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CONTENTS

Editorial Comment

The Journal of Educational Development and Practice (JED-P) is a journal of the Institute of Education, University of Cape Coast, Ghana. The journal focuses on contemporary issues in educational development in Ghana and other countries, particularly, in the context of a developing world. It also seeks to stimulate extensive dialogue and discussion on educational policy and practice. In view of this, articles that feature on the following issues are welcome: (a) Review of curriculum practice, (b) Evaluation of educational policies and practices, (c) Evaluation of various educational programmes such as interventions by NGOs and governmental agencies, and (d) Studies examining alternative models of educational delivery.

The journal carries original empirical and theoretical studies and targets local and international audience. Important criteria in the selection of articles for publication are: quality of presentation, conviction in argument, clarity in presentations and educational significance. It is published once a year in **December.** However, articles are received throughout the year. This fourth edition has articles of significance.

Kelechi U. Lazarus investigates the effect of Collaborative Strategic Reading (CSR) on enhancing the achievement in reading comprehension of students with learning disabilities in Lagos State, Nigeria. She reports of significant main effect of treatment (Collaborative Strategic Reading) on the reading comprehension of students with learning disabilities. The study concludes that students who are exposed to Collaborative Strategic Reading perform better in reading comprehension than those who are exposed to Control Group and recommendsthe need for schools to sustain improved achievement in reading comprehension among students with learning disabilities through the use of Collaborative Strategic Reading.

Florence C. Awoniyi and Jonathan A. Fletcher reports on a study to explore senior high school mathematics teachers' use of School-Based Assessment (SBA) guidelines and test scores in the Cape Coast Metropolis in Ghana. Their study revealsamong others that mathematics teachers in senior high schools in the Cape Coast Metropolis do not follow the School-Based Assessment guidelines on principles of testing in the construction of teacher-made or classroom tests. The researchers recommend the need for Ghana Education Service toorganise regular in-service training in testing practices for senior high school mathematics teachers in the Metropolis.

Ernest Kofi Davis draws on theories on the local aspect of mathematics, and teaching and learning to ascertain how the Ghanaian College of Education Mathematics curriculum deals with these aspects. The researcher makes interesting findings on how the College of Education

planned curriculum and implemented curriculum in mathematics orient trainees to appreciate the local aspect of mathematics and mathematics pedagogy, and recommends the need for curriculum developers to expose trainees to social and cultural issues in mathematics and mathematics pedagogy.

Prosper Deku investigates the types of support provided to classroom teachers, the relationship between teachers who are supported, and equipment utilization in primary school classrooms. The researcher reports of a significant relationship between teachers who receive support and those who do not receive any support in the use of equipment in teaching. The study highlights, among others, the need for educational authorities to develop an adequate support system in schools for teachers.

John Sedofia and Frederick Ocansey evaluate the counselling and appraisal services in the Colleges of Education in the Volta Region of Ghana. The researchers report of teacher trainees not benefiting fully from both the counselling and appraisal services and recommend, among others, that counsellors should intensify guidance activities in the colleges so as to make guidance services, especially the counselling and appraisal services, more attractive and accessible to students.

Fehintola J. Olusola investigates the readability level of pupils in private and public primary schools in Ibadan Land, Nigeria. The researcher makes interesting findings about the readability levels of pupils in the private and public schools and recommends the need for Government to employ experts in English language to handle the teaching of English language right from primary school level to enhance the reading culture of pupils.

About the Authors

Prof. Frederick Ocansey is a Professor of Guidance and Counselling at the Counselling Centre, Faculty of Education, University of Cape Coast, Ghana.

Prof. Jonathan A. Fletcher is a Professor of Mathematics Education at the Department of Mathematics and Science Education, Faculty of Education, University of Cape Coast, Ghana.

Dr. Kelechi U. Lazarusis a Senior Lecturer in Special Education, Department of Special Education, University of Ibadan, Nigeria.

Dr. Ernest Kofi Davis is a Senior Lecturer of Mathematics Education, Faculty of Education, University of Cape Coast, Ghana.

Dr. Prosper Deku is a Senior Lecturer in Special Education at the Department of Educational Foundations, Faculty of Education, University of Cape Coast, Ghana.

Mr. John Sedofia is a Tutor at the Department of Education Studies, St. Francis' College of Education, Hohoe, Ghana.

Rev. (Sis) Florence C. Awoniyi is a Senior Research Assistant and PhD candidate at the Department of Mathematics and Science Education, Faculty of Education, University of Cape Coast, Ghana.

Dr. Fehintola, J. Olusola is a Lecturer at the Department of Guidance and Counselling, University of Ibadan, Ibadan, Nigeria.

as a result of deficits in cognitive and meta-cognitive skills. They are ignorant of how to process information effectively and use strategies to read and study. Often these students are unable to meet the demands of required subjects in the content areas in senior secondary school and their resulting failure leads to discouragement and disengagement in school (McNamara, 2007). Buttressing this, the National Joint Committee for Learning Disabilities (NJCLD) (2008) identified ten areas of the increased academic demands of junior and senior secondary school students with learning disabilities. Some of these areas are:

- steadily increasing the amount of information;
- the need for comprehension of complex linguistic forms and abstract concepts;
- high stakes testing and graduation requirements;
- greater demand for working memory for on-the-spot problem-solving;
- increased reliance on print (including a shift from narrative texts to emphasis on informational content/expository text structures and domain-specific vocabulary); and
- Increased demands for digital (versus traditional) literacy proficiency;

These activities are associated with an individual's ability to read efficiently. Basically, no effective reading can be achieved without comprehension because in the opinion of Durkin (1993), comprehension is the "essence of reading". It can, therefore, be deduced that there is a close relationship between success at school and utilization of effective comprehension strategies by all students especially, students with learning disabilities. To elucidate this point, Pressley (2000) submitted that research evidence proves that students can be taught reading comprehension strategies and students who learn these strategies exhibit increased motivation and reading achievement (Rosenshine & Meister, 1994; Rosenshine, Meister & Chapman, 1996; Ziyaeemehr, 2012).

Therefore, teachers of students with learning disabilities should provide instruction, modelling, and practice of strategies to enable the students to learn to use these tools independently of the teacher and truly own them (National Reading Panel, 2000).

Literature Review

Three areas of literature are particularly relevant to this study. These are (i) Description of Collaborative Strategic Reading (CSR), (ii) Collaborative Strategic Reading (CSR) Steps and (iii) Researches on Collaborative Strategic Reading (CSR) and gender differences in reading comprehension. Each is briefly reviewed.

Description of CSR

Collaborative Strategic Reading (CSR) is an instructional strategy designed to help students with culturally and linguistically diverse abilities and students with learning disabilities and other disabilities acquire and practice comprehension strategies for use with informational text (Klingner & Vaughn, 1996). CSR was adapted from reciprocal teaching, an instructional activity that involves a dialogue between teacher and students. In reciprocal teaching, the teacher and students take turns assuming an instructional role in leading the dialogue (Palincsar, 1986).

During CSR lessons, students of mixed achievement levels apply comprehension strategies while reading content area text in small cooperative groups. Initially, the teacher presents the strategies (preview, click and clunk, get the gist, and wrap up) to the whole class using modelling, role playing, and teacher think-alouds. After students have developed proficiency applying the strategies through teacher-facilitated activities, they are then divided into heterogeneous groups where each student performs a defined role (such as Leader, Clunk Expert, Gist Expert, and Question Expert) as students collaboratively implement the strategies (Klingner, 2010).

Collaborative Strategic Reading (CSR) Steps

(a) Preview: Before reading, the teacher guides students in activating background knowledge, making predictions, connecting associations with the text, generating interest and encouraging active reading of the text and identifying the purpose (that is, discuss the title, section (s) and paragraph headings, illustrations, maps and tables).

(b) Click and Clunk: These two strategies are associated with self-monitoring. Click and clunk occurs during reading and refers to the process of reading for meaning (clicking) and monitoring comprehension so that students notice when understanding breaks down (clunking). Students are taught to use several "fix-up" strategies (for example, "read the sentence before and after the clunk; look at the word structure for root words and

affixes") to figure out unknown words or concepts (that is, words they do not know the meaning of; not word acc uracy reading).

(c) Get the Gist: Students quickly read each paragraph or section to find the main ideas or summarize key information and message. Students are taught to identify the most important who or what in the paragraph or section they have just read and then to briefly state the critical information about the who or what.

(d) Wrap-up: Wrap-uptakes place after reading and teaching students to identify the most important information in an entire passage. Wrap-up includes two components. First, students generate and answer their own questions about what they have read, and second, students review what they have learned by summarizing the key ideas presented in the text.

Researches on Collaborative Strategic Reading (CSR) and on Gender Differences in Reading Comprehension

The initiators of CSR and their associates have carried out series of intervention studies to authenticate the effects of CSR on reading comprehension for students with learning disabilities. Some of these studies are presented in the section that follows.

The first study using CSR was conducted by Klingner and Vaughn (1996) with twenty-six (26) seventh-and eighth graders with learning disabilities, who used English as a second language. In this study, students were taught to use modified reciprocal teaching methods in cooperative learning groups (that is, brainstorm, predict, clarify words and phrases, highlight main idea, summarize main ideas and important detail, and ask and answer the questions. The researchers found that CSR was effective in improving reading comprehension for most of the students with learning disabilities.

In another similar study conducted by Klingner and Vaughn (2000), fifth-grade students were taught to apply CSR by trained classroom teachers during English as a Second Language (ESL) science classes. It was shown that the students significantly increased their vocabulary from pre-testing to post-testing. Further, students in CSR groups spent greater amounts of time engaged in academic-related strategic discussion and assisted one and another while using CSR.

CSR has also been combined with other approaches to address the range of skills needed for reading competence in (middle) junior school and senior secondary (high) school. In a study by Bryant, Vaughn, Linan-Thompson, Ugel, Hamff and Hougen (2000), sixty (60) sixth-grade middle school students were utilised and a multi-component reading intervention

was used to address the range of reading needs. CSR was used in conjunction with two other research-based strategies namely, Word identification (Lenz, Schumaker, Deshler & Beals, 1984) and Partner Reading (Mathes, Fuchs, Henley & Sanders, 1994). Results revealed that students with learning disabilities improved their word identification and fluency, but not reading comprehension.

Wang (2008) examined the effect of CSR on sixth-graders' reading comprehension and learning attitudes. Sixty-two pupils from two intact classes were divided into a control group receiving the traditional teacher-directed reading instruction and an experimental group of CSR instruction in combination with story retelling strategy training for fifteen weeks. Multiple measures were used in this study namely, a questionnaire of English learning background, pre-tests and post-tests of reading comprehension, five post-tests administered after reading stories, a story reading post-test which students had not ever read in the class and a questionnaire of students' attitudes towards the intervention. It was reported that modified CSR approach was effective in fostering the six-graders' overall reading comprehension and understanding of the meaning of the stories, and that it increased their English learning motivation.

Besides, Lazarus (2009) determined the effect of two instructional strategies namely, Directed Reading-Thinking Activity (DRTA) and Collaborative Strategic Reading (CSR) in improving achievement in reading comprehension of students with learning disabilities in Lagos State, Nigeria. Seventy-five Junior Secondary Class 2 students were purposively selected for the study. Participants in the experimental groups were exposed to ten weeks of reading comprehension training using DRTA and CSR strategies. The results revealed that participants in the two experimental conditions were significantly better in their reading comprehension achievement than their counterparts in the control group. Moreover, participants who were exposed to CSR performed better than those who were exposed to DRTA.

In another study, Fitri (2010) investigated the effectiveness of Collaborative Strategic Reading (CSR) towards the students' reading comprehension achievement by using quasi experimental research design with 56 intact students of PGSD Suryalaya, West Java, Indonesia. The result showed that the mean score between CSR and conventional reading activities were significantly different. It meant that the CSR was effective in increasing students' reading comprehension achievement.

Gender differences in reading comprehension achievement have also been examined in literature with no concluding results. For instance, Maccoby and Jacklin (1974) held that girls are better than boys in reading tasks. They stated that possible causes for early difference in reading related

This technique enabled the researcher to select fifty (50) students th participated in the study. Then, the researcher randomly assigned these fi (50) students to two groups that is treatment and control, respectively w students from Baptist Junior Secondary School, Obanikoro, Shomolu L.G. as the experimental group and students of Ikosi Junior High School, Kosc L.G.A. as control group.

Description of Instruments

The Pupil Rating Scale

The Pupil Rating Scale is a screening instrument for students with learnir disabilities (primary and junior secondary school). It was designed b Myklebust in 1971 and revised in 1981. The author emphasized i usefulness and accuracy when used for screening purposes (Myklebus 1981). The pupils rating Scale is a standardized scale. The author normaliz it on a large population and found the instrument to be valid as a screenir device. On the local scene, some researchers have re-validated the sca including Lazarus (2009) who obtained a reliability coefficient of 0.76 f the Pupil Rating Scale, using the Guttman- split half formula.

Reading Comprehension Test (RCT)

Reading Comprehension Test questions were drawn for junior seconda school class 3 (J.S.S. 3) students with reading comprehension deficits. Th test is designed to assess students' pre-treatment and post-treatment readi comprehension abilities. The main difference between the pre-treatme assessment and the post-treatment assessment is that during the pre-t students' reading comprehension ability prior to instruction was the foc while the post-test was aimed at identifying how much change if any l occurred in the students' reading comprehension ability due to instruction treatment received. The test consists of four reading passages which a related to the background of the participants. The questions were selec from New Oxford Secondary English Course, for Junior Secondary Schoo Book 3by Banjo, Adeniran, Akano and Onaga (2007). Participants we expected to answer five questions from each of the two passages to give total of twenty questions. These questions (which include multiple choi questions and recall/inferential questions) were intended to exami students' ability to identify main ideas, supporting details, draw inference recall facts and comprehend the meaning of words in context. Th Cronbach's alpha estimate of internal consistency of the Readi Comprehension Test was found to be 0.61 for test and 0.67 at retest.

Procedure for Data Collection

The researcher sought approval from the Local Education District 2 Tutor-General, who is the Inspector of Education in charge of schools in the Kosofe and Shomolu L.G.A.s, which is located at Maryland Schools Complex, Ikeja, Lagos, to conduct the research in the two public schools. Letters of approval issued to the researcher were presented to the principals of the respective schools.

Training sessions were conducted twice a week for a period of eight weeks. Week one served for screening and pre-test while week eight served as post-test period. The training sessions were held between the second week of training and the seventh week to give a total of six weeks. In each week, each group had two lessons. In all, a total of twenty four lessons were held for the experimental and control groups. To teach participants in both groups the researcher carefully selected six reading passages from the New Oxford English Course for Junior Secondary Schools, Book 3.

Classroom procedures adopted for each Collaborative Strategic Reading lesson is summarized as follows:

i. The researcher described and modelled the entire Collaborative Strategic Reading plan as an overview for the students using a given passage (Whole class introduction).
ii. The researcher assigned students to groups (Cooperative Group Activity).
iii. The researcher assigned group roles to all participants in the groups (five students per group) for example, group leader, clunk expert, gist expert, and group reporter.
iv. Before they read a passage, the group leader asked the group to: brainstorm what they already know about the topic, make predictions about what they think they are going to learn from the passage, to share their brainstorming ideas and to share their predictions with other group members.
v. Group members read the passage, figured out meaning of "clunks" and identified "clicks" in the passage. Each clunk expert reminded group members to use clunk strategies.
vi. The researcher offered assistance to students working in groups by clarifying "clunks".
vii. Each gist expert ensured that his group members identified "who" or "what" the passage is mostly about, as well as the most important information about the "who" or "what" in the passage.
viii. Whole class wrap-up: The class dispersed from their groups and came together. The researcher called on each group reporter to report

to the class the important ideas learned and favourite questions formulated by his group members on the passage. Other students supplied answers to group questions.

ix. The researcher evaluated the lesson with some questions (oral and written).

x. He summarised the lesson by highlighting the main idea of the passage.

xi. He gave assignment based on the lesson.

The conventional approach was adopted for participants in the control group. These students continued to receive instruction on the same passages treated by the experimental group using the conventional method of learning (read and explain). Basically, the students were asked to read the passage silently and in some cases students read aloud. After reading the passage they answered oral and written questions based on the passage. Classroom management and rules were the same for the experimental and control groups. Students in the control group also took part in the pre-test and post –test of this study (same as in experimental group).

Method of Data Analysis

Analysis of Variance and computation of t-test statistics were used to analyse the data collected.

Results

H_{01}: There is no significant main effect of treatment on the reading comprehension achievement of students with reading disabilities.

Table1 Summary of Analysis of Variance on the Effects of Collaborative Strategic Reading (CSR) on Reading Comprehension of Participants

Source of Variance	Sum of Squares	Df	Mean Square	F	Sig. P
Covariates	2467.045	1	2467.045	64.221	.000
Pre-test	2467.045	1	2467.045	64.221	.000
Main Effects	1342.742	1	1342.742	34.954	.000**
(Treatment Groups) : (a) CSR (b) Control Group	1342.742	1	1342.742	34.954	.000**
Explained	3809.787	2	1904.894	49.588	.000
Residual	1805.493	47	38.415	49.588	.000
Total	5615.280	49	114.588		

* *Significant at $P < 0.05$

The results of the findings on Table 1 show a significant main effect of treatment (Collaborative Strategic Reading) on the reading comprehension of students with learning disabilities ($F_{(1, 47)} = 34.954$; $P < 0.05$). This implies that treatment contributed significantly to the variation in participants' post-test scores in reading comprehension. Thus, that there is a significant difference in reading comprehension of students with learning disabilities exposed to collaborative Strategic Reading and those exposed to Control Group. On the basis of this finding the null hypothesis is hereby rejected.

In order to determine the magnitude of the post-test mean scores obtained by each of the treatment group and the control group, the Multiple Classification Analysis (MCA) was computed and is presented in Table 2.

Table 2: Multiple Classification Analysis of Reading Comprehension of Participants in Treatment Group and Control Group

Variable + Category	$\bar{X}$	N	Unadjusted Deviation	Eta	Adjusted for Factors and Covariates Deviation	Beta
Treatment:						
(a) CSR	23.35	25	4.20	.40	5.23	.49
(b) Control Group	12.89	25	-4.20		-5.23	

Grand Mean = 18.12
Multiple R = .678
Multiple R Squared = .824

Table 2 reveals a beta value of 0.49 for treatment group and control group and a Multiple R^2 value of 82% (eighty-two percent). This implies that the amount of variation of the independent variable in this analysis when taken together is eighty-two (82%). In other words, the independent variable, Collaborative Strategic Reading (CSR) was effective in improving the reading comprehension achievement of students with learning disabilities. Also, the mean scores of the two groups were 23.35 and 12.89 for the treatment and control groups, respectively. This therefore demonstrated that Collaborative Strategic Reading which obtained the highest adjusted post-test mean score of ($\bar{X}$ = 23.35) is superior to the Control method (conventional teaching) in improving reading comprehension of students with learning disabilities.

H_{O2}: There is no significant difference between the achievement in reading comprehension of students with learning disabilities based on gender.

Table 3: t-Test Comparisons of Reading Comprehension of Male and Female Participants Exposed to Treatment and Control Group

Gender	NO.	$\bar{X}$	SD	t Cal.	t. Tab.	Df	P
Male	24	15.75	9.37				
Female	26	21.69	9.83	2-18	2.0	48	<.05

Table 3 reveals that female participants performed better in the reading comprehension achievement test than their male counterparts ($\bar{X}$ =21.69 for females and 15.75 for males). This implies that there is a significant difference between the achievement in reading comprehension of

male students with learning disabilities who were taught using Collaborative Strategic Reading and female students exposed to the same treatment. Thus, the null hypothesis is rejected.

Discussion

The main focus of the study was to determine whether or not there would be any significant difference in the achievement of participants according to groups of instructional strategy and control. The findings have clearly indicated that the interactive and multi-component instructional strategy developed for this study that the Collaborative Strategic Reading has contributed significantly to the improvement of students with learning disabilities' achievement in reading comprehension. The results pointed to statistically significant differences between the achievement scores in reading comprehension of the experimental and the comparison groups. In other words, the experimental group significantly outperformed the control group on the reading measures.

This present findings lend credence and further buttress the position of Vaughn, Clapper and Kim (2002) that most intervention studies conducted by researchers using Collaborative Strategic Reading (CSR) demonstrated that CSR was associated with improved reading comprehension for students with learning disabilities. Many intervention studies with CSR indicated positive gains in the students' reading comprehension, increased vocabularies, enhanced cooperative skills and enriched content area learning (Klingner & Vaughn, 1996; 1998; Klingner, Vaughn, Arguelles, Hughes & Ahwee, 2004; Wang, 2008; Lazarus, 2009 & Fitri, 2010). These findings have indicated that when students with learning disabilities are exposed to Collaborative Strategic Reading (CSR), they make significant improvement in their reading comprehension.

The above view, therefore, suggests that the instructional strategy of this present study that is, Collaborative Strategic Reading (CSR) should be considered as a useful strategy in reading comprehension instruction in general education classrooms where a large number of students with learning disabilities receive instruction, in resource room settings common in many private schools in Lagos State, Nigeria as well as in special education settings that cater for the educational needs of majority of students with disabilities particularly, in Nigeria.

However, the present findings contradict the discoveries of Bryant, Vaughn, Linan-Thompson, Ugel, Hamff and Hougen (2000), who conducted a study with sixty (60) sixth-grade middle school students. In their study, a multi-component reading intervention was used to address the range of

reading needs. CSR was used in conjunction with two other research-based strategies namely, Word identification (Lenz, Schumaker, Deshler & Beals. 1984) and Partner Reading (Mathes, Fuchs, Henley & Sanders, 1994). Results revealed that students with learning disabilities improved their word identification and fluency, but not reading comprehension.

The findings of this study that female students with learning disabilities performed better in achievement in reading comprehension than their male counterparts support the opinion of Maccoby and Jacklin (1974) that girls are better than boys in reading tasks. These researchers buttressed their view by providing an explanation. In their opinion genetic and environmental factors are possible causes for early difference in reading related behaviour. They stress that genetic differences have been suggested as a basis for deficit in boys and which might take the form of maturational lag, or differences in attention, activity or aggressiveness. Further, major environmental hypotheses include bias in readers' content, negative treatment of boys by female teachers and general cultural expectations related to sex roles. This present finding corroborates these assertions.

Additionally, the viewpoint of Ormrod (2006) is authenticated by this very finding. According to Ormrod (2006) many aspects of society conspire to teach growing children to conform to gender stereotypes. For example, girls and boys are given different toys and play different games (Campbell, 1986). This present finding is also in agreement with Stoet and Geary (2013) finding that across the nations of the world, boys scored higher than girls in mathematics, but lower than girls in reading. The present study has indicated a strong support for all these submissions.

Educational Implications

The effects of instructional strategies to enhance achievement in reading comprehension of secondary school students with learning disabilities have been demonstrated specifically in this study. The study has also established that Collaborative Strategic Reading (CSR) which is a multi-component reading comprehension strategy teaches all students especially students with learning disabilities to use four independent comprehension strategies that is, preview, click and clunk, get the gist and wrap up, while working cooperatively.

Essentially, Collaborative Strategic Reading (CSR) encourages students to think critically during reading activities and to monitor their comprehension while they are reading. CSR emphasize brainstorming and predicting, activation of prior knowledge, determining meaning of unknown words, finding the main idea, and summarizing the text they have read. In

fact, by engaging in these reading comprehension practices during CSR lessons students gain more skill and confidence to read, think, understand, and remember what they have read even after much time has passed.

Another implication of the findings of this study is that the study has reinstated the need to facilitate students' reading skills through implementation of group based reading comprehension strategies like Collaborative Strategic Reading. This study testifies that providing students with learning disabilities opportunities to learn in cooperative groups will definitely pay off. Group based comprehension strategies, when adopted, enable students to perform defined roles as they collaboratively implement the group activities whilst the role of English Language teachers would be to enforce the implementation of collaborative strategies, model strategy use, provide on-going assistance, lead students to formulate purposes for reading, read to prove or reject predictions.

Based on all these benefits, students generally read more actively and enthusiastically as they participate in their group activities. Eventually independent reading is sustained whilst students become more responsible, and active in reading and learning.

Conclusion and Recommendations

The findings of this study and discussion above inform the following recommendations: To sustain improved achievement in reading comprehension in English Language and in all other content area subjects in the general education setting, schools should adopt Collaborative Strategic Reading (CSR) particularly, for students with learning disabilities. The use of CSR instructional strategy should be long lasting, not just in a single lesson or unit. This is to allow CSR steps and procedures to permeate the curriculum as well as become wholly intertwined with content areas.

It is important that school administrators and supervisors encourage the teachers to employ this instructional strategy considering its benefits. This is because if it is properly enforced the gains will rub off on all subject areas because as students learn to read, they would later read to learn.

School administrators should endeavour to organize frequent professional development programmes that will afford teachers the opportunity to acquire new and effective skills to improve their lesson delivery. During such seminars, workshops and conferences, teachers can get to learn about the implementation of CSR and better ways of utilizing CSR in the classrooms.

Teachers can organize cooperative learning groups in the classrooms in which students can discuss what they read, help each other choose

comprehension strategies that are most appropriate for specific texts. Teachers should endeavour to stress that students with learning disabilities learn necessary skills to enable them function effectively in cooperative learning groups.

Teachers should provide adequate time for reading, instruction. Apart from the English language periods in the school time table, and the so called free periods, library periods could be devoted to sustain silent reading in the schools. This practice will assist in facilitating reading and reading related activities among students.

School administrators (principals, heads of schools, vice principals, heads of departments, head teachers, unit coordinators, year tutors) should conduct classroom walk through regularly to gauge the strengths and needs of teachers' reading instruction. These visits will enable them to talk to teachers about the teaching and learning processes, especially those related to reading. When all these measures are put in place, students with learning disabilities will be able to apply cognitive and meta-cognitive strategies in reading and learning and improve their overall academic achievement.

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Senior high school mathematics teachers' use of School-Based Assessment guidelines and test Scores in the Cape Coast Metropolis of Ghana

Florence C. Awoniyi & Jonathan A. Fletcher
Department of Science and Mathematics Education, University of Cape Coast

Abstract

This paper reports on a study conducted to explore senior high school mathematics teachers' use of School-Based Assessment (SBA) guidelines and test scores in the Cape Coast Metropolis in Ghana. A total of 110 educators comprising 100 male and 10 female mathematics teachers participated in the study. A questionnaire and an interview schedule were used to collect data for the study and descriptive statistics was used to analyse the data. Findings revealed that mathematics teachers in senior high schools in the Cape Coast Metropolis do not follow the School-Based Assessment guidelines on principles of testing in the construction of teacher-made or classroom tests. Very few respondents reported that students' test scores were used to identify strengths and weaknesses and for remedial teaching. The majority of the respondents still practise the old continuous assessment in which students' assessment scores were used mainly for promotion/selection, awarding of prizes/ranking, record keeping, providing feedback to parents, generating score for the West African Examinations Council (WAEC), and preparing students for examination. This is because they do not understand the SBA guidelines. Based on the above findings, it was recommended that the Ghana Education Service should facilitate regular in-service training in testing practices for senior high school mathematics teachers in the Metropolis.

Keywords: Mathematics, Assessment, Application, Senior High School, School-Based Assessment.

Introduction

Assessment is a process of gathering evidence of what a student can do. It provides feedback on a student's learning to direct further development. It is also meant to help students with their learning as well as help teachers improve their teaching (Moore, 1998). As Etsey (2012) observes, good assessment can make teaching more transparent and reliable. Assessment also looks into the special behaviour displayed by learners and measures learners' mastery of the subject matter. It is the process of seeking and

interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there. Assessment can also be used to present feedback to parents on their children's achievement in education.

Anamuah-Mensah and Bartels (1998) have argued that classroom assessment and grading practices can be used as a means to improving teaching and learning. According to them, the best way to enhance learning for a diverse range of students is through appropriate, reliable and valid classroom assessments and grading practices. It is critical, therefore, that teachers possess not only the comprehensive knowledge of subject matter but also the ability to assess the learning of the subject matter, and mathematics teacher are no exception.

There simply cannot be any meaningful development in virtually any area of life without knowledge of science, technology and mathematics Achievement in science, technology, engineering and mathematics (STEM) is increasingly recognized as one of the most reliable indicators for measuring socio-economic and geo-political development among nations (Justina, 1991). It is for this reason that the education systems of countries that are concerned about their development put a great deal of emphasis on the study of mathematics. In Ghana, mathematics is a compulsory subject at all pre-university levels of the educational system.

Due to its importance, the government of Ghana is committed to ensuring the provision of high quality mathematics education programme. Various attempts have been made in the past to improve students' achievement in mathematics in schools. These include the Science, Technology and Mathematics Education (STME), Japan International Cooperative Agency (JICA) initiatives and the Female and Education in Mathematics and Science in Africa (FEMSA) programme. These attempts are also seen in the New Educational Reforms Committee's Report (Anamuah-Mensah, 2002), the implementation of which started in September, 2007.

Included in the assumptions underlying the tenets of the senior high school (SHS) mathematics curriculum in Ghana is the expectation that mathematics teachers will embrace the new School-Based Assessment (SBA) system administered in schools and marked by the students' own teachers. The SBA was introduced into the curriculum in the last curriculum review in 2007 to replace what used to be called Continuous Assessment (CA) with the view to making assessment more comprehensive. The SBA was designed to provide schools with an internal assessment system that would help schools achieve the expected standards in mathematics. The SBA

and the end-of-term test marks are combined in equal proportions of 50:50 in the schools. However, WAEC uses only 30% of marks obtained from the schools.

The new curriculum in mathematics at the senior high school (SHS) level places emphasis on skill acquisition, creativity and the art of enquiry and problem solving. It aims at developing in the student the ability and willingness to perform investigations using various mathematical ideas and operations. As part of the reforms, the curriculum places a lot of SBA guidelines as a means of encouraging improvement in teaching, learning and assessment (MOESS, 2007). The introduction of the SBA led to several changes in CA. These changes were necessary for some pertinent reasons, among which was to bring about a reduction in the workload of teachers. Every term, the teacher was expected to be active in designing and producing a variety of assessment instruments, scoring the class tests, assignments, projects, taking observations, providing up-to-date records on each pupil and simultaneously be involved in remedial and individual teaching. Where classes were large, the workload became unbearable. The teachers then resorted to unfair means of providing the requisite data for each student (Etsey, 2012).

The new SBA system is designed to provide schools with an internal assessment system that will help schools to standardize the practice of internal school-based assessment in all schools in the country; provide reduced assessment tasks for each of the senior high school subjects; provide teachers with guidelines for constructing assessment items/questions and other assessment tasks; introduce standards of achievement in each subject and in each class of the school system; provide guidelines on marking and grading of test items/questions and other assessment tasks; introduce a system of moderation that will ensure accuracy and reliability of teachers' marks; and provide teachers with advice on how to conduct remedial instruction on difficult areas of the syllabus to improve students' performance. Curriculum documents in this context suggest that teachers should carry out SBA properly to help schools achieve the expected standards of mathematics CRDD (2007, p. xi).

The SBA consists of 12 assessments a year instead of the 33 assessments in the previous CA system, that is, a reduction of 64% of the work load compared to the previous CA system. To improve assessment and grading and also introduce uniformity in schools, guidelines for marking the assessment tasks and grading procedure were suggested. In writing a report on an experiment or any form of investigation, the students has to introduce the main issue in the investigation, project or report. The introduction carries a weight of 20%, the main text/actual work- 40%, conclusions and

evaluation of results/issues- 20%, acknowledgement and other references- 20%. The grade boundaries are as follows: Grade A: 80-100%, Grade B: 70-79%, Grade C: 60-69%, Grade D: 45-49% etc (CRDD, 2007).

School based assessment in the Ghanaian SHS curriculum

As indicated above, the SBA was introduced into the Ghanaian school curriculum in the last curriculum review in 2007 to replace what used to be called continuous assessment with the aim of making assessment more comprehensive i.e. to cover more applications profile dimensions (Mereku, Nabie, Appiah & Awanta, 2011). The major changes to assessment which came with the reforms are summarised in Table 1.

Table 1: Major Changes to Assessment in the 2007 Reforms

	Nature of changes	CA	SBA
Overall changes	i. Use of class exercises and home work	Largely for CA	For formative evaluation only
	ii. % contribution of Class Exercises/ Homework/project work to overall school assessment	30%	-
	iii. % contribution of SBA Tasks to overall school assessment (i.e. class tests & project)	-	50%
	iv. % contribution of end of term exams to overall school assessment	70%	50%
	v. % contribution of (I or II and III) to final WASSCE score	30%	30%
	vi. Number of assessments per term	11	4
	vii. Number of assessments per year	33	12

Changes in project	a) Number of project tasks given per term	4	1
	b) Term distribution of project tasks by individual or group	All individual tasks each term	Individual tasks in terms 1 and 3; Group task in term 2
	c) When is project task given and completed?	Any time, i.e. teachers discretion	Beginning of the term and submitted at the end of the term
	d) Written report required?	Optional, largely oral presentation	Yes, with references
	e) Scoring projects	5	20

(Source: Mereku, Nabie, Appiah & Awanta, 2011)

In the SBA, project work has been restructured and its focus is now to encourage students to apply knowledge and skills acquired in the school term to carry out authentic assessment tasks and write analytic reports or use mathematics to solve real life problems. In the new syllabus, hitherto the class exercises and homework scores were recorded as part of continuous assessment but in the SBA these are supposed to be done as part of the everyday formative assessment and not to contribute to the SBA scores (see Table 1). This means that after teaching for the first 3 or 4 weeks in a term, the teacher should set and administer a class test covering the topics (or content) treated and record this as SBA Task 1. Then after the next 3 or 4 weeks in the term, the teacher sets and administers SBA Task 2, etc. Also, unlike the continuous assessment where teachers use homework tasks that can be completed overnight or over the weekend as project, in SBA projects are supposed to take at least six weeks to complete.

Task 4, Task 8 and Task 12 are supposed to be project to be undertaken throughout the term and submitted at the end of the term; a student is expected to select one project topic for each term; and projects for the second term will be undertaken by teams of students as group projects. A project involves tasks or a series of tasks for students to carry out using one or more of the following processes: gathering data, observing, looking for references, identifying, measuring, analyzing, determining patterns and or relationships, graphing and communicating. An investigational task may also be set in the context of algebra, geometry and or measurements. A project

usually requires students to take a substantial amount of time (e.g., a few days, weeks, or even months) to finish. As part of project-based learning, the teacher is expected to give the students the opportunity to periodically present progress reports to the class for colleagues' feedback and suggestions. For SBA scoring, it is recommended that each class test (or task) should be scaled to the score of 10 and project task scaled to the score of 20 (CRDD, 2007). Table1 shows the distribution of scores to be awarded to the tasks (i.e. 3 class tests and a project) and examinations each term.

All over the world, more and more emphasis is being placed on student performance and teacher accountability. As a result, assessment is becoming increasingly important to all educators. For example, David (2008) stated that in Australia, traditionally a wide range of measures had been used to identify academically successful schools. The mix of these measures has varied from state to state. But recently, added to this mix, and perhaps becoming the most influential factor, have been the examination results of senior students. These have become far more available to the prospective parents and governing bodies. They are used to gauge the ranking of the school, and to find out whether parents can expect their children to gain entry into the more prestigious tertiary programmes available. These scores are used to rank staff. Consequently, the 'quality' of staff becomes yet another factor in identifying an academically successful school.

About a decade ago, state organizations such as the Ghana Education Service (GES), the media and school boards in Ghana were using test scores in order to evaluate schools. The Ghana Education Services published the Senior Secondary School Certificate Examination (SSSCE) Result League, in which 470 secondary schools in Ghana were ranked from first position to last based on the total number of students each school presented in the examination and the number of candidates that passed 6-7 subjects. Other information including the number of passes in 5, 4, 3, 2 subjects and 1 subject for each school, along with fails, absences, results withheld, and results cancelled was also displayed in the SSS Results League. The ranking became the subject of intense public discussions among Ghanaians inside and outside of Ghana. While some people jubilated over the performance of their former schools, others bowed down their heads in despair. Some people even stated categorically that their former schools were better than others simply because they came near the top position in the ranking. Consequently, some people even suggested that the SSSCE results should be used as an objective criterion for the allocation of resources of money, personnel, and other facilities to secondary schools (Fredua-Kwarteng,

2004). This phenomenon is still lingering in the Ghana Education Service, perhaps because of the international league tables of junior high schools students' performance in science and mathematics (TIMSS, 2007).

In spite of government efforts to encourage the use of formative assessment to enhance the teaching of mathematics, the subject has not undergone much change in terms of how it is assessed. This is reflected consistently in low achievement levels in mathematics among students at the high school levels. The high failure rate and low scores of students over the years in the West African Secondary School Certificate Examinations (WASSCE) attest to this (Ottevanger, van den Akker & de Feiter, 2007). This is true because of the way teaching and learning of mathematics is carried out in schools, interest level in mathematics among students, attitude of teachers toward assessment practices etc. According to Fletcher (2001), teachers tend to use summative assessment during the instructional phase with the misconceived intention of formatively evaluating the learner. Goldstein (as cited by Fletcher, 2001) opines that the attempt to use summative assessment in place of formative assessment encourages pupils to hide their weaknesses and exaggerate their strengths.

Fletcher (2001) further argues that assessment should be rooted in the daily classroom practice of the teacher and as such the curriculum should lead the examination, and not the other way round. Students get credit for everything they do and so there is less temptation from the teacher to omit areas of experience on the grounds that they cannot be examined by a paper and pencil test. Assessment should have a way of measuring what is educationally important. The issue is how we can produce reliable information about pupils' achievement in ways which recognize their true achievement and do not harmfully narrow the criteria on which they and their schools are judged, so that students' examination results are not linked to teacher performance in a simplistic manner. The central purpose of assessment in education is to contribute to raising educational standards by assisting the improvement of teaching and learning. This can only be achieved if assessment encourages open and honest admission of failure as well as successes. Any attempt to use students' examination results as a key indicator of his/her performance could result in the teacher subverting any assessment scheme which tends to promote individual learning at the teacher's expense.

According to Stiggins (1991), "teachers spend much of their instructional time (a third to a half) in assessment-related activities. While this would suggest the need for teachers to be knowledgeable with assessment practices, that is not the case" (p. 1). In Ghana, both trained and untrained teachers in the classroom, from the basic level to the university

level, construct, administer and score classroom achievement tests irrespective of whether they have had training in assessment practices or not. Decisions mostly taken on students have far-reaching consequences that affect students. Policy makers have ignored the training and equipping of teachers with the skill in test construction, test administration and test scoring but not all teachers in the secondary schools in Ghana have undergone professional training in testing techniques Amedahe (2000). Yet, there is scanty literature on how mathematics teachers particularly those with little or no skills in assessment practices construct, administer, score and use classroom or teacher-made tests as a means of assessing students' performance in mathematics (Amedahe, 2000,1989).

The purpose of this study was to investigate senior high school mathematics teachers' use of SBA guidelines and test scores in the Cape Coast Metropolis in order to ascertain the degree to which they are able to apply principles of test construction as enshrined in SBA guidelines, and the uses to which they put test scores.

The study was guided by the following research questions:

i. Which assessment formats do senior high school mathematics teachers' employ in assessing students' learning and achievement in mathematics?
ii. To what extent are senior high school mathematics teachers implementing the school-based assessment (SBA) guidelines outlined in the 2007 revised mathematics syllabus?
iii. How do senior high school mathematics teachers use assessment scores?

Method

The descriptive survey design was used. The study administered a questionnaire and interviewed some of the participants (i.e. sequential mixed methods design) in order to clarify some outstanding claims made by the participants while completing the questionnaire. All the mathematics teachers in the 15 senior high schools in Cape Coast Metropolis participated in the study with the exception of one school that could not render the desired assistance and three of the schools that did not have the desired features necessary for the study. A total of 110 mathematics teachers consisting of 100 males and 10 females from 10 schools (out of the 15) schools in Cape Coast Metropolis participated in the study. The low representation of female teachers in this study is a reflection of the under-representation of females in science and mathematics at all levels, from basic school to the university level in Ghana (Baah-Korang, 2002). For instance, in

2006, female teachers constituted only 15% of the mathematics teachers in the country (Ottevanger et al., 2007). Mathematics teachers were used in the study because the mathematics curriculum in particular emphasises that SBA is a very effective system for teaching and learning if carried out properly.

Instruments

A questionnaire and an interview schedule were used to collect data for this study. The questionnaire was made up of 12 items. Seven of these were closed while the remaining five were open-ended. Section "A" which contained one item requested information on the gender of the respondents. Section "B" of the questionnaire dealt with factors involving construction of achievement tests based on the basic principles in assessment. This section "assessed" knowledge of respondents in assessment practices and how often they had attended in-service training events

Section "C" was concerned with some general issues connected with the management of assessment practices in senior high schools. Amongst them were: how often teachers planned the schedule for assessing students in the schools and the number and types of assessment administered to students the previous term. In writing the items in this section, the four tasks required by CRDD (2007) to be administered in a term in SBA were considered. As part of the SBA, the respondents were requested to indicate the number of times they had used other assessment methods implied by SBA within a term. These other assessments are home work/assignment, class exercises, observation, interview, question and answer (CRDD, 2007).

The questionnaire was pilot tested and the results were analysed to confirm the content validity of the instrument which had earlier been ascertained by experts in assessment in the Department of Science and Mathematics Education. The internal consistency of the instrument was determined using the Cronbach co-efficient alpha. The co-efficient alpha obtained for the pilot-testing was 0.776, an indication of a high correlation among all of the items that make up the scale (Pallant, 2005, p.6).

Data Collection Procedure

The questionnaire was administered to 130 mathematics teachers in the 10 schools that participated in the study with the assistance of the HOD in the schools.

In each of the schools, the purpose of the study was explained to the Head of Department and the mathematics teachers, and they were pleaded with to respond to all the items as candid as desired, while assuring them that no attempt would be made to associate their names or institutions with the

responses. Questionnaires were then distributed to the teachers. There was time for questions, before the participants responded to the questionnaire. The administration of the questionnaire to the teachers was done in September and October, 2012.

Twelve teachers and their HODs were interviewed and data obtained provided in-depth elaborations for the data collected through the questionnaire. This is based on the claim by Fontana and Frey (2008) that interviewing is one of the most common and powerful ways in which one tries to understand people.

Out of the one hundred and thirty teachers given the questionnaire to complete in the 10 schools that participated in the study, 20 of them did not oblige because of their tight schedules. One hundred and ten respondents returned their completed questionnaires, resulting in 84% return rate.

Results

Table 2 summarizes the gender distribution of mathematics teachers who responded to the questionnaires.

Table 2: Gender Distribution of the Respondents

	Frequency	Percent
Male	100	90.9
Female	10	9.1
Total	110	100.0

It is observed from Table 2 that the majority of the respondents, 100 out of the total 110 were males. This suggests that women are in the minority in the teaching of mathematics in the Cape Coast Metropolis.

Furthermore, to be able to assess students very well, a teacher must have taken a course in assessment whether at the pre-service or in-service level (Chapman & Snyder, 2000; Stillman, 2001; Etsey, 2003). Table 3 shows the number of respondents who had taken an assessment course at different levels.

Table 3: The Level at which Respondents Undertook the Assessment Course

	Frequency	Percent
Pre-service	17	15.5
In-service	27	24.5
Both	46	41.8
None	20	18.2
Total	110	100.0

It could be inferred from Table 3 that most of the respondents (90 out of the total 110) had taken an assessment course while the remaining 20 respondents had not taken any assessment course before. Out of the total 90 respondents who had taken an assessment course, the majority of them (about 42%) had their assessment at both the pre-service and in-service levels.

There are many test formats at the disposal of a competent teacher to be used to assess students (Etsey, 2012; Fletcher, 2009). Table 4 shows a summary of the test formats used by the respondents.

Table 4: Frequency Distribution on Use of Test Format (s)

Test Format	Very often	Fairly often	Often	Not often	Never	Total (%)
Essay	50 (45%)	13 (12%)	19 (17%)	26 (24%)	02 (2%)	110 (100%)
Multiple choice	35 (32%)	20 (18%)	32 (29%)	22 (20%)	01 (1%)	110 (100%)
Matching	01(1 %)	08 (7%)	11(10 %)	46 (42%)	44 (40%)	110(100%)
Evaluating mathematical statement	16 (8%)	22 (20%)	22 (20%)	28 (25%)	22 (20%)	110 (100%)
Analysing own error	28 (25%)	28 (25%)	24 (22%)	21(19 %)	09 (8%)	110 (100%)
Peer assessment	15 (14%)	23(21 %)	25 (23%)	39 (35%)	08 (7%)	110 (100%)
Self-assessment	38 (35%)	29 (26%)	14 (13%)	17 (15%)	02 (2%)	110(100%)

Table 4 indicates that the most common format used by the teachers appeared to be Essay (45%), Self-assessment (35%) and Multiple choice (32%) respectively, while Matching (1%) was rarely used. It could be said that in addition to the use of essay and multiple choice in testing students in the schools, teachers claimed they used formats which are current in assessment such as evaluation of mathematical statements, matching, analysing own error, peer assessment and self- assessment. Regarding current formats in assessment, it was found out from the responses that self-assessment (35%) and analysing own error (25%) formats were said to be very often used by the teachers, while matching different representations of mathematical statement (1%) was the least used by the teachers. This finding is not surprising because research (e.g. Higgins et al, cited in Fletcher, 2009) has shown that matching often leads to learners arriving at conflicting answers but such conflicts when resolved through reflective discussion lead to more permanent learning than conventional, incremental teaching methods which seek to avoid learners making 'mistakes'.

Regarding the activities which a teacher should carry out when constructing test items, Table 5 shows the frequency distribution of respondents' practice of those activities.

Table 5: Frequency Distribution of Activities Regarding Test Construction

Activity	Always	Very often	Often	Not often	Never
I write individual assessment items at least two weeks before the date of testing.	14	28	26	37	05
I prepare a marking scheme before students take the assessment	40	30	23	16	01
I review assessment item by letting another teacher in the subject area read over them	28	20	27	24	11
I write direction/instructions for the test	71	21	12	05	11
I copy questions from past questions set by WAEC	03	18	25	63	01
I develop assessment items only when it is time to assess students	03	13	27	49	18
I use test specification table	06	15	39	36	14

when writing test items					
I copy assessment questions from textbooks	01	12	34	59	04
I match instructional objectives with assessment items	36	28	32	12	02
I arrange assessment items in order of increasing difficulties	25	38	20	24	03
I write items based on the information that students know	29	47	20	11	03
I arrange objective test answer in a pattern to make scoring easy	05	11	2	18	64
I consider the purpose of the assessment before developing assessment items	39	52	15	04	-
I allow students to select a specific number of items from a given set of items in the essay test	22	41	24	17	06
I prepare more items than needed before I review and select some for the examination	22	27	31	23	07
I evaluate the test as a whole before I submit it for typing	15	22	27	05	02
I give test to students without prior notice	01	09	26	48	26
I give tough test item to students during quizzes to prepare them for examinations	06	22	28	48	06

Table 5 reveals that only 42 (out of 110 respondents) indicated that they write individual assessment items at least two weeks before the testing date and a good number of the respondents (70 out of 110) indicated that they prepare a marking scheme before students take the assessment. Likewise, 48 out of 110 respondents review assessment items by letting

another teacher in the subject area read over them and 92 respondents write direction/instructions for the test. As many as 11 respondents do not write direction/instructions for test. Interviewing these respondents revealed that although experts in assessment condemn the act of copying questions from past questions and textbooks (Etsey, 2012) only one (1) and four (4) respondents respectively have never been guilty of the "offence".

Over 60 respondents claimed that they match instructional objectives with assessment items while 63 arrange assessment items in order of increasing difficulties. It is interesting to note that only a handful of the respondents never waited till when it is time to assess students before developing assessment items. Yet very few of the respondents (21 out of 110) use test specification table when writing test items. This is an interesting finding because Fletcher (2011) seems to suggest that most mathematics teachers continue to use traditional forms of assessment in schools and these do not necessarily match curriculum objectives. Teachers can avoid this situation if they use test specification tables.

Furthermore, the data from Table 5 shows that 34 of the respondents do not write assessment items based on what the students know the majority of the respondents (84 out of 110) arrange objective test answer in a pattern to make scoring easy, 84 give test to students without prior notice and nearly all the respondents (104 out of 110) give tough test item to students during quizzes to prepare them for examinations: all these are against experts' recommendation in assessment. In addition, Table 5 shows that the majority of the respondents seemed to consider the purpose of the assessment before developing assessment items, about half (63) of the respondents allow students to select a specific number of items from a given set of items in the essay test but few respondents (49) prepare more items than needed before reviewing and selecting some for the examination. The findings from Table 5 generally support the observation made by Fletcher (2001) that teachers are not making use of assessment practices even if they have had training in assessment, considering that as many as 90 respondents had had training in assessment.

As part of the SBA, teachers are supposed to assess their students as often as possible; nevertheless, the standard schedule for assessing the students should be monthly (CRDD, 2007). Figure 1 show often respondents claimed they planned the schedule for assessing the students.

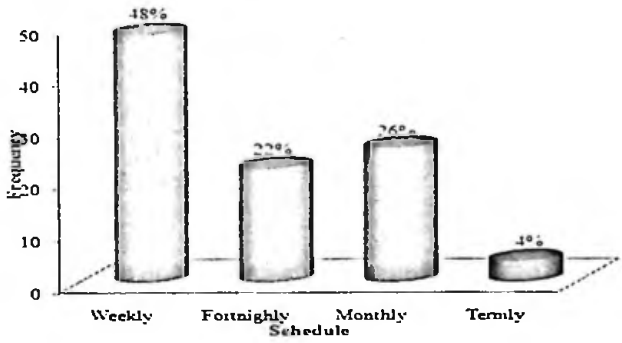

Figure 1: How often respondents claimed they planned the schedule for assessing the students

Figure 1, shows that only a handful (29 out of 110) of the respondents assesses monthly. Thus, from their responses, 26% claimed they followed SBA regarding the schedule for assessing the students while the claims of the majority (74%) are not in line with the SBA guidelines. Those respondents claimed they assessed weekly, fortnightly or termly. Assessing students termly is highly against the standards (Mereku, Nabie, Appiah & Awanta, 2011).

Figure 2 shows summary of the number and method of School-Based Assessment indicated by the teachers.

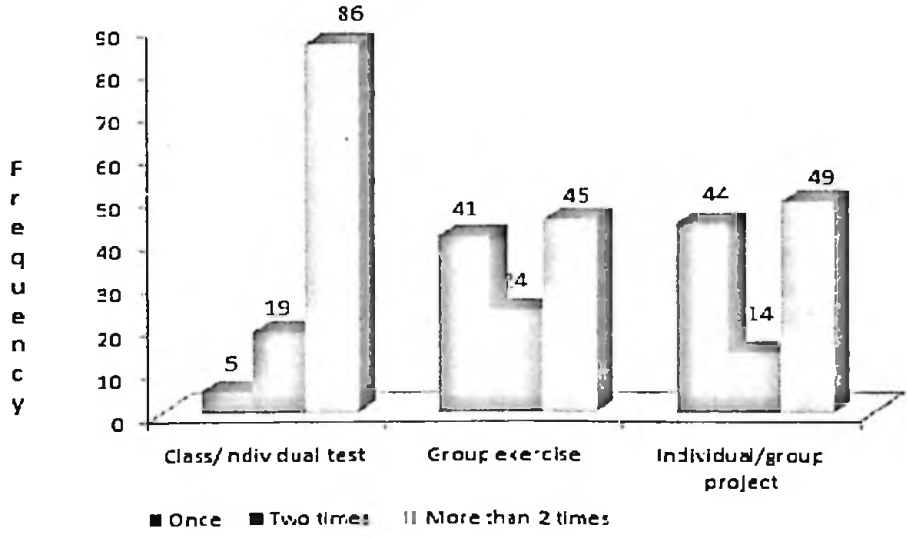

Figure 2: Number and method of School-Based Assessment indicated by the teachers.

It can be observed from Figure 2 that the majority of the respondents (86 out of 110) claimed they administered class/individual test once last term, 5 respondents claimed they administered class/individual test more than two times last term, while only 19 teachers claimed they practiced the SBA system by administering the test twice last term.

Regarding group projects, 45 of the respondents claimed they administered this 'once' as expected, although, 41 and 24 respondents respectively declared that they administered Group Projects 'more than two times' and 'two times'. Additionally, 49 respondents indicated that they administered individual project 'once' as required. Nonetheless, 44 and 41 teachers, respectively indicated they administered same 'more than two times' and 'two times' last term.

In addition, teachers are expected to use class exercises, homework, interview, observation, and question and answer as processes for continually assessing students' class performance and as a means for encouraging improvements in learning performance (CRDD, 2007). Table 6 summarises teachers' responses to this effect.

Table 6: Number of times the Other Assessment Methods were used

Method	More than 4 times	4 times	3times	2times	Once
Homework/Assignment	88	6	7	7	2
Class exercises	00	86	14	08	02
Observation	57	11	12	14	16
Interview	33	05	09	22	41
Question and Answer	75	11	07	07	10

Table 6 shows that 88 out of the total respondents declared that they administered home work/assignment to the students correctly (more than 4 times), the majority of the teachers (86) administered class exercises 4 times in a term. In addition, 57 respondents indicated that they used observation to assess their students within the term, 41 and 33 respondents claimed they carried out interview within the term as a way of assessing their students, 'once' and 'more than 4 times', respectively.

Finally, 75 teachers claimed that they used Question and Answer method to assess their students more than 4 times within the term. This is one of the traditional teaching methods in mathematics and sometimes called

'transmission' method because of the way procedures for solving mathematical problems are explained to learners 'one step at a time'. This according to Fletcher (2009) involves teachers questioning learners in order to lead them in a particular direction or to check if they are following the taught procedure(s). This method may appear superficially effective when short-term recall is required, but they are less effective for long-term learning because they encourage rote memorisation of disconnected rules which are often misapplied and quickly forgotten (Mereku, 2004; Clements & Battista, 1992).

Teachers put students' score to different use. Table 7 represents the respondents' ideas of the use of students' SBA Scores.

Table 7: The Use of School-Based Assessment Scores by Teachers

Use of students' test scores	Frequency	(%)
Identifying strengths and weaknesses/Remedial teaching	40	36.3
Promotion/Selection	39	35.4
Awarding of prizes/Ranking	35	31.8
Evaluating and improving teaching methods	20	18.2
Feedback to parents	16	14.5
Generating score for WAEC	13	11.8
Guidance and Counselling	13	28.2
Record keeping	09	08.1
Prepare students for examination	07	06.4
Others	37	33.6

It is observed from Table 7 that the sum of the frequencies exceeds the sample size because respondents gave multiple factors. According to the Table, 36.3% of the respondents stated that they used SBA for identifying strengths and weaknesses to determine students learning and understanding of the topic and help where necessary. Also, 39 (35.4%) of the teachers indicated that they used the SBA scores of the students for promotion/selection, 35 (31.8%) indicated they used the SBA results for awarding of prizes/ranking, 20 (18.2%) reported that they used the SBA scores for evaluating and improving teaching methods, 16 respondents (14.5%) indicated that SBA provided them with scores as feedback to parents and 13 (11.8%) specified that they used the scores for Guidance and Counselling. In addition, 8% and 6% of the respondents, respectively indicated that they used the scores for record keeping and for preparing students for examination. This suggests that the teachers put more emphasis

on summative assessment than on formative assessment. This may lead to a situation where students invest time and effort in short-term surface learning just to enable them pass tests and examinations (Fletcher, 2001).

Interview

An interview guide was the second research instrument used in the study. The interview guide was made up of relevant items from the questionnaire. After analysing the responses from the questionnaire, the interview was conducted to confirm the earlier claims by the respondents of their activities regarding test construction of classroom or teacher-made tests and the use to which they put students' scores. Most importantly, the interview was conducted to investigate the results that are shown in Figure 1, where 48%, 22% and 4% respondents, respectively claimed they assessed students weekly, fortnightly and termly. Assessing students termly is highly against the standards (Mereku, Nabie, Appiah & Awanta, 2011).

Using the codes on the questionnaire, the respondents were traced to their various schools. There were twelve teachers involved, out of which six belonged to the same school. The respondents as well as their HODs were interviewed. Although they refused to have the interview taped, they were nonetheless reasonably honest on the issues discussed. The respondents who were interviewed said so many things which were not directly related to assessment but which were nevertheless affecting the way they assessed their students. Their responses to the questions pertaining to assessment were reasonably adequate to explain some of the results revealed by the questionnaire data. Relevant excerpts from the interviews are presented here. What motivated teachers to remain in the classroom for long period and yet why they were not doing what they were supposed to do with regard to SBA was sought. Some of the responses suggested that some experienced teachers were still in the classroom, not because they wanted to be there but in their view they had to be there in order to sustain their families. One of them said:

> ...we cannot leave, even if we want to, the good thing is that, at least we are able to feed ourselves. That is all. Many of my colleagues have left the teaching field for something else, if you don't have anybody to finance you, you cannot go into business. Teachers are really suffering, those students one taught some years ago are now riding big cars, and here I am using 'footwagen' (meaning on his feet)!

This suggests that some of the teachers who had taught for over 10 years were not really learning from the work they had done in the past or even if they were learning from them, they were repeating the same mistakes they had made in the past.

Asked how they conduct their assessment, one of the respondents said:

> "You mean C.A? You do it at your own convenience. What is important is that at the end of the term, you have 30% scores ready to be added to the 70% scores from the end of term examination. The time is not just there to even construct the items, I write the items one after the other while in the classroom teaching"

Another respondent stated:

> "You cannot afford to waste time giving tests every now and then, where is the time to mark them? I need to teach well and cover the syllabus before they write WASSCE; anyway, whenever I remember there is a need for a test, I quickly give one".

Nearly all the interviewees were of the view that time factor is one of the challenges facing assessment of learning in schools. This suggests that teachers see assessment as a separate activity from teaching and as such are not committed to it.

Conclusion

Despite the positive policy statements regarding the need for SBA in Ghanaian senior high schools, and in the mathematics curriculum in particular, SBA guidelines are yet to be adopted by the mathematics teachers in classroom practice, in the Cape Coast Metropolis. Considering the claims made by the respondents on the various items on the activities regarding test construction (see Table 5), it can be concluded that mathematics teachers in the senior high schools sampled partially followed the principles in constructing teacher-made tests in the schools and the majority of the mathematics teachers used essay, multiple-choice and self-assessment in testing students in the schools while matching was rarely used (see Table 4). Furthermore, students' test scores are yet to be seen by the majority of the mathematics teachers as meant for identifying the strengths and weaknesses of the students and for remedial teaching.

The responses of the mathematics teachers in this study show that they had limited skills and competence in the knowledge of construction of classroom or teacher-made tests, even though most of them (90 out of 110) had been exposed to a course in testing either at the pre-service stage of their training or in-service or both. Some teachers did not have any formal training in the practice of continuous assessment, much less the practice of SBA which is very recent in schools. Teachers generally learn the basic principles of test construction on the field and not during the course of training as teachers. Teachers' lack of knowledge of the appropriate procedures in test construction and use of students' test scores has weakened the validity of assessment of students' performance in mathematics.

The interview revealed that some mathematics teachers often prepare test items at the last minute, only a handful of the respondents did not wait till when it was time to assess students before developing assessment items. Most teachers acknowledged the need for in-service training in test construction, stating that their lack of skills in test construction and scoring often dampen their desire to give valid tests to the students. Given this situation, the main conclusion is that the majority of teachers in the Cape Coast Metropolis may not be measuring students' performance in mathematics accurately.

Based on the findings of the study, it is recommended that the Ghana Education Service ought to give serious attention to the continuing professional development of teachers and the provision of the necessary support services to sustain the SBA.

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Socio-cultural issues in mathematics: A missing variable in Ghanaian basic school mathematics teacher preparation

Ernest Kofi Davis
Institute of Education, University of Cape Coast

Abstract

Sociocultural practices of pupils and their teachers have been positioned in literature as being asset for meaningful learning of concepts generally (Hedegaard & Chaiklin, 2005; Fleer & Robin, 2005) and mathematical concepts specifically (Presmeg, 2007). This paper draws on theories on the local aspect of mathematics, and teaching and learning to ascertain how the Ghanaian College of Education Mathematics curriculum deals with these aspects. The mathematics curricula at the colleges of Education in Ghana, the methods of teaching mathematics textbook and lessons from five experienced tutors of mathematics purposely selected from five Colleges of Education in Ghana constituted the main source of data. The documents were analysed qualitatively and presented as narrative description with illustrative examples. The study revealed among others that the College of Education Mathematics curriculum does not orient trainees to appreciate the local aspect of mathematics and mathematics pedagogy and recommends the need for curriculum developers to expose trainees to social and cultural issues in mathematics and mathematics pedagogy in order to make them better prepared as mathematics teachers.

Background to the study

Teaching and learning of mathematics has attracted the attention of not only mathematics education researchers in Ghana but also the government of Ghana. Ghanaian grade eight (JHS 2) pupils' abysmal performance in Trends in International Mathematics and Science study in 2003 (TIMSS) (MOEYS, 2004) examination called for the need to re-look at mathematics and science education at the Basic School level (Kindergarten to grade 12). In order to strengthen the teaching and learning of mathematics and science at the Basic School level, the Ministry of Education designated about a third of the thirty-eight public Colleges of Education in Ghana as science and mathematics colleges, with the aim of producing specialist mathematics and science teachers to handle mathematics and science at the Junior High School level. Ghanaian Mathematics education researchers have conducted research studies to throw more light on some of the difficulties pupils face

learning mathematics by looking at how pupils experience some mathematical processes/concepts like counting (see Wilmot, 2008) and fractions (Amuah, 2003; Davis, Bishop & Seah, 2010). Others have also looked at issues relating to teaching and the teachers' knowledge in an attempt to understand why many Ghanaian school pupils especially in the public schools struggle with mathematics (Davis & Ampiah, 2008). However, no study has looked at the mathematics syllabus of the Colleges of Education, the approaches outlined in the methods of teaching mathematics textbook and the approaches tutors use in teaching some of the difficult concepts, for example, in order to ascertain how prospective teachers are prepared to draw on pupils' everyday mathematical practices and conceptions to scaffold their higher understanding of school mathematics. Meanwhile literature shows there is mathematical and scientific relevance of socio-cultural practices in Ghana such as games and toys (see Anamuah-Mensah, Anamuah-Mensah & Asabere-Ameyaw, 2009 for example).

Even though Laridon, Mosimege and Mogari (2005) have observed from their study in South Africa that teachers respond differently to ethnomathematical pedagogy, a growing body of literature points to the value of drawing on societal and cultural practices of students and teachers in teaching and learning (Hedegaard & Chaiklin, 2005; Fleer & Robbins 2005; Presmeg 1998). Presmeg (1998), for example, suggests that culture of both pupils and the teacher could be a useful tool in mathematics teaching and learning. Other researchers are also of the view that successful study of mathematics must take into account the many and varied experiences with which children come to school (Charbonneau & John-Steiner, 1988; Presmeg, 2007). For teachers to be able to draw on the many and varied mathematical experiences with which children come to school, training must equip them to be able to do that. Training must expose them to the varied mathematical experiences students bring with them into the learning situation and provide the prospective teacher the theoretical basis for using the varied mathematical experiences as asset in mathematics pedagogy.

Robitaille and Garden (1989) identified three levels of curriculum as the intended, implemented and the attained curriculum.

a) Intended curriculum – this constitutes what is expected to be covered in syllabus or course outline. This is what the experts decide as appropriate for the learner.
b) Implemented curriculum - this is what teachers are able to cover through the teaching and learning process. Often it is very difficult for teachers to cover the whole intended curriculum.
c) Attained curriculum - constitutes what the students learn from the implemented curriculum. This is often measured through the system

of examinations. In some contexts the examinations are administered by external bodies such as the West African Examinations Council (WAEC) and the Institute of Education in Ghana, in the cases of Senior High Schools and Colleges of Education respectively.

In this study, curriculum includes mainly what is planned in the syllabus and how this is implemented in textbooks and classrooms by mathematics tutors at the college of education level.

Three theoretical lenses were drawn upon to support the study. These were local aspects of mathematical knowledge, local aspects of pedagogy and school children's transition between contexts of mathematical practices. These theoretical perspectives were drawn upon to underpin the study because they provided the basis for analysis of how the curriculum of the Ghanaian pre-service mathematics teacher trainees exposes trainees to the local aspects of mathematics and mathematics pedagogy.

Literature points to the local aspects of mathematics. Ethnomathematics researchers have argued for a difference between mathematics encountered in the local culture/socicty and school mathematics (Bishop, 1988; D' Ambrosio, 1985). Bishop (1988) for instance argued for a difference between "m" mathematics (encountered in the local culture/society) and "M" Mathematics (the western/international mathematics). Bishop further described two types of mathematics education as being enculturation and acculturation. According to Bishop, mathematics education as an enculturation process has to do with inducting the child in practices which constitute part of the child's own culture, whereas acculturation has to do with the process of inducting the child in Mathematical practices which are alien to the child's culture.

Literature also points to the local aspects of pedagogy. Some researchers argue that knowledge construction goes beyond the innate factors of the individual learner such as maturation (Hedegaard & Chaiklin, 2005; Vygotsky, 1978). Vygotsky (1978) for example emphasizes the role of social interaction in the process of teaching and learning. In Mathematics particularly, researchers have shown that the out-of-school mathematics practiced in cultures usually lend support to pupils' learning outcomes in the study of formal mathematics in school (Draisma, 2006; Cherinda, 2002; Presmeg, 2007; Saxe, 1988). Mathematics education researchers have shown that processes children follow in acquiring mathematical knowledge or doing mathematics in their societies and culture such as finger counting and verbalisation of results lend support for mathematics pedagogy in school.

However, most often these approaches do not have a place in mathematics classrooms in Ghana (Davis, 2012).

Ghanaian school children often go through a collateral transition experience (Abreu, Bishop and Presmeg, 2002; Davis, Bishop & Seah, 2009). According to Abreu, Bishop and Presmeg (2002):

> Collateral transitions, where there are two or more related practices requiring relatively simultaneous involvement... example is the situation where the school students' parents emigrated after being at school in their home country, and the student is exposed to one set of mathematical practice and representation at home and another set at school... (p. 17)

For example, in the home context children make use of empty tins in measuring (i.e. "cups", "Olonka" and so on). The metric system of measurement is not usually used in Ghanaian local markets either in urban or rural settings (GNA, May 2009). Financial news on national radio stations usually quotes prices of commodities in these local units ("Olanka" for example). The situation is the same for fractions (see Davis, Bishop & Seah, 2010, for example).

The language of instruction in school (especially at the upper primary level) is different from the language children use at home and even outside the classroom in most cases. The approaches students may use in the representation of a typical arithmetic problem may also differ between contexts (home/school), as Abreu (1993) observed with children of Brazilian sugar cane farm workers, where children are taught metric systems of measurement in schools while at home they used their local unit of measurement based on 'braças'. These struggles between school and home contexts of mathematical practices by Ghanaian students could be described as being collateral in nature. Literature suggests that such mismatch between out-of-school and school mathematics (as prescribed in school curriculum) usually constrains teachers from using out-of-school mathematics, since they are obliged to follow the school curriculum (Abreu & Duveen, 1995).

Mathematics teachers in contexts such as Ghana where students have to cross several barriers such as those between informal and formal level of mathematics and language barriers, often face a very difficult task taking students from the informal level of mathematics to the formal level of mathematics (Setati & Adler, 2001). The learning trajectory of a typical Ghanaian child from an ordinary Ghanaian home, where the parents are not highly educated and the child is deeply engaged in societal practices such as petty trading is different from that of a monolingual child from an advanced country such as Japan or United Kingdom (Setati & Adler, 2001).

A growing body of literature has, for example, shown that language is a cultural tool that has the tendency to mediate mathematics learning in school (Kozulin, 2003; Setati & Adler, 2001) and therefore training teachers for mathematics teaching in a multilingual context such as Ghana without orienting them to linguistic and cultural issues in mathematics teaching and learning is likely to affect students' learning outcomes and perceptions of mathematics. It is against the background of the several barriers that Ghanaian students have to cross in order to access the formal level of mathematics that this study was designed to explore how the curriculum of the Colleges of Education in Ghana orient trainees to the local aspects of mathematics and mathematics teaching. There is the call for Ghanaian mathematics teachers to make mathematics relevant to the societal practices of Ghanaian students (Myjoyonline, September, 2011). However not many research studies have looked at the way teacher training programmes are preparing teacher trainees to appreciate the local aspects of mathematics and mathematics pedagogy in the way that would enable them to draw on students' sociocultural context to teach mathematics meaningfully. This study will therefore add to literature on socio-cultural issues in mathematics teacher preparation, which is a relatively new area in Ghana.

Research Questions

The following research questions were posed to guide the study:

1. How does the content of the mathematics curriculum at the College of Education level reflect the social and cultural practices of the Ghanaian school children?
2. How does the training of mathematics teachers for the basic school level (Year1- 9) in Ghana equip trainees to appreciate the local aspects of mathematics and mathematics pedagogy?

Method

The qualitative research method was employed to address the two research questions that guided the study. Even though this approach is noted for its subjectivity, it is recommended for the opportunity it provides for the collection of in-depth information on the issue under investigation (Holliday, 2002; Mertens, 2010). The research participants for the study consisted of five experienced tutors of mathematics, one each from five colleges of education namely Colleges A, B, C, D and E (all pseudonyms). Two of the tutors were females while the remaining were males. The colleges were purposely selected from two (out of the five) Conference of Principals of Colleges of Education (PRINCOF) in Ghana zones, namely Central

Western/Zone and Greater Accra/Eastern Zone. Four out of five of the colleges were selected from Central Western Zone and one from Greater Accra/Eastern Zone because of proximity of these colleges. The participants were also purposely selected from each of the colleges of education. In each of the colleges, only senior tutors who had taught mathematics for at least ten years, and were teaching methods of teaching mathematics at the colleges were selected. The average teaching experience of the research participants was 15 years. Also, all the tutors were experienced examiners for the national examinations conducted by the Institute of Education, University of Cape Coast at the college of education level. All the research participants were therefore well versed in curriculum delivery at the college of education level. Two of the participants had Master of Philosophy degree in Educational Measurement and Master of Education in Teacher Education as their highest qualification, each of the remaining participants had Master of Education in Mathematics Education as their highest qualification. The details of the background of each of the research participants are provided in Table 1.

Two main instruments were developed and used in the data collection. These were an observation guide and document analysis guide (to guide the analysis of the planned curriculum and the Mathematics for teacher training in Ghana textbook). The observation guide consisted of two sections, A and B. Section A elicited information on tutors' biographic data which included the name of their College of Education, the zone in which the College is located, their sex and years of teaching mathematics. Section B required the observer to take copious notes of the classroom interaction from the beginning of the lesson to the end of the lesson. The document analysis guide consisted of four main items. The first item looked at availability of course(s) that orients trainees to the local aspects of mathematics and mathematics pedagogy. The second item looked at the social and cultural relevance of each of the objectives of the mathematics courses taken by trainees in the planned curriculum. The third item looked at how trainees are oriented to the local aspects of mathematics and mathematics pedagogy through the introduction of the topic in the Mathematics for teacher training in Ghana textbook. While the fourth item looked at how trainees are exposed to the local aspects of mathematics and mathematics pedagogy in the development and evaluation of the topics in the textbook.

The main sources of data for the study were the intended/planned Mathematics curriculum of the Colleges of Education for both the generalist and the specialist Mathematics and Science programmes, the main methods of teaching mathematics textbook at the College of education in Ghana

(Mathematics for Teacher Training in Ghana) and observation of lessons of the participants. The lessons were observed in a method of teaching mathematics class in each of the colleges. The lesson observation was carried out by the author in the second semester (May/June, 2014). The rationale for observing lessons as an additional source of data was also to explore how some of the practices of these experienced mathematics tutors in the College of Education reflect the nature of the College of Education planned curriculum in mathematics. The lesson observed in each of the colleges was on the introduction of number bases. This topic was selected for two reasons. First, number has been identified as one of the topics Ghanaian basic school children and prospective basic school mathematics teachers have difficulty in (Anamuah-Mensah, Mereku & Ampiah, 2008; IoE, 2012; IoE, 2013, IoE, 2014). Chief examiners report on Mathematics-FDC 112: Number and Basic Algebra shows that trainees continue to perform poorly in this area. In the 2014 examinations, for example, only 33.8% of the total of 14513 candidates who took this paper passed. Number Bases was one of the topics that were identified as being difficult for the prospective teachers. Second, it is a concept many Ghanaian school children – especially those who assist their parents to sell in the market – experience in the everyday setting before they even start formal education. The data collected were analysed qualitatively and presented as narrative description with illustrative examples.

Table 1: Background of research participants

Participant	Sex	College	Academic qualification	Teaching experience at the college of Education level (in years)
One	Female	A	MPhil (Measurement and Evaluation), B. Ed (Mathematics)	22
Two	Male	B	M. Ed (Teacher Education), B. Ed (Mathematics)	13
Three	Male	C	M. Ed (Mathematics Education)	17
Four	Male	D	M. Ed (Mathematics Education)	14
Five	Female	E	M. Ed (Mathematics Education)	10

Results

In this section, the summary of the results from the lesson observation from each of the five colleges of Education are presented in Table 4. The results of the analysis of the College of Education planned curriculum in mathematics and the Mathematics for teacher training in Ghana textbook are also presented.

The Planned Mathematics Curriculum of College Education in Ghana

The Colleges of Education mathematics curriculum is designed in such a way that the first two years of training is used to consolidate trainees' content knowledge and to also expose them to methods of teaching mathematics at the basic school level. Six mathematics courses are taken by those who are offering the generalist programme. These are FDC 112: Number and Basic Algebra, FDC 122 Geometry and Trigonometry, FDC 212: Statistics and probability, PFC 212 methods of teaching primary school mathematics, FDC 222: Further Algebra and PFC 222: Methods of teaching Junior High School mathematics. The first two years are used to consolidate the mathematics content of the trainees. Trainees are introduced to methods of teaching in the second year, thus in the second year, trainees take courses in both the content and the methods of teaching mathematics. The curriculum outlines the objectives and the content to be covered in each of the courses. This provides the basis for analysis of how the courses orient the prospective mathematics teachers to the social and cultural issues in mathematics generally and the local aspects of mathematics and mathematics pedagogy specifically. Table 2 presents the objectives and the content of each of the courses taken by the prospective generalist mathematics teachers.

Table 2: Mathematics curriculum for generalist mathematics teacher trainees

Course	Content	Objectives
FDC 112	Sets, Ratio; Proportion; Rates; Scale; Real Numbers - Properties and Operations; Indices; Number Bases; Relations; Functions and Graphs; Algebraic Expressions; Equations and Inequalities	1. Demonstrate a sound knowledge of mathematical concepts and procedures in the content areas studied. 2. Make connections between mathematics and other disciplines and activities in daily life.

		3. Pose mathematics tasks in the content studied and solve them using appropriate procedures and tools including calculators and ICT
FDC 122	Lines and Angles, Polygons, Geometrical Constructions, Circles, Measurement of 2-D and 3-D shapes, Pythagoras Theorem and Simple Trigonometrical ratios, Movement Geometry and Vectors, Coordinate Geometry.	1. Review and consolidate concepts and skills related to Geometry and Trigonometry. 2. Discover relations involving shapes, perimeters, areas and volumes and use these to solve problems. 3. Relate and apply mathematical knowledge to solve problems in Geometry and Trigonometry, using appropriate procedures and tools including calculation and ICT.
FDC 212	Collection, organisation, representation, analysis and interpretation of data, Measures of Central Tendency, Measures of Dispersion, "probability of experiments" and simple events, relative frequency, combined events, and tree diagrams, Conditional Probability.	1. Demonstrate a sound knowledge of the topics and apply them in real life situations. 2. Collect, organize, represent, analyse and interpret data. 3. Pose mathematics tasks in the content studied and solve them using appropriate procedures and tools including calculations and ICT.
PFC 212	Factors influencing the selection and sequencing of the content of the Primary School Mathematics Curriculum;	1. Identify factors that contribute to the inclusion of topics for the primary mathematics

	Developing problem-solving and investigation skills. Development of number concepts and operations, preparation for lesson delivery, methods and materials for effective teaching and learning, use of the activity method and grouping of children for effective teaching and learning. Simple geometric concepts and relationships including measurements and assessment of children's achievement in mathematics.	curriculum. 2. Explain how children acquire the concept of number and design appropriate activities to enable children perform numerical operations. 3. Illustrate various activities that children can be engaged in to develop their understanding of mathematical concepts and relationships. 4. Discover various geometrical concepts and how they could be introduced to children. 5. Identify various ways for assessing children's learning in mathematics. 6. Solve mathematical problems and assist children to develop strategies for tackling problems in mathematics. 7. Explore ways in which the calculator and ICT could be used to enhance learning and problem-solving by children
FDC 222	Series and sequences, binary operations, Matrices and Binomial Expansion including Pascal's triangle.	1. Explain and discover patterns in simple series and sequences. 2. Apply matrices and binomial expansion to the solutions of problems. 3. Pose and solve problems which require the use of

Table 4: Summary of lesson presentation on number bases by college of education

College	Zone	Observation
A	Central /Western	**Topic**: Introducing Number Basis **Summary of observation**: - Teacher writes 578, 309 and 241 and asks students to read. - Teacher asks students to identify the place value of each digit in each of the numbers - Teacher requests students to write the numerals involved in the decimal system i.e. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, - Teacher reminds students that in the decimal system the numerals are from zero to nine, and asks students if we have say base five what is the numerals that would be used? - Teacher once again reminds students that in base ten we do not have 10, so 10 is a group of ten - Students write 0, 1, 2, 3, 4 - Teacher explains that in base two the numerals are 0, 1 - Students read numbers in other bases i.e. 234_{five} and 1011_{two} as two, three, four base five and one, zero, one, one base two respectively - Students find the place value of digits of numbers in other bases i.e. 234_{five} is two five of fives, three fives and four ones - Teacher asks students convert 234_{five} to base ten
B	Central/ Western	**Topic**: Introduction of number bases **Summary of observation**: - Teacher tells students that to introduce number bases you start from base ten because we use the Hindu Arabic system - Teacher writes 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (numerals for base ten) on the chalk board. - Teacher introduces the Diene's base ten

		blocks and explains that the cube is the unit (10^0), the long is ten (10^1), the flat is hundred (10^2) and the block is one thousand (10^3) - Teacher introduces base 4 and explains that the cube is the unit (4^0), the long is four (4^1), the flat is four by four which is sixteen (4^2) and the block which is four by four by four which is sixty four (4^3) (still using the Dienes base ten blocks) - Teacher introduces base three and explains that in base three students have to group in threes; if you join three units you get a long. - Teacher tells the class that for base 3 we use the symbols 0, 1, 2 - Teacher tells the class that 3 is 10 (one zero) in base three - Teacher introduces conversion from base three to base ten and writes $3^0=1$, $3^1 = 3$, $3^2 = 9$, $3^3 = 27$ - Teacher introduces base five numerals and writes 0, 1, 2, 3, 4 and presents what he termed "base five apparatus as cube = 5^0, long = 5^1, flat = 5^2, block = 5^3" - Teacher introduces conversion from base ten to other bases by demonstrating how to convert eight to base five - Teacher asks students to make groups of five from eight bottle tops - Students form one group of five and three ones - Teacher uses the division algorithm and writes the final answer as $8 = 13_{five}$ - Lesson ends by teacher giving students some more exercises to try
C	Central/ Western	**Topic**: Number Bases (Numeration System) **Summary of Observation**: - Teacher introduces the lesson by telling students that the Romans use the numerals i, ii, iii in counting and asks students the name given to the system of counting we use in

Ghana

- Teachers explains to students that the system we use in Ghana is based on the Hindu Arabic numerals
- Teacher asks students how they would help their pupils to form the concept of number bases.
- Teacher asks students to sit in groups, (students formed, three groups, two groups were made up of ten students the other group made up of twelve students)
- Teacher supplies each group with bundles of sticks (27, 18 and ten respectively)
- Teacher asks each group of students to put each of the bundles of sticks in groups of ten, eight and six respectively
- Each group of students group the sticks (in tens, eight and six respectively) and presented their solution orally as the teacher enters the answer in a table. For 28, students called out the answer as two groups of ten and seven ones, three groups of eight and three ones and four groups of six and three ones.
- For 18, students orally called out the answer as one group of ten and eight ones, two groups of eight and two ones and three groups of six
- For ten, students called out the answer as one group of nine, one group of eight and a one, one group of six and three ones
- Teacher tells students it is important to indicate the base for numbers which are not in base ten
- Teacher tells students that 27 is three three base eight i.e. 33_{eight}
- Teacher poses the question "what is number bases"
- Students give answers such as "way of writing figures with base", "grouping of

		objects" - Teacher defines number bases as "Grouping objects in terms of definite groups" - Teacher introduces how to find digits of number bases and asks students to always start with ten - Teacher list numbers from one to forty on the chalkboard and explains to the class that 0-9 comes up regularly and tells students that ten digits are involved that is why it is called base ten - Teacher introduces base five and list the numerals as 1, 2, 3, 4, 10_{five}, 11_{five}, 12_{five}, 13_{five}, 14_{five}, 20_{five} and indicates that the digits for base five are 0, 1, 2, 3, 4 - Teacher drills students on the numerals for base twelve, base six and base two. - Teacher introduces place values, using the Dienes blocks and explains that cube = 10^0, long = 10^1, flat = 10^2 and the block is 10^3 - Teacher explains that in base ten numeration system, the value of a digit is ten times the value of the next digit to the right of it. - Teacher draws place value table for base ten numeration system and identifies the place value of each of the digits in 438 - Teacher presents the solution on the board as 4 = 4hundreds = 400, 3 = 3tens = 30, 8 = 8ones = 8 - Teacher solves another problem involving 1324_{five} in class and presents the solution as 1 five-five-fives, 3 five-fives, 2 fives and 4ones - Teacher ends the lesson by "saying in the next class we would look at operations on number bases"
D	Central/ Western	**Topic**: Numeration System - Number Bases **Summary of Observation**: - Teacher introduces the lesson by asking student "how do you count?" - Student count from 0, 1, 2, ..10, 11, 12, 13,

... 20, 21, 22, ...

- Teacher asks students the base in which the numbers are written.
- A student responds by saying base one.
- Teacher explains that we do not have base one and explains that what has been listed is in base ten.
- Teacher writes the following question on the board "indicate the place value and the value underlined in each of the numbers (a) 5̲8 (b) 68̲5 (c) 8̲564 (d) 5̲7862".
- Teacher solves the question with the class and presents the answer on the board as (a) tens, 50, (b) ones, 5 (c) Hundreds, 500 (d) Ten thousands, 50000.
- Teacher tells the class that these are number base, in base ten.
- Teacher introduces base five using the Diene's base ten blocks and asks a student to count in fives using the cubes (ones).
- The student counts 1, 2, 3, 4 and 5.
- Teacher tells students that in base five you cannot count five. Five is 10 (one zero) in base five.
- Teacher invites another student to continue with the counting and comes out with 1, 2, 3, 4, 10, 11, 12, 13, 14, 20 as the answer.
- Teacher draws students' attention to the fact that 10 is read "one zero base five" and 20 is read "two zero base five".
- Teacher introduces students to counting in base two and invites some students to the board to count in base two.
- A student counts one cube and picks a long (made of ten units) to represent one group of two (10_{two}).
- Teacher presents counting in base two drawing diagrams on the board and writes one cube = 1, 2cubes = 10, 3cubes = 11, 4cubes = 100, 5cubes = 101, 6cubes = 110.

		objects" - Teacher defines number bases as "Grouping objects in terms of definite groups" - Teacher introduces how to find digits of number bases and asks students to always start with ten - Teacher list numbers from one to forty on the chalkboard and explains to the class that 0-9 comes up regularly and tells students that ten digits are involved that is why it is called base ten - Teacher introduces base five and list the numerals as 1, 2, 3, 4, 10_{five}, 11_{five}, 12_{five}, 13_{five}, 14_{five}, 20_{five} and indicates that the digits for base five are 0, 1, 2, 3, 4 - Teacher drills students on the numerals for base twelve, base six and base two. - Teacher introduces place values, using the Dienes blocks and explains that cube = 10^0, long = 10^1, flat = 10^2 and the block is 10^3 - Teacher explains that in base ten numeration system, the value of a digit is ten times the value of the next digit to the right of it. - Teacher draws place value table for base ten numeration system and identifies the place value of each of the digits in 438 - Teacher presents the solution on the board as 4 = 4hundreds = 400, 3 = 3tens = 30, 8 = 8ones = 8 - Teacher solves another problem involving 1324_{five} in class and presents the solution as 1 five-five-fives, 3 five-fives, 2 fives and 4ones - Teacher ends the lesson by "saying in the next class we would look at operations on number bases"
D	Central/ Western	**Topic**: Numeration System - Number Bases **Summary of Observation**: - Teacher introduces the lesson by asking student "how do you count?" - Student count from 0, 1, 2, ..10, 11, 12, 13,

... 20, 21, 22, ...

- Teacher asks students the base in which the numbers are written.
- A student responds by saying base one.
- Teacher explains that we do not have base one and explains that what has been listed is in base ten.
- Teacher writes the following question on the board "indicate the place value and the value underlined in each of the numbers (a) 5̲8 (b) 68̲5 (c) 8̲564 (d) 5̲7862".
- Teacher solves the question with the class and presents the answer on the board as (a) tens, 50, (b) ones, 5 (c) Hundreds, 500 (d) Ten thousands, 50000.
- Teacher tells the class that these are number base, in base ten.
- Teacher introduces base five using the Diene's base ten blocks and asks a student to count in fives using the cubes (ones).
- The student counts 1, 2, 3, 4 and 5.
- Teacher tells students that in base five you cannot count five. Five is 10 (one zero) in base five.
- Teacher invites another student to continue with the counting and comes out with 1, 2, 3, 4, 10, 11, 12, 13, 14, 20 as the answer.
- Teacher draws students' attention to the fact that 10 is read "one zero base five" and 20 is read "two zero base five".
- Teacher introduces students to counting in base two and invites some students to the board to count in base two.
- A student counts one cube and picks a long (made of ten units) to represent one group of two (10_{two}).
- Teacher presents counting in base two drawing diagrams on the board and writes one cube = 1, 2cubes = 10, 3cubes = 11, 4cubes = 100, 5cubes = 101, 6cubes = 110.

		- Teacher copies the table below on the whiteboard for base five -

5^3	5^2	5^1	5^0

- Teacher copies the table below on the whiteboard for base two

2^3	2^2	2^1	2^0

- Teacher gives students the following tasks to do
  1. Write down (i) the place value and (ii) the value of the digit 2 in each of the following base five numerals (a) 1324 (b) 2431 (c) 4231.
  2. Write down (i) the place value and (ii) the value of the following base two numerals
     (a) 10011 (b) 101001 (c) 101101.
- Teacher discusses the solution to each of the tasks with the class.
- Lesson comes to an end after discussion of the solution to the class exercise.

E	Greater Accra/ Eastern	**Topic**: Number Bases **Summary of Observation**: - Teacher introduces the lesson by drawing students attention to the fact the number system used in Ghana is one of the several number systems. - Teacher tells students that the written symbol for numbers are called numerals and collection of numerals is called numeration system, Number is an idea of quantity. - Teacher explains that since number systems are based on different groupings, there are numeration in different bases. - Teacher explains that any number students see is in base ten unless otherwise stated and

list the numerals for base ten as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

- Teacher teaches place value involving base ten; writes the number 2345 and explains that from the right, the digit five is a unit, the digit 4 is second from right and it is in tens or groups of ten, it is four groups of ten or 40, the 3 in the figure is third from right and it is tens of ten. The 3 therefore is written as 3 groups of 10 of ten. The place value of 3 is therefore 300, the 2 in the figure is seen as 10 of 10 of 10 giving 2 as 2 groups of 10 of 10 of 10 which is 2000.
- Teacher explains further that 2345 = 2000 + 300+40+5.
- Teacher introduces students to base five and lists the numerals as 0, 1, 2, 3 and 4. .
- Teachers draws students' attention to the fact that in base five the numeral five is not included
- Teacher asks students to write 2123_{five} in expanded form.
- Teacher presents the solution as 2(5x5x5) + 1(5x5) + 2(5) + 3
  2(125) + 1(25) + 2(5) + 3
  250 + 25 + 10 + 3
  $= 288_{(10)}$
- Teacher introduces conversion from base ten to other bases by converting 288 back to base five
- Teacher takes students through the division algorithm to obtain 2123_{five} as the final answer
- Teacher ends the lesson by explaining to students that in base ten we have 10^0, 10^1, 10^2, ... in base five we have 5^0, 5^1, 5^2, ... and in base two we have 2^0, 2^1, 2^2, ...

Number bases is covered in FDC 112 course (see Table 2). The lesson of each of the experienced mathematics educator shows that the topic was presented out of context to the teacher trainees. The lesson presentation basically involved reading numerals in given bases usually starting from base ten, then to base five, base two and so on, identifying the numerals for given bases usually starting from base ten, base five and so on, performing operations in a given base and then converting from one base to another. Not much was seen about the relationship between the topic and the social and cultural practices of students such as the systems of counting of fishes, oranges and tomatoes in Ghanaian local markets, for example (see Davis, Bishop & Seah, 2009, for example). The use of the base ten blocks in explaining other bases was common in almost all the Colleges of Education. For example, in College D a long made of ten cubes was used to explain one group of two (that is, 10_{two}). An informal conversation with the tutor from College E, revealed that this tutor had never thought of the possibility of drawing on students' sociocultural practices to teach Number Bases. This was evident in the tutors' response to the question: "have you thought about the possibility of using everyday practices in the Ghanaian society to teach this topic [number bases]?" The tutors response to this question was "no, it has never crossed my mind, how possible, please tell me."

Discussion

The College of Education mathematics curricula does not orient the prospective mathematics teachers to the local aspects of mathematics and mathematics pedagogy, meanwhile literature points to the local aspects of mathematics (Barton, 1996, 1998; Bishop, 1988; D'ambrosio, 1999; Matang, & Owens, 2004) and mathematics pedagogy (Draisma, 2006; Presmeg, 2007) and therefore the need for prospective mathematics teachers to learn about these aspects of mathematics. Analysis of the Ghanaian College of Education mathematics curriculum shows that sociocultural issues in mathematics and mathematics pedagogy are not included in teacher preparation; meanwhile many Ghanaian school children are living in two worlds within the same country. They often have to simultaneously engage in one set of mathematical practices and representation in out-of-school contexts and another set of mathematical practices and representation in school context (see Davis, Bishop & Seah, 2009). These students often experience cultural conflicts (conceptual discrepancy between what they bring from outside of school and what they experience in school) as they encounter different kinds of mathematics in the home and the school contexts. Conflict of this nature in itself is not bad in the educational setting

(Bishop, 2002), but the way conflicts are handled in the classroom setting is what makes the difference. Davis, Seah and Bishop (2009), for example, found that some Ghanaian primary school teachers usually ignore the cultural conflicts students bring with them in mathematics lessons by concentrating on what the curriculum requires them to do rather than understanding the source of students' difficulty. The tendency is that the student may adopt the new ways of doing things that may be alien to their culture, or may decide not to be part of the new cultural practice. In the later situation the student would often be branded as a failing student and be eventually excluded from school. Bishop (2002) gives accounts of how teachers make it impossible for students to engage in cultural interaction even when the student makes the initiative. Other studies support the fact that in some cases teachers' notion about the fact that out-of-school mathematics and in-school mathematics are mutually exclusive affects their teaching. Such teachers usually make no reference to out-of-school mathematics in their lessons (Abreu, 1995; Abreu & Duveen, 1995).

Previous knowledge of students includes their informal knowledge and the purpose of teaching school mathematics is to get students to the formal level of mathematics (formalization). Any curriculum which does not prepare teacher trainees to appreciate the need to take the societal and cultural practices of students into consideration in the process of teaching is therefore not giving the prospective teachers all what they need to teach mathematics meaningfully to students. Although the Ghanaian College of Education curriculum mentions the need for trainees to apply mathematics in their daily activities in two (FDC 112 and FDC 212) out of 12 courses, it does not provide trainees any theoretical basis to do that. It is one thing indicating what trainees have to achieve in the general objectives of a course and another thing designing the course in such a way that trainees would be equipped with the necessary knowledge and skills they need to teach mathematics meaningfully, drawing on the sociocultural practices of their students.

The findings from the results of this study show that the planned curriculum for both the generalist and specialist training in mathematics at the college of education level do not orient trainees to the local aspects of mathematics and mathematics pedagogy. Analysis of the results of the lessons on number bases shows that implementation of some of the planned curriculum does not also orient trainees to draw on the social and cultural practices of students to scaffold their deeper understanding of concepts. This was evident in the fact that none of the lessons made use of some of the numerous everyday practices of students in the process of the development

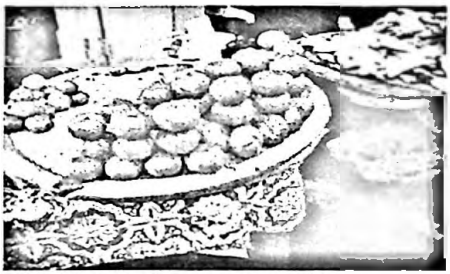
of the topic. The lesson was delivered using either Diene's base ten blocks or bundle of sticks or bottle tops in each of the colleges. The use of Diene's base ten blocks made some of the concepts even more confusing. For example, the use of a long made of ten units to explain one group of two (10_{two}) and the use of flats made of hundred units to explain two groups of two (100_{two}) appeared to have rendered the use of this teaching learning material ineffective in most of the lessons observed. Informal interaction with each of the participants revealed that they did not have materials that would support the development of other bases apart from base ten. This shows the need to explore the possibility of using cheaper and readily available materials from the environment to teach concepts meaningfully to students. The question is, are these materials available in our Ghanaian society? I will show examples of what is possible at the end of this section.

Training does not also orient trainees to the local aspect of mathematics and mathematics pedagogy through the implementation of the planned curriculum. The results in Table 4 also show that measurement of attained curriculum in most cases was also done out of context. Evaluation exercises were mainly based on examples of what had been solved in the class. None of the evaluation exercise drew upon the social and cultural context of the students. Social and cultural context of students therefore had no place in the development of the lesson and the evaluation of the lesson in each of the colleges.

The results from the observation of the experts' lessons on Number Bases in Table 4 show that many of the everyday societal practices which can easily afford the development of Number Bases such as system of counting of fishes, tomatoes and oranges in the local markets across the country are not drawn upon to develop the concept meaningfully in school (see Figure 2). Counting of tomatoes, for example, could lead to the development of Bases Three, Four and Five, depending on the sizes of the tomatoes. All these useful resources are not employed to teach mathematics meaningfully in school because most training programmes for mathematics teacher educators at the university level do not provide teacher educators the opportunity to appreciate the local aspects of mathematics and mathematics pedagogy. They do not provide them the opportunity to acquire the theoretical basis of drawing on social and cultural contexts of their students in teaching and learning of mathematics. The procedures proposed by the experts reflect the approaches prescribed in Ghanaian textbooks and methods of teaching mathematics books (Martin et al., 1994). It appears some of the experts such as the tutor from School E do not consider sociocultural context of the students as an important variable in mathematics pedagogy.

It is possible to draw on the social and cultural contexts of students to teach many of the topics that have been identified as being difficult for students at the basic school level such as division. In teaching division, for example, societal practices involving the sale of vegetables such as tomatoes which involves grouping (see Figure 2) could be employed to teach the topic meaningfully. The sale of fishes also involve grouping. Practices involving measurement of vegetables and fishes by grouping support development of the concept of division in school. In teaching x divided by four, for example, the sale of garden eggs or tomatoes could form a context which will results in repeated subtraction of four or multiples of four till x items of the garden eggs are exhausted. Often these ideas are taught out of context, for example, repeatedly subtracting a number of pebbles, counting sticks and so on, which do not often help pupils to connect mathematics and everyday mathematical activities within their society or culture.

Grouping of four or five (depending on size)



Grouping of four or five (depending on size)

Figure 2: Local system of measuring

Conclusion and Recommendation

The current College of Education mathematics curriculum for both the specialist and generalist trained teachers do not orient the prospective mathematics teachers to the local aspects of mathematics and mathematics pedagogy. Sociocultural issues in mathematics and mathematics pedagogy are not included in teacher preparation despite documented evidence of the importance of local aspects of mathematics and mathematics pedagogy. Although local aspects of mathematics are missing in the College of Education curriculum, it is possible to employ them to teach mathematics meaningfully. How to employ more local aspects of mathematics in the development of methods of teaching mathematics textbooks in the Colleges of Education in Ghana is left for debate among mathematics education experts in Ghana. This is because there are several suggested ways of employing local aspects of mathematics in the development of mathematics

lessons in school (see Hedegaard & Chaiklin, 2005; Presmeg, 2007, for some examples).

Exposing the prospective Primary and Junior High School teachers to sociocultural issues in mathematics will go a long way to help them develop lessons that would motivate their students to learn, by creating the opportunity for their students to appreciate the relevance of what they are learning to their everyday practices. Exposing them to sociocultural issues in mathematics will also help the trainees to conceptualize the relationship between everyday mathematical concepts and academic/school concepts. This will enable them to draw on their students' sociocultural practices in mathematics to teach school mathematics meaningfully.

It is therefore recommended, the mathematics curriculum for pre-service teacher training programme at the college of education in Ghana and other sub-Saharan African countries that share similar situation as Ghana should be revised to include a course or two that would orient the prospective mathematics teachers to the local aspects of mathematics and mathematics pedagogy.

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Teacher Support and Equipment Usage in the Regular Primary Schools in the Hohoe District of Ghana

Prosper Deku
Department of Educational Foundations, University of Cape Coast

Abstract

The proposal to make all basic schools practise inclusive education by 2015 in Ghana will require that teachers are supported to use equipment to facilitate the teaching and the learning process. The purpose of the study was to investigate categories of persons provide support to the teachers, types of support provided for teachers, the extent of equipment usage in the classroom and the relationship between teachers who are supported, and equipment utilization in primary school classrooms. Three hundred and nine teachers made up of 161 males and 148 females formed the sample which was selected through multistage random sampling. The participants responded to an 18 item self-designed questionnaire with Cronbach's reliability alpha of .76. The results indicated that majority of the teachers confirmed that they received support from resource teachers, special education officers, school heads, school counsellor/psychologists and parents. The types of support teachers received included instructional, equipment/materials, psychological and collaboration/ consultation. The results also revealed that there was a significant relationship between teachers who received support and those who did not in the type of equipment they used in teaching. And again, it was found out that there was no significant difference in relationship between the male and the female teachers in equipment usage. It is therefore, recommended that the educational authorities should develop an adequate support system in the schools for the teachers, and should also provide the state of the art teaching equipment for the use by the teachers.

Key words: teacher support, equipment, primary school

Introduction

The implementation of the 2007 Educational Reforms in Ghana saw a remarkable attempt at governmental and non-governmental levels, as well as school level, to promote the use of educational equipment in schools. Such educational equipment plays an important role in creating an effective and adaptable learning environment, especially, when teaching children with special needs. However, it appears the use of educational equipment in addressing special education needs has been inadequate so far, in the

Ghanaian educational system. It appears that despite the current emphasis on inclusive education and the use of equipment, there is a lack of attention to the application of equipment utilization for children with special needs. It is envisaged that by the year 2015 all basic schools in Ghana will practise the inclusive philosophy. Consequently, to make the teaching more effective and result oriented, the schools will require an effective support system to be put in place, to help teachers to use appropriate equipment that can facilitate the teaching and the learning process.

Theoretical Framework

This study is based on the theory of facilitating conditions. Facilitating conditions, according to Triandis (1979), include the extent and type of support provided to individuals that influence their use of technology. In the context of equipment usage in classroom teaching, facilitating conditions include the availability of equipment, and the provision of support to teachers. This implies that the presence of support serves as a motivating factor that increases teachers' self- efficacy to use equipment in teaching.

Facilitating conditions, do not only affect actual behaviour as postulated by Triandis (1979), but also affect intention. That is, if an individual perceived that there is adequate support and resources, that individual would use or would continue to use equipment. This observation is consistent with the theory of planned behaviour (Venkatesh, Morris, & Davis, 2003). Thus, education authorities and support personnel hoping to promote the use of equipment in inclusive classrooms should not only provide access to equipment, but also provide sufficient technical, psychological and collaborative support.

Literature Review

Gomleksyz (2005) stated that the use of equipment is an important dimension in teaching and learning. Accordingly, using educational equipment in classes helps teachers to ensure a better and more effective teaching and learning environment. The use of variety of educational equipment both enriches, and strengthens learning environment in a way that facilitates learning. Several earlier researchers (Bork, 1985; Ragosta, 1983) show that computers have an influential effect on learning and teaching. They were of the view that teaching and learning become more student-centred with the use of computers in the classroom, and more individualized learning takes place.

Millenken and Barnes (2002) stated that traditional formats are not always successful and efficient. They are of the view that new technologies

offer opportunities for taking account of individual aptitude and interest. Gomleksyz (2005) pointed out that effective use of equipment in the classrooms can help the education system work better and more effectively. Tezci (2010) also remarked that equipment do not have an educational value in themselves but become important when teachers and other support personnel use them in teaching. Some people claim that the presence of equipment creates a pressure, and requires effective use (Kozma, 2003). However, research results have shown that equipment usage is related to the attitudes and levels of knowledge of teachers and support personnel (Lim & Khine, 2006; Zhang, 2007; Paraskeva, Bouta & Papagianni, 2008; Tezci, 2010).

Teachers' attitudes and beliefs affect the way equipment is applied in education. They tend to use equipment in ways shaped by their own personal perspectives on the curriculum, and on their pedagogical practices (Beattie, Anderson & Antonak, 1997). Bullock (2004) found that teachers' attitudes are a major enabling or disabling factor in the adoption and use of technological equipment in the classroom. Similarly, Kersaint, Horton, Stohl, and Garofalo (2003) observed that teachers who have positive attitudes towards the use of equipment feel more comfortable using them, and usually incorporate them into their teaching. Teachers are also more comfortable using equipment in their teaching if provided with support. It is, therefore, important that support systems that would make teachers effective in the use of equipment in teaching are provided.

Defining support is difficult, because support is comprehensive in nature and varied in type (Gold, 1996). In this sense, support is a global construct that has many dimensions. Littrell, Billingsley, and Cross (1994) found that psychological support was perceived as most important for special educators. These authors found that instructional support, for example, helping teachers with classroom work, such as providing needed materials and equipment for teaching and non-teaching duties correlate positively with both job satisfaction, and school commitment.

York, Giangreco, Vandercook, and Macdonald (1992) described support as provision of constructive feedback to fellow team members that may result in more effective team-member interactions and ultimately improving student learning. It is therefore clear that support is achieved through the actions of one person and this may affect another person, with the recipient perceiving having received help. In inclusive education, support can be provided for teachers and pupils with special needs by special education resource persons in the Districts, Municipal and Metropolitan Education Offices in Ghana. Other support persons include the school

administrators and professionals whose expertises are critical in the education of pupils with special needs.

In a quantitative study on perceived support for inclusive education, Jull and Minnes (2007) using 115 Education students who were between 16 to 25 years at Queens' University found that good quality of support accounted for 50% of the variance in ratings of quality of contact above and beyond a series of other predictor variables, such as instruction, and quantity of experience with children with special needs. The study also found that perception of support also correlated with willingness to include students with special needs. The findings are consistent with previous research demonstrating that teachers generally, have more positive attitude toward inclusion when they expect high quality support will be provided when it is required (Buell, Hallahan, Gamel-McCormick & Scheer, 1999). The implication is that inclusive education could become a successful possibility if support is provided to teachers. The result of this study suggests perceived support is an important variable to consider in inclusive education, and more so, when teachers are encouraged to use equipment during instruction.

Stainback, Stainback and Ayres (1996) proposed that a major aim of support personnel is to work side by side with classroom teachers and other school personnel to encourage natural support networks. The support personnel can also function as a "resource allocator" (Stainback et al., 1996, p. 37). The classroom teacher is also expected to have expertise, in locating appropriate materials and equipment needed by the students. In addition, support staff often work side by side with classroom teachers by providing support to enable teachers to adapt and individualize instruction to meet the unique needs of all class members.

Statement of the Problem

The use of educational equipment in facilitating instruction is an important factor in making inclusive education successful. Educational equipment provides children with disabilities with equal opportunities to participate in active environments with predictive activities that are aligned to their abilities. Many educational equipment such as assistive devices are available to assist teachers in improving the functional capabilities of their students via increasing students' participation in learning opportunities and involvement in activities (Scherer, 2004). Unfortunately, teachers are not always enthused about using assistive technology equipment (Wessels, Dijcks, Soede, Gelderblom, & De Witte, 2003).

In Ghana, the situation might not be different as regards the use of assistive equipment in addressing special education needs in the regular schools. It is also not certain if support is provided to the teachers in the inclusive schools to assist them use equipment in lesson delivery. Research in this area of teacher support and equipment usage in classroom teaching has not been fully explored. Therefore, this study was to investigate teacher support and the extent of equipment usage in classroom teaching.

Purpose of the Study

The purpose of the study was to investigate categories of persons that provide support to the teachers, types of support provided for teachers, the extent of equipment usage in the classroom and the relationship between teachers who are supported, and the types of equipment they use in teaching in the primary school classrooms.

Research Questions:

1. Which categories of support persons provide support to the teachers?
2. What types of support are provided to the teachers?
3. What is the extent of equipment usage as perceived by the teachers?

Null Hypotheses

1. There is no significant relationship between teachers who receive support and those who do not in the type of equipment used in teaching.
2. There is no significant relationship between male and female teachers who receive support and those who do not receive support in the use of equipment.

Methodology

Research Design

In cognisance with the circumstance of the study, the researcher adopted a cross sectional descriptive survey design for the study. This type of research can be used to describe the characteristics that exist in a population, but not to determine cause-and- effect relationships. The justification for the use of cross-sectional survey is that it provided detailed description of what exists at the moment in terms of the support provided for the teachers and how these translate to equipment usage.

Sample and Sampling Technique

A multistage random sampling technique was utilized to select the respondents. The population from which the sample was drawn was 1,459 teachers in 71 primary schools in the Hohoe District of the Volta Region of Ghana. There are seven circuits in the district and out of these circuits; six schools were randomly selected to give a total of 42 schools. A simple random sampling was used to select 8 teachers from each school. In all, 148 males and 161 females making a total of 309 teachers participated in the study.

Instrument

A self-developed questionnaire was utilized for data the collection. The questionnaire consisted of three sections. The first section comprised items that identified the respondents' bio data. The second section which was a 13-item questionnaire measured the teachers' equipment usage. The last section was made up of items that solicited information on support. The items were ordered in a Likert scale format. The scale reported a reliability coefficient of .76 Cronbach's Alpha.

Procedure for Data Collection

Firstly, prior to the administration of questionnaires, a meeting with the District Education Director was held to discuss the purpose of the study. The initial attempt was to facilitate co-operation, and obtain official permission for the data collection. The final data collection was done in May/June 2013 by a four- man team that is, the researcher and three research assistants. Each participant sampled was met in his or her school during school hours. The participants were asked to fill out the questionnaire. One week was allowed for the collection of the questionnaire. In each school visited, the head teachers accepted to collect the completed questionnaire which was later handed over to the researcher. Three hundred and nine teachers completed the questionnaire representing 91.96% return rate.

Data Analysis

The descriptive statistical analyses were employed in the study. The Likert type scale which measured the extent of equipment usage was scored as never 1, rarely 2, sometimes 3, often 4 and always 5. These were then computed into percentages. The mean and the standard deviations were also calculated to determine the level of equipment usage. The research questions 1and 2 were analysed by the use of frequency counts and the results

presented in bar charts that described the types of persons and the types of support provided, while research question 3 was analysed by the use of percentages, mean scores and standard deviations. The hypotheses were analysed using cross tabulation to determine the Pearson chi-square values which described the relationship between the variables.

Results

Research Question 1: Which categories of support persons provide support to the teachers? The bar chart in Figure 1 illustrates the categories of support persons who provided support to the teachers.

A bar chart showing types of persons who provide support to teachers

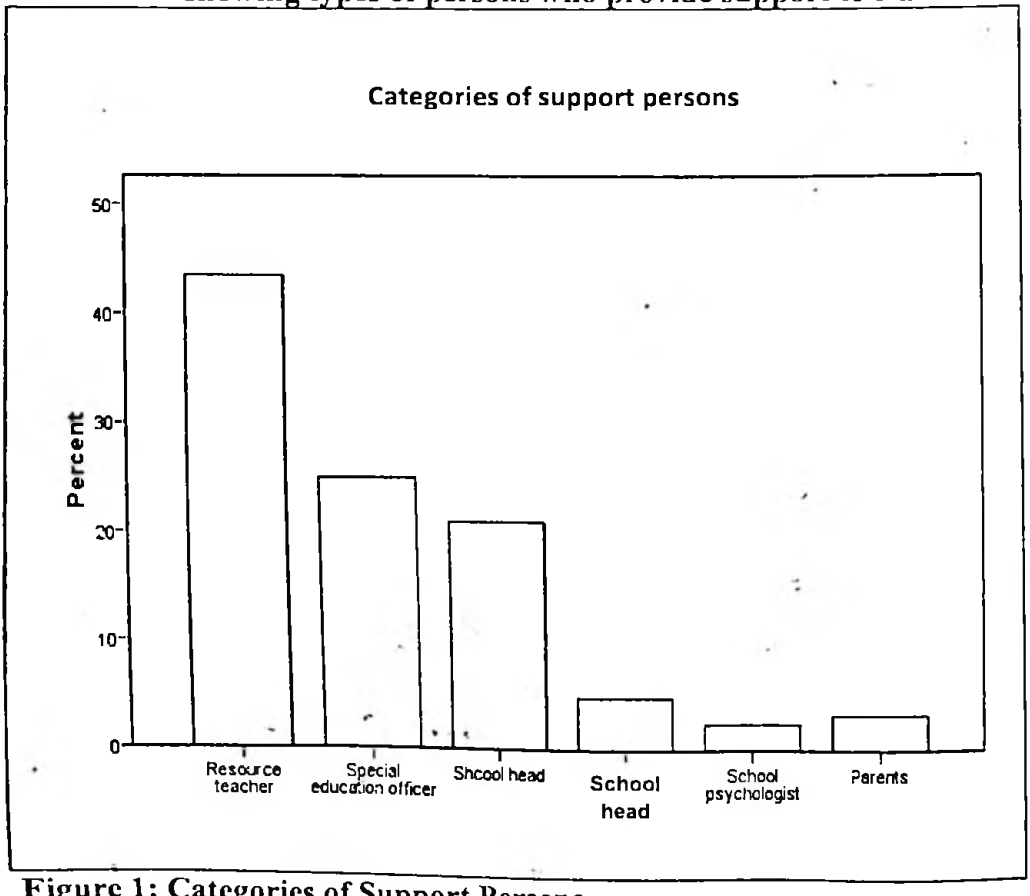

Figure 1: Categories of Support Persons

Based on the results, the trend shows that there were more resource teachers and special education officers as well as school heads providing support than any other personnel. Interestingly, parents' contributions to the provision of support were extremely low. It is however, important to note that the limited number of school counsellors and school psychologists mirrors the number of personnel in the educational system in Ghana. In other words, there are very few personnel in the area of counselling and psychology in the schools.

Research question 2: What types of support are provided to the teachers? Figure 2 shows the results of the types of support provided to the teachers.

A bar chart showing types of support provided to teachers

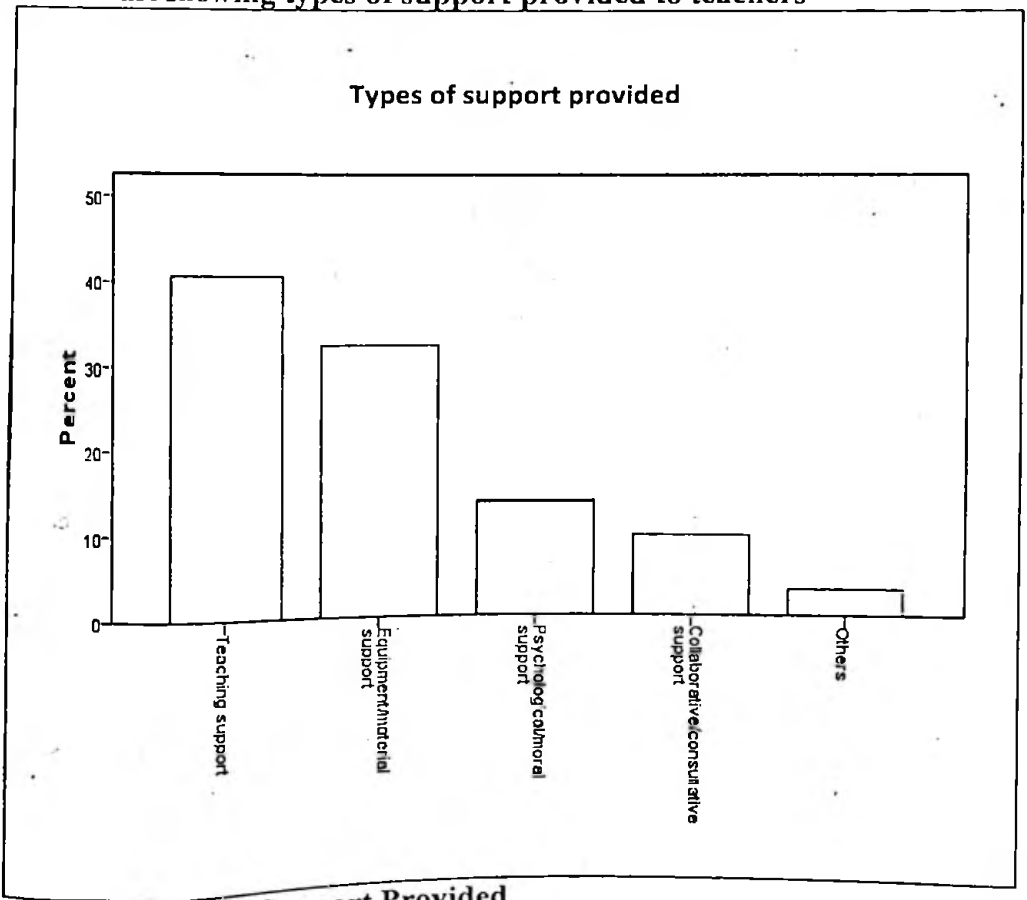

Figure 2: Types of Support Provided

The types of support teachers received are presented in Figure 2. The trend of support provided shows that there was more support in the area of instructional and equipment and material than all other types of support. In other words, the support provided decreased from instructional to collaborative consultative and to other support services. This means that the more teachers received instructional and material and equipment support, the more they are likely to use the equipment in the teaching and the learning process. The provision of psychological support was low despite its importance in dealing with teachers' burnout.

Research question 3: What is the extent of equipment usage as perceived by the teachers? Table 1 shows the results of the extent of equipment usage by the teachers

Table 1: The mean, standard deviation and percentage distribution of teachers' use of equipment

Equipment usage	Never	Rarely	Sometimes	Often	Always	Mean	Standard deviation
Electronic Equipment	108 (35.0%)	103 (33.0%)	73 (23.6%)	14 (4.5%)	11 (3.6%)	2.08	1.04
Non Electronic Equipment	20 (6.5%)	28 (9.1%)	40 (12.9%)	142 (46.0)	79 (25.6)	3.75	1.13

Teachers were asked to rate the extent of equipment usage on a five point scale never, rarely, sometimes often and always. The types of equipment were classified under electronic and non-electronic equipment For the purpose of electronic equipment, majority of the teachers (68%) indicated that they never or rarely used them, 23% sometimes used them, and 4.5% often used them while 3.6% always used them. The mean score and standard deviation gave the indication that two-thirds majority of teachers rarely used electronic equipment such as computers, radio, and television as equipment for teaching (M = 2.08, sd = 1.04). This has

implication for the promotion of information and communication technology (ICT) programme instituted in the schools in Ghana.

In the case of non- electronic equipment, the mean score and the standard deviation showed that majority of the teachers often used equipment classified as non-electronic (M = 3.75, sd = 1.13). This means that the greater majority of teachers used traditional equipment such as boards, charts, pictures, flash cards and others for the teaching and the learning purposes.

Hypothesis 1: There is no significant relationship between teachers who receive support and those who do not in the type of equipment used in teaching.

Table 2: Pearson chi-square showing the relationship between support and types of equipment used in teaching

	Support						
Types of Equipment	Yes	%	No	%	χ^2	df	sig
Electric	50	52.1%	46	47.9%	4.484	1	0.044
Non Electric	138	64.8%	75	35.2%			

Sig. = 0.05

Table 2 shows the results of the Pearson chi-square test conducted to find out whether there was a significant relationship between teachers who received support and the type of equipment they used in teaching and those who did not. The results revealed that there was a significant relationship between teachers who received support and those who did not in the type of equipment they used in teaching [$\chi^2 = 4.484$, df 1, $p = 0.044$]. The results show that a significant proportion of teachers who received support reported that they used electronic equipment (52.1%) and non-electronic equipment (64.8%) in teaching compared to the teachers who had no support. The null hypothesis is therefore rejected.

Hypothesis 2: There is no significant relationship between male and female teachers who received support and those who did not receive support in the use of equipment.

Table 3: Pearson chi- square showing the relationship between support and equipment usage by gender

Gender	No	%	Yes	%	χ^2	df	sig.
Male	64	20.7	84	27.2	1.989	1	.164
Female	57	18.4	104	33.7			
TOTAL	121	39.2	188	60.8			

Sig. = 0.05

The Pearson chi-square conducted to investigate whether there was no significant relationship between male and female teachers' opinions in equipment usage is shown in Table 3. The results indicated that there was no difference in relationship between males and females in equipment usage (χ^2 1.989, df 1, p = .164). This means that the proportion of females (33.7%) who reported to use equipment in teaching was not significantly larger than the proportion of the males (27.2%) who indicated using equipment in teaching.

Discussion

Some major findings have emerged from this study. Based on the research questions, the results indicated that the resource teachers, the special education officers, and the school heads were the three dominant personnel that provided support for the teachers. This finding confirms earlier studies which found similar results. A study carried out by Billingsley, Carlson and Klein (2004) found that teachers agreed that special educators and special education officials provided support to enhance their teaching. These authors also found that principals and district level consultants provided support. In the current study, over 60% of the teachers indicated that they received support from the various support persons. This shows a clear manisfestation of the presence of a supportive culture at the school level. The support from the school heads and the officials from the District, Minicipal and Metropolitan Directorate of Education are likely to enhance and influence the use of equipment by the teachers.

The teachers also indicated in this study that they received instructional support, equipment and material support, psychological support and collaborative and consultative support. The overwhelming majority of the teachers (73.2%) agreed that they were provided with instructional support as well as equipment and material support. It is important that instructional support must be present to enable teachers meet the needs of all students. Gold (1996) found in a study that instructional support is needed to help the teachers to develop knowledge and skills necessary to be effective teachers. By implication, the 40.7% of the teachers who received instructional support were likely to develop the knowledge and skills required to teach effectively in the inclusive classroom as well as using equipment. Billingsley and Cross (1994) found that psychological support for example, showing appreciation, taking an interest in the teachers work, maintaining open communication was perceived as the most important for the special educators. They also found that instructional support for example, helping the teachers with work tasks, such as providing needed materials and

equipment, space and resources, ensuring adequate time for teaching and non-teaching duties correlated positively with both job satisfaction and school commitment.

The hypothesis which stated there is no significant relationship between teachers who receive support and those who do not in the type of equipment they used in teaching was rejected. The teachers' perception of the type of equipment they used in teaching revealed that there was a significant relationship between the teachers who received support and those who did not in the type of equipment they used. The implication is that teachers who received support largely used electronic and non-electronic equipment compared with those who were not supported. This finding is consistent with Ertmer (2005) who in his study on models for pre-service teachers' use of technology to support student centred learning, reported that the teachers' perceptions about instructional and technical support available had a moderate influence on the teachers use of equipment. However, Ertmer (2005) was quick to add that it is naive to assume that as long as the adequate resources and supports were provided to teachers, the use of equipment would follow. To him, other factors could be involved. The findings from this current study confirm the theory of facilitating conditions. This theory implies that the presence of support serves as a motivating factor that increases teachers' self- efficacy to use equipment in teaching (Triandis, 1979). In this study, these facilitating conditions included instructional support, technical support, psychological support and collaborative consultation support. Dasgupta, Haddad, Weiss and Bermudez (2007) found that facilitating conditions positively relate to intention to use equipment to increase teachers' use of equipment in the teaching and learning process.

The second hypothesis which sought to find whether there was no significant relationship between male and female teachers was accepted. This implies that the proportion of females (33.7%) who reported to use equipment in teaching was not significantly larger than the proportion of the males (27.2%) who indicated using equipment in teaching. The underlying assumption is that men and women learn in the same way. Besides, different treatment of men and women might be perceived as discriminatory practice in an era of gender sensitivity. Yet, observation of social practices suggests that men and women grow and are raised differently and that these gender differences in growing may affect the way they perceive what they do (Madu & Kasanga, 2005). Definitely, the male and the female teachers were expected to share the same opinions perhaps, because, their levels of education made them see the issue of equipment usage the same way. In a study, Onocha (1998) revealed that conflicts between school and traditional values, beliefs, practices and sex stereotyped roles are not yet resolved even

among male and female teachers. It is therefore not surprising though, that in this study, the relationship between the male and the female teachers on the issue of support and equipment usage was not significant.

Conclusion

The implementation of different support systems to teachers can provide a range of opportunities for the teachers to utilize equipment in their classrooms. It is therefore, imperative to identify the types of support that are likely to motivate teachers to utilize equipment in the teaching. This conclusion is sufficiently proven when it was found from the current study that the support teachers received was directly related to equipment utilization. By addressing the prospective areas of concern in the provision of equipment, both the male and the female teachers would in turn, become more involved in the use of equipment in their classrooms.

Recommendation

In the light of the findings of this current study the following are recommended:

It is recommended that the educational authorities should develop adequate supports systems, and also, provide the state of the art teaching equipment including assistive devices for the teachers in all the schools implementing the inclusive education. Again, teacher training institutions in Ghana should consider for adoption in their programmes, practical experiences with the use of equipment, and supportive environments. This will give the teachers a first-hand practical knowledge and skills in the use of equipment in the classrooms.

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An evaluation of the counselling and appraisal services in Colleges of Education in the Volta Region of Ghana

John Sedofia
Department of Education Studies
P.O. Box 100
Hohoe, Ghana
email: joks76@yahoo.com

&

Frederick Ocansey
Counselling Centre
University of Cape Coast
Cape Coast, Ghana

Abstract

The main objective of this study was to evaluate the counselling and appraisal services in the Colleges of Education in the Volta Region of Ghana. The research design used for the study was the survey approach. Four hundred research participants made up of 317 students, 80 tutors and three counsellors were selected from three Colleges of Education in the Volta Region through stratified and purposive sampling procedures. Stratified sampling technique was used to select the students and tutors while the counsellors were selected purposively. Data were collected with questionnaire and analysed using frequencies and percentages. The results revealed that teacher trainees were not benefiting fully from both the counselling and appraisal services. Some of the recommendations made were that counsellors should intensify guidance activities in the colleges so as to make guidance services, especially the counselling and appraisal services more attractive and accessible to students. In addition, college authorities should play a supervisory role to ensure that counsellors organise guidance activities in the key service areas on periodic bases, just like other co-curricular activities such as sports.

Introduction

The ever increasing call for accountability in education brings with it a renewed focus on counsellor effectiveness and guidance models that are designed to maximise school counselling services (Baker & Gerler Jr., 2004; Gysbers & Henderson, 2000). When accountability is demonstrated through measured effectiveness of the delivery in the guidance programme it helps to ensure that students, parents, teachers, administrators, and the general public continue to benefit from quality comprehensive guidance programmes (Gysbers & Henderson, 1994, p. 362).

Already there are new demands and expectations for school counsellors in the 21st century brought about by societal changes, media advancements and technological developments. Shertzer and Stone (1980)

noted that the revolutions taking place in industry, education, medicine and government are profoundly affecting every field of human activity: transportation, communication, merchandising, marketing, health, weather control, the substance and structure of work and home life. These trends make it imperative for school administrators to take a second look at the effectiveness of guidance services across all levels of the educational system.

Guidance programme evaluation is a means or process for assessing the effectiveness of the counsellor's activities. It is essential for the continuous sustenance and effectiveness of the entire guidance programme. Evaluation is the systematic process of judging the worth, desirability, effectiveness or adequacy of something according to definite criteria and purposes. It includes obtaining information (qualitative or quantitative) for use in judging the worth of a programme, product, procedure, subject (course), curriculum or objective, or the potential utility of alternative approaches designed to attain specified objectives (Joshua, 2005). Evaluation is a process for professional improvement, a process in which one gathers objective, performance-oriented data on a systematic and nonbiased basis (Gibson & Mitchell, 1995).It is seen by some as an ethical obligation (LaFleur, 1983; Ohlsen, 1983 and Remer, 1981).

Without evaluation, the school guidance programme can become counterproductive and even grind to a halt. Counsellors need to know the effects that their programmes and strategies have on clients (Ohlsen, 1983). Evaluation is fundamental to the verification and improvement of professional programme performance (Gibson & Mitchell, 1990). Amenyedzi (1997) noted that evaluation is the vehicle for improving guidance practice. In Amenyedzi's view, evaluation provides insights that help counsellors to perform at higher and more efficient levels. Evaluation gives counsellors and administrators direct feedback on the services they provide and insight into what new services they need to offer (Gladding, 1992).

Counselling and appraisal are two of the guidance services that are of direct importance to every student. Inview of this, the counselling and appraisal services must be evaluated from time to time so that students can derive maximum benefits from them.

The Counselling Service

The counselling service is considered by many professionals and researchers in the field as the heart or the lifeline of guidance. "Counselling is the most important service offered to students" (Amenyedzi, 1997, p.32), and it is the only guidance service that requires a trained professional (called the

counsellor) to provide. Counselling in the school system is a professional service through which each student is helped to understand himself in relation to his unique and developing world through an opportunity of free expression within a setting of privacy and acceptance. The major focus of the counselling service is to create a positive school or learning environment for the students. As the heart of the school guidance programme, counselling aims at helping individual students to live more productive and self-satisfying lives. The basic aims of counselling include the following:

1. To help students to have an insight into the genesis of emotional disturbances
2. To effect a positive change in maladjusted behaviour
3. To assist students to move in the direction of fulfilling their potential (Ocansey, Forde, Awabil & Otopa, 2005).

School counsellors help students to acquire skills in the personal, social, educational, and career areas through individual and or group counselling. Thus, counselling may take place in group settings or it may be individual in nature.

Individual counselling

In individual counselling, the counsellor enters into a face-to-face or one-to-one helping relationship that is highly confidential with an individual client on one-on-one basis. Individual counselling is a helping relationship that is confidential and involves an on-going process that consists of specific phases in which the counsellor spends a considerable amount of his time working with individual students to help them focus on particular concerns of their lives (Schmidt, 1999). The focus of individual counselling, Schmidt explained further, can be developmental, but it most often has a remedial purpose. Individual counselling is aimed at helping the client to arrive at a rational decision which will enable the client to solve his problem (Oladele, 2000; Akinade, Sokan & Osarenren, 2005).

Individual counselling in the school system is therefore designed to take place in confidential settings and is aimed at dealing with the educational, personal, social and occupational issues that confront students. Counselling helps the individual to know and understand himself, accept his superior and limited features and develop himself, trust himself, develop effective interpersonal relationships, become a personally and socially balanced and harmonious individual (Yesilyaprak, 2001).

Group counselling

Group counselling on the other hand is also a face-to-face helping relationship in which the counsellor meets a group of people instead of an individual. The group members are people who either have the same or similar concerns, and agree to share information in a group setting. "Group counselling typically consists of a few students who meet on regular basis in confidential sessions to handle specific concerns or support each other with particular developmental goals" (Schmidt, 1999, pp.82-83). Group counselling in schools is also a process in which one counsellor is involved in a helping relationship with a number of students at the same time (Taylor & Buku (2003); Nayak (2004). The aim is for the group members to work collaboratively to share information that would help each group member to focus on solving his or her own problem.

Areas of School Counselling

Oladele (1987) identified three major counselling services that should be provided in the school system. These are: vocational counselling, academic counselling, and personal counselling. He explained that vocational counselling involves the selection, training for and adjustment to occupations. The aim of vocational counselling is to help students to know their aptitudes, interests, attainments, dispositions, and circumstances in the light of occupational demands. Academic counselling deals with the problems of teaching, learning, and education in general. It aims at helping the student to make the most out of his educational opportunities. Personal counselling helps students to deal with problems that crop up in their relationship with friends, teachers, parents, and others.

In short, the counselling service is the lifeblood of the guidance programme. It is designed to help students to deal with their personal, social, academic and vocational concerns. Without counselling in the school guidance programme, a lot of students are likely to take uninformed decisions, some of which can have dire consequences.

The Appraisal Service

The appraisal service is also known as the pupil inventory service. The appraisal or inventory service refers to when we collect, analyse, and use objective data for the purpose of better understanding the student or client (Makinde, 1987)."Appraisal involves gathering, organising and interpreting information or data about the pupil for the purpose of understanding himself" (Oladele, 1987, p.7).

Appraising helps to highlight the uniqueness of people. It shows how different or similar one person is from the other. The major purpose of the appraisal service is to gather data about students that will help them in understanding themselves and in making meaningful decisions (Shertzer & Stone, 1980). Miller (1978) argued that unless the information gathered is used to facilitate self-understanding, it cannot be regarded as a service.

Generally, appraisal information can be gathered through two basic techniques: test and non-test. The test technique of gathering appraisal data is mainly through psychological tests. A psychological test is a standardised test that elicits a sample of the subject's behaviour, and that can be objectively scored and compared with standards of performance (Oladele, 1987).

An important characteristic of psychological tests is that they are standardised. Standardisation suggests uniformity and objectivity. Standard techniques such as psychological testing are those with a precise format, set of procedures, and method of scoring that enable the instrument to be used for the same purpose in a variety of settings and times (Gibson & Mitchell, 1990).

Several types of psychological tests that can be used to gather appraisal data on students include: mental ability tests, aptitude tests, achievement tests, vocational interest tests, and personality inventories (Shertzer & Stone, 1980). Psychological tests generally provide appraisal information that is objective, exact, numerical and verifiable (Numale, 2003).Apart from the test techniques, appraisal data can also be gathered through non-test techniques such as observation, interviews, rating scales, anecdotal records, self-reports, autobiographies and sociograms (Pecku, 1991).

The Cumulative Record Card/Folder is another important non-test means of collecting appraisal data. Cumulative records are normally found in folders or on cards. The data they contain can be used by the counsellor, the class teacher, the school head, house masters and mistresses or other members of staff for counselling students, giving them testimonials or for helping them to understand themselves. The Cumulative Record Card is a storehouse for data about a pupil or student yielding maximum information in a minimum space (Shertzer & Stone, 1980). The contents of a Cumulative Record Card include:

1. Date of admission into the school
2. Personal data and family background
3. Medical and health information
4. School grades
5. Transcripts from previous schools attended

6. Personality and behaviour trait rating
7. School-wide results
8. School activities
9. Anecdotal records and autobiographies written in class settings (Shertzer & Stone, 1980).

In short, the appraisal service is meant to collect, analyse and interpret useful information about the personality characteristics of the individual student. The information so gathered should help the student to better understand himself in the light of their strengths, weaknesses, likes, dislikes, and so on. The information gathered through appraisal can also be useful for counsellors, teachers, and parents in taking some important decisions about students.

Although guidance is relatively new to the Ghanaian society (Ackom, 1992), and research on guidance and counselling services at the Colleges of Education level in particular is scanty (Sedofia & Ocansey, 2013), considerable research continues to go on in the area. Some of the studies, notably Sowah (1984), Bedu-Addo (1989), Keteku (1989) and Amenyedzi (1997) have reported the existence of guidance and counselling services in some Senior High Schools in several parts of the country, even though Anyimah (1983) reported that there were no guidance services in three Senior High Schools in the Sefwi District of the Western Region.

Even though guidance services in tertiary institutions are highly needed in view of the fact that the students there are young adults who feel more concerned about their future: getting a job, making a home, or continuing higher education (Amadi, 1991),it seems little is known about how well the guidance services are being provided in the Colleges of Education in Ghana. Mensah (2007) studied the place of guidance and counselling in Colleges of Education in the Eastern Region of Ghana and found that most college of education students did not benefit from the guidance and counselling programmes, and that some Colleges of Education had no laid down systems and structures that promoted guidance and counselling. Indeed Rønning (1997) discovered that the guidance and student advisory functions in colleges and/or universities were less effective and more randomly operated than in high schools.

Meanwhile, evidence that guidance services do produce benefits will increasingly be demanded, but only through research and evaluation can such evidence be secured (Shertzer & Stone, 1980).The main purpose of this study was therefore to evaluate the appraisal and counselling services of the school guidance programme in Colleges of Education in the Volta Region of Ghana.

Research Questions

The following research questions directed the study:

1. What evidence is there that college students in the Volta Region are benefiting from the counselling service?
2. How effective is the appraisal service in the Colleges of Education in the Volta Region of Ghana?

Method

Design

The research design used for this study was the survey approach. Survey research involves acquiring information about one or more groups of people—perhaps about their characteristics, opinions, attitudes, or previous experiences—by asking them questions and tabulating their answers (Leedy & Ormrod, 2005). Survey research has the advantage of making available information on aspects of behaviour that are difficult to observe directly. It also makes it relatively easy to collect data on attitudes and opinions from large samples of subjects (Weiten, 2001). Typically, survey research is conducted in natural settings, and it is flexible and adaptable especially at the initial stages of the investigation.

The survey method, however, has some limitations. Firstly, it is costly especially when the survey is done in areas where transportation and postal systems and the designing and printing of questionnaire are expensive (Amedahe, 2002). Secondly, survey methods give room for faking of responses. Leedy and Ormrod (2005) pointed out that people may intentionally misrepresent the facts (at least, the "facts" as they know them) in order to present a favourable impression to the researcher. There is the possibility of non-response or low rate of return.

Notwithstanding the weaknesses, descriptive survey was appropriate for this study mainly because of the nature of the research problem and the purpose of the study. This study set out to evaluate the appraisal and counseling services in the Colleges of Education in the Volta Region of Ghana. The focus therefore was to gather evidence that the appraisal and counselling services were effective in the Colleges of Education. The goal was to draw attention to the level of provision of the two guidance services in the colleges. Survey research helps the researcher to pose series of questions to participants; summarise their responses with percentages and frequency counts, and then draw inferences about the population from the responses of the sample (Leedy & Ormrod, 2005). The survey approach thus helped the present researchers to achieve the objectives of the study.

Population

There were seven Colleges of Education in the Volta Region. The academic staff and students of these colleges constituted the population for the study. The accessible population was college counsellors, tutors, and students (levels 100, 200 and 300) in the St. Francis' College of Education (FRANCO), Hohoe; E.P. College of Education (AMECO), Amedzofe; and Peki College of Education (GOVCO). The three colleges, which constituted 42% of the colleges in the Volta Region, were selected randomly as follows: first the seven colleges were listed in an alphabetical order and numbered. Then seven pieces of paper (each corresponding to a college) were obtained, numbered and placed in a container. The papers were mixed well and the first one was drawn. The number on the first drawn paper was traced to the corresponding college and that college was written down. The first paper was returned into the container. The process continued until the three colleges were selected. The total population for the study was 1881. Table 1sums up the distribution of the population as follows:

Table 1: Distribution of Population by College

College	Students	Tutors	Counsellors	Total
FRANCO	654	42	1	697
AMECO	598	30	1	629
GOVCO	524	30	1	555
TOTAL	**1776**	**102**	**3**	**1881**

Source: Tutor and Student registers of FRANCO, AMECO and GOVCO for the 2010/2011 academic year.

Sample and Sampling Procedure

The stratified and purposive sampling techniques were used to select a total sample of 400 respondents for the study. Stratified sampling technique was employed to select 317 students (224 males and 93 females) out of the total student population of 1776, and 80 tutors (66 males and 14 females) out of the total tutor population of 102. The student and tutor samples were selected based on Krejcie and Morgan's table of *Sample Sizes (S) Required for Given Population Sizes (N)* (as cited in Sarantakos, 2005).

First, the population was stratified into students (1776), tutors (102) and counsellors (3). Another stratification was done based on college (AMECO, FRANCO and GOVCO).This was done to get the number of students and tutors to be selected from each college. For example, to get the number of students to be selected from AMECO, 598 (AMECO student population) was divided by 1776 (total student population) and the result

multiplied by 317 (student sample). The number of tutors for each college was determined in a similar approach by dividing the tutor population of the college by the total tutor population of the three colleges and multiplying the result by 80 (the tutor sample). This worked up to 107 students, 24 tutors for AMECO; 117 students, 32 tutors for FRANCO; and 93 students, 24 tutors for GOVCO.

A further stratification was done, to determine the number of students to be selected from each grade level for each of the three colleges. To get the figure for Level 100 students of AMECO for instance, 200 (Level 100 population) was divided by 598 (AMECO student population) and the result was multiplied by 107 (AMECO student sample). The result was: AMECO= 36 first year, 36 second year, and 35 third year students; FRANCO= 41 first year, 39 second year, and 37 third year students; and GOVCO= 31 first year, 31 second year, and 31 third year students. After determining the strata and the number of subjects to be selected from each, the subjects were selected randomly. The sub-samples were then merged to give the final sample. Purposive sampling technique was used to select the three counsellors, two males and one female.

Table two summarises the distribution of the student and tutor samples.

Table 2: Distribution of Student and Tutor Samples by College

COLLEGE	TUTORS		STUDENTS	
	Pop.	Sample	Pop.	Sample
AMECO	30	24	598	107
GOVCO	30	24	524	93
FRANCO	42	32	654	117
TOTAL	**102**	**80**	**1776**	**317**

Instruments

Questionnaire was the main instrument used to collect data. The questionnaire was adapted from Keteku (1989) and Amenyedzi (1997), and Starr and Gysbers' (1997) "Sample Guidance Programme Evaluation Surveys". There were three sets of questionnaire; one set for the guidance coordinators, the second for the tutors and the third for the students.The three categories were used for purposes of triangulation. According to O'Donoghue and Punch (2003), triangulation is a method of cross-checking data from multiple sources to search for regularities in the research data. Triangulation corroborates evidence from different sources or individuals since the information is not drawn from one single source, individual or process of data collection (Creswell, 2002).

The questionnaire was divided into seven sections; A-G for each category of respondents. Section A consisted of four items that sought personal information from respondents while sections B to G solicited the views of respondents on the counselling and appraisal services. There were a total of 48 questions on both the students' and counsellors' questionnaire while that of tutors consisted of 47 items.

Content-related evidence of validity was used to ensure validity of the instrument. The content of the instrument was discussed with the supervisors and three experts in the field of guidance and counselling for scrutiny, review and judgement of its appropriateness. Reliability of the instrument was established using the Cronbach Coefficient Alpha. The reliability coefficient of the students' questionnaire was calculated at .92 while that of tutors was .97.

Procedure

The researchers visited the colleges and personally administered the questionnaire. The questionnaires for students were hand-delivered by the researcher. The selected students were assembled in a lecture hall and the purpose of the study was explained to them before they were asked to fill them. The tutors and counsellors also filled their questionnaire and returned them the same day. Three hundred and eleven students filled and returned their questionnaire. This represented 98% questionnaire. The return rate for the tutors' questionnaire was 93% while that of the counsellors was 100%.

Data Analysis

Data were analysed using descriptive statistics (means) and frequency counts from the Statistical Package for Service Solution, (SPSS). Frequency and percentage tables were used to organise the data from the questionnaire. The means of the percentages of the responses were computed and used to determine the extent to which the counselling and appraisal services were being provided.

To be able to determine the extent to which counselling and appraisal services were being provided in the colleges, the mean scores of the percentage of responses for "Yes", "No" and "Unsure" were computed. A scale was developed and used to interpret the responses that were "Yes": a range of 70% - 100% mean indicated that the service was being provided to a large extent, 40% - 69.9% mean suggested that the service was being provided to some extent and 39.9% and below showed that the service was being provided only minimally.

Results

Research question one. What evidence is there that the Counselling Service in Colleges of Education in the Volta Region of Ghana is effective? Tables 3, 4 and 5 drew responses from teacher trainees, college tutors and counsellors respectively to answer research question one.

Table 3 shows the views of students on the counselling service.

Table 3: College Students' Views on the Counselling Service

Item	Responses in Percentages		
The counsellor:	Yes	No	Unsure
Discusses students' personal goals.	8.7	90.7	0 .6
Discusses students' relationship issues.	8.0	91.3	0.6
Assists students to make good decisions.	19.6	78.5	1.9
Helps students to accept consequences of their decisions	15.8	81.7	2.6
Helps students to plan their education.	23.2	75.2	1.6
Helps students to deal with behaviour problems.	13.2	86.2	0.6
Helps students in group sessions.	18.3	77.8	3.9
Mean (in percentages)	**15.3**	**83.1**	**1.7**

Table 3shows that a small number of the students (Mean= 15.3%) answered "Yes" to each of the seven items. This indicates that the students believed that the counselling service not being provided. The mean of83.1% indicates that a large number of the teacher trainees said that their college counsellor did not provide the stated counselling activities. Table 4 presents the views of tutors on the counselling service.

Table 4: College Tutors' Views on the Counselling Service

Item	Responses in Percentages		
The counsellor:	Yes	No	Unsure
Discusses students' personal goals.	50.0	2.7	47.3
Discusses students' relationship issues.	55.4	2.7	41.9
Assists students to make good decisions.	60.8	2.7	36.5
Helps students to accept consequences of their decisions	39.2	5.4	55.4
Helps students to plan their education.	50.0	6.8	43.2
Helps students to deal with behaviour problems.	51.4	4.1	44.6
Helps students in group sessions.	39.2	12.2	48.6
Mean (in percentages)	**49.4**	**5.2**	**45.4**

The data in Table 4 shows that more of the tutors (Mean= 49.4%) said the counsellors engaged students in the counselling activities specified. However, a considerable number of them (Mean= 45.4%) reported that they were unsure if the counsellors did carry out those specified counselling activities.

Table 5 shows the counselling service from the viewpoint of the counsellors.

Table 5: Views of College Counsellors on the Counselling Service

Item The counsellor:	Responses in Percentages		
	Yes	No	Unsure
Discusses students' personal goals.	66.7	33.3	-
Discusses students' relationship issues.	66.7	33.3	-
Assists students to make good decisions.	100	-	-
Helps students to accept consequences of their decisions.	100	-	-
Helps students to plan their education.	100	-	-
Helps students to deal with behaviour problems.	100	-	-
Helps students in group sessions.	100	-	-
Mean (in percentages)	**90.5**	**9.5**	**0**

Table 5 shows that contrary to the views expressed by the students, a majority of the counsellors (Mean= 90.5%) said that they engaged in each of the seven activities in the counselling service to help students. Thus, only a small number of them (Mean=9.5 %) indicated that they did not carry out the activities specified in the counselling service.

Research question two. How effective is the Appraisal Service in Colleges of Education in the Volta Region of Ghana? Tables 6, 7 and 8 solicited responses from participants to answer research question two.

Table 6 shows the appraisal service as it was seen by the students.

Table 6: College Students' Views on the Appraisal Service

Item The counsellor:	Responses in Percentages		
	Yes	No	Unsure
Has a cumulative record card for each student.	24.1	52.4	23.5
Uses data from cumulative cards to address issues concerning students.	1.6	89.4	9.0
Helps students to know their interests, skills and values.	8.7	87.8	3.5
Helps students to relate jobs to their interests	9.0	88.4	2.6

and skills.			
Uses tests to help students know themselves.	11.9	85.5	2.6
Uses tests to help students know themselves and this is helpful to students.	9.6	2.3	0.3
Discusses students' test and examination results with them.	18.6	76.2	5.1
Mean (in percentages)	**11.9**	**68.6**	**6.7**

The responses in Table 6 indicate that most of the students (Mean= 68.6%) reported that their counsellors did not engage in the appraisal activities. This implies that the level of provision of the appraisal service in the colleges of education was generally very low.

Table 7 gives the views of the tutors on the appraisal service.

Table 7: College Tutors' Views on the Appraisal Service

Item	Responses in Percentages		
The counsellor:	Yes	No	Unsure
Has a cumulative record card for each student.	16.2	25.7	58.2
Uses data from cumulative cards to address issues concerning students.	27.0	23.0	50.0
Helps students to know their interests, skills and values.	32.5	10.8	56.8
Helps students to relate jobs to their interests and skills.	35.1	13.5	51.4
Uses tests to help students know themselves.	37.8	14.9	47.3
Uses tests to help students know themselves and this is helpful to students.	37.8	33.8	28.4
Discusses students' test and examination results with them.	36.5	25.7	37.8
Mean (in percentages)	**39.8**	**21.1**	**47.1**

Table 7 shows that a larger proportion of the tutors (Mean= 47.1%) reported that they were unsure if the counsellors undertook appraisal activities in the colleges. The mean score of those who reported that the counsellors carried out their appraisal duties was 39.8, an indication that the appraisal service was provided to a lesser extent.

Table 8 presents the counsellors' views on the appraisal service.

Table 8: College Counsellors' Views on the Appraisal Service

Item The counsellor:	Responses in Percentages Yes	Unsure	No
Has a cumulative record card for each student.	66.7	33.3	-
Uses data from cumulative cards to address issues concerning students.	33.3	33.3	33.3
The counsellor helps students to know their interests, skills and values.	100	-	-
Helps students to relate jobs to their interests and skills.	100	-	-
Uses tests to help students know themselves.	100	-	-
Uses tests to help students know themselves and this is helpful to students.	100	-	-
Discusses students' test and examination results with them.	100	-	-
Mean (in percentages)	**85.7**	**9.5**	**4.8**

In Table 8, a greater percentage of the counsellors reported that they did engage in appraisal activities. The mean score of the responses that were "Yes" was 85.7%. Some of the counsellors (Mean=9.5%), however, said that they did not carry out the appraisal activities.

Discussion

The Counselling Service

The results in Table 3 show that the students believed that the counselling service was inadequately provided in the colleges. This finding on the counselling service supports Mensah's (2007) study which found that some Colleges of Education in the Eastern Region had no laid down systems and structures that promote guidance and counselling. It is therefore, possible that effective counselling did not take place in the colleges in the Volta Region because the systems and structures that promote it were non-existent. Counselling is an activity that requires a very high degree of confidentiality. The absence of the requisite systems and structures is therefore likely to pose a great challenge to the provision of the service.

The finding on the counselling service further gives credence to Rønning (1997) conclusion that guidance and counselling in colleges was

not as effective as what pertained in high schools. It also supports Amenyedzi's (1997) report which listed counselling among the guidance services that needed to be improved considerably.

In addition, the present study found that the counsellors in the colleges of education in this study were not discharging their duties in offering individual and group counselling services to college students. When asked whether the counsellor ever helped them in group sessions to deal with any problem, 242 students (representing 77.8%) said "No". This finding is partially inconsistent with Paisley and Mc Mahon's (2001) study which found that school counsellors generally fulfilled their primal aid activities of individual and group counselling, consultation, coordination and evaluation.

The report by the tutors in Table 4however shows that counselling services were provided to some extent. Similarly, the counsellors reported overwhelmingly in Table 3 that they did carry out each of the seven counselling activities. These reports are obviously contrary to what was reported by the students in Table 3, and give credence to Paisley and Mc Mahon's (2001) study. But the tutors' report fails to support Rønning's (1997) and Amenyedzi's (1997) findings.

There might be no doubt about the report of the tutors and the counsellors but one cannot rule out an instance of social desirability. That is, it may be the case that the tutors and counsellors gave socially acceptable responses so as to present a favourable impression about the counselling service.

As it is, students are the primary, and for that matter, direct beneficiaries of the guidance services. One would therefore expect them to be able to say whether or not a given service in the guidance programme is being provided to benefit them. The counsellors on the other hand are the service providers and so can also say whether they are providing those services or not. It is thus difficult to tell which of the reports actually represents the realities on the ground. However, if the report by the students about the counselling service is anything to go by, then there is the urgent need to make counselling services more vibrant in the Colleges of Education in the Volta Region so as to help students develop their full potential.

The Appraisal Service

The data in Table 6 pointed to the fact that the appraisal service was not adequately rendered in the colleges. For example, only 5 of the students (representing 1.6%) said that the counsellor used data from their cumulative record cards to address issues that concerned them while only 27 of them

(8.7%) said the counsellor helped them to know their interests, skills, values and aptitudes.

This finding on the appraisal service is corroborated by the results of a number of empirical studies. Notable among them are the researches of Anyimah (1983), Essuman (2007), Boafo (2010) and Braimah (2010). For the most part, these studies found that the appraisal service was among the guidance services that were rarely or not at all provided in the Ghanaian schools studied.

One worrying revelation about the appraisal service in the present study is that 163 (52.4%), 19 (25.7%) and 1 (33.3%) of the students, tutors and counsellors respectively reported that the counsellors did not have cumulative record cards for each student. This situation is difficult to understand and explain because certainly some of the respondents affirmed that the cards were available. The question therefore is how come some students have the cards but the others do not? The cumulative record card is a storehouse for data about a student (Shertzer & Stone, 1980). Pecku (1991) stated that all the necessary information needed for appraising a student are kept in the cumulative record card. Cumulative records therefore play an essential role in the appraisal of students. One can thus assume that the absence of the records for some teacher trainees may have contributed to the low level of provision of the appraisal service in the colleges.

Table 7 showed that most of the tutors were not sure if the counsellors undertook appraisal activities in the colleges. It is difficult to explain this uncertainty. But given the low percentage of the tutors who said that the counsellors carried out the appraisal activities, one interpretation that is possible is that the appraisal service was not rendered very effectively. This conclusion is supported by the report of the students on the appraisal service and is further corroborated by the findings made by Anyimah (1983), Essuman (2007), Boafo (2010) and Braimah (2010) that the appraisal service was rarely or not at all provided in some schools around the country.

The data in Table 8, on the contrary, showed that in the perspective of the counsellors, the appraisal service was provided to a large extent. This report by the counsellors, however, fails to tally with the opinions of the students and tutors on the appraisal service.

As Shertzer and Stone (1980) noted, appraisal is to help students to better understand themselves so as to be able to make more meaningful decisions. Quite apart from this, appraisal helps students in their academic, personal and social development (Oladele, 2000).The low level of provision of the appraisal service in the Colleges of Education surveyed in the present study therefore implies that the college students would not derive the benefits that Shertzer and Stone, and Oladele talked about above. The low

provision of the appraisal service in the colleges may thus affect the overall development of the students qualitatively. This is because most of them would lack knowledge about their strengths, weaknesses, interests, values and aptitudes.

Conclusion

Based on the findings of the study and the discussion that followed, it can be concluded that:

1. Teacher trainees were not benefiting fully from both the counselling and appraisal services as the students would have wished. It could be that the two services were not very well provided or that the students themselves did not utilise those services.
2. Since the present study did not ask respondents to provide reasons for their responses, further or separate research is required to assign reasons for the low provision of the two guidance services in the colleges surveyed.

Implications for Guidance and Counselling

Since the study found that college students were not deriving full benefits from the counselling and appraisal services, it is recommended that:

1. Counsellors should publicise the guidance programme very well so that students would constantly be reminded that such services exist in the colleges.
2. In addition, college authorities should play a supervisory role to ensure that counsellors organise guidance activities in the key service areas on periodic bases, just like other co-curricular activities such as sports are organised.
3. Also, counsellors should explore and employ all strategies including persuasive invitation to get students to access all guidance services in general, particularly the counselling and appraisal services.

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Comparative Analysis of Readability Level of Basic Six Pupils in Private and Public Schools in Ibadan Land

Fehintola, J. Olusola
Dept. Of Guidance & Counselling, University Of Ibadan, Ibadan

Abstract

The study was carried out to determine the readability level of pupils in private and public primary schools in Ibadan land. The study used simple random sampling with a sample size of 109 participants from both private and public basic six pupils from three selected local government areas in Ibadan land. Sixty-four pupils were taken from public schools while 45 pupils were selected from private schools. Modular English Course for Primary Schools Book Six was used to assess the readability level of the pupils. SMOG index and Close test procedure were used to measure the readability levels of the pupils. The data collected were analysed using the simple percentages to classify the participants into different readability levels and t-test statistics was used for comparison between readability levels of the pupils. The results indicated that the pupils from private primary school had readability levels of 78% independent, 22 % instructional, and 0% at frustration level, while the pupils from public schools had 31% at independent level, 36% at instructional level and 33% at frustration level respectively. The Smog index test is 5.82. There is significant difference in readability level of the basic six pupils in private and public schools ($t = 6.294$, $df = 307$ and $p<0.05$). Suggestions were made concerning low performance of public primary school pupils compared to their counterparts from private schools. This study recommends another or closer look at the English textbooks in use in schools in Ibadan land. Also, it is recommended that Government should employ experts in English language to handle the teaching-learning of English language right from the primary school level in enhancing the reading culture of the in-coming generation.

Key words: Comparative, Readability, Basic six, Private school and Public school

Introduction

Globally, language plays a significant role in human communication. Ezeokoli (2005) describes language as the cornerstone of academic success, a critical resource in all human endeavours, especially in the educative process. This probably informs the belief that language is the light of the mind, which is a means to the enlightenment and development of an individual. In Nigeria, formal education is delivered through the use of the English language.

The English language though foreign to Nigerians, has over the years played and has continues to play an enormous role in the Nigerian school system and the society at large. English language as stated in the National Policy on Education (2004) is the medium of instruction, examination and certification. Books on all subjects are written in English language except ones on local languages. Hence knowledge conceptualization in other content subject areas is made possible through the medium of the English language.

The central and strategic roles English language plays in the school system account for why it is one of the core subjects (NPE, 2004). At the certificate examination level, a credit pass or failure in it determines to a great extent, the educational advancement of senior secondary school students. Consequently, students are expected to acquire a thorough grounding in the spoken, written and reading aspects of the English language. Okonkwo and Okpara (1991) observe that English language is the gate-way to educational advancement and job opportunities. Institutions of higher learning make English language a prerequisite for admission. Most jobs are secured only when one has a good command of English language. As an official language in Nigeria, English is used for all government transactions both oral and written.

Over the years, the quest for proficiency in English language has motivated language experts and sociolinguists to derive and search for ways and methods of acquiring it, and yet there still remains a lot to be done. Hence, Ubahakwe (1991) emphasizes that teachers of English must adopt the appropriate approaches, methods and techniques. It is believed that on the one hand, poor teaching methods have contributed immensely to the appalling performance of students in English language and on the other hand the students themselves have been lazy and non-challant. There is evidence that the use of text materials can aid children to learn in schools but little information is available on the ease or difficulty of these text materials in Nigerian Primary Schools. Evidence related to readability has also shown that science texts are often too difficult for children (Yoloye, 1975; Okpala, 1985; and Ayodele, 2011), particularly in developing countries where pupils are learning through English as the medium of instruction (Peacock, 1995). The use of English for second Language (ESL) learners encounter numerous problems because learning science through English is complicated by mastering both science content and language at the same time.

Reading as a general practice, has become a major concern of teachers, counsellors, researchers, psychologists, government and private establishments and school administrators (Rollnick, 1999; Ayodele, 2011).

Readability continues to be among the most discussed, misunderstood, and misused concepts in reading. It is all too commonly, but erroneously, assumed that a precise numerical score, obtained through the use of readability "formulas," indicates the level of difficulty of a text.

Readability can be expressed as the level of ease or difficulty with which text material can be understood by a particular reader who is reading that text for a specific purpose. Readability is dependent upon both readers and text characteristics. Thus, one important characteristic of a useful, informed definition of readability is that it reflects the interactive nature of the construct. Text and reader variables interact in determining the readability of any piece of material for any individual reader (Harris & Hodges, 1995). The purpose of readability assessment is to effect a 'best match' between intended readers and texts, thus, optimal difficulty comes from an interaction among the text, the reader, and his/her purpose for reading (Chall & Dale, 1995). For example, some books certainly have a lower level of readability than others. However, within narrower ranges of texts the readability or difficulty of texts is not as clear. Some science texts measured to be at fourth-grade readability are easier to read than a fifth-grade readability social studies text. One child might found the science text easier, while another might be more successful with the social studies text. The concept of comprehension is hence of major relevance to education. In the general sense of being educated, an educated person acquires acquired a certain body of knowledge, competence, abilities and skills (Freedle & Carroll, 1992).

According to Freedle and Carroll, being educated implies possessing a capacity for acquiring new understanding and integrating them in some valid way with the knowledge already acquired. Taken at its face value, this statement implies that one is said to be "educated" in any language he or she chooses. English language however, occupies a strategic position in Nigeria education. In effect, one of the major concerns of the school curriculum is the promotion of English comprehension skills at progressively higher levels grammatical, lexical and semantic knowledge (Cappella & Weinstein, 2001). Beyond the process of teaching the child to decode print into some analogue of spoken language, educators have discovered that there still remains the problem of teaching the child to "understand" the language thus decoded (Jeffrey, Mariglia,n Bryan & Naqkuin, 2001). Thus comprehension is the basis of reading. Teaching children how to read and comprehend is the number one responsibility of schools, (Cairney, 1990; Unoh, 1995). Cairney further stressed that no child should leave school without adequate reading ability and judging from the angle of low-income families, the school is the

only hope for their children to attain proficiency in reading and comprehension.

Statement of Problem

Nonetheless, it is very common nowadays that majority of the primary school certificate holders cannot read and write in both English and Yoruba languages. And since these pupils will metamorphous to become secondary school students something should be done at the elementary level before it is too late.

Purpose of Study

This study was, therefore, undertaken to investigate the Readability level of basic six pupils in both private and public schools in Ibadan land. It was meant to investigate the ability of basic six pupils to read their text material, comprehend it and to see whether the text book being recommend for them is too difficult for them or not.

Significance of Study

The significance of any research work is based on the quality of solution it is able to provide. This study l would be of benefit to the primary school pupils in both private and public schools in the sense that it will help to enhancing their readability level. It would enable the stakeholders to know the readability level of the primary school pupils. It will also help the teachers to know that they still have a lot to do if the interest of the pupils is at their heart. It will also help the education planner to make sure that appropriate text is recommended for reading and that competent teachers are employed to handle the English language, knowing fully that English language is a second and borrowed language in Nigeria.

Scope of Study

This study covered three local government areas in Ibadan metropolis and pupils in basic six from private and public primary schools were used for the study.

Literature Review

Ayodele (2012), investigated the readability of basic science and technology textbooks for primary schools used in Ekiti State, Nigeria. Using Flesch-

Kincaid Readability Formula and Cloze test to assess the difficulty index, he obtained different Reading Ease score for different science textbooks for different classes. This suggest that many of students find it difficult to comprehend the science concepts that 12.8 years, 13.2 years and 13.2 years are expected to comprehend. Ayodele's (2012) study also showed that there is a mismatch between pupils' reading level and the readability of Macmillan Basic Science and Technology for Primary school Books 5 and 6 respectively.

Idogo (2011) found that there are significant effects of instructional strategies on pupils' reading comprehension skills and their attitude to reading generally. His study further shows that, pupils in the Preparation Assistant Reflection group had higher mean scores, followed by pupils in the Question Answering Relationship group while pupils in the conventional group had the least score. Whereas, his study indicated that there is significant positive effect of instructional strategies on the verbal ability segment, the low ability segment did show very low level effect of instructional strategies. There was no significant effect of gender on pupils' learning outcomes in reading comprehension and their attitude to reading comprehension. The study concludes that the teaching of reading comprehension in primary schools can produce positive outcome if relevant and appropriate strategies are used in the teaching process.

Letsoalo (1996) and Doidge (1997) revealed that language used in some African science textbooks is too advanced for many of the pupils. To be specific the communicative competences of some Year 12 (17+ years) English second language (ESL) students were comparable to that of Year 5 (10+ years) English-speaking students. In similar studies, Heppner, and Leong (1997) investigated the readability of Biology text materials and the reading ability of sixth form students (US 12th grade) in Brunei. Durassalam, found that the reading materials supplied to the students were more difficult than what they were able to read comfortably.

Bormuth (1966) conducted several extensive studies, to provide evidence of just how much change in a number of readability variables beside just vocabulary and sentence length can affect comprehension. He found out that at the beginning readers relate differently to word variables than do better readers. This underscores the reason why special formulas have been developed for the earliest primary grades such as the Spache formula (1953) and the Harris-Jacobson primary readability formula (1973). Bormuth's study confirmed the curvilinearity of the formula variables. That means their correlation with text difficulty changes in the upper grades.

Dale and Chall (1948) included an adjustment for this feature in their formula-correction chart. This adjustment was also included in the SMOG

formula (McLaughlin 1968), the Fry Graph (Fry 1969), the FORCAST formula (Caylor, 1973), Degrees of Reading Progress (Koslin, 1987) and the ATOS formula (Paul 2003). Some critics of the formulas (Rothkopf 1972, Thorndike 1973-74, Selzer 1981, Redish and Selzer 1985) claim that decoding words and sentences is not a problem for adults. Bormuth's study showed that the correlation between the formula variables and comprehension do not change as a function of reading ability. Bormuth (1969) carried out another research on the readability variables and their relationship to comprehension, which validated the equivalencies of 35%, 45%, and 55% correct cloze criterion scores with 50%, 75%, and 90% correct multiple-choice scores. It also showed that the cloze score of 35% correct answers indicated the level of difficulty required for maximum information gain. Finally, Bormuth produced three different formulas; one for basic use, one for machine use, and one for manual use. All three formulas predict the difficulty of texts for all grade levels using a 35%, 45%, 55%, or a mean-cloze criterion.

The findings of Bormuth about the reliability of the classic variables were confirmed by MacGinitie and Tretiak (1971) who said that the newer syntactic variables proposed by the cognitive theorists correlated so highly with sentence length that they added little accuracy to the measurement. They concluded that average sentence length is the best predictor of syntactic difficulty. Rogers (1962) published a formula for predicting the difficult of spoken texts. So did McLaughlin (1969).

Hypothesis

The null hypothesis for the study was that, there is no significant difference between the readability level of basic six pupils in private and public schools. This was tested at 0.05 level of significance.

Research Question

1. What is the readability level of both public and private basic six primary school pupils?

Research Design

The study made use of descriptive research design of survey type. This study made use of descriptive research design which does not involve direct control of any variable or any experimental manipulation.

Population, Sample and Sampling Procedure

The target population for this study consisted of the basic six pupils in private and public schools within Ibadan North, Ibadan North East, and Ibadan South East Local Government Areas in Ibadan Land. The population size is about 5,000 pupils. The researcher employed the use of a Stratified Random Sampling technique for the purpose of this study. Samples of one hundred and nine (109) pupils were randomly drawn from Basic six private and public schools. Forty-five (45) pupils were selected from three (3) private schools and sixty-four (64) pupils from three (3) public schools. The selected pupils consist of 52 males and 57 females.

Instrumentation

A cloze test was prepared from a reading passage of one hundred and twenty-five (125) words and used for data collection. The instrument consisted of three parts. Part A was the reading passages (with eight underlined syllables used to determine the 'smog index'). Part B contained the Cloze Test Procedure. The Cloze Test Procedure was made up of 127 word passages with fifth (5^{th}) word deletion. The total words deleted were twenty one (21). The minimum and maximum obtainable scores from the passage were 1 and 21. The reliability coefficient of the instrument was 0.78 using test-re-test method.

Procedure

The information was collected by distributing the instrument (reading passage) to the intended respondents (Basic six pupils in private and public schools). The administration took two days. The pupils were instructed and informed of the purpose of the study so as to keep them free of text anxiety and to facilitate the results of the research. The researcher administered the test by himself in the classroom, whereby every participants read the passage, responded to it and their responses were collected without any mortality.

Data Analysis

Data were analysed using Smog Index and Cloze test procedure method and t-test for comparison of readability level among the basic six pupils from private and public primary schools in the selected local government areas of Ibadan land.

Results

Hypothesis 1: There is no significance difference between the readability level of basic six pupils in private and public schools.

Table 1: t-test Table showing the difference in the Readability Level of Basic Six Pupils in Private and Public Schools in Ibadan

Variables	No	X	SD	df	t-calculated	P
Public School	65	8.591	3.972	107	6.394	>0.05
Private Schools	45	15.409	3.003			

Table 1 shows the results obtained from testing hypothesis 1, it is shown that t-calculated is 6.294, degree of freedom is 107 and $p< 0.05$. Therefore, the null hypothesis is rejected and the researcher concludes that there is significant difference in readability level of the basic six pupils in private and public schools.

Smog Index: Smog Index = 3 + 11 (Square root of difficult words)

$= 3 \div \sqrt{8}$

$= 3 \div 2.82 = 5.82$

The result of Smog Index value is 5.82

Cloze Test Procedure Table

Table 2 showing the Cloze reading level, score class interval, number of pupils in private school and their percentage (%) score, number of basic six pupils in public school and their percentage (%) score using Modular English Course for Primary Schools Book Six.

Table 2: Cloze Test Method Showing the Results of Readability Level between Private and Public Basic Six Primary Schools in Ibadan

Cloze Reading level	Score Class Interval	Private		Public	
		No of pupil	% score	No of pupil	% score
Independent level	60-100%	35	78	20	31
Instructional level	40-59%	10	22	23	36
Frustration level	0-39%	-	0	21	33
Total		45	100	64	100

Cloze Text score for basic six private pupils showed that thirty five (35) pupils scored 78% at the independent level, ten (10) pupils scored 22% at the Instructional level, and no pupil (0%) in the frustration level. In the public school, twenty (20) basic six pupils scored 31% at the independent level, twenty three (23) pupils at the Instructional level (36%), and twenty one (21) pupils at the frustration level (33%).

Discussion

The results showed that there is significance difference between the readability level of basic six pupils in private and public schools. Based on this finding the null hypothesis was rejected.

The cloze test results from Table 2 corroborates Table1 results which shows that 0% of the basic six private pupils were found in frustration level, while only twenty one basic six pupils from public schools were at frustration level. This finding is in line with Idogo (2011) who observed that there were significant difference in the performance of the pupils in the readability test. These differences resulted from the three different instructional strategies they were exposed to. It could be asserted that the pupils in the private schools were exposed to more effective instructional strategies than those in the public primary schools. . Also, this finding corroborates the findings of Ayodele (2012) on the readability of basic science and technology textbooks for primary schools. Ayodele observed that there was a mismatch between students' reading level and the

readability of Macmillan Basic Science and Technology for Primary School Books 5 and 6.

Implication of Findings

Slog study shows that the readability level of basic six pupils depend mostly on schools and less on pupils. The importance attached to the readability level of basic six pupils can be facilitated by the encouragement given to the pupils by teachers during academic pursuits. Since comprehension is the basis of reading, it implies that the strategy of teaching pupils how to read and comprehend is the number one responsibility of every school.

Conclusion

It can be concluded from this study that the readability level of the selected basic six pupils in private schools is higher than the readability level of selected basic six pupils in public schools within Ibadan North, Ibadan North East, and Ibadan South East Local Government Areas.

Recommendation

This study recommends another or closer look at the English language textbook (Book 6) in use in schools in Ibadan land. It is recommended that Government and educational stake holders should employ experts in English language to handle the teaching-learning of English language right from the primary school level in enhancing the reading culture of the pupils in primary school. Also, more time should be given to reading comprehension on the school time table.

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