups in the study were however, of the view that TVET did not provide combination of academic and skill training. They also perceived that TVET did not equip students with ICT skills, and soft skills that facilitate effective interpersonal relationships in the workplace such as communicative skills, leadership skills, managerial skills and administrative skills. They were also of the view that TVET students did not usually aspire to higher education level. This outcome is hardly surprising because historically and culturally, TVET in Ghana had been focused on skilled training only, such as carpentry, mechanics, brick laying, cooking and sewing trades without the inclusion of academic subjects such as English, literature, mathematics, social studies, physics, chemistry, and biology for examination to get a place at university. However, to make TVET more responsive to the national goals and aspirations as well as local and global demands, the Council for Technical and Vocational Education and Training (COTVET) of the Ministry of Education has added English language, mathematics, science and social studies to technical students' curriculum so they can be admitted into degree and HND programmes direct. With this combination, technical institute's graduates who have a minimum of six (6) credit passes in three electives (trade areas) and three core subjects: English, mathematics, integrated science or social studies are eligible to pursue degree related programmes at the University. However, those who have a minimum of six (6) passes in three electives (trade areas) and three core subjects are admitted into HND programmes at polytechnic/technical universities. It is plausible that many young people and their parents are not aware of this restructuring, perhaps due to inadequate public information/education.

On career and job potential, both public and private JHS participants and their parents were confident that TVET produces high skilled graduates for the nation. However, both student groups disagreed that TVET leads to professions that are highly demanded on the labour market, leads to jobs that are well paid, and enable people to

continue with university studies. They also disagreed that TVET is recognised by private and public companies, as well as higher institutions in Ghana and overseas. They were also of the opinion that TVET is socially not prestigious and its graduate did not earn on par with other academic qualifications. This finding is partly consistent with the reported study of Katsande (2016); but does not support the findings of Awang et al., (2011). This difference in perception may probably be due to the fact that the needs and wishes of the students in the two geographical environments were dissimilar due to differences in political, socio-cultural and the level of development prevailing in the respondents' environments**.**

Contrary to previous studies that parents generally despise technical and vocational education (Raimi & Akhuemonkhan, 2014), the JHS parents studied held positive perception of TVET. This emerging opinion of parents may be attributable to the high graduate unemployment in Ghana in recent years because most of the graduates do not have employable skills (Laing, 2013; Ali, 2015)

In general, this result suggests that the JHS participants held negative perception of TVET qualification recognition, and career and job potential while their parents held positive perception. This might be attributable to the fact that the parents in the study perhaps are more informed or better exposed to TVET qualification recognition and career and job potential than the students. It is also probable that the JHS participants had not been exposed adequately to the prospects of TVET, even though these prospects had been highlighted explicitly in their basic design and technology curriculum. The findings further showed that there was no significant difference in the mean perception of public and private JHS participants. This suggests that the JHS students' perceptions of TVET were quite similar. The public and private JHS participants carried similar view probably because their needs and wishes were similar. Other reason for the similarity of views between public and private students was that the same curriculum is used in both categories of schools. This possibly accounts for the similarity in their perception of TVET.

The inferential statistics also showed differences in perception between the JHS students and of their parents. The parents held a higher positive perception of TVET than the JHS participants. The differences

in opinion could be attributed to the fact that the parents are better exposed to the relevance of TVET than the students.

Conclusion

From the findings, it can be concluded that both public and private JHS participants held a positive perception of TVET access/entry qualification, and quality of TVET curriculum. Both students' groups held negative perception towards TVET qualification recognition, career and job potential, and soft skills of TVET. With the exception of social and soft skills in TVET, the JHS parents studied held positive perception of TVET access/entry qualification, quality of TVET curriculum, TVET qualification recognition, and career and job potential of TVET.

The findings further showed that there was no significant difference in the mean perception of public and private JHS participants. However, there was a significant difference in opinion between the JHS students and of their parents. In general, the parents studied recognised the relevance of TVET in the Ghanaian society than the JHS participants. The influential role of parents on students' perception is very strong (Saiti & Mitrosili, 2005); thus, parents' positive perception of the relevance of TVET could have influence on the students' perception of TVET with time.

Implications and Practice

Based on the findings of this study, it is evident that TVET may not have received adequate attention among the students' participants in the Cape Coast metropolis of Ghana. It is therefore important that awareness drive targeting students is strongly advocated. As prescribed by Dzeto (2014), COTVET and Ministry of Education must promote a massive social marketing campaigns such as the provision of awareness weeks, exhibitions and open days by TVET institutions for school children and their parents to visit training institutions, workshops and industries to familiarize themselves with the sort of training offered in those institutions as well as the opportunities for people with such trainings. Hopefully this could expose the students to the advantages technical and vocational programmes have over other programmes; particularly in the area of self-employment and self-actualization and also enhance the outlook of TVET institutions in the minds of younger

people who may eventually become trainees of such institutions. It will also be important to run programmes in the electronic media showing the benefits of technical and vocational training, and its importance to development and wealth creation.

Limitations and Further Studies

This study was limited to JHS students and their parents in the Cape Coast metropolis only; thus, its generalisation to other students and parents outside the metropolis may not be appropriate. Further study in this area could be carried out in other regions; and also look at the perspectives of other stakeholders such as teachers, managers of TVET institutions and employers.

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Appendix A

Scale	Public Sch. Students (132)		Private Sch. Students (110)	
	Mean	SD	Mean	SD
Access/Entry Qualification				
TVET is very accessible to all students	3.37	0.685	3.26	0.825
TVET has low and flexible entry requirement	3.28	0.556	3.12	0.782
TVET students have high learning ability	2.58	0.749	2.52	0.824
TVET students aspire to higher education level	2.46	0.640	2.35	0.656
Quality of Curriculum				
TVET is an alternative educational choice	3.08	0.743	2.68	0.854
TVET provides combination of academic and skills	2.42	0.827	2.34	0.748
TVET is more practical oriented.	2.78	0.816	2.95	0.584
TVET provides specific job skills	2.68	0.881	2.86	0.824
Recognition of Qualification				
TVET is recognised by both private and public companies TVET graduate earn on par with other academic qualification	2.44	0.815	2.37	0.726
TVET is recognized by Ghanaian universities and overseas higher institutions	2.29	0.741	2.13	0.824
TVET is socially prestigious	2.30	0.704	2.48	0.764
	2.24	0.802	2.16	0.691
Career and Job Potential				
TVET produces high skilled graduates for the nation	2.68	0.743	2.64	0.807
TVET leads to professions that are highly demanded on the labour market.	2.36	0.540	2.45	0.816
TVET leads to jobs that are well paid	2.13	0.682	2.05	0.890
TVET enable people to continue with university studies	2.25	0.784	2.02	0.788
TVET graduate are highly employable	2.56	0.652	2.52	0.745
Social Skills and Soft Skills				
TVET produces creative and innovative graduates	2.65	0.775	2.58	0.876
TVET is able to inculcate communicative skills in students	2.42	0.865	2.38	0.785
TVET is able to inculcate and produce students with ICT skills	2.38	0.786	2.32	0.884
TVET is able to inculcate leadership and administrative skills in students	2.44	0.784	2.23	0.836

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The Internal Consistency Reliability of Scores in Diploma in Basic Education Examination conducted by the Institute of Education, UCC, Ghana

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Abstract
The purpose of the study was to determine the internal consistency reliability of the scores that students of Colleges of Education in Ghana obtain for the Diploma in Basic Education examination. The stratified random sampling technique was employed to select the scripts of 600 students for each examination paper from 12 Colleges of Education. The courses selected for the study were English (FDC121), Mathematics (FDC122) and Integrated Science (FDC124) whose examination was conducted in the second semester of the 2015/2016 academic year. Cronbach's alpha was computed for the internal consistency reliability. The results showed a reasonably strong internal consistency indicating that candidates' performance is reasonably consistent across items on each test paper and the items constituting a paper, to some extent, are homogeneous. However, it was observed that there was the need to improve upon the internal consistency of the scores. Consequently, it was recommended that the Institute of Education intensifies the orientation on test construction for item writers and conditions in the testing environment should be improved for efficient administration of the examinations.

Key words: internal consistency, cronbach alpha, standard error of measurement, item homogeneity, reliability, replications, true scores, error scores

Introduction

Whenever a test is administered, the test user would like some assurance that the results could be replicated if the same individuals were tested again under similar circumstances (Crocker & Algina, 1986). It is this consistency (reproducibility) of test scores that is called reliability. In practical terms, reliability is the degree to which individuals' deviation scores, or z-scores, remain relatively consistent

over repeated administration of the same test or alternate forms (Crocker & Algina, 1986). Subsequently, Haertel (2006) opined that the concern of reliability is to quantify the precision of test scores and other measurements. Haertel, further explained that reliability is concerned solely with how the scores resulting from a measurement procedure would be expected to vary across replications of that procedure. This suggests that test scores from a single administration may not be wholesome. In view of this, Spearman (1913) cited in Crocker and Algina (1986) described test scores as fallible measures.

Spearman (1913) cited in Crocker and Algina (1986) went on to explain that any observed score could be envisioned as a composite of two hypothetical components- a true score and an error score which is expressed mathematically as X=T+E where X represents observed or raw score, T represents the true score and E the error score. From the equation, it can be deduced that the greater the error (E) the wider the difference between the observed score and the true score and the smaller the error the less the difference between the observed score and the true score. The latter is the wish of every test developer and user for the greater the uncertainty associated with the result of measurement, the less confidence should be placed on the measurement (Haertel, 2006). Since both the test developer and user expect the confidence people place on the decisions that arise out of the use of the test to be high, they would like the error associated with the test result to be relatively low. This corroborates Miller, Mclntire and Loveler's (2011) definition that a reliable test is one that can be trusted to measure each person approximately the same way every time it is used.

According to AERA, APA and NCME (2014), a true score is a hypothetical error-free value that characterises the variable being assessed. It is conceptualised as the hypothetical average score over an infinite set of replications of the testing procedure. In other words, the true score is the mean or expected value, of an examinee's observed scores obtained from a large number of repeated testings (Crocker & Algina, 1986). This means that the scores obtained in the different replications are not the same and that there may be difference between the true score and the score obtained by an individual on a single administration. This difference between the true score and the observed score constitutes the error score. That is X-T=E. It is on this basis that Crocker and Algina defined the error of measurement as the

discrepancy between an examinee's observed test score and his or her true score.

Diploma in Basic Education (DBE) is a programme run by the Colleges of Education in Ghana. The programme leads to the award of DBE certificate which qualifies one to teach in Basic schools in Ghana (KG1 to JHS3). A DBE score is a composite of two scores. These are the internal score which is conducted and scored by the college (continuous assessment) and the external score (end of semester), which is conducted and scored by the Institute of Education of the University of Cape Coast (UCC).

The Institute of Education has put in place a structured process of marking the scripts of the candidates. The examiners for the marking are tutors from the Colleges of Education. The Principal of each college selects representatives for each course offered in the college for appointment by the IOE. The marking is conducted in conference and the examiners are put in groups of three or four under a team leader selected among the examiners based on his/her experience. The chief examiners who are university lecturers prepare marking schemes for their respective course papers.

The marking begins with coordination of the examiners of the marking scheme. During the coordination, the chief examiner of each paper leads the team of examiners to thoroughly discuss the marking scheme. Where there are disagreements with the scheme, the examiners deliberate and arrive at a consensus. The outcome of the scheme at the end of the coordination becomes the accepted scheme for the marking. When the assistant examiners mark, the marked scripts are vetted by the team leaders who record the marks obtained by each candidate on broadsheets.

The marks on the broadsheets are crosschecked by checkers with the marked scripts. Errors detected are corrected before the scores are keyed into the computer programme. The scores are scaled down to 60% and added to the internal component of 40% to obtain the composite of the DBE scores. These are printed out for another checking to ensure that scores from the corrected broadsheets have accurately been imputed. From the eventual scores, grades are assigned for each candidate and based on the grades obtained for all the prescribed courses a student's final performance for the programme is

determined. That is, whether the student qualifies to be certificated as a teacher or not.

In spite of the structures put in place by the Institute of Education to ensure error-free scores, measurement error cannot be avoided totally. For example, candidates might have cheated but succeeded without been noticed by invigilators. Or candidates might have guessed correct answers. Such situations lead to random errors andis may reduce the usefulness of the test scores. Literature shows that the error component of an observed score arises from a number of factors. These include content sampling, inattention on the part of the student, guesses, misreading of items, variations in testing conditions, administration errors, fluctuations in the level of the examinee's motivation, levels in distractions and variations in scoring due to scorer subjectivity (AERA, APA & NCME, 2014; Crocker & Algina, 1986; Haertel, 2006; Fraenkel, Wallen & Hyun, 2012). In view of this, the DBE obtained scores may also be contaminated.

These sources of error are categorized into systematic and random errors. Systematic measurement errors are those which consistently affect an individual's score because of some particular characteristic of the person or the test that has nothing to do with the construct being measured (Crocker & Algina, 1986). For example, if a candidate at the JHS level gets a question on integration, which is not included in the JHS syllabus, in a mathematics test wrong and provided no revision takes place afterwards, anytime the test is conducted again the candidate would have that item wrong. This item would not affect the candidate's performance over replications of the test. In this case the candidate's scores over replications will remain the same, hence any variations in scores attributable to this error is systematic. On the other hand, random errors of measurement affect an individual's score on the basis of chance. Random errors may be caused by guessing, distractions in the testing room, administration errors etc. Random errors may affect an examinee either in the positive or negative direction.

Goforth (2015) noted that reliable measure is one that contains no or very little random measurement error. This implies that anything that might introduce arbitrary or haphazard distortion into the measurement process, results in inconsistent measurements. However, Goforth observed that reliable measure needs not be free of systematic error in order to be reliable; it only needs to be consistent.

Consequently, between the two types of test errors, psychometrics are more concerned with the random errors.

Although systematic errors do not result in inconsistent measurement they may cause test scores to be inaccurate and thus reduce their practical utility. Random errors, on the other hand, reduce both consistency and practical utility of the test scores (Crocker & Algina, 1986). If it is found that test scores are not consistent, their usefulness would be in doubt and prospective users would lose confidence in them. It is, therefore, the expectation of test developers and users that the error component of the observed score of a test is reduced in order to make the observed score closer to the true score. This expectation is realized when reliability is high. This is because reliability is high if the scores of each person is consistent over replications of the testing procedure and is low if the scores are not consistent over replications (AERA, APA & NCME, 2014). Consequently, Crocker and Alginer opined that test developers have a responsibility to demonstrate the reliability of scores obtained from their tests.

Measurement experts have identified a number of procedures for estimating reliability. Miller, Mclntire and Lovler (2011), Haertel (2006) and Allen and Yen (1979) identified four methods of checking reliability. These are test-retest, parallel forms, internal consistency and scorer reliability or agreement. However, Crocker and Algina (1986) categorized reliability estimates into two depending on the number of administrations. The first one consists of procedures requiring two test administrations which include alternate forms, test-retest and test-retest with alternate forms. The second category involves procedures requiring a single test administration. The latter consists of split-half method and methods based on item covariances. Crocker and Algina observed that both methods yield an index of internal consistency.

In spite of the varied methods, the most appropriate procedure to adopt when determining the reliability of a test depends on the intended use of the test scores (Crocker & Algina, 1986) and the population being tested (AERA, APA & NCME, 2014). Consequently, Crocker and Algina suggested that the test developer should identify the sources of measurement error that would be most detrimental to useful score interpretation and design a reliability study that permits

such errors so that their effects can be assessed. This suggests that not all the reliability methods are suitable for a particular study.

Parallel/alternate forms reliability estimates may be ideal but are often difficult to obtain. Even if parallel/alternate forms are available, there may be resistance to the burden of repeated testing, especially in school settings (Haertel, 2006). Thus, there has been an abiding interest in methods for estimating reliability from a single administration of a single test form.

The internal consistency is explained as coefficients based on relationships/interactions among scores derived from individual items or subsets of the items within a test, with all scores accruing from a single administration. It is a measure of how related the items are to each other (Miller, Mclntire & Lovler, 2011). In other words, if a test is internally consistent, then the items in that test are really measuring the same thing (Banyard & Grayson, 2000). In view of this Miller, Mclntire and Lovler argued that if a test is internally consistent then knowledge of how a person answered one item on the test would provide information that would help correctly predict how the person answered another item on the test. In another sense, internal consistency estimates are designed to determine how consistently examinees' perform across items or subsets of items on a test form. In this way, the test user can estimate how consistently examinees' performance on the test can be generalized to the domain of items that constituted the test form. Crocker and Algina (1986) observed that if examinees' performance is consistent across subsets of items within a test, the examiner can have some confidence that the performance would be generalised to other possible items in the content domain.

All internal consistency estimation procedures yield values that are functions of the correlation between separately scored parts of a test (Crocker and Algina, 1986). Crocker and Algina further posited that when examinees perform consistently across items within a test, the test is said to have item homogeneity and such items measure the same type of performance or represent the same content domain. In addition, such items must also be well written and be free of technical flaws that may cause examinees to respond on some basis unrelated to the content.

Crocker and Algina (1986) advocated for the internal consistency to be always examined. This is because its coefficient is an index of both item homogeneity and quality. They, therefore, cautioned

item writers and users to be wary of conditions that will cause examinees not to perform consistently across items on a test and subsequently reduce the internal consistency. Crocker and Algina identified conditions that make examinees not to perform consistently across items to include:

1. When items on a single administration are drawn from diverse areas;
2. When items are drawn from single area but some items test major concepts and some others are based on minor points;
3. If some of the items are poorly written to the extent that examinees may misinterpret the questions or answer to the degree of their testwiseness rather than their knowledge.

The most widely known method using the internal consistency yields a split-half reliability estimate (Allen & Yen, 1979). With the split-half method the test is divided into two parts which are alternate forms of each other (Allen and Yen, 1979; Miller, Mclntire & Lovler, 2011). The individual scores on the two halves are then compared. Allen and Yen suggested that attempts should be made to choose these parts so that they are parallel or essentially tau-equivalent. This means that the two halves must be equivalent in length and content for this method to yield an accurate estimate of reliability (Miller, Mclntire & Lovler, 2011; Haertel, 2006). Consequently, Allen and Yen posited that if the halves are parallel, the reliability of the whole test is estimated using the Spearman-Brown formula. However, if the halves are essentially tau-equivalent, coefficient alpha (α) can be used to calculate the reliability of the entire test.

According to Miller, Mclntire and Lovler (2011) the best way to split the test is to use random assignment to place each question in one half or the other. Miller, Mclntire and Lovler, explained that the random assignment is likely to balance errors in the score that can result from order effect, difficulty and content. Another way to measure internal consistency is to compare individual scores on all possible ways of splitting the test into halves. This method compensates for any error introduced by lack of equivalence in the two halves (Miller, Mclntire & Lovler, 2011). Consequently, KR-20 formula was proposed for computing the internal consistency of tests whose questions are

dichotomously scored (Kuder and Richardson,1939) and Cronbach (1951) also proposed coefficient alpha that calculates internal consistency for items that have more than two possible responses.

Computation of alpha is based on the reliability of a test relative to other tests with same number of items, and measuring the same construct of interest (Hatcher, 1994). According to Goforth (2015) Cronbach's alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. Goforth further explained that the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Santos (1999) observed that alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct". In fact, Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability and it is one way of measuring the strength of that consistency.

Cronbach's alpha is computed by correlating the score for each scale item with the total score for each observation (usually individual survey respondents or test takers), and then comparing that to the variance for all individual item scores. The resulting α coefficient of reliability ranges from 0 to 1 in providing this overall assessment of a measure's reliability. If all of the scale items are entirely independent from one another (i.e., are not correlated or share no covariance), then $\alpha = 0$; and, if all of the items have high covariances, then α will approach 1 as the number of items in the scale approaches infinity. In other words, the higher the α coefficient, the more the items have shared covariance and probably measure the same underlying concept.

Although the Standards for what makes a "good" α coefficient are entirely arbitrary and depend on one's theoretical knowledge of the scale in question, many methodologists recommend a minimum α coefficient between 0.65 and 0.8 (or higher in many cases); α coefficients that are less than 0.5 are usually unacceptable, especially for scales purporting to be unidimensional (Goforth, 2015). Other literature had suggested that a coefficient alpha of 0.70 is adequate for reliability of tests (Nunnally, 1978; Cascio, 1991; Schmidt, 1996). However, Cascio (1991) suggested that reliability should be greater than 0.90 and (Green, Salkind & Akey, 2000) in the Statistcal Procedure for Social Sciences (SPSS) corroborating with this view, noted that the coefficient alpha of 0.89 is an indication that the scale scores are

reasonably reliable. However, in determining the adequacy of the internal consistency one must consider the standard error of measurement (SEM) as it gives a realistic estimate of how much error exists in an individual's obtained score (Miller, Mclntire & Lovler, 2011).

Considering the role teachers play in the education of the child, parents, stakeholders and of course, the general public look for evidence to boost their confidence in the teachers who teach their wards. There have been indicators that give concern for stakeholders to be inquisitive about the reliability of the scores that qualify teachers to teach children at the basic schools.

Anamuah-Mensah, Mereku and Ghartey-Ampiah (2008) reporting on the 2007 edition of Ghana's participation in Trends in International Mathematics and Science Study (TIMSS) observed that Ghana's performance was poor. The test was conducted for Grade 8 (JHS 2 in Ghana) students of forty-four countries in Mathematics and Science with Ghana ranking 43rd in Mathematics and last in Science. The students who represented Ghana were a sample of students taught by teachers who had completed the DBE programme and certificated by UCC. If this performance at the International level is anything to go by, then one will wonder the kind of marks that qualified those teachers to obtain the certificates to teach. It was not surprising that, making reference to Ghana's performance at TIMMS during his inaugural lecture, Ghartey-Ampiah (2016) wondered at the type of the content knowledge possessed by these teachers.

Added to this are studies that have questioned the credibility of Senior School Certificates awarded by West Africa Examination Council (WAEC) in Nigeria. Achigbe and Bassey (2012) reported that the Nigerian educational scene had been riddled with a lot of controversies with the approval of a new and indigenous examining body, the National Examination Council (NECO), in 1999 to conduct the Senior School Certificate Examination (SSCE) alongside the more experienced WAEC. They observed that such action had raised the consciousness of stakeholders and agitations of the general public on the credibility of the SSCE being conducted by WAEC. In support of this view is the study of Ajuonuma and Mkpa (2009) which indicated that the credibility of public examinations conducted by WAEC in Nigeria was being queried. They observed that WAEC's certificates

were being subjected to public scrutiny locally and many foreign countries. Ajuonuma and Mkpa, therefore, wondered if the universities have been admitting the right students.

The Institute of Education, as an examination body, should not wait for the public to strike before it puts its house in order. It will be useful for it to learn and avoid the WAEC's experience in Nigeria. It is for these reasons that this study would want to examine the internal consistency of the DBE examination scores on which decisions are taken about the certification of students of the Colleges of Education in Ghana. Hence, the problem of the study is the internal consistency reliability of DBE external scores obtained by the Institute of Education which are used to determine the qualification of students of the Colleges of Education as teachers.

Purpose of the study

The purpose of the study is to examine the internal consistency reliability of the DBE external examination scores obtained by the Institute of Education, UCC. Specifically, the study will examine;

1. The internal consistency of the external examination scores of the DBE.
2. The relationship of the items constituting the papers in measuring common constructs of the DBE examination papers.

Research question

The study was guided by the following research question.

1. What is the internal consistency reliability of the DBE external examination scores?

Methodology

Research Design

The study is mainly a descriptive survey design. Borg and Gall (1983) described descriptive studies as those aimed at finding out the state of objects. Descriptive survey is an attempt to obtain data from members of a population or a sample to determine the current status of that population with respect to one or more variables (Burnham, Gilland, Grant, & Layton-Henry, 2004; Fraenkel, Wallen & Hyun, 2012). A survey is often conducted to obtain description of a particular

group of individuals (Gravetter & Forzano, 2006). This design is suitable for the study because data were collected from the current natural setting of colleges of education to obtain the desired information. The study was conducted using a sample from the population of colleges of education in Ghana. Gravetter and Forzano observed some advantages of a survey to include its flexibility and efficiency in collecting a wide variety of information about different variables. However, one disadvantage has been noted to be its low response rate and non-response bias. In order to address such weaknesses the researcher made a number of follow-ups to the colleges for the collection of the data.

Population

The population of the study consisted of all students who offered first year second semester core courses in English (FDC121), Core Mathematics (FDC122) and Integrated science (FDC124) in all public and private Colleges of Education in Ghana for the 2015/2016 academic year. As at the 2015/2016 academic year, there were thirty eight (38) public and eight (8) private Colleges of Education in Ghana. English, Mathematics and Integrated Science were selected because they were core courses taken by all students offering the General Programme which is offered in all the 46 Colleges of Education. The total number of students was 13,352 (Report on the 2015/2016 first year end-of-second semester examination results).

Sample and Sampling Techniques.

The stratified random and simple random sampling techniques were adopted in selecting the sample. The study was conducted in 12 Colleges of Education constituting 26.1% of the colleges. Using the stratified random sampling technique, two colleges were randomly sampled from each of the five zones of public Colleges of Education in Ghana. These zones were Northern, Ashanti/BA, Eastern/Greater Accra, Volta and Central/Western Zones. In addition to these, two private Colleges of Education were randomly selected.

For each College of Education Zone, the names of all the colleges were written on pieces of paper, folded and placed in a bowl. The researcher shook the bowl vigorously and asked a twelve year old girl to pick two at random with replacement. This was done to ensure

equal chance of selection. The two selected colleges from each zone constituted the sample for the zone. The same process was used to select the sample for the private colleges. In each college, a sample of 50 students' marked scripts for each course was randomly selected for the study. Fifty scripts were packed in each envelope. Any of the fully packed envelopes for each of the selected courses from each of the sampled colleges was randomly selected. This means that 600 scripts (4.5%) were sampled for each course.

Research Instrument

The main instrument used in the study was document analysis guide. A document is an instrument in language which has, as its origin and for its deliberate and express purpose to become the basis of, or to assist, the activities of an individual, an organisation or a community (Webb & Webb, 1932 cited in Burnham, Gilland, Grant & Layton-Henry). Webb and Webb cited in Burnham, Gilland, Grant and Layton-Henry opined that the social investigator must insist on the original document or an exact verbatim copy and that the aim of the investigator must be to consult the original source. The instrument sought to examine documents/records of students' external examination scores of English (FDC 121), Mathematics (FDC 122) and Integrated Science (FDC 124). The Integrated Science and Mathematics papers consisted of objective (dichotomously scored) and essay items and the English paper consisted of five (5) sections (A, B, C, D and E) with seven questions. Candidates were to answer one question out of two from sections A and E and answer all the questions in Sections B, C and D. Consequently, for the English, candidates answered five items in all. The Mathematics (FDC 122) paper was composed of two sections (A and B). Section A consisted of 15 compulsory objective items and Section B was made of five items out of which candidates were to answer three. In this section candidates were required to show working. The integrated Science paper, on the other hand, consisted of four sections (A, B, C and D). Section 'A' part had a 40 dichotomously scored items. Each of Sections B, C and D consisted of two subjective items from which candidates were to answer one from each section.

One advantage of examination of records is that it is relatively quick and complete since all the relevant information is usually stored in one location (Borg & Gall, 1983). Borg and Gall cautioned that the

use of the technique involves invasion of subjects' privacy. In view of this clearance was sought from the appropriate authorities of the Colleges of Education, Institute of Education and Institutional Review Board (IRB) of the University of Cape Coast.

Data Analysis

The data were analysed by adopting the Cronbach's alpha. The Statistical Programme for Social Science (SPSS) was employed to compute the statistics. The internal consistency of the external scores of the three papers was computed using the Cronbach's alpha. Cronbach's alpha was found suitable to determine the internal consistency of the scores of the target courses due to the structure of the test papers which consisted of both objective and essay items. Crocker and Algina (1986) observed that Cronbach.'s alpha can be used to estimate the internal consistency of items which are dichotomously scored or items which have a wide range of scoring weights including essay items.

Results and Discussions

Research question: What is the internal consistency reliability of the DBE external examination scores?

To answer the research question, the internal consistency reliabilities of the external papers of the selected courses (English, FDC121; Mathematics, FDC122; and Integrated Science, FDC 124) were computed by the researcher using the Cronbach alpha. For the FDC 121 each of the five sections was considered as a subtest of the test paper with each section consisting of a maximum of 20 marks. This means that FDC 121 was made up of five subtests.

Section A of FDC 122 had a total of 40 marks and each of the three questions of Section was B allotted 20 marks. In order to have uniform scores for all the items, the researcher divided section A scores by two. In effect, for the FDC 122 four questions or subtests with 20 marks each were used to compute the internal consistency. The distribution of scores in Integrated Science was the same as that of Mathematics and so FDC 124 was also composed of four subtests. The results of the Cronbach's alpha are presented in Table 1.

Table 1: Results of Cronbach's alpha for the three papers

Paper title	Paper code	Valid cases	No. of subtests	Coefficient alpha (α)	SEM of the single adm
English	FDC 121	497	5	0.66	6.51
Mathematics	FDC 122	395	4	0.69	7.05
Int. Science	FDC 124	591	4	0.66	5.95

From Table 1 coefficient alpha of the three papers range between 0.66 and 0.69. These approximated to one decimal place gives 0.7 with SEM ranging between 6 and 7. It can, therefore, be deduced that the internal consistency of the external DBE examination scores may be considered satisfactory. This is because the results are in conformity with other literature that a coefficient alpha of 0.70 is adequate for reliability of tests (Nunnally, 1978; Cascio, 1991; Schmitt, 1996). To buttress this, Goforth (2015), observing that standards for what makes a good coefficient alpha are controversial, noted that many methodologies recommend a minimum alpha coefficient of 0.65 and that alpha coefficient of less than 0.5 is unacceptable. The results further conform with the American National Election Study scale in 2008 cited in Goforth (2015), whose coefficient alpha of 0.67 was considered as reasonably strong. The results therefore suggest a reasonably strong internal consistency reliability of the DBE test scores.

The fact that the range of internal consistency coefficients for the three papers is very small (0.66 – 0.69) suggests that the internal consistency of the scores of the other DBE papers might hover around the same range of values. If this is the case, then, the results depict that candidates' performance is consistent across items on the DBE papers. This implies that the items in the respective papers, to a very large extent, measure common or related constructs (concepts). This is an indication that one can predict a candidate's performance on an item from the candidate's performance on another item. Miller, Mclntire and Lovler (2011) noted that if a test is internally consistent then knowledge of how a person answered one item on the test would provide information that would help correctly predict how the person answered another item on the test. It, therefore, suggests that the test item writers follow a common standard in developing the items and the scoring

procedure is uniform across examination papers. Consequently, one can conclude that the methods the Institute of Education has been adopting in developing items and the scoring procedures for the DBE examinations are, to some extent, effective.

However, this observation may not be all that accurate because the alpha coefficient of 0.66, SEM=6.51 for English, 0.66, SEM 5.95 for Integrated Science and 0.69, SEM=7.01 for Mathematics are just at the fringes of the minimum alpha coefficient considered as satisfactory. Given the view of the minimum acceptable alpha coefficient of 0.9 (Cascio, 1991) and 0.89 (Green, Salkind and Akey, 2000), the internal consistency reliability coefficients could be considered as low. This is buttressed by the high standard error of measurement (between 6 and 7) (Table 1). It means that the error margin is high with regard to the difference between the true score and the observed score. For example, if a candidate scored 70 (raw score) in Mathematics, and given a 95 confidence interval or 0.05 level of significance, the true score is likely to be located between 56.28 and 83.72 ($70 \pm 1.96 \times 0.7$). This illustrates that there is 95% chance that the true score in Mathematics of the candidate whose raw score is 70 lies between 56.28 and 83.72, an interval of 26.5. The interval is too wide and illustrates a wide variation between the true score and the observed score. This is in line with Santos' (1999) observation that alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct." In fact the results indicate that the variation of the observed score from the location of the true score is too wide with regard to the SEM.

Studies show that the error component of an observed score arises from a number of factors. These include content sampling, inattention on the part of the student, guesses, misreading of items, variations in testing conditions, administration errors, fluctuations in the level of the examinee's motivation, levels in distractions and variations in scoring due to scorer subjectivity (AERA, APA and NCME, 2014; Crocker & Algina, 1986; Haertel, 2006; Fraenkel, Wallen & Hyun, 2012). Crocker and Algina also noted that low internal consistency is likely to result from the following.

1. That the items on each paper might have been drawn from diverse (unrelated) areas.

2. The items might be drawn from single area or while some items test major concepts others are based on minor points.
3. Some of the items were poorly written to the extent that examinees might have misinterpreted the questions or answer to the degree of their testwiseness rather than their knowledge.

It then follows that if the internal consistency of the DBE papers is low, then they might have been caused by some, if not all of these factors and the scores may contain some amount of errors.

Conclusion and Recommendations

The study has shown that the internal consistency reliability of the DBE external examination scores is high (coefficient alpha for the three papers is about 0.7) and that the performance of candidates on the examination papers is reasonably consistent across items of the DBE papers. This implies that the items in the respective papers, to some extent measure the same construct. However, the coefficient alpha range of 0.66-0.69 with high SEM (6-7) indicate errors in the observed scores. Based on the identified factors that generate errors in observed scores by measurement experts (AERA, APA & NCME, 2014; Crocker & Algina, 1986; Haertel, 2006; Fraenkel, Wallen & Hyun, 2012), the following are recommended in order to improve upon the internal consistency reliability of the DBE external examination scores.

1. The item writers must pay particular attention to the construction and use of test specification table during the process of test construction by writing items which relate content with objective effectively.
2. Each item should reflect major content or topic. To a very large extent, items drawn from trivial content must be avoided.
3. The information carried out in each item must be as clear as possible such that candidates will depend on knowledge acquired rather than guesses and testwiseness in answering questions. Items should be devoid of any ambiguity.
4. Each examination paper must be moderated by a panel comprising, at least, a subject expert, language specialist and an assessment expert. This will ensure that issues bordering on content, clarity, language and principles of test construction are effectively addressed.

5. In administering the test the testing environment should be given utmost consideration. Adequate attention must be paid to illumination of the examination room to ensure that there is enough light that will enable each candidate see clearly to read and understand each question. Also, the room must be devoid of any distractive sounds that may distract candidates' attention in the course of answering the questions. Furthermore, the seating arrangements should be spacious enough to avoid candidates from obtaining any form of assistance from each other. These and other measures will ensure that candidates answer the questions with no or little interference thereby reducing the error margin associated with their observed scores. Consequently, with the items being homogeneous, internal consistency will be high.
6. Finally, further studies could be conducted involving other courses beside Mathematics (FDC 122), English (FDC 121) and Integrated Science (FDC 124) in any of the College of Education zones or the same courses in other zones to confirm or nullify the results of this study.

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