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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 curricula 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**. Articles are received throughout the year. This seventh volume has two editions, published in June and December 2016. In this second edition of the seventh volume, there are eight articles of significance.

In this issue, Christine Adu-Yeboah, Christopher Yaw Kwaah, Might Kojo Abreh and Ebo Amuah explore the processes of providing field experience to student-teachers in Colleges of Education in Ghana. Using the mixed method design, they purposively selected 3 Colleges of Education and 12 schools of attachment in the Central Region for data collection. The researchers found that the organisation of practicum in the Colleges of Education lacked guided documentation and uniformity, hence resulting in poor mentoring, support and supervision of mentees in most schools of attachment. Furthermore, their study revealed that there was little articulation between the Colleges and the schools of attachment as far as the provision of practicum is concerned. The study concludes that the key stakeholders who are involved in the preparation of student-teachers should develop appropriate teaching standards and guidelines for the conduct of practicum, and should also seek greater cooperation between Colleges of Education and schools of attachment in order to develop competent student-teachers.

Inusah Abdul-Razak examines the use of phonics as a method of teaching reading in basic schools within the framework of the Sound Pattern of English (SPE). The study determines the impact of phonic analysis as a method of improving the reading skills of basic pupils and showing the relationship between phonic symbols and letters. It identifies the dental fricatives /θ/ and /ð/ as sounds that are not easily pronounced by L1 learners of English in Ghana. The study concludes that Phonic analysis as a method of reading should be introduced at the pre-school level to create phonological awareness using phonic games such as sounding out words, rhyme words, and making up nonsense words. Introduction to phonetics and phonology should be introduced as part of English language training in the Teacher College of Education, in order to prepare the teacher on the physical properties of sound and pattern of sounds.

Jonathan Osae Kwapong investigates the attitude of primary school teachers in the Cape Coast Metropolis towards assessment of their pupils. The stratified random sampling technique was used to sample 227 primary school teachers from 36 out of 65 schools in the metropolis for the study. The study showed that the teachers generally have positive attitude towards assessment of their pupils and that there is no significant difference between the attitudes of male and female teachers towards assessment. However, there are some aspects of the components of assessment that the teachers were not well exposed to or comfortable with. In view of this, he recommends that the Metropolitan Education Directorate in collaboration with the University of Cape Coast conduct in-service training on assessment for re-orientation of primary school teachers.

Ayotunde O. Oyediran, Joshua A. Omotosho and Eric Nyarko-Sampson study the level of preparation for death and dying among pre-retirement civil servants in Nigeria. This is a nation-wide study which comprised 2000 civil servants selected from 6 geo-political states in Nigeria. These were civil servants who had worked for more than 25 years or, were 50 years and above. The researchers concluded that pre-retirement civil servants in Nigeria were ill-prepared for death and dying. Also, significant age differences were observed in retiring civil servants' preparation for death and dying. The critical challenges that these findings pose for counselling practice in Nigeria were then succinctly highlighted.

Francis Hull Adams focuses on an investigation of the 2014 Revised Social Studies Syllabus for Colleges of Education in Ghana. The purpose of this study was three-fold: first, to examine the content areas semester by semester and identify the core issues looked at in the five-semester Social Studies programme in the Colleges of Education; second, to ascertain how the Social Science disciplines influence the Social Studies Curriculum and third, to suggest ways by which both tutors and students can immensely benefit from the syllabus. Twelve tutors were sampled from six Colleges of Education in the Western and Central Regions of Ghana using the purposive sampling technique. Pseudonyms were used to refer to the respondents in the discussion. The names of persons found in the work are not the real names of the respondents. The main research instrument used was an interview guide. Data collected were transcribed and analyzed using qualitative procedures. The structure and contents of the syllabus were first critically discussed, followed by the data collected from the respondents. The study confirmed the perception held by many that Social Studies offered in the Colleges of Education in Ghana is integrated based on the Social Sciences. It was revealed that the content areas of the subject are based on disciplines such as Geography, Economics, History, Sociology and Government. More so, in spite of the few gaps found between the Colleges of Education syllabus and the JuniorHigh School (JHS) Social Studies syllabus, to a very large extent, the Social Studies syllabus for the Colleges of Education is consistent with the JHS syllabus. Among the recommendations made was the need for tutors to adopt innovative approaches in teaching to enable them complete the outline for each semester before the End of Semester Examinations.

Eric Anane, Bliss Sedegah, Mark Mishiwo, Justine Awudetsey and Godwin Awuitor explore problem-solving skills among Junior High School 1 students in Mathematics at Akatsi South District in Ghana. It was found out that a majority of the students could not solve the word problems in Mathematics such as fractions, perimeter and area correctly, resulting in very low performance. It is recommended that the Institute of Education in collaboration with the Ministry of Education in Ghana should include problem-solving in Mathematics as a course in the curriculum of the Colleges of Education in the country.

Abdul-Jaleel Saani investigates the influence of Leadership for Learning (LfL) programme on headteachers' performance in the Central Region of Ghana. Data were collected from 393 respondents, made up of 24 headteachers, 192 teachers and 177 basic seven, eight and nine pupils from the 24 selected randomly public basic schools. Twelve headteachers, 95 teachers and 87 pupils belong to schools that the headteachers participated in the LfL project while the other 12 headteachers, 97 teachers and 90 pupils belong to schools that the headteachers did not participate in the LfL project. Data were collected in order to ascertain whether LfL project have a significant impact on performance. The study concludes that the LfL programme has influenced both headteachers and teachers' work performance, and also pupils' academic performance significantly.

Mumuni Baba Yidana and Albert Henry Ntarmah examine the sources of Economics teachers' efficacy beliefs in the implementation of the Senior High School Economics curriculum. The results showed that Economics teachers build their efficacy beliefs from varied sources. However, mastery experience is the strongest source of Economics teachers' efficacy beliefs. Again, there were no statistically significant differences in sources of Economics teachers' efficacy beliefs as a result of gender but there was a statistically significant difference between professional and non-professional teachers in physiological state. It was recommended that teacher educators, Ghana Education Service and school authorities should continuously organize self-efficacy development programmes for teachers to motivate them to use multiple sources to build their self-efficacy beliefs.

Fred Kofi Boateng enquires about the gendered experiences of female academics and research scientists in STEM fields in Ghana through semi-structured interviews. The study concludes they experience gender discrimination manifested in comments and was embedded in structures and practices. Nonetheless the support system they have buffer the gender discrimination meted out to them.

About the Authors

Prof. Christine Adu-Yeboah is an Associate Professor at the Institute of Education, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Dr. Christopher Yaw Kwaah is a Research Fellow at the Centre for Educational Research, Evaluation and Development, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Dr. Might Kojo Abreh is a Research Fellow at the Centre for Educational Research, Evaluation and Development, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Mr. Ebo Amuah is a Principal Research Assistant at the Centre for Educational Research, Evaluation and Development, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Mr. Inusah Abdul-Razak is a Tutor at the Tamale College of Education, Tamale, Ghana.

Mr. Jonathan O. Kwapong is a Lecturer at the Institute of Education, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Dr. Ayotunde O. Oyediran is a Lecturer at the Department of Psychology, Emmanuel Alayande College of Education, Oyo, Oyo State, Nigeria.

Prof. Joshua A. Omotosho is a Professor at the University of Ilorin, Ilorin, Kwara State, Nigeria.

Prof. Eric Nyarko-Sampson is an Associate Professor at the Counseling Centre, Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, Cape Coast, Ghana.

Francis Hull Adams is a Tutor at the Holy Child College of Education, Takoradi, Ghana.

Dr. Eric Anane is a Senior Lecturer at the Institute of Education, School of Educational Development and Outreach, College of Education Studies, University of Cape Coast, Ghana.

Messrs **Bliss Sedegah, Mark Mishiwo & Godwin Awuitor** are Tutors at Akatsi College of Education, Ghana.

Mr. Justine Awudetsey is a Tutor at OLA College of Education, Ghana.

Mr. Abddul-Jaleel Saani is a Tutor at Islamic University College, Accra, Ghana.

Dr. Mumuni Baba Yidana is a Senior Lecturer at the Department of Business and Social Sciences Education, University of Cape Coast, Ghana.

Mr. Albert Henry Ntarmah is a Research Assistant at the Department of Business and Social Sciences Education, University of Cape Coast, Ghana.

Dr. Fred K. Boateng is a Lecturer at the Department of Educational Studies and Leadership, University of Ghana, Legon, Ghana.

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PREPARING STUDENT TEACHERS FOR TEACHING: AN EXPLORATION OF FIELD EXPERIENCE IN THREE COLLEGES OF EDUCATION IN GHANA

Christine Adu-Yeboah
University of Cape Coast, Ghana

Christopher Yaw Kwaah
University of Cape Coast, Ghana

&

Might Kojo Abreh
University of Cape Coast, Ghana

Ebo Amuah
University of Cape Coast, Ghana

Abstract

This study sought to understand the processes of providing practical experience to student-teachers in preparing them for teaching, and how the trainees perceive these. It used the mixed method approach to obtain data from 3 purposively sampled Colleges of Education and 12 schools of attachment in the Central Region of Ghana. Questionnaires were administered to 232 student-teachers; 12 focus group discussion sessions were held with mentees while an interview guide was used to elicit data from 24 mentors. The study found that there were no documented guidelines for the conduct of practicum, which meant uniformity in the approach was lacking; different processes and intensity of practicum organisation occurred in the colleges, and poor mentoring and supervision happened in most schools of attachment. Again, most mentors were untrained for their task, and the elements of partnership between teacher-training institutions and schools of attachment, which normally characterise practicum were not observed. This situation led to little articulation between the college preparation and activities of schools of attachment, and how one informs the work of the other. Moreover, student-teachers received very little professional guidance on how to develop their teaching competencies. Consequently, the study recommended that institutions should develop appropriate teaching standards and guidelines for practicum. Again, colleges should foster a strict adherence to the elements of partnership, while ensuring that qualified mentors are formally appointed, trained, incentivized and supported.

Keywords: Ghana, teaching practice, off-campus, student-teachers, college of education, teacher-educators, mentors.

Introduction

It is becoming increasingly clear that it is not enough to simply make physical access to basic education available to the many children of school-going age in fulfillment of the objectives of Education for All (EFA) and the Millennium Development Goals (MDGs) (Akyeampong, Djangmah, Oduro, Seidu, 2007; Obanya, 2010). If these goals are to have positive social and economic effects, then the education system should ensure that children are equipped with the basic minimum competences in literacy, numeracy and essential life skills that will enable them to benefit from, and contribute to the future of their society. A UNESCO (2008, p.2) report indicates a 'relatively low and unequal learning achievement in language and mathematics' especially in Sub-Sahara Africa (SSA). In Ghana, national standardized examinations such as the National Education Assessment (NEA) and School Education Assessment (SEA) have shown that basic school pupils are 'challenged by both English and Mathematics' (MOE, 2014, p.7). A national Early Grade Reading Assessment (EGRA) which assessed reading skills in 12 Ghanaian languages and English Language, and the Early Grade Mathematics Assessment (EGMA) which assessed the children's basic mathematics skills that need to be acquired in early grades produced similar results. The EGRA results in 2014 showed that "by the end of Primary 2, the majority of public school pupils could not yet read with comprehension – neither in a Ghanaian language nor in English" (Ministry of Education, 2014, p. 11).

Research evidence suggests that there is a relationship between poor quality of teachers' teaching and students' learning output (Pontefract & Hardman 2005; Akyeampong, Pryor, & Ampiah, 2006). Teacher education (both pre-service and in-service training) has been identified as the link between teachers' pedagogical content knowledge and pupils' high learning achievement. Of particular importance to this discussion is the initial training programme that prepares teachers for teaching, and the practicum that exposes trainees to real classrooms. The teacher education literature documents that the central issue in teacher education is how to achieve quality in teaching resulting in different models of teacher preparation competing with each other (Darling-Hammond, 2016; Mevorach & Ezer, 2010; Villegas-reimers, 2003). For example, in the USA, two common

approaches exist. Firstly, teaching as a profession which advocates standards in teaching and in curriculum planning and takes the age of the learners into consideration (Cochran-Smith, 2005). In this approach, student-teachers connect theory and practice by applying what they learn to curriculum planning, teaching application and other performance assessments organized around professional teaching standards (Cochran-Smith, 2005; Darling-Hammond, 2010). This approach is consistent with the preparation of teachers in Israel which views teaching as practical-reflective and an ongoing process that involves moving back and forth between practical and theoretical considerations (Mevorach & Ezer, 2010). The other approach is the movement to deregulate teacher education. This approach views the teacher as a charismatic subject and believes that good teaching is not a matter of education and training, but rather is associated with a teacher's personality and inner qualities (Darling-Hammond, 2010, 2016). The first model which views teaching as a profession and teacher training focusing on connecting theory and practice by reflective analysis and field experience is practised in most developed countries (Brouwer & Korthagen, 2005; Sockett, 2008). The preparation of teachers in most SSA countries is consistent with the practical-reflective model practised in developed contexts where training must be 'on the job', during field experience, and must alternate between practical and theoretical considerations over time (Morganlin & Ezer, 2003).

However, there are concerns throughout SSA countries that, the quality of instruction is poor owing to inadequate preparation of teachers (Mulkeen, 2010; Pryor, Akyeampong, Westbrook, & Lussier, 2012). A synthesis study on teacher preparation in six countries in SSA by the World Bank reveals that training in pedagogical methods in all the countries was often theoretical, making it less likely to have an impact on classroom practices (Mulkeen, 2010). Learning to teach does not only come from textbooks but also from field experience which is a component of teacher-preparation programmes. Practicum offers trainee-teachers the opportunity to develop their pedagogical skills which are likely to make the theoretical material more relevant and meaningful to them (Pryor, et. al., 2012). Mulkeen's study indicated inadequacies in aspects of practicum in the countries studied. For example, in Zambia, Gambia and Uganda, in the context of teacher shortages, student-teachers who were posted to schools of

attachment to work with mentor-teachers ended up teaching full classes for the rest of the period. A multi-site study on teacher preparation in six countries in SAA has also shown that many newly qualified Ghanaian teachers lack the requisite teaching skills needed to promote effective teaching and learning (Akyeampong, Lussier, Pryor, & Westbrook, 2013). The implication is that the initial teacher training programme does not adequately inculcate the required skills and competencies in the trainees. Nevertheless, there are limited post-training professional support and development activities available, a situation which seems to indicate that the initial teacher training is the main training many teachers obtain for their entire career life.

Additionally, recent policy directives for the education sector seem to be targeting the problem of teacher-demand to meet the increasing pupil enrolment more than what actually goes on during the initial preparation of teachers (Ghana Education Service, 2015). It is therefore important to interrogate the initial teacher-education that prepares Ghanaian teachers for teaching, and in particular, the processes of equipping teacher-trainees with the skills they need to teach in basic schools. This paper focuses on the practical component of the initial teacher-preparation programme for basic school teachers in the Colleges of Education (CoE) in Ghana. The study reported here was designed to explore teacher-trainees' experiences and perception of the year-long off-campus teaching practice, and how the processes of mentoring and supervision prepare them for teaching. Specifically, we addressed the following research questions:

1. What kind of preparation goes on before the off-campus teaching practice?
2. How is the off-campus teaching practice supervised?
3. How are the trainees supported in the process of developing their teaching skills during teaching practice?
4. How are mentoring and supervision used to develop trainees' teaching competencies?

The context: Initial teacher-education at Colleges of Education in Ghana

Initial teacher-education is provided at teacher training universities and colleges of education in Ghana. At both levels, the concurrent model of training, which provides both subject content and

pedagogical skills, is employed. Whereas the universities run four-year degree programmes to produce teachers and education officers for the basic and secondary levels, the colleges of education take their clients through three-year programmes leading to the award of teachers' diploma. This study however focused on the diploma-awarding colleges. There are 47 publicly funded and 3 privately run colleges of education in Ghana. The diploma programme in the Colleges of Education was introduced in the 2004/2005 academic year to fulfill a teacher education policy directive that required basic school teachers to possess a minimum professional qualification of Diploma in Basic Education (DBE) (Ministry of Education, 2012). It is a residential programme offered for trainees who have secondary education but have no previous teaching experience.

The structure of the programme is commonly termed 'IN-IN-OUT', which means, trainees spend the first two years in college to study courses in subject matter and pedagogy, and go out to schools of attachment to have a year-long teaching practice as part of their three years training. Akyeampong (2003) revealed that the move could ensure quality education delivery in the country's basic education system where what is taught at college meets up with actual situational demands in real classrooms. In the two-year residential programme, trainees' first exposure to teaching is through the school observation visit in which they observe the teaching practices of qualified teachers in real classrooms during vacations. The second exposure is the on-campus teaching practice (micro/peer teaching) held at the college level. Beyond the two-year residential programme, trainees are engaged in a year-long off-campus teaching practice in the third year at the schools of attachment usually near the location of the college (Ghana Education Service [GES], 2003) which is the focus of this present study.

The out-programme of the Initial Teacher Education (ITE) programme in the colleges of education in Ghana draws on partnership approaches among groups and organisations in the development of teacher-trainees. Key actors in the effective management of the school attachment component are teacher-trainees, mentors (classroom teachers), lead-mentors (head teachers), link-tutors and supervisors (college tutors), principals of colleges of education, district directors of education and opinion leaders/community (Ghana Education Service [GES], 2003). Of these

actors, the teacher-trainees, mentors and lead-mentors are in the school system, whereas officers from the college and the GES district offices who provide professional support and guidance for trainees are external to the school system. Mentoring and support according to the Teacher Education Division (TED) are to be provided by classroom teachers who serve as role models and mentors for trainees, focusing on issues pertaining to planning of lessons and instructional leadership in the school. The district directorate of education provides support by supplying schools of attachment with needed logistics to facilitate effective teaching and learning. It must be noted that even though specific roles for the key players have been documented in the handbook on mentorship and supervision of teacher-trainees on school attachment (GES, 2003), benchmarks for mentoring have not been clearly marked.

Practical teaching experience of initial teacher training in CoEs

Practical experience, also known as teaching practice or field experience in some contexts as a form of experiential learning, is valued internationally in many teacher-education institutions. However, managing it in the course of the ITE programme is a daunting task fraught with a lot of challenges as evidenced in developing contexts as well (Sweitzer & King, 2004). In most successful teacher education programmes, fieldwork involves an agreement between the teacher-education institution and the partnering institution (Reilly, 1992). The institution undertaking the teacher-education programme normally documents guidelines for conducting teaching practice; including the individual roles, responsibilities and modalities for the partnership with the partner schools (e.g. University of Sydney, 2012). The nature, intensions, values, and procedures of the field experience to the institutions in the partnership are usually documented. The level of expected cooperation between the staff, students and partner institutions are also normally documented clearly (He, Means, & Lin, 2006; NCATE, 2010).

Some teacher-preparation institutions also involve community groups and local businesses in the training process. The involvement of these other partners brings about proactive teachers who have the potential of supporting pupils at the school level to achieve to the best of their ability (Sweitzer & King, 2004; NCATE, 2010). The Whole

School Development (WSD) project in Ghana, according to Akyeampong (2004), inspired a strategy for enhancing the involvement and participation of partners in the community in planning and decision-making, including those that affect the conduct of off-campus teaching practice. The WSD Training Programme Handbook (1999, p.4) notes that the 'process of effecting positive change in the classroom to be owned by head teachers, teachers, and the community' should remain an indispensable part of the process of teacher-trainees' professional development agenda. Mulkeen's (2010) study found that the integration of the period of teaching practice with campus-based training was poor and weakened by issues of timing, supervision and assessment. For example, in many of the countries students completed campus-based training first, followed by field experience which made it difficult to bring classroom experience into the taught course (Mulkeen, 2010).

Another issue worth noting is that the approach to organizing teaching practice at the school level makes teacher-educators more responsible although that does not often match the kind of preparation and support student-teachers need (Valencia, Martin, Place, & Grossman, 2009). The assumption in most cases is that what student-teachers need to learn during teaching could be learnt on the job as they progress through their career. The time that student-teachers spend in schools of attachment is often not carefully planned and many still do not have frequent opportunities to observe teaching or to receive feedback on their own teaching (Zeichner, 1996). Additionally, the opportunities student-teachers have to tap into the expertise of experienced mentors were found to be derailed by other engagements that inadvertently have become part of the teaching practice. Literature on the organization of this practical component of initial preparation is silent on these crucial details in Ghana, thus making an area worth studying.

Supervision of trainees' teaching

Supervision of student-teachers' classroom instruction is important for evaluating their effectiveness. This generally involves supervisors observing and evaluating trainees' lessons in a classroom setting, documenting the trainees' performance and sharing suggestions for improvement with the trainees (Fullan, 2001; Holland, 2004). The task of the supervisor includes developing professional learning

communities for groups of trainees that do not only acquire new knowledge and skills, but also learn how to study and respond remarkably to their usual workspace and learning environments (Fullan, 2001). During teaching practice, college tutors from the teacher training institutions, who are also connected with trainees' study department or course of study, assist mentors to interpret teacher-trainees' practices and to offer support when called upon (Gopee, 2011). According to Bouchamma (2006), it is assumed that the supervisor knows much of what the teacher-trainee should do in order to provide effective teaching. Tang and Chow (2007) view teaching practice supervision as a form of 'teaching' that helps trainees to learn to solve pedagogical problems.

In supervision, the supervisor observes, assesses and comments on teaching quality, critiques teacher-trainees' teaching, commends, and sometimes condemns the students' efforts. In this connection, Holland (2004) advances three factors that shape teaching practice supervision namely: the perceived purpose, the relationship between the teacher candidate and the supervisor; and how the information about the trainees' performance is used after practice. Tang and Chow (2007) on the other hand highlight two main purposes of teaching practice as (1) formative assessment for informing personal decisions and enhancing professional learning of the teacher trainee, and (2) summative assessment for certification or institutional decisions on the teaching work output of the teacher-trainee. The two paradigms of assessment that are carried out during supervision do not fully address issues of teacher-trainee supervision, especially so, when student numbers are large.

Mentoring

Mentoring is described as a mechanism where one individual acts as a positive role model and adviser to another, drawing on personal experience and facilitating improved performance, learning or development of the other (McKimm, Jollie & Hatter, 2007). It is the process by which an experienced person provides advice, support and encouragement to a less experienced person. Seen another way, it may be a structured programme that pairs a mentor with a trainee who is either new to the profession or new to the school in order to provide orientation, training, support and assistance (Parsloe & Wray, 2000).

Research has shown that if structured well, mentoring has the potential to reform the education system, especially with the current accountability demands by the state, agencies and industry towards enhanced worker productivity. Murray and Owen (1991) reported increased productivity, cost effectiveness, improved recruitment efforts, improved organizational communication and understanding associated with mentoring. In addition, mentoring brings about motivation for employees, enhancement of services offered by the organization, and improvement in strategic and succession planning as a result of the mentoring that new employees receive.

Discussing the features of mentoring, Stone (1999) mentions that mentoring has the tendency towards faster learning curves; increased communication of professional values; increased loyalty; improved one-on-one communication and a sense of team spirit within the workspace, as well as increased employee productivity and so on. The benefits that Stone recounts have a connection with the teaching profession. Nonetheless, the good side of mentoring does not automatically cancel out possible threats that mentoring programmes have on a system, if not properly managed. It could be an ineffective avenue when it does not encourage newly qualified teachers especially to remain in the teaching profession and in persuading new teachers to adopt pedagogical beliefs and techniques that are felt to be vital in the classroom (Whitaker, 2000; Moore, 2001).

The literature indicates that good quality initial training leads to good quality beginning teachers (Akeampong, et al., 2013; Darling-Hammond, 2010; Zeichner, 1996). By inference, a good quality teacher practicum can be said to be crucial to the type of training experience trainees receive to meet the demands of teaching in real schools. The indicators of such a system can be gleaned from the inputs and processes of the programme. The framework for a quality practicum of a teacher education programme should therefore focus on the structural and operational design of the teaching experiences provided to trainees. Firstly, there should be a variety of practical activities (college/school-based) between the training institution and partner schools, which should be spread over a stipulated period of time. Ideally, trainees should be exposed to different community/school types and grade levels. Secondly, a strong partnership between the college and partner schools should be nurtured in a spirit of collaboration and complementarity throughout

the processes of planning, implementation and monitoring/evaluation cycle of the programme. Lastly, the various actors (e.g. teacher-educators, link tutors/supervisors, mentors, etc.) involved in the cycle should be identified and resourced to facilitate trainees' learning and development in the course of their training.

Methodology

The study employed the mixed method approach to explore how the off-campus teaching practice is conducted in colleges of education in Ghana. The approach was used for the purposes of triangulation and for obtaining a deeper understanding of the processes of providing practical experience for teacher trainees. Three colleges in the Central Region and their schools of attachment out of the 47 public colleges in Ghana were selected for the study. The selection of 3 colleges was meant to provide snapshots of the cases of the three colleges rather than a generalization of what pertains in all the colleges of education in Ghana. The small sample notwithstanding, the findings of the study were expected to provide information on the kind of exposure teacher trainees are given in actual schools and the teaching practice that they undergo before they graduate, thus providing a critical justification for the use of a limited number of isolated cases. Furthermore, the choice of three colleges has implications for diagnosing the practicum of the colleges of education that may have similar operational contexts.

Two instruments (questionnaire and interview guide) were designed to help obtain data from trainees who were in the third year of the initial training programme who were on teaching practice. The questionnaire sought information on how the college prepared them for the off-campus teaching practice, the conduct of monitoring and supervision, and the trainees' perception of the teaching practice processes. Interview guide for mentors and focus group discussion with trainees sought information on the processes involved in the preparation and conduct of the off-campus teaching practice, trainees' experiences and perception of the programme. The instruments were tested on 50 teacher trainees in one college of education in the Western Region in April 2013. Some of the items were subsequently modified before the final instruments were used for data collection. Data was collected in the months of May and June 2013.

In each college, the trainees were allocated to schools of attachment within districts closest to the college. Four (4) schools of attachment were selected from each college district, making a total of 12 schools. Sampling was mostly based on proximity and clustering (i.e. two or more schools on the same compound or close to each other), and whether the schools of attachment had both primary and junior high schools under one head teacher. This was done to obtain a minimum of 30% of the total population (270, 304 and 294 in the three colleges) of trainees for each college. Consequently, 232 trainees and 24 mentors (that is, the head teacher and one other mentor in each school) were sampled for the study. The total of 232 trainees who responded to the questionnaire, 150 (64.7%) were females and 82 (35.3%) were males. There were more females in this study because one of the three colleges for the study was a female-only institution. The majority of the trainees (79.3%) were in the age range of 22-25 years and a little over 10% had their ages within 26-29 years with only two of them (0.9%) having attained age 30 years and above.

All the trainees in each sampled school were recruited to respond to the questionnaires. In each school, two researchers gathered data at a time. While one administered questionnaire to trainees, the other conducted interviews with the mentors (the head teacher [lead-mentor] and one other mentor, selected with the help of the head teacher). After obtaining the questionnaire data, the researchers assembled all the trainees in each school of attachment for a focus group discussion. This procedure was used to enable the researchers to probe into some of the responses the trainees provided in the questionnaire. Permission was obtained from the head teachers (and colleges concerned) before scheduling appointments with the respondents. The questionnaire data collected were analysed using simple frequency counts and percentages. Opinions and perceptions of respondents that were expressed in both interviews and focus group discussions were put into themes and textually reported. This was done by employing a thematic analysis method to examine the assessment records of mentees' teaching against the benchmarks indicated on the assessment forms.

Results and Discussion

The findings of this study were reported under the following sub-headings: preparations that occurred before the start of off-campus teaching practice; how the teaching practice was supervised; how the teacher trainees perceived the monitoring and support provided them during the teaching practice; and how mentoring and supervision were used to develop their teaching skills and competencies.

Preparation for off-campus teaching practice

The trainees described the academic and professional preparation that occurred before they embarked on teaching practice. Their perception of how the colleges prepared them to carry out teaching practice was surveyed, as presented in Table 1. Results in Table 1 show the distribution of the proportion of trainees who showed levels of agreement or disagreement on the preparation they received. They perceived that they had high levels of academic and professional preparation before they embarked on off-campus teaching practice. For instance, altogether, 98.3% of them agreed that they were well informed about the importance of on-campus teaching practice as part of the preparation for off-campus practice.

Table 1: Trainees' Perception of the Preparation for Off-Campus Teaching Practice

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
Preparation for teaching my elective subjects was adequate	98	42.2	115	49.6	15	6.5	4	1.7
Preparation for teaching my core subjects was adequate	109	47.0	116	50.0	7	3.0	0	0.0
Tutors' practical demonstration of how to teach elective subjects was adequate	90	38.8	125	53.9	17	7.3	0	0.0

Tutors' practical demonstration of how to teach core subjects was adequate	94	40.5	125	53.9	11	4.7	0	0.0
Students were educated on the importance of on-campus teaching practice	176	75.6	52	22.4	4	1.7	0	0.0
Training in TLM preparation was adequate	117	50.4	99	42.7	15	6.5	1	0.5
Training in use of TLM was adequate	147	63.9	75	32.6	7	3.0	1	0.4
Training in lesson notes preparation was adequate	179	77.2	48	20.7	5	2.2	0	0.0

Source: Field Data, 2013

A further 97.9% agreed that they received adequate training in lesson notes preparation. Similar proportions of agreement were received from the trainees on how adequately they have been prepared to teach core subjects and also on how to carry out practical demonstration of lessons. This finding reflects an assumption that college preparation is by default 'adequate' and student-teachers have little or no criticism of it. It could also mean student-teachers will go into teaching field uncritical of the college training therefore may not look back to question the effectiveness of the training.

The teacher-trainees also reported varied frequency of occurrences of other activities in the on-campus teaching practice that helped them during the off-campus teaching practice (see Table 2). These included exposure to real classroom experiences before off-campus teaching practice, which occurred almost always for over 26.3% of them (see Table 2). However, a few (17.2%) of the trainees admitted that this situation did not occur before the off-campus teaching practice.

Table 2: On-Campus Teaching Practice as Preparation for Off-Campus Teaching

	Almost Always	Very Often	Often	Almost Never
Students are exposed to real classroom experience before on-campus teaching practice	26.3	22.0	34.5	17.2
Tutors' suggestions during on-campus teaching practice are relevant for off-campus teaching	56.9	31.5	11.2	0.4
Tutors' suggestions during on-campus teaching practice were adequate for off-campus teaching	45.3	34.1	19.8	0.9
Tutors' responses to trainees' concerns during the on-campus teaching practice were helpful for off-campus teaching	50.4	34.5	13.8	1.3
Tutors use on-campus teaching practice assessment marks to address trainees' teaching related difficulties	46.6	30.6	15.1	7.8

Table 2 further shows that trainees (56.9%) found the tutors' suggestions during the on-campus teaching practice almost always relevant and (31.5%) very often relevant for their off-campus teaching practice. The high percentage (98.4%) of trainees who highly rated the occurrence of this phenomenon shows the strong influence of tutors' suggestions on their practice. This could explain their feeling of confidence when it came to teaching in real classrooms. For example, in the focus group discussion, one trainee recounted that:

> *Micro-teaching has helped us a lot. For me it has boosted my confidence in teaching because it has exposed me to how pupils behave in class and how to control them so it became a normal thing for me here (Trainees' FGD)*

Though the on-campus teaching practice employed the peer-teaching approach in the college setting and not real classrooms, the

trainees thought that it was a semblance of what they were likely to encounter in real classrooms. The tutors also used assessment suggestions to address the trainees' teaching difficulties, which according to the trainees occurred almost always (46.6%), very often (30.6%) and often (15.1%). The tutors hinted that the on-campus teaching practice did not count towards the trainees' final grading and certification. Nevertheless, they used the scores internally to make the trainees attach some importance to the exercise, and also to help them work on their teaching deficiencies. Practicum has a range of goals, primarily among them is to develop in student-teachers the ability to think critically on the relationship between procedures and principles of teaching (Ochieng & Borg, 2011). The finding resonates studies that have shown that teacher-training with focus on practicum connect theory and practices through reflective discussion among tutors and student-teachers (Brouwer & Korthagen, 2005; Mevorach & Ezer, 2010). Aside preparing trainees academically and professionally for the off-campus teaching, the colleges also identified partner schools in consultation with the head teachers. The colleges and partner schools and their Parent-Teacher Association (PTAs) also collaborated to arrange accommodation for the teacher trainees. Depending on the kind of arrangement, the colleges made with the schools, the trainees paid the utility bills and/or the accommodation. For example, a mentor revealed:

> *When they (the mentees) come, we find them the accommodation and then they feed themselves and pay for their light and water bills (Mentor's interview).*

For the mentoring arrangement however, the only form of preparation given to the mentors was an orientation on school-community relationship and how to supervise trainees to be involved in community activities, with less emphasis on how mentors should guide trainees in their teaching. However, this orientation was not a regular feature of the college's programme, as some mentors indicated that they were not given any orientation in the year in which this present study was conducted.

Mentoring during the off-campus teaching practice

Focus group discussions (FGD) with the trainees revealed that many of them left the year-long teaching practice with very little

engagement with their mentors. Many of them reported that some mentors were very often absent from school, and even when they were present, they left trainees on their own without mentoring and monitoring. The implication is that, the trainees did not receive adequate mentoring since the mentors made very little input in their pedagogical skill development. Some of the experiences they described include the following:

> *We were asked to do off-campus teaching practice so that experienced teachers will mentor us, but what we are experiencing is nothing compared to mentoring. We almost do everything on our own and this does not make it an engaging study relationship (Trainees' FGD).*

A trainee in another college shared similar sentiments:

> *When I came into my current class my mentor was not around. I was having a national service person in my class. My issue is, who indeed is my mentor? Besides, the class teacher comes to school only sparingly. In my case I can say for the whole of the first two terms I did not enjoy enough of a mentor's support (Trainees' FGD).*

Most of the mentors had no knowledge on the benchmarks against which the trainees were graded. Some mentors figured that pre and post-supervision conferences with the college tutors and trainees would have offered them the opportunity to understand what their role in the process was, but that rarely happened.

The findings of this present study reveal some lapses in the preparation for off-campus teaching practice. For example, the orientation given to the mentors did not seem to adequately address the procedures and processes involved in mentoring of trainees on teaching practice. Also, the practice of selecting schools of attachment in consultation with only the head-teachers and not the district education offices hampers the effectiveness of the teaching practice exercise, given that the district education offices have useful information on the types of schools to use for the exercise. Besides, the selection of schools of attachment for the exercise did not seem to take into account the availability of experienced teachers whose capacity have been built to undertake mentoring, and at the same time

who are willing to mentor the teacher trainee. The choice of a school with the right caliber of teachers is of utmost importance to the success of the off-campus teaching practice. The inadequate support by mentors to student-teachers found in this study compliments the findings of Mulkeen (2010) who found that in some SSA countries, a great number of student-teachers were made to fill teaching vacancies to teach full classes for the whole practicum period with no mentorship. It also means that student-teachers do not get access to thinking and decision-making processes of their experienced mentors who are usually poorly motivated for mentoring prospective teachers (Darling-Hammond, 2009; Zeichner, 2010).

As has been highlighted in the literature, mentoring has the tendency to increase communication of professional values, loyalty and employee productivity, and above all is able to reform an education system (Murray & Owen, 1991; Parsloe & Wray, 2000). However, since this study reveals inadeqacies of mentorship during practicum in schools of attachment, it supports the work of Whitaker 2000 and Moore, 2001 who argue that mentoring could be ineffective in achieving its purpose if improper arrangements are done for its implementation. This could widen the gap between the connection between campus courses and field experiences which is regarded as Achilles heel of teacher education (Darling-Hammond, 2009).

Regularity of teacher educators' visits to schools of attachment

A high proportion of the trainees (63.5%) reported that they had less than four (4) supervision visits having been on teaching practice for about nine months, which suggests that this aspect of the teacher-educators' role was given relatively less attention. Specifically, 23.11%, 40.44% and 28.44% of the trainees had received 2, 3 and 4 supervisions respectively about six weeks to the end of the teaching practice. Less than 10% of the trainees said they had more than 4 supervision visits. Interviews with college tutors however revealed that ideally, each trainee was supposed to receive at least six supervision visits.

Obtaining little or no opportunities for supervision could affect the teacher trainees' pedagogical skills development in a number of ways. First, by the end of the practice, trainees may not have had the chance to be supervised and guided in all the subjects they were assigned to teach during the period. Again, if the supervisions were

conducted at the onset of the programme when trainees were teaching for the first time, it would be important that follow-up visits are made to ensure that suggestions made regarding teaching challenges are adequately addressed in subsequent engagements. Otherwise, the benefits to be gained from the whole process of supervision would not be obtained. This finding implies that student-teachers view their tutors as playing important role in their learning process and of course their marks during the off-campus teaching practice which adds up to their final grade. However, college tutors may not be the only supervisors responsible for guiding students during practicum. In other contexts, the key driver of learning to teach is the mentor and teacher-educators who work closely with school-based mentors to develop strategies for supporting student-teachers (Darling-Hammond, 2009; Ochieng & Borg, 2011).

Processes of supervising teaching

In principle, student teachers on teaching practice should normally obtain clinical supervision at the start of the exercise and be supported to address identified weaknesses before they are assessed. In this study, a majority (77.2%) of the trainees indicated that the teacher-educators' visits were mainly for assessing their teaching. The 19.4% who said that scoring of their teaching occurred only either sparingly or rarely (2.6%) is in itself indication that the link tutors' visits were mainly for supervision and scoring of mentees' teaching rather than for other reasons such as social, academic or professional support. For supervision of teaching to be effective, it is important that supervisors hold pre-supervision, supervision and post-supervision conferences with the student-teachers on practice to improve upon their teaching (Fullan, 2001; Holland, 2004). However, most supervisors went straight into trainees' classes, took their lesson notes and started observing and scoring trainees' teaching. Sometimes, supervisors interjected in the course of the lesson instead of writing down comments for discussion in the post-conference meeting, apparently because they did not devote time for the post-supervision conference. On some occasions, supervisors hurried through the supervision, and sometimes did not sit through to the end of the lessons to provide feedback. In all three colleges, trainees' focus group discussions revealed similar sentiments:

We prepare our lesson notes for seventy minutes and the introduction is ten minutes. Therefore, when the tutor supervises for ten minutes and goes away, he/she is not able to get to the core of the lesson but eventually he will get grade and even comment up to the conclusion. I feel this is not a good practice' (Trainees' FGD)

I was teaching triangles. Immediately I was about to cut the triangle the tutor said it is okay and he left (Trainees' FGD)

These results reflect the conception of learning to teach which focuses much on meeting standards in assessment instruments rather than supporting teachers to reflect on their field experience in relation to the theories learnt in college (Mevorach & Ezer, 2010). Data from this study further show that sometimes, supervisors who sat through the lessons did not carry out the supervision exercise conscientiously. In one college for example, there were instances where according to one trainee, a supervisor left the class mid-way to pick up a telephone call:

... there was one tutor who came to supervise me who was virtually not seated in my lesson for the whole period, then in my comment sheet he had no name of school, no name of class, etc... Surprisingly, he was able to get comments to pass on my strengths and weaknesses. I sometimes wonder whether they were comments meant for someone else or mine' (Trainees' FGD).

Instances like these create doubts in the minds of trainees' on the supervision exercise, and that may result in supervisors of the off-campus teaching practice not being taken seriously. It was found that there were some supervisors who pretended to be very strict, who were most of the time unfriendly and wore no smiles while on supervision duties. For example, one mentee had this to say:

Some of the link-tutors are very timid whereas others are callous. They seem not to be satisfied with just any amount of effort one puts into teaching. Yet, some of the link-tutors, although you will teach very well, will either pretend not to be satisfied and on very rare instances tell

management of Teaching and Learning Materials (TLMs) and methods of presentation.

In the schools and communities, the support-student teachers received was mainly in the form of accommodation. The accommodation in this case was normally provided through the school's Parents-Teachers Association (PTA) in conjunction with the community. In some communities, the student-teachers paid for the utility bills while in others, they did not. Additionally, in some schools, the community members had been sensitized about the need to provide the student-teachers with certain basic needs. This study gathered that these were presented in the form of money, foodstuffs that were given to the trainees at the end of each school term or academic year. In few cases, the trainees were allowed to borrow TLMs from the schools, if only the former had them, as examples of school-based support received. However, the student-teachers did not comment on support received in terms of building teaching competencies that they were expected to get from their mentors in the schools of attachment.

Conclusion

The evidence available from the findings of this study provides a basis for a number of conclusions. First, there appeared to exist some form of structure for community, inter-institutional and school level support for off-campus teaching practice. However, these structures were not in any policy documents for training basic school teachers. The implication is that the stakeholders in teacher training worked with verbally transmitted information on their expected roles and responsibilities, be they well-defined or not. Thus, there is a high tendency for low mentor output and lack of accountability. This could also result in disjointed coordination between the Colleges of Education and the schools of attachment with regard to the performance of their roles.

Besides, it was found that the professional support the student-teachers received on campus were more intense than what they received while on off-campus teaching practice. Some explanations can be gleaned from this finding. Again, there were low and inadequate opportunities for orientation, and almost non-existent capacity building and certification avenues for the key actors (mentors) of the off-campus exercise. For example, no orientation was

conducted in most of the colleges for the year when this study was conducted. Therefore, lacking training and motivation for the exercise, mentors would consider the mentoring as an additional responsibility for which there would be no remuneration. Moreover, since there was no formal partnership agreement between the colleges and the schools of attachment in the study region, there could be no support from other agencies of teacher professional development in the districts where the mentees practised. This brings up the question of how the responsibility of student-teachers' mentorship should be shared between teacher educators and school-based mentors which is non-existent in the Ghanaian context.

Lastly, we conclude that the fact that student-teachers in Ghana are given a considerable length of time (about one year) to learn teaching in real classrooms does not necessarily mean they receive adequate preparation for teaching, since the time is not meaningfully utilised by the key stakeholders concerned. Student-teachers have limited access to engage in practical-reflective activities which help student teachers to function effectively in real classroom situations (Mulkeen, 2010). The practical training given to prospective teachers focused much more on meeting discrete teacher behavior as outlined in the assessment instrument which is more of summative than formative assessment of student-teachers teaching. Mentoring and supervision of the student-teachers' teaching, which together go to support their gradual and systematic learning about teaching, have lapses that must be addressed. These might account for the claim by Akyeampong et al. (2013) that newly qualified teachers in Ghana lack the requisite teaching skills needed to promote effective teaching and learning.

Recommendations

This paper upholds the point that the initial preparation teachers receive prior to the start of their professional life plays a crucial role to influence what goes on in their classrooms and determines how much learning takes place (Brouwer, Niels and Korthagen, 2005; Darling-Hammond, 2010; UNESCO, 2014). This is in consonance with Akyeampong et al.'s (2013, p. 280) argument that initial-teacher education is 'the most powerful influence on the practice of teachers in the early part of their career' as it provides the knowledge and

understanding that they fall back on to justify and generate their classroom practice. As the data in this study reveals, there is the need to refocus on the processes involved in gradually and systematically guiding teacher-trainees to develop their teaching skills while they are learning how to teach. In this connection, we make the following recommendations that connect with our findings.

First, it is important that the Ghana Education Service, Teacher Education Division, National Teaching Council and other stakeholders in teacher training reschedule teaching practice in the early year of training to experience teaching for number of weeks. The CoEs calendar needs to alternate with longer periods in schools with periods to discuss problems arising from teaching practices in the colleges rather than having teaching experience concentrated in one block at the end of their training. Ghana Education Service in collaboration with the CoEs should select experienced teachers whose practice is considered effective to serve as mentors as key drivers in the professional learning process of student-teachers. We also recommend that mentors should be certificated for the service they render as partners in the training of teachers and given due recognition in the course of their career growth and promotion. This way, a lot more seriousness may be attached to the exercise.

The structural arrangement of the teaching practice activities should also be reviewed. By this, we suggest that stronger partnerships should be forged between the Colleges of Education and the schools of attachment, as well as other analogous systems. This should enable the individual roles, responsibilities, modalities and the expected outputs of the mentors, supervisors, students and partnering institutions to be agreed, documented and enforced. Such formal arrangement should also bring about the formal appointment and training of mentors in accordance with their qualifications and expected outputs. We believe that our recommendations proffer some workable solutions to the identified weaknesses in the provision of teaching practice activities which, when applied may help to produce competent teachers that can bring about change in the low learning achievement of Ghanaian basic school children.

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USING PHONICS AS A METHOD OF TEACHING READING IN BASIC SCHOOLS

Inusah Abdul-Razak
Tamale College of Education,
Tamale, Ghana.

Abstract
This study examines the use of phonics as a method of teaching reading in basic schools within the framework of generative phonology proposed by Chomsky and Halle (1968) in the Sound Pattern of English (SPE) as discussed in Hawkins (1992). The study aims at describing the patterns of phonic sounds with the application of phonological rules. It describes naturally occurring phenomena (phonemes) without experimental manipulation. The data which is collected from some existing data on phonic teaching and learning and used in this paper are from both verbal and written sources. Participants selected include teachers (T), teacher-trainees (TT) and pupils (P). The study shows the relationship between phonic symbols and letters of the alphabet in English. It attempts to present consonants and vowels occurring in word-initial, word-medial and word-final positions in English as the major sounds in the English language. Based on the synchronic data available, the paper hypothesizes that the voiceless dental fricative /θ/ and the voiced dental fricative /ð/ are the difficult sounds that are not easily pronounced in English words by the L1 learner in Ghana. The study, therefore, suggests that both teachers and teacher-trainees should have some knowledge in phonic sounds, and that an introduction to phonetics and phonology should be considered as a course in the Colleges of Education.

KeyWords: Language, phonics, reading, method, fricatives, Dagbani.

Introduction

Phonic analysis is a method for teaching reading at the basic level by developing learners' phonic awareness (the ability to hear, identify and manipulate English sounds in order to teach the sounds and the spelling patterns they represent). The term phonics was used as a synonym of phonetics, and also as a method of teaching in the 1970s. Phonics is derived from the roman text 'The Doctrine of littera' which

means a letter (littera) consists of a sound (potestas), a written symbol (figural) and a name (nomen). The relationship between a word and a sound forms the backbone of traditional phonics. Pupils, who have not learnt to read face the challenge of acquiring the initial concepts and skills of literacy in the English language. English language learners (ELL) in Ghana at the basic level come from different linguistic and cultural backgrounds which can easily influence their L2 learning with interference from their L1 experience. So, it is recognised that ELL may need extra support in learning the sound system (phonemes), vocabulary and grammar of the spoken English and the print concepts (Brown and Rogers, 2002).

My seven years of experience in teaching and supervising works of teacher-trainees on teaching practice at the basic school level using phonic analysis as a method alerted me to the fact that phonic analysis is a good method for teaching reading to beginners using sound-letter relationships of written English. Teacher-trainees always complain about the effective use of phonics both in school as students and teachers in the second language classroom. While some of them enjoy using the method, others think it is difficult. Hence, the motivation to do a study in order to suggest a reliable procedure for using phonic sounds in addition to the existing procedures to teach reading to beginners. This study uses the analytic perspective and it focuses on the role of the constituent parts (phoneme) that make up the total phenomenon as observed by Salinger and Shohamy (2001).

There are a few methods of teaching reading and these include syllabic method, eclectic method, phonic analysis, sentence or word method (Look and say method). The study focuses on investigating the phonics as a constituent method of the general methods for teaching reading. The process is going to be more specific at the level of the sound (phoneme) - letter (symbol) relation in analysing vocabulary in English. Out of the proposed methods of teaching reading at the basic level, the study examines phonic analysis as one of the methods and tests the concept in detail without considering other related linguistic variables. This is because the study has a deductive purpose with a mind set on a positive outcome of the investigation. The focus is on making a detailed analysis of the phonic sounds.

Salinger and Shohamy (2001) argue that the more restricted the scope, the more the context will have to be manipulated, since

restriction implies the selection of some aspects within the study context for close study. This assertion is purely a linguistic variable that needs the competence of using phonic sounds to teach reading. It limited to the use of phonemes to teach reading by applying the phonological rules in basic patterns of sounds in word formation in English. Participants are defined in order to ensure the control of the data and manipulation. The scope is limited to a specific target group and area where the participants and materials are readily available for the study. The more the focus is narrowed, the more necessary it is to manipulate the study context and the more likely the learners will become aware of being involved in a study. The attention of the participants was avoided in a natural context during the process of collecting data. Participants were selected in a natural situation for the effectiveness of a reliable data collection. Selection of study design and instrument were done in a way to avoid subjectivity. Furthermore, data were collected on the basis of the study design (interview) to be used during the study. The data were based more on linguistic variables (literacy skills, lexical items).

Statement of the Problem

A critical observation of teachers and pupils' performance in teaching and learning in the classroom revealed that phonic analysis as a method of teaching and learning was avoided. Both teachers and pupils showed little interest in phonics and for that matter, the problem of literacy competence in reading and writing arose. This study seeks to examine why teachers shun the use of phonics analysis as a method of teaching reading.

Objective

The principal objective of this study is to determine the state of teaching and learning phonic sounds in English, so as to provide a model for teaching, and to conduct investigation that could furnish the expanding domain of interest in phonic analysis as a method. The study is aimed at making an analytic test on the use of phonic sounds to teach reading in order to produce a model that may guide the teacher and other future users.

Research Questions

1. What is the role of phonic skills in literacy development?
2. What is the sound-letter relationship in literacy development?
3. Which L2 sounds are difficult to pronounce with respect to accuracy in reading?

Significance of the Study

Improving teaching methods will certainly develop the system of teaching and learning the English Language in our educational set-up. The outcome of the study could be of interest to people in the field of second language teaching/learning in Ghana. The teacher in the classroom who will use the concept to teach is the primary target. The linguist and sociolinguist, educationist, textbook writers, policy-makers and students of language will need the concept. The phonic sounds form the basis of learning a language since language learning begins with phonology. It involves the study of speech sounds (phonemes) in a particular languageand how to pattern the sounds to form a morpheme. With regard to this, there is the need to develop a possible procedure of using the concept to teach a beginner how to read.

Literature Review

Literacy instruction at the basic level continues to be a controversial and intensively researched area of education since the late 1960's. Opinions on teaching methods have been highly polarized, particularly in terms of how to teach children to 'crack' the written alphabetic code (Hamilton, 2007). Hooper (2010) notes that phonics is a second area that reading is built upon or it is a reading strategy that teaches reading through repetition and relationships between letters and sounds. She further mentions that phonemic awareness is the ability to isolate individual sounds (phonemes) in spoken words and if a child does not develop this skill the entire reading process will suffer. Previous accounts that review phonics as a method of teaching reading reveal that the systematic phonic work is overwhelming and much strengthened by an analytic approach as have been argued by different authorities such as Wyse and Styles (1976a 1976b), Matson (1996), Allington (1997), Wolf and Burko-Gleason (1998), Holton (2004), Gerber (2004), Leafstedt et. al. (2004), Rose (2006), Dombey

(2006), Whitaker et al. (2006), Hamilton (2007), Cihon (2008) and Hooper (2010).

Wyse and Styles (1976a) think that the best practice in the teaching of early reading brings together two key components: the acquisition of the alphabetic principle and comprehension. These components, they mentioned, should not be developed in isolation. Best practice integrates skills teaching with more authentic, contextually grounded literacy activities, responding to the interests of the learner and the literacy contexts of their homes and communities. They further provide the evidence that some teaching strategies are more effective than others; no one approach in itself can address the complex nature of reading. An integrated approach requires that teachers have a thorough understanding of a range of effective strategies, as well as knowing when and why to apply them.

Matson (1996) describes phonics as a code-oriented approach which is a traditional way of teaching that has worked successfully with most students. According to Allington (1997, p.4), "evidence indicates that most children (80-85%) already acquire phonemic awareness by the middle of first grade". Phonemic awareness is the most basic of the abilities related to reading and a skill that the reading process is built upon. Research has shown that success in phonemic awareness is critical to the reading process. Wolf and Burko-Gleason (1998, cited in Hamilton, 2007), observe that given the complexity of language, beginning learners must come to an understanding of language and the rules for ordering and combining its sounds to be successful communicators.

Holten (2004) gives the example of the word "mat" and explains that the three letters represent three phonemes [m-æ-t] which are sounds put together to form a word. Manipulating phonemes such as /m/ by substituting the first phoneme /m/ in 'mat' with /k/, it changes the word from 'mat' to 'cat' [k-æ-t]. Thus exercise mentioned above trains a child's brain sound-letter awareness.

Gerber (2004, cited in Hamilton, 2007) indicates that phonological awareness is an important component of early reading development. Leafstedt et al. (2004) have also suggested that students with phonological deficits have difficulties understanding that words can be broken into individual phonemes and therefore cannot act on that knowledge which poses a large problem in a society. According

to Whitaker et al. (2006), children are expected to recognize over 80,000 words by sight by the end of third grade.

Rose (2006) observes that teachers [should] provide systematic, direct and explicit phonics instruction so that children master the essential alphabetic code-breaking skills that are required for foundational reading proficiency. Equally, those teachers [should] provide an integrated approach to reading that supports the development of oral language, vocabulary, grammar, reading fluency, comprehension and the literacy of new technologies.

Dombey (2006) believes that the most successful schools and teachers focus both on phonics and the process of making sense of a text. Best practice brings these two key components together, in teaching that gives children a sense of pleasure. Reading can support them in making personal sense of the texts they encounter and also shows them how to lift the words off the page. In contrast, as part of the Rose enquiry learning, to decode is to read and to encode is to write, spell or print. For most children, high quality-systematic phonic work should start by the age of five, taking full account of professional judgements of children's developing abilities, hence the need to situate this work within a broad and rich curriculum. Cihon (2008:139) states that, "in 2002 a study involving 604 young children was conducted, and found that over 70% of poor readers had a history of phonological awareness or oral language deficits in kindergarten.

Implications of the Review for English Teaching and Learning in Ghana

Wyse and Styles (1976b) conclude that the findings of the review should be secured through the revised framework for teaching literacy, currently being developed by the Primary National Strategy, and through changes to: the key stage 1 English programme of study for reading, an early learning goal.

Rose (2006) again feels that analytic phonics should be adopted nationally as the preferred method for the teaching of early reading. The available study evidence supports systematic tuition in phonics at a variety of levels (e.g. phoneme, onset-rime) combined with meaningful experiences with print.

Some successful models as outlined by Foorman and Torgensen (2001) mention that effective instruction for students that are struggling to learn to read, must include explicit and

comprehensive instruction, as well as more intensive and supportive instruction than that which is required by the majority of the class. Also, they found that instruction that builds on phonemic awareness and decoding fluency in word recognition and text processing, construction of meaning, vocabulary, spelling and writing skills, is most effective. Overall, direct, systematic and comprehensive instruction that builds on phonemic awareness and phonemic decoding skills will make the most significant impact (Hamilton 2007).

Edelen-Smith (1999, cited in Hamilton, 2007) suggests exposing students to word play through the use of literature that deals playfully with speech sounds through rhymes. Utilizing literature that is interesting to students can be used to increase their awareness that words are made up of individual speech sounds, and that those sounds can be produced in isolation. Beginning to draw students' attention to all parts of words can be done through literature that emphasizes rhyming, alliteration and syllabication.

Methodology

The study was conceived to combine extensive school-community interactions and conceptual analysis of participants' performances. The interactions involved the use of participatory techniques entailing in-depth interviews and observation. Information for the study was both primary and secondary sources. Unstructured interview was used to collect data from primary sources, while the existing Dagbane literature (Hudu, 2013) provided the secondary information.

The study was conducted in Yendi municipality with a particular attention on the basic Schools in the locality. Guardians and identified teacher and student participants in the selected area were contacted personally for their consent. The advantage for choosing these participants for the study was that, they constituted samples from diverse neighbourhood and different schools.

The study objectives were tested through interviews. Participants used in the study were teachers, teacher-trainees and pupils from Yendi and its surroundings. All the selected participants were from the basic schools in the locality. The teachers and the pupils were selected from lower primary classes. The fact that they were from diversed social groups who always used the English Language in the classroom for interaction was indication of getting the

true reflection of the use of the phonic variables. Possible participants who had formal knowledge of linguistics were not selected because the study needed to avoid control of the variables since the knowledge of linguistics had introduced them to the use of phonics.

Population

Generally, the choice of sampling domain was driven by the purpose of the study. Snowball sampling technique was employed to select participants for the focus group interviews. To get a fair assessment, the participants constituted samples from different neighbourhood and different social groups from different basic schools. In order to collect useful data that contained the relevant linguistic variables, sixty (60) participants were purposively selected. This sample was based on Hudson's (2001, p. 160) statement that "it is unrealistic to aim at very large samples because it takes so long to process the data collected." Milroy (1987, p. 21) points out that "the most successful studies based on structured interviews have used fewer than a hundred speakers, and increasing the number of speakers tends to be counter-productive, the analytical work increases without much improvement in the result."

Two sets of participants were selected; the first set comprised twenty (20) males and twenty (20) females, representing the Teachers and Teacher-Trainees. They included sixteen (16) regular teachers comprising eight (8) males, eight (8) females who were all natives of Yendi and twenty-four (24) teacher-trainees comprising twelve (12) males and twelve (12) females who were all teacher-trainees from Tamale College of Education. The second group comprised twenty (20) pupils consisting of ten (10) boys and ten (10) girls.

Instruments

The instruments used to collect the data were Rapid and Anonymous surveys and Sociolinguistics interview. Rapid and Anonymous surveys and Sociolinquistic interviews used in this study have been described by Labov (1966), Trudgill (1974), Milroy (1980, 1988), Eckert (1989), Bauer (2011), Milroy and Gordon (2003). Three sections were used for the interviews: the first set was all the teachers; the second set was the teacher-trainees and the last set was the pupils. The study focused on the language use patterns of teaching in different basic schools and different neighbourhood. The teaching methods used by T & TT provided information necessary for an

efficient method to be used for the expected behaviour from the participants. The instrument was used to collect data on both linguistic variables [θ, ð] and social variables (age, gender). Hudson (2001, p. 169) states "a variable is a collection of alternatives which have something in common" while Korsah (2012) defines a variable as the particular linguistic form that is capable of being realized differently under the influence of various social factors.

In all, sixty (60) participants were interviewed; the interviews took place in the schools and only the information from the intervention activities introduced during the interviews were transcribed for analysis. The activities included: The Phonological Awareness Test (Robertson & Salter 1997), Segmentation Task (Smith et al., 1995) and /θ/ and /ð/ in Context (Gogovi et al., 2005).

Participants

The initial data on pronunciation were obtained in Yendi by first identifying the lower classes that had lessons on reading comprehension or dictation using the rapid and anonymous surveys techniques. These classes were taught by the regular teachers and teacher-trainees who were using phonic methods. The researcher deliberately went round asking for the correct pronunciation of some familiar words. To elicit the set of words in natural conditions, I engaged participants in natural conversation for the pronunciation of some words. The target groups of the first set were all the teachers and teacher-trainees. The following verbal questions were asked:

1. Are the lady and the gentleman a couple?
2. Which animal is drawn on the card board?
3. How do you assist the pupil to pronounce 'both'?
4. What about 'madam'?

The conversation with the participants was conducted in English since the researcher had already identified participants in each class. These questions were asked as part of the conversation; question 1 is illustrated in example (1) below:

1) Q: Are the lady and the gentleman a *couple* /kʌpl/?
A: Yes: they are a couple [kɔpl].
(Amina [1], personal communication, February 11, 2016)

The data in (1A), represents the response of one of the participants who ended pronouncing /kʌpl/ with the variable [ʌ] as

[kɔpl] with the variable [ɔ] instead of the [ʌ] used in (1Q) by the researcher. Most participants were prominent in the use of [ɔ] in the word "couple". The participants responded with considerable emphasis on the use [f] for /θ/ in the word "both" and [d] for /ð/ in most of the words. They were also comfortable with the interview since the researcher used their preferred choice of language (Dabanli). The method of recording was to note the relevant details about each participant's pronunciation using a check-list so that none of them realized that they were taking part in a linguistic study. They were however told the purpose of the conversation after each interview session. The pupils and teacher-trainees were more cooperative than the teachers.

Teachers and Teacher-Trainees

The rapid anonymous survey had already made the researcher visit the locations of the participants and identify them through an informant. The participants were visited about two weeks for familiarization before the interviews were conducted. The researcher interviewed the participants by using the following verbal questions in a conversational manner. The researcher adopted Labov's (1984) conversational network models cited in Milroy and Gordon (2003) where sets of questions were organized around specific topics.

1. Which methods are employed in teaching reading?
2. What is the role of phonic method in teaching reading?
3. Do you know the sound and the letter relationship in reading?
4. Which L2 sounds are difficult to pronounce with respect to accuracy in reading?

The set of questions were designed to get the participants to give information about the stated research questions of the study. They were more natural talking about the challenges in teaching using the phonic approach especially the sound-letter relationship. The interview was conducted mainly in English except at a point when the Dagbanli was used to make some clarification from some of the participants who understood Dagbanli. The example in (2) illustrates one of the questions for clarification.

(2) Q: bo lamba m pa kpe ŋɔ
What number 3sg place. perf here loc.
'What number is placed here?'
A: lumba tɛrii m-ba la
Number three 3sg.cop Det
'That is number three'
(S. Admu, personal communication, February 26, 2016).

The data in (2A) presents one of the participant's responses to a question for clarification on the pronunciation of the word 'three' /θri:/ of the interview question represented in (2Q). The target variable was the use of the sound dental fricative /θ/. The questions were asked between conversational intervals in order not to put pressure on the participant. All the responses were documented and crosschecked with the initial data for accuracy. The interview was selected because it often produces valuable quantitative data that can complement quantitative analyses (Milroy and Gordon 2003, p. 61).

Pupils

The last set was the pupils. The researcher used a checklist to monitor how the pupils pronounced the words in naturally occuring conditions through their teachers. The word list was used to check how the pupils responded to reading when a teacher did a model reading of a text during a reading aloud lessons. The reading was recorded and transcribed as illustrated in 3.4.3. It also helped the researcher to track how the teachers also pronounced the words during the reading. The interviews were conducted by the researcher himself in English and Dagbanli.

Procedure

The interviews were conducted in natural settings where the participants were much comfortable doing their own things. Each interview lasted for not less than 20 minutes because the study had limited time. The whole interview spanned two months from February to the end of March.

The method used to collect the data followed that of Labov (1966) study in New York. All the questions used in the first interview were based on the three research questions. Other studies that used the same method included Trudgill (1974) and Coupland (1988). To elicit the data, rapid and anonymous survey was used to collect the initial

data (without the awareness of the participants) with a checklist, while sociolinguistic interviews were used on one-on-one exchanges between the researcher and the participants to cross-check the initial data obtained. The instruments used to collect the data on the phonic variables were described in the sections as rapid and anonymous surveys and sociolinguistic interview. The data is presented below.

The Data Collected

The data for this study was collected based on the interviews conducted. The data was collected through a series of different activities conducted during the use of the focus key informant interviews. As part of the data collection, intervention model activities were introduced to help participants practise some phonic analysis.

The Phonological Awareness Test (Robertson and Salter 1997)

The Phonological Awareness Test is an activity that involves isolation of initial sound in a word to test the association of sound with letter, and also to test sound positions (initial, medial, final) in words. The instruction used in the test is as follows: "I am going to say a word, and I want you to tell me the beginning or first sound in the word. Example, what is the beginning sound in the word 'tin'?" The data collected in this test is presented in Table 1. In the Table, the bolded numbers represent the identification of [θ] as the initial sound while the unbolded numbers represent the identification of [ð] as the initial sound.

Table 1 Phonological Awareness Test

Word	Sound	T
Took	[tʊk]	14
Dry	[drai]	13
Tin	[θin]	0
Three	[θri:]	0
Then	[ðən]	0
Though	[ðəʊ]	1
Thank	[θænk]	2
The	[ðə]	2
Them	[ðəm]	0
True	[θru:]	0

The table presents the number of participants (T, TT & P) who were able to identify the initial sounds of the words (see analysis in section 4.2.1). The bolded sounds in column two are the initial sounds. This test was also used to identify word-final position. As seen in the data, there is the association of the letters 'th' or't' with the sound [θ] in word-initial and also 'th' again with the sound [ð] in the same environment. The activity draws participant's attention to the notion that the 'th' letters represent the sounds [θ, ð] depending on the voicing (voiced or voiceless).

Segmentation Task (Smith et al., 1995)

Segmentation Task is an activity that allows participants to identify the various segments (sounds) they hear in a given word. Segmentation involves breaking a word into segments; e.g. the word "truth" has the segments [θ], [r], [ʊ], [θ], so the sound /θ/ is a segment. Participants' response requires one step of pulling apart the sounds: e.g. [θ], [r], [ʊ], [θ]; these sounds are represented by the letters t-r-u-th. When they are asked to delete the first sound from 'truth', the response requires two steps. First, identify it and segment the sound. Second, the remaining sounds [r, ʊ, θ] need to be held in memory and then blended- /t/ ruth [θ]rʊθ]. The same words used in the first activity were repeated for consistency. The data collected is presented in table two. In the table, the bolded numbers represent the identification of [θ] as the initial sound while the unbolded numbers represent the identification of [ð] as the initial sound.

Table 2: Segmentation Task

Word	Sound	T
Truth	[θ] rʊθ]	2
That	[ð] æt]	3
Tin	[θ] in]	3
Three	[θ] ri:]	3
Then	[ð] ən]	3
though	[ð] əʊ]	1
Thank	[θ] ænk]	2
The	[ð] ə]	2
Them	[ð] əm]	2
True	[θ] ru:]	5

The table presents the number of participants (T, TT &P) who were able to identify the initial sounds and other segments in the words (see analysis in section 4.2.1). This activity was used to develop participants' knowledge on sound-letter relationship. The data also show the association of 'th' with [θ] in word-initial and 'th' [ð] in the same environment. The activity also draws participants' attention to the notion that 'th' represents the sounds [θ, ð] depending on the voicing (voiced or voiceless).

/θ/ and /ð/ in Context (Gogovi et al., 2005)

Participants' reading a comprehension text in class on the linguistic variables [θ, ð] were recorded and transcribed. That passage was written in the form of a dialogue purposefully for the lesson without the knowledge of all the participants. First was model reading by T and TT in class for pupils to listen and second, pupils reading aloud. The data below represents the reading of all the participants. For the purpose of understanding, only the words containing the variables are transcribed and the bolded parts are the variables. The underlying forms (actual pronunciation) are represented in / / while the surface forms (participants' pronunciation) during the reading are represented in [ ]. The surface forms are written directly under the underlying forms in italics to show how participants pronounced the words in that context.

T, TT & P reading data:

/θælmə/ and /rʊθ/ were /θinkiŋ/ of /visiθiŋ/ /temə/. /bəʊθ/ of /ðəm/ met at /ðə/ /θɛθi-θri:/ square
[tælmə] [rʊf] [tinkiŋ] [visitiŋ] [temə] [bəʊf] [dəm] [də] [tɛti-tri]
at /ten/ /θɜ:θi/ on /θɜ:sdei/ morning and the following /da:lɔg/ /tʊk/ place between /ðəm/:
[ten] [tɜ:ti] [tɜ:sdei] [da:lɔg] [tʊk] [dəm]:
Thalmar: /did/ [did] you /tɛl/ [tɛl] your /fa:ðə/ [fa:də]?
Ruth: Yes, I have /təʊld/ [təʊld] him about next /θɜ:sdei/ [tɜ:sdei].
Thalmar: I have also /təʊld/ [təʊld] my /ma:ðə/ [ma:də] /ðə/ [də] /θrʊθ/ [trʊf] about our trip.
Adopted from Gogovi et al. (2005).

The data also shows the association of 'th' with [θ] in both word-initial and word-final and 'th' and'd' with [ð] in the same environment. The activity also draws participants' attention to the idea that 'th' represents the sounds [θ, ð] depending on the voicing (voiced or voiceless).

Data Analysis

The statistical procedures used to test the research questions were analysis of linguistic variables (phonic sounds) and social factors (participants, gender and age). It should be noted that the pronunciation of the variables were realized with the social factors. Each variable was tested against the background of all the social factors. The results are tabulated in different tables with the totals and percentage total boldened. For the purpose of this study and easy analysis, the participants are represented with the following: T – teachers, TT- teacher-trainees and P – pupils.

Results and Discussion

The results are presented in two sections; the first section reports the results of component analysis done on the linguistic variables that verify the [θ] and [ð] as difficult sounds and second the analysis of the findings on phonic skills as well as the sound-letter relationship in literacy development. Results of the data gathered from the interviews are presented in the tables as well.

The Data Obtained

Table 3 presents, according to gender, the 60 participants selected for the study. It shows that 50% males and 50% females were selected for the study. The bolded figures represent the analysis. Gender balance was considered in selecting the participants for this study.

Table 3: Participants * gender cross tabulation

Participants	Gender		Total
	Male	Female	
Teacher (T)	8	8	16
Teacher-trainee (TT)	12	12	24
Pupils (P)	10	10	20
Total	**30**	**30**	**60**
% of total	**50%**	**50%**	**100%**

The Table presents the distribution of the participants according to gender to confirm the equal representation of all the groups. It shows that the percentage of total count comprises 50% of male participants and 50% of female making a total of 100%.

Testing the Research Questions

Tables 4 and 5 confirm the research questions by showing which L2 sounds are difficult to pronounce and sound-letter relationship with respect to accuracy in reading. The results here reflect the data presented in (3.4.1-.3.4.2).

Table 4: Pronunciation of /θ/ cross tabulation

Participants	Pronunciation		Total
	/t/	/θ/	
Teacher (T)	14	2	16
Teacher-trainee (TT)	18	6	24
Pupils (P)	20	0	20
Total	**52**	**8**	**60**
% of total	**87%**	**13%**	**100%**

The distribution in Table 4 shows the pronunciation of the linguistic variable [θ] as a phonic sound. It presents a total count of fifty-two (52) participants representing 87% of both male and female showing frequency of participants substituting the dental fricative /θ/ with the alveolar stop [t] in English words while a total count of eight (8) participants representing 13% of both male and females show frequency of /θ/ in their pronunciation. This represented both T and TT since none of P could pronounce the sound. It is also noticed that most of the participants are comfortable with the surface from [t].

Table 5: Pronunciation of /ð/ cross tabulation

Participants	Gender		Total
	/d/	/ð/	
Teacher (T)	13	3	16
Teacher-trainee (TT)	16	9	24
Pupils (P)	20	0	20
Total	**49**	**11**	**60**
% of total	**82%**	**18%**	**100%**

The distribution in Table 5 shows the pronunciation of the linguistic variable [ð] as a phonic sound. It presents a total count of forty-nine (49) participants of both male and female comprising T, TT and P who show a frequency of [d] pronunciation representing 82%, while eleven (11) participants of both male and female comprising T and TT show /ð/ frequency in their pronunciation representing 18%. This means that 82% of the participants substitute the dental fricative

/ð/ with the alveolar stop /d/. Again, it is also noticed that most of the participants are comfortable with the surface from [d].

Table 6: Knowledge of participants on the role of phonic skills and sound-letter relationship in literacy development

Participants	Research Questions	Phonic skills	Sound-letter relation No idea	Total
Teacher (T)	4	0	12	6
Teacher-trainee (TT)	6	2	16	24
Pupils (P)	0	0	20	20
Total	**10**	**2**	48	60
% of total	**17%**	**3%**	**80%**	**100%**

The distribution in Table 6 presents the knowledge of participants in research questions 1 and 2. It shows that a total count of ten (10) participants comprising only T and TT have knowledge about phonics representing 17% while a count two of (2) participants comprising TT have knowledge about phonics. A total count of forty-eight (48) participants comprising T, TT and P have no knowledge about phonics representing 80%. The data suggest that only 20% of participants comprising T, TT and P have knowledge about phonics and sound-letter relationship while 80% have no idea. This confirms research questions 1 and 2.

Discussion and Conclusion

Results obtained in this study provided support for the three research questions, although other studies are certainly needed in other contexts and from other perspectives. The discussion in this study are presented in three sections according to the research questions stated in this study. Section one discusses the first research question that determines the knowledge of participants on phonic skills in literacy development; section 2 discusses the second research question that determines participants' knowledge on sound-letter relationship in literacy development and section 3 concludes on the third research question that determines which L2 sounds are difficult to pronounce with respect to accuracy in reading.

Knowledge of Participants on Phonic Skills

The first research question was tested on the variables in the interview to determine the knowledge of participants on phonic skills in teaching and learning reading. This was tested using the linguistic variables /θ/ and /ð/ in Context in (3.4.3). The findings were that a total of ten (10) participants comprising only T and TT have knowledge about phonics representing 17%. A total count of forty-eight (48) participants comprising T, TT and P have no knowledge ont phonics representing 80%. It was observed that only four (4) T had an idea on phonics; six (6) TT had an idea on phonics while none of P had an idea about phonics sounds. This proved that the phonic analysis was not used to teach reading at the basic level due to lack of knowledge on it on the part of the teachers and those under training. It wasevident in the data in (3.4.3) that all the participants substituted /θ/ and /ð/ with [t] and [d] during the reading activities but they were all accurate in pronouncing words with [t] and [d]. The data also showed that the participants associated 'th' or't' with [θ] in both word-initial and word-final and 'th' and'd' with [ð] in the same environment. The activity also drew participants' attention to the notion that 'th' in Thalmar and't' in 'truth' is pronounced as /θ/ while 'th' in 'the' and 'd' in 'madam' is pronounced as /ð/. So when 'th' is voiceless, it is pronounced as /θ/ as in 'think' and when 'th' is voiced, it is pronounced as /ð/ as in 'them' (see table 6).

Knowledge of Participants on Sound-Letter Relationship

The study presented a total count of sixty participants, representing 100% of both male and female. The second research question was tested on the variables in the interview to determine the knowledge of participants on sound-letter relationship in teaching and learning reading. This was tested in phonological awareness test, segmentation task and /θ/ and /ð/ in context discussed in 3.4 above. The results showed that none of T has knowledge of sound-letter relationship; two (2) T had the knowledge of sound-letter relationship and none of P had an idea about sound-letter relationship as shown in table 6. Only 3% of T, TT and P showed knowledge of sound-letter relationship as illustrated in table 6. The results presented in Table 3 for phonic awareness test showed that 87% of both male and female substituted the dental fricative /θ/ with the alveolar stop [t] in English words while 13% of both male and females showed frequency of /θ/ in their

pronunciation. Again, the results of segmentation task in Table 5 showed that both T and TT show /ð/ frequency in their pronunciation representing 18% while 82% of the participants substituted the dental fricative /ð/ with the alveolar stop /d/. This, therefore, confirms why sound-letter relationship causes difficulty in pronunciation of words in English language and, the need for the sound substitution.

Sound Substitution

The third research question was tested on the variables in the interview to determine English sounds which were difficult for L2 learners in teaching and learning reading in Ghana. This was tested in phonological awareness test, segmentation task and /θ/ and /ð/ in context as discussed in 3.4 above. The results tabulated in Tables 4 and 5 confirmed that a total count of 87% participants showed frequency of substituting /θ/ with [t] in English words while a total count of 13% showed frequency of /θ/ in their pronunciation. 18% showed frequency of /ð/ in their pronunciation while 82% of the participants substituted the dental fricative /ð/ with the alveolar stop /d/. None of P could pronounce /ð/ in any of the words in the data presented in (3.4.1 - 3.4.3). It is important to conclude that the dominant variant in participants' pronunciation were [t, d] showing that /θ, ð/ were the L2 sounds that were difficult to pronounce with respect to accuracy in reading and for that matter the third research question was also answered.

Linguistic Variables Necessary for Using Phonics

The results of the knowledge of use of phonics confirmed that T, TT and P all had little or no idea on the phonic sounds as well as the difference between a sound and a letter. It is established that language operates at the level of literacy skills of speaking and writing. Speaking as a productive skill makes use of speech which is produced as a result of speech sounds- consonants and vowels. The sounds that are used in English are represented linguistically by phonic symbols which are conventionally presented in two slashes or slants, / / or square brackets [ ], for example, /b/ or [b]. But for writing, also as a productive skill, the letters of the alphabet presented in inverted commas are used conventionally to represent the phonic sounds, for example 'b'. Each of the phonic symbols represents only a sound in

English Language. But in phonic analysis, a sound is spelt in different forms and represented physically by different letters, for example /f/ in the word initial of 'flood' /flʌd/ is 'f'; in the word 'phone' /fəʊn/, it is 'ph' in the word final of 'laugh' /læf/, it is 'f'. These show that symbols and letters are different and so the need to know sound-letter relationship in pronunciation of words. The twenty-four consonant sounds in English language are represented by twenty-four phonic symbols which are physically represented by twenty-one (21) letters in words. All the sound can occur at word initial, word medial and word final except /ŋ/ which only occurs in word medial and word-final and /ʒ/ which also only occurs in word medial as illustrated in Table 7.

The twenty English vowel sounds as illustrated in Table 8 are also represented physically by only five letters. The vowels are the nucleus of the English syllable structure and are difficult in sound-letter relationship. One vowel sound may be realized differently in different words, for example /ʌ/ in cup /kʌp/ is realised as a letter 'u'; in monkey /mʌnki/, it is heard as letter 'o'; in blood /blʌd/, it is realised as 'oo'; in couple /kʌpl/, it is heard as 'ou'. It is important to note the differences between the pure vowels and the diphthongs. Physically, a letter in a word may sound like a pure vowel with one pitch sound as in pat /pæt/, while in a different word it will sound like a diphthong with two pitch sounds as in table /teibl/. Consequently, it is important to note that pronunciation depends on the sounds and not the letters, therefore there is the need to apply auditory-visual aspect in dealing with phonics. The Tables below present the English phonics (consonants and vowels) and their relationship with letters in word-initial, word-medial and word-final. It provides the data for participants to practise before they can successfully do the intervention activities presented during the interviews.

Table 7: English Consonants

Sounds	Distribution of Sounds		
	word-initial	**word-medial**	**word-final**
/p/	pan /pæn/	happy /hæpi/	map /mæp/
/b/	ban /bæn/	babby /beibi/	lab /læb/
/m/	man /mæn/	mama /mæmə/	come /kʌm/
/w/	one /wʌn/	away /ə̯wei/	NA
/f/	fan /fæn/	elephant /elefænt/	laugh /læf/
/v/	van /væn/	river /rivə/	wife /waiv/
/θ/	three /θri:/	nothing /nætiŋ/	truth /truθ/

/ð/	the /ðə/	madam /ma:ðəm/	NA
/t/	ten /ten/	letter /letə/	mat /mæt/
/d/	done /dʌn/	wedding /wɛdiŋ/	wide /waid/
/s/	cent /sent/	sister /sistə/	nice /nais/
/z/	zero /zerəu/	puzzle /pʌzəl/	boys /boiz/
/n/	know /nəu/	money /mʌni/	cane /kein/
/l/	load /ləud/	play /plei/	people /pi:pəl/
/r/	wrong /rɔŋ/	mirror /mirɔ/	NA
/ʃ/	she /ʃi:/	nation /neiʃən/	fish /fiʃ/
/ʒ/	NA	pleasure /pleʒə/	NA
/ʧ/	church /ʧɜ:ʧ/	teacher /ti:ʧə/	march /mæʧ/
/ʤ/	judge /ʤʌʤ/	larger /la:ʤ/	college /kɔliʤ/
/k/	come /kʌm/	chemical /kemikəl/	link /link/
/g/	game / geim/	bigger /bigə/	leg /leg/
/ŋ/	NA	NA	sing /siŋ/
/j/	yes /jes/	NA	NA
/h/	home /həum/	yahoo /jəhu:/	NA

Table 7 presents the English consonant sounds and their relationship with the letters in word-initial, word-medial and word-final. The symbols in column 1 represent the phonic sounds in English, column 2 is the distribution in word-initial, column 3 is word-medial and column 4 is the word-final. The transcribed forms represent the actual sounds in / /. It is observed that some of the sounds are restricted in their distribution represented by NA which means the sound is not applicable in that environment. The vowels are found between the consonants in the CVC words as illustrated below:

Table 8: English Vowels

Sounds	**Distribution of Sounds**		
	word-initial	**word-medial**	**word-final**
/i:/	eat /i:t/	bead /bi:d/	see /si:/
/i/	it /it/ bid /bid/	money /mʌni/	NA
/ɛ/	egg /ɛg/	parent /pɛrɛnt/	NA
/æ/	athlete /ætlit/	man /mæn/	NA
/ʌ/	an /ʌn/	blood /blʌd/	NA
/3:/	NA	bird /bɜ:d/	NA
/ə/	about /əbaut/	correct /kərɛkt/	mother /ma:ðə/
/a:/	are /a:/	heart /ha:t/	car /ka:/

/ɔ/	off /ɔv/	pot /pɔt/	mirror /mirɔ/
/ɔ:/	or /ɔ:/	lord /lɔ:d/	saw /sɔ:/
/ʊ/	NA	cook /cʊk/	to /tʊ/
/u:/	NA	soon /su:n/	two /tu:/
/ei/	eight /eit/	table /teibəl/	pay /pei/
/ai/	eye /ai/	kite /kait/	by /bai/
/ɔi/	oil /ɔil/	soil /sɔil/	boy /bɔi/
/əʊ/	open /əʊpən/	boat /bəʊt/	go /gəʊ/
/aʊ/	out /aʊt/	mouth /maʊθ/	cow /kaʊ/
/iə/	ear /iə/	beard /biəd/	here /hiə/
/eə/	air /eə/	head /heəd/	her /heə/
/ʊə/	NA	cured /kʊəd/	poor /pʊə/

Table 8 shows the English vowels with column 1 presenting the vowel sounds. Columns 2, 3 and 5 show the distribution of the vowels with the boldened parts showing the letters that represent the vowel in words. Some of the vowels do not occur in all environments and are indicated as not applicable (NA). The knowledge of this data will guide every participant to a successful phonic analysis.

Conclusion

The study examined the use of phonic sounds as a method of teaching reading at the basic level. The study observed from the data that 17% of the participants, comprising only T and TT have knowledge about phonics and 80% of the participants comprising T, TT and P had no knowledge on phonics. The study showed that none of T had knowledge of sound-letter relationship while two (2) T had knowledge of sound letter relationship and none of P had an idea on sound-letter relationship. This confirmed that 87% showed frequency of substituting /θ/ with [t] in English words while a total of 13% showed frequency of /θ/ in their pronunciation. Other findings showed that 82% of the participants presented frequency of [d] in pronunciation while 18% of the participants showed /ð/ frequency in their pronunciation. None of P could pronounce /ð/ in any of the words. It was concluded that the dominant variant in participants' pronunciation were [t, d] showing that /θ, ð/ are the L2 sounds that are difficult to pronounce with respect to accuracy in reading.

The study however suggested that in teaching /θ, ð/, identified as unusual sounds in English, the pupils must practise how these sounds are produced by placing the tip of the tongue behind the upper

teeth and pronounce words like: tin /θin/, true /θtri:/, think /θink/ etc. Mechanical drill for example can be used to enforce accuracy by practising the sounds in isolated words in a conversation. At the basic level, it is good to identify phonics as one of the components of word recognition which include structural clues, context clues and sight words. Phonic analysis can be based on the pre-requisite knowledge of sight words; for instance the sound /ʌ/ may be related to the sight words cup [kʌp], couple [kʌpl], monkey [mʌnki]. These would show the correspondence of sound-letter relationship as presented in Tables 7 and 8.

At this stage, it is clear that TT is generally the innovator in linguistic change. In view of this, the study proposes the introduction of phonetics and phonology as part of the English language courses offered at the Colleges of Education in order to prepare the teacher well on the physical properties of sounds and patterns of sound (see Table 7). This will make the use of phonic analysis in teaching much easier and comprehensible. Currently, the English sounds are only taught as a subtopic under speech as part of the level 100 first semester English course in the Colleges of Education. As a result, the TT only learns it as part of a course requirement and not as a methodological tool for teaching reading. It is expected that a future study may increase the number of participants in order to ascertain some of the claims the study made.

It seemed clear that the informational and symbolic functions of the linguistic variables constituted an important factor in the processes of teaching and learning reading using phonics. As part of the intervention, three models were used to test the variables; these models could be practised to facilitate the use of phonics to teach reading. Consequently, language planners as well as language activist can do a further study on the models presented to improve the use of phonic analysis as a methodological tool to teach reading at all levels.

Recommendations

The purpose of this research was to determine the impact of phonic analysis as a method of improving reading skills of basic school pupils. After researching phonological awareness and noting its accolades, the objective of the study was to discover its impact on the

researcher himself. Based on the results of the study, the following recommendations were made:

- Phonic analysis should be a valuable part of every pupil's reading educational development.
- Phonic analysis as a method of reading should be introduced at the pre-school level to create phonological awareness.
- Some strategies teachers can use to strengthen reading skills through phonics include, phonics games such as sounding out words, rhyme words, and making up nonsense words.
- Phonetics and phonology should be introduced as a course of study at the College of Education.
- The following steps can be used as a model for teaching phonics at the basic level. This model involves the ability to attend to, identify, and manipulate the sounds that are representative of letters in the English language.
  - Exposure to alliteration in text.
  - Word-initial and word-final sound identification/comparison (minimal pair test)
  - Sound/symbol correspondence (sound-letter relationship)
  - Sound segmentation
  - Sound blending (synthesis)
  - Sound substitution

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ATTITUDE OF PRIMARY SCHOOL TEACHERS TOWARDS ASSESSMENT OF PUPILS IN THE CAPE COAST METROPOLIS

Jonathan O. Kwapong
University of Cape Coast,
Ghana

Abstract
The purpose of the study was to determine the attitude of primary school teachers in the Cape Coast Metropolis towards assessment of their pupils. The stratified random sampling technique was used to sample 227 primary school teachers from 36 out of 65 schools in the metropolis for the study. The subjects responded to a questionnaire from which the data were collected. The data were analysed using descriptive statistics (means and standard deviations) and the independent t-test. The results showed that the teachers generally have positive attitude towards assessment of their pupils and that there is no significant difference between the attitudes of male and female teachers towards assessment. However, there are some aspects of the components of assessment that the teachers were not well disposed to or comfortable with. In view of this it was recommended that the Metropolitan Education Directorate, in collaboration with the University of Cape Coast should conduct in-service training on assessment for re-orientation of the primary school teachers.

Key words: Attitude, assessment, test construction, test administration, utilisation of assessment results, independent t-test, statiscally significant difference.

Introduction

Education is the bedrock of every nation's development, therefore, any nation that intends to develop must strengthen its educational base. The quality of the educational system is reflected in the quality of education at the basic level, especially in the primary schools. An aspect of the curriculum delivery process that is designed to determine the educational quality of every school is the assessment system.

Of late, the demand for public accountability of education has risen. One way of satisfying such curiosity of the public is through the

use of assessment. The results of assessment inform the public of what is going on in the classroom in terms of teaching and learning. Such information may be used to evaluate the curriculum. This is achieved by using the results of assessment in stimulating analysis of educational objectives and encouraging a critical examination of the content and methods of instruction. Educational authorities are then informed about the suitability or otherwise of the prescribed content and instructional materials which lead to review of the curriculum and reformulation of educational goals. To make such information useful, teachers have to ensure that assessment results are highly reliable. This can be achieved by ensuring that the assessment processes are without errors.

Spearman (1913, cited in Crocker and Algina, 1986) established that any observed test score could be envisioned as the composite of two hypothetical components-true and error scores. Spearman (1913, cited in Crocker and Algina, 1986) further noted that any observed score is considered as a realisation of a random variable due to the effects of factors such as inattention, misreading of items, guesses, cheating and subjective scoring on the examinee. This is corroborated by Harlen (2010) when she admitted that measurement is subject to error but the error is greater in the case of educational assessment. Some of these errors are introduced as a result of the way tests are constructed, administered and scored. With regard to test administration, the American Educational Research Association (AERA), American Psychological Association (APA) and the National Council on Measurement in Education (NCME) (2014), in discussing efforts in the Standards to ensure the integrity of test scores, prescribed among other things for test administrators to provide continuous monitoring of the testing process. This view goes to buttress Amedahe and Etsey's (2003) position that, invigilators should stand at a point where they could have a clear view of all students during test administration. If this advice is adhered to, it will minimise cheating in testing.

Assessment is, generally, used to refer to all activities teachers use to help students learn and to gauge students' progress (Black & William, 1998). The role assessment plays in the educational system cannot be overemphasized. It has been identified as a major component in the development of education. Anastasi and Urbina (2007) observed that for all types of learners, the periodic

administration of well-constructed tests may serve to facilitate learning. Such tests can reveal strengths and weaknesses in past learning, give direction to subsequent learning and motivate the learner. In addition, assessment provides a means of adapting instruction to individual needs. Teaching can be most fruitful when it meets the learner at whatever stage he/she happens to be (Anastasi & Urbina, 2007).

Apart from facilitating effective teaching and learning, teachers use assessment for very important decisions about placement, selection, guidance and counselling, and curriculum planning. Literature suggests that assessment results are used to make important educational decisions including evaluating students' overall achievement and growth in content domain, diagnosing students' strengths and weaknesses, planning educational interventions and designing individualized instructional plans, and place students in appropriate educational programmes (Miller, McIntire & Lovler 2011).

For assessment to execute all its functions effectively, there is the need for efficient handling of the assessment processes which include test construction, test administration, marking, interpretation and utilization of test scores. Although standardized tests are known to have all the psychometric qualities, in the Ghanaian situation, the classroom teacher is directly responsible for handling them. Literature has shown that classroom teachers' assessments are of low quality. For example Miller, McIntire and Lovler (2011) noted that nonstandardised tests are usually constructed by a teacher in a less formal manner. This suggests that teacher-made tests may not meet all psychometric standards. Similarly, Anastasi and Urbina (2007) observed that the test constructor who plunges directly into item writing is likely to produce lopsided items. It is not surprising that, Amedahe (1989) in a study of assessment practices of secondary school teachers in the Central Region of Ghana, found that the teachers lacked skills and principles of test construction. Such is the situation of most classroom teachers.

The study further observed that in-service teachers in Ghana have limited competency in assessment in general and continuous assessment in particular. In view of this, Anhwere (2009), in his study of assessment practices of tutors in the training colleges observed that there is lack of skills and knowledge of test construction among tutors

in the Training Colleges of Ghana. Furthermore, in Wales, Montgomery (2010), in a study of teacher assessment in the UK, observed that Wales had moved to the implementation of teacher assessment but certain issues remain problematic. In view of these situations, teachers' assessment is perceived as having low reliability (Harlen & Gardener, 2010).

To guard against fortuitous imbalance of item coverage, Anastasi and Urbina (2007) suggested that test specification table should be drawn up before any items are prepared. In support of this, Schmeiser and Welch (2006) noted that test specification table and review are important sources of validity.

With regard to continuous assessment, Tamakloe, Ata and Amedahe (1996) in discussing the shortcoming of continuous assessment observed that teachers' continuous assessment marks are highly subjective. To reduce the subjectivity of scoring, assessment experts have provided some principles for scoring which include marking in anonymity, the use of marking scheme and marking question by question instead of script by script (Ebel, 1972; Mehrens & Kaminski, 1989).

Continuous assessment plays a major role in promoting teaching and learning in the classroom. Bartels (2003) outlined the advantages of continuous assessment to include (a) obtaining comprehensive and more valid information on the student, (b) identification of the strengths and weaknesses of students at an early stage of a programme and their subsequent remediation, (c) assessing the entire personality of the student, (d) providing adequate data for the guidance of students and (e) minimization of students' fears and anxieties of examinations. To achieve these lofty results from continuous assessment and for that matter, assessment in general, depends on the expertise with which the assessment processes are handled. The extent to which the classroom teacher handles the assessment process has direct relationship with his or her attitude towards assessment. This is because literature suggests that the attitude of a person towards an attitudinal object predicts the behaviour of that person towards that attitudinal object (Tamanja, 2010). In addition, people's attitudes dispose them to either respond favourably or unfavourably to an object, person, institution or event (Seidu, 1998). This notion is carried out by Anastasi and Urbina (2007) in their definition of attitude which states that an attitude is a

tendency to react favourably or unfavourably towards a designated class of stimuli such as national or ethnic group, a custom or an institution.

A study by Mohiuddin, (2015) had shown that secondary and higher secondary school teachers in Bangladesh hold positive attitude towards assessment. It follows that if teachers have positive attitudes towards assessment, they are likely to handle the assessment processes efficiently and obtain desirable results. This is in conformity with Davis (2008) whose findings demonstrated that there is some degree of agreement between teachers' attitude towards mathematics teaching and their instructional practices. His finding was based on a survey he conducted on primary and junior secondary school teachers' attitude towards Mathematics and Mathematics teaching and the relationship between the two using questionnaire. The data was analysed using means, standard deviation and Pearson correlation. The results showed a positive attitude towards Mathematics and the teaching of Mathematics although, the relationship was found to be moderate.

There seems to be paucity in studies on gender related attitude of teachers towards assessment in Ghana. This concern arises as a result of Siamisang and Nenty (2012) study on analysis of gender-based differential item functioning in the 2007 TIMMS examination. The results of the study showed that there were few mathematics and science items which functioned significantly differently for male and female students. It is for the foregoing reasons that the investigator examined the attitudes of primary school teachers in the Cape Coast Metropolis towards assessment and the related gender comparison.

Purpose of the study

The study sought to investigate the attitudes of primary school teachers towards assessment in the Cape Coast Metropolis. The study further examined the gender differences in the attitude of the teachers towards assessment and made recommendations.

Research questions/hypothesis

The study was guided by the following research questions and hypothesis.

Research questions

1. What are the attitudes of primary school teachers towards test construction?

2. What attitudes do primary school teachers have towards test administration?
3. What attitudes do primary school teachers have towards marking of test papers?
4. What are the attitudes of primary school teachers towards utilization of assessment results?

Hypothesis

Ho: There is no statistically significant difference between male and female primary school teachers' attitude towards assessment of pupils at the primary school.

Hi: There is statistically significant difference between male and female primary school teachers' attitude towards assessment of pupils at the primary school.

Methodology

Research design

The design for the study was a cross sectional survey. Fraenkel, Wallen and Hyun (2012) defined survey as an attempt to obtain data from members of a population or a sample to determine the current status of that population with respect to one or more variables. They indicated that for a cross sectional survey, information is collected at one point in time from a sample drawn from a predetermined population. The choice of the design is justified for the fact that data for the study were collected from a sample of primary school teachers in the Cape Coast Metropolis. The subjects were made to respond to questionnaire for the collection of data to determine the current attitudes of primary school teachers of the Cape Coast Metropolis towards assessment of pupils.

Population and sample

The population for the study consisted of teachers in all the 65 primary schools in the Cape Coast Metropolis. Using the multi stage sampling technique, two hundred and twenty-seven (227) teachers from thirty-six (36) constituting 55% of the primary schools were selected to participate in the study. There are six circuits in the metropolis which served as strata and six schools from each of the circuits were selected by means of stratified random sampling

technique considering the different school characteristics. Once a school was sampled, all the teachers were selected to participate.

Instruments

A questionnaire consisting of a five-point likert scale was constructed to collect data from subjects. The questionnaire, comprising twenty-nine (29) items was constructed by the researcher. The items were classified into five sections, comprising background information, attitude towards test construction, attitude towards test administration, attitude towards marking and attitude towards utilization of test scores.

The section on background information requested respondents to provide information on their teaching experience and background in assessment. The test construction section explored the attitude of the teachers concerning the processes of test construction. On test administration, the items covered provision of conducive testing environment and good practices in test invigilation while the section on marking involved investigations into the attitude towards marking conditions. The final section was concerned with utilization of test scores.

In order to obtain reliability of the instrument, the items were administered to teachers at the University Primary School, UCC. Using the Cronbach alpha, a reliability coefficient of 0.72 was obtained. The instrument was validated by two senior lecturers, one in assessment and the other in Mathematics, who reviewed and provided useful suggestions which reshaped the current standard. By so doing content validity evidence was achieved.

Data collection

The researcher trained six assistants for the administration of the questionnaire. They were given letters to the respective head teachers. The letters introduced the research assistants and asked permission for the teachers from the schools to participate in the study. In each school, all the teachers participated. Consequently, arrangements were made for the participants to assemble during break time to respond to the items. The administrators explained the purpose of the study and the instructions for responding to the items to the respondents. The respondents were also assured of confidentiality of their responses. In view of this arrangement, the return rate was 100%.

Data analysis

The data were analysed using the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics comprising means and standard deviations were computed and used for the analysis and discussion. In addition, inferential statistical analysis was carried out to investigate whether a significant difference existed between the attitudes of male and female teachers' towards assessment, using the independent t-test.

For purpose of analyses, the responses of the positive items were weighted as follow; strongly agree=5, agree=4, undecided=3, disagree=2 and strongly disagree=1. On the other hand, the negative items were weighted as; strongly disagree=5, disagree=4, undecided=3, agree=2 and strongly agree=1. For each of the individual items a mean score greater than 3 indicate a positive attitude and less than 3 indicate unfavourable attitude. However, a mean score of 3 indicate attitude which was neither positive nor negative. The overall mean scores were also used to discuss the overall attitude of primary school teachers towards assessment. For the overall mean scores, the most positive attitude will have an overall mean score which is equal to the number of items times 5 and the most unfavourable attitude will have an overall mean score equal to the number of items times one. Attitudes which are neither positive nor negative will have an overall mean score of 3.

Results

The results of the study are presented in five sections. These were teachers' attitude towards test construction, teachers' attitude towards test administration, teachers' attitude towards scoring of test scripts, teachers' attitude towards utilization of test scores and a comparison between male and female primary school teachers' attitude towards assessment of pupils at the primary school.

Research question 1:

What are the attitudes of primary school teachers towards test construction?

Results of teachers' attitudes toward test construction are presented in Table 1.

Table 1: Mean scores of teachers' attitude towards test construction.

Items	Mean	SD
Stating the purpose of a test before writing the items is useful to item writing	3.89	1.33
Deciding on the item format(s) to use helps in writing good items	4.23	0.89
Test specification table helps to improve the quality of test papers	4.18	0.88
Constructing test specification table prior to item writing is a waste of time	3.34	1.37
Without test specification table I can write equally good items	2.95	1.19
Selecting questions from textbooks and past questions makes item writing easier	3.94	1.12
Review of test items is time wasting	2.42	1.14
Overall mean score	**3.55**	**0.68**

Table 1 shows that the overall mean score of teachers' attitude towards test construction was 3.55 out of 5 (24.36 out of 35) and a standard deviation of 0.68. This shows that Cape Coast Metropolitan primary school teachers have positive attitude towards test construction. The overall standard deviation of 0.68 suggests that the teachers have almost the same attitude towards the various stages of test construction.

None of the individual positive items had a mean score of less than 3.8 out of 5. This indicates a high positive attitude towards these items. However, among the negative items, two (without test specification table, I can write equally good items and review of test items is time wasting) had mean scores less than 3 suggesting negative attitudes towards these categories. On the other hand, the other two (constructing test specification table prior to item writing is a waste of time and review of test items is time wasting) had mean scores greater than 3 implying positive attitudes towards these stages of test construction.

Research question 2:
What are the attitudes of primary school teachers towards test administration?

Table 2 presents responses of respondents on attitude towards test administration.

Table 2: Mean scores of teachers' attitude towards test administration

Items	Mean	SD
Providing information in advance to pupils about test to be conducted helps the pupils to perform well	4.09	1.09
Vigilance of the teacher during test invigilation is good to improve the performance of pupils	3.99	1.08
Ensuring adequate ventilation for the conduct of a test facilitates pupils' performance	3.96	1.05
Ensuring adequate lighting system for the conduct of a test is necessary for pupils to do well in the test	4.03	1.04
It is convenient for the invigilator to stand at one place during invigilation	3.78	1.23
During test administration, it is good to make frequent announcement of time	2.61	1.23
Searching pupils prior to the conduct of a test is abuse of pupils' human rights	2.75	1.34
Ensuring spacious seating arrangement for the conduct of a test is an added responsibility for the teacher	3.44	1.28
Overall mean score	**3.58**	**0.68**

From Table 2, the overall mean scores of teachers' attitude towards test administration is 3.58, with a standard deviation of 0.49. This shows that teachers in the Cape Coast Metropolis have a trend towards positive attitude for test administration. The standard deviation of 0.49 shows that the attitude of the teachers towards the various categories of test administration is almost the same. None of the positive statements had a mean score less than 3.9, suggesting high

positive attitude towards these categories. For the negative statements the mean scores of two of them (it is convenient for the invigilator to stand at one place during invigilation and searching pupils prior to the conduct of a test is abuse of pupils' human rights) were less than 3.0. This implies negative attitude towards these categories of test administration. However, the other two (during test administration, it is good to make frequent announcement of time and ensuring spacious seating arrangement for the conduct of a test is an added responsibility for the teacher) have mean scores greater than 3.0 indicating positive attitude towards them.

Research question 3:
What attitudes do primary school teachers have towards marking of tests scripts?

The results of the attitude of teachers towards marking of test scripts are presented in Table 3.

Table 3: Teachers' attitude towards marking of test scripts

Items	Mean	SD
Marking scheme is necessary for marking	4.58	0.77
The use of index numbers in examination helps the teacher to mark well	3.07	1.40
Pupils' names on test papers are disturbing in the award of marks during marking	2.97	1.50
Marking question by question instead of pupil by pupil (script by script) improves the quality of marking	2.83	1.32
Marking scheme preparation is tedious	3.17	2.43
Pupils' names on test papers make it easy for the teacher to know the marks obtained by each pupil	2.43	1.34
Marking question by question is more tedious than marking script by script	3.15	1.38
Overall mean score	**3.17**	**0.52**

The overall mean score of 3.17 for teachers' attitude towards marking of test scripts shows that in the Cape Coast Metropolis, primary school teachers have a trend in the direction of positive

attitude towards marking of test scripts. The overall standard deviation of 0.52 suggests that the teachers have almost the same attitude towards the various categories of marking of test scripts.

With the exception of one (Pupils' names on test papers are disturbing in the award of marks during marking) all the individual positive items had mean scores greater than 3.0. However, the mean scores of two of these items (the use of index numbers in examination helps the teacher to mark well and marking question by question instead of pupil by pupil) were less than 3.2. This indicates a trend towards positive attitude for these items. It was only one positive item that had a mean score greater than 4.0 which indicated a high positive attitude.

Among the negative items, two (Pupils' names on test papers make it easy for the teacher to know the marks obtained by each pupil and marking question by question is more tedious than marking script by script) had mean scores less than 3.0, suggesting negative attitudes towards these categories. On the other hand, the other one (Marking scheme preparation is tedious) had a mean score just about 3 (3.17) implying a trend towards positive attitude towards this statement. However, two of the negative items (pupils' names on test papers make it easy for the teacher to know the marks obtained by each pupil and marking question by question is more tedious than marking script by script) recorded mean scores less than 3, indicating negative attitude towards these items.

Research question 4:

What are the attitudes of primary school teachers towards utilization of assessment results?

Table 4 presents responses of respondents on attitude towards utilization of assessment results.

Table 4: Teachers' attitude towards utilization of assessment results

Items	Mean	SD
Analysis of test scores is useful in taking educational decisions	4.20	1.07
Applying statistics to test scores helps to take good decisions about pupils	4.23	0.85
Remedial teaching based on item difficulty indices is effective	4.08	0.89
Analysis of test scores is helpful in teaching and learning	4.38	0.75
Analysis of test scores is tedious	2.94	1.21
Remedial teaching based on test scores does not benefit pupils	3.58	0.95
Analysis of test scores is a waste of time	4.09	0.95
Analysis of test scores is complicated	3.31	1.16
It is not necessary to determine the statistics of test scores	3.66	1.30
Overall mean score	**3.83**	**1.30**
Total score of all components of assessment	**3.53**	**0.60**

Results in Table 4 show that the overall mean score of the attitude of teachers in the Cape Coast Municipality is 3.83, indicating a high positive attitude. The overall standard deviation of 0.37 shows that the difference in the attitude towards the various items under utilization of assessment, results is minimal. All the positive statements had mean scores greater than 4.0, indicating a high positive attitude towards these items. Among the negative statements, it was only one respondent who admitted that "analysis of test scores is tedious" which resulted in a mean score of less than 3.0, showing a negative attitude. The mean score of the negative item, analysis of test scores is complicated. It is 3.31 out of 5, only indicating a trend towards positive attitude.

Hypothesis 1:

Ho: There is no statistically significant difference between male and female primary school teachers' attitude towards assessment of pupils at the primary school.

Table 5 shows a comparison of the attitude of teachers towards assessment by gender.

Table 5: Comparison of the attitude of teachers towards assessment by gender.

Categories	Gender	N	Mean	Std. Dev.	Independent t-test t	df	sig
Test construction	Male	81	3.48	0.80	-1.174	222	0.241
	Female	143	3.59	0.60			
Test Administration	Male	81	3.50	0.51	-1.764	222	0.079
	Female	143	3.62	0.48			
Marking	Male	81	3.32	0.50	1.325	222	0.186
	Female	143	3.13	0.53			
Utilization of test scores	Male	81	3.76	0.65	-1.356	222	0.175
	Female	143	3.88	0.56			
Overall mean	Male	81	3.49	0.42	-1.201	222	0.231
	Female	143	3.56	0.35			

Table 5 shows that the overall mean score of the females (3.56 out of 5) is greater than that of the males (3.49 out of 5). This shows that the females have higher positive attitude towards assessment in the Cape Coast Metropolis than the males. However, the mean scores for both males and females in each component of assessment is greater than 3.0 out of 5, indicating that both males and females have positive attitudes towards the various components of assessment.

The sig (p) value of the overall mean of 0.231 in Table 5 shows that the mean difference in the attitude towards assessment between males and females is not statistically different at 0.05 level of significance [$t(222) = 1.201$, $p > 0.05$]. The null hypothesis is, therefore, rejected at 0.05α. The p-values of the various components are equally greater than 0.05, indicating that the mean differences between male and female in the various components are not statistically significant.

Discussion

Each of the overall mean scores of the attitude of primary school teachers in the Cape Coast Metropolis towards test construction, test administration, marking of test scripts and utilization of assessment results was greater than 3.0 out of 5 (Tables 1-4). This shows that the teachers have positive attitude towards these components of

assessment, indicating that the teachers' overall attitude towards assessment was positive. This is illustrated by the overall mean score of 3.53 out of 5. This is in conformity with the result of Mohiuddin's (2015) study of educational assessment of secondary and higher secondary teachers of Bangladesh. The results showed that the teachers held a favourable attitude towards educational assessment. The overall standard deviation of 0.37 shows that the attitude of the teachers towards the various components of assessment, is similar. With the exception of the overall attitude towards marking of test scripts (M=3.17, SD=0.52), the overall mean scores of their attitude towards the assessment components ranged between 3.55 and 3.83.

The implication is that generally, teachers in the Cape Coast Metropolis are conscious of the good practices of assessment. However, there are some of the negative items under some of the assessment components that the teachers are either not conversant with or uncomfortable with. They consequently expressed negative attitudes towards them. This is in conformity with available literature that assessment practices of teachers are problematic and that teachers have limited competency in assessment in general (Amedahe, 1989; Montgomery, 2010; Harlen & Gardener, 2010).

Under test construction the items the teachers indicated negative attitudes were 'without test specification table I can write equally good items' (M=2.95, std. dev.=1.19) and 'review of test items is time wasting' (M=2.42, SD=1.14). In the case of test specification table, the high mean score of the item 'test specification table helps to improve the quality of test papers' (M=4.18, SD=0.88) suggests that the teachers are aware of the relevance of test specification table but they are not comfortable using it in their test construction, as more than half of the respondents indicated that without it, they could write equally good items (M=2.95, SD=1.19). Schmeiser and Welch (2006) have, however, noted that test specification provides direction for test construction and identified test specification as one of the sources of validity evidence of a test. If test developers avoid test specification in their test construction process, they are likely to provide lopsided tests (Anastasi & Urbina, 2007). This means that, while some content areas will be overrepresented, others will be underrepresented and some will remain untouched. This means that the relevance of test specification table in test construction lies in its implication for test validity.

The purpose of test review is for appropriateness of content, skills and relevance for the purpose of the test. Consequently, Schmeizer and Welch (2006) described test review as an important early source of validity evidence intended to affirm or refine preliminary test design. It is not good for teachers to show negative attitude towards test specification table and review because the omission of these steps in test construction may have serious implication for validity of the test. The negative attitude of the teachers towards these stages in test construction confirms Amedahe's (1989) finding that secondary school teachers in the Central Region of Ghana lacked skills and principles of test construction, and his conclusion that such is the situation of most classroom teachers. In addition, Montgomery (2010), observed that the implementation of teacher assessment in Wales remained problematic. All these support the perception of teachers' assessment as having low reliability (Harlen & Gardener, 2010).

With regard to test administration, the items towards which the teachers indicated negative attitudes were 'it is convenient for the invigilator to stand at one place during invigilation' (M=2.61, SD 1.23) and 'searching pupils prior to the conduct of a test is abuse of pupils' human rights' (M=2.75, SD=1.34). When an invigilator stands at one place during invigilation, there is the tendency that he/she may not have clear view of all the students' writing the paper. Students, seeing this, may take advantage to engage in cheating. Since they are not likely to be caught, their scripts will be marked to earn scores. This will introduce errors in the scores and subsequently affect the reliability of the test scores. It is in view of this that Amedahe and Etsey (2003) indicated among other things that, for effective test administration, invigilators are expected to stand at a point where they would have a clear view of all students but make occasional tours to ensure that the testing process has continuous monitoring in order to maintain the integrity of the scores (AERA, APA & NCME, 2014).

Another action during test administration with similar effect is the failure to search students before they enter the examination room. Students are likely to equip themselves with already prepared notes and with the least opportunity refer to the notes, thus influencing the reliability of the test. This supports an observation made by Spearman (1913, cited in Crocker & Algina, 1986) that any observed score is considered as a realization of a random variable (with an error

component) due to factors including cheating. This means that cheating introduces error into the observed scores which is described by Fraenkel, Wallen and Hyun (2012) as measurement error. Such errors create wide variation between students' observed and true scores. This undermines the effectiveness of assessment.

Among the principles of scoring emphasized by assessment experts includes grading one question at a time for all papers before scoring another (Ebel, 1972; Lindquist, 1951; Mehrens & Kaminski, 1989; Tyler, 1950, cited in Anhwere, 2009). This way, they believed, the hallo effect would be reduced. However, with regard to marking of test scripts, the item that the teachers indicated negative attitude was towards 'marking question by question instead of pupil by pupil (script by script) improves the quality of marking' (M=2.83, SD=1.32). When an examiner grades one question at a time for all students, he remains focused and remains stable in grading the responses. But the response to one question influences the reader's evaluation of quality of the responses to subsequent questions.

Miller, McIntire and Lovler (2011) identified the educational decisions that are made based on assessment results by citing the Standards for Educational and Psychological Testing (1999) to include evaluating students' overall achievement and growth in a content domain, diagnosing students' strengths and weaknesses, planning educational interventions and to design individualized instructional plans and place students in appropriate educational programmes. Such decisions are meant to promote effective teaching and learning and overall educational system. For these decisions to be effective requires that the analysis and interpretation of assessment results are effectively handled. Literature has shown that the extent to which the classroom teacher had handled the assessment process has direct relationship with his or her attitude towards assessment. For example, Tamanja, (2010) observes that the attitude of a person on an issue explains and predicts the behaviour of that person toward the issue.

From Table 4, the mean scores of all the positive items of the categories under utilization of assessment were greater than 4.0 out of 5 indicating high positive attitudes towards them. However, one of the negative items, 'analysis of test scores is tedious' (M=2.98. SD=1.21) recorded a mean score less than 3.0 indicating a negative attitude. However, with the item 'analysis of test scores is complicated.' (M=3.31, SD.=1.16) the respondents expressed a trend towards a

positive attitude. These show that there is the likelihood that the teachers were not well inclined to analysis of test scores, which constitute the backbone of utilization of assessment results. The overall mean score of 3.83 out of 5 suggests that most of the teachers might be aware of the benefits and what is entailed in utilization of assessment results but their responses might have been influenced by their dislike for statistics, since analysis of test scores makes use of statistics.

The study also sought to compare the attitude of the teachers towards assessment by gender. Table 5 shows that there are differences in all the four components of assessment. With the exception of marking, in which the difference was in favour of males, all the other three were in favour of females. However, in all the assessment components, both male and female mean scores were greater than 3.0 indicating positive attitudes toward test construction, test administration, marking of test scripts and utilization of assessment results.

In order to determine whether the differences were statistically significant, the independent samples t-test was computed. The results show that the overall difference was not statistically different $t(df=222)= -1.201$, $p>0.05$ (Table 5). The study therefore fails to reject the null hypothesis at 0.05 level of significance. This means that both male and female teachers in the Cape Coast Metropolis have similar attitude towards assessment. That is, there is no gender difference in the teachers' attitude towards assessment.

Conclusion and Recommendation

The study revealed that generally, primary school teachers in the Cape Coast Metropolis have positive attitude towards assessment. This means that the teachers have what it takes to conduct effective assessment in their schools to enjoy the many benefits associated with assessment including facilitating effective teaching and learning. However, the results indicate negative attitudes towards some aspects of the components of assessment. These include construction and use of test specification table, and review of tests under test construction. Under test administration, the negative attitudes expressed were about the position of the invigilator in the examination room and searching students before the enter the examination room for the examination. The only item that the teachers showed negative attitude under

marking of test scripts was on the principle of marking question by question instead of script by script. In the case of utilization of assessment results the teachers indicated that they were not well inclined to analysis of test scores. These aspects are very important in assessment delivery and therefore raise some concerns. The results have also shown that both males and females have positive attitude towards assessment and that the difference between the two is not statistically significant at 0.05 level of significance.

Based on the finding of this study, it is recommended that the Cape Coast Metropolitan Education Directorate, in conjunction with the University of Cape Coast, conducts in-service training on assessment for teachers in the Metropolis to re-dispose the teachers to assessment principles. The training should place emphasis on test construction, test administration, marking of assessment scripts and utilization of assessment results with emphasis on statistical analysis and interpretation of test scores. It is also recommended that further studies could be replicated in other districts, metropolitan and municipal areas in Ghana. This will help determine how widespread the findings are related to the whole nation since the Cape Coast Metropolis is one out of the many districts, municipal and metropolitan areas in Ghana. In addition, studies can be conducted on the relationship between the attitude of teachers towards assessment and assessment practices to find out how the attitudes of the teachers towards assessment impact on their assessment practices.

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PREPARATION FOR DEATH AND DYING AMONG PRE-RETIREMENT CIVIL SERVANTS IN NIGERIA: CHALLENGES FOR COUNSELLING

Ayotunde O. Oyediran
Emmanuel Alayande Coll. of Edu., Oyo, Nigeria

Joshua A. Omotosho
University of Ilorin, Ilorin, Nigeria

&

Eric Nyarko-Sampson
University of Cape Coast, Ghana

Abstract
This nationwide study was done with the main purpose of finding out the level of preparation for death and dying among pre-retirement civil servants in Nigeria. A secondary purpose was to determine the influence of age on such preparation. The instrument used for data collection was tagged "Preparation for Death and Dying Questionnaire" (PDDQ). Its validity and reliability were duly established through the help of experts. The relevant data were collected through the employment of research assistants. The findings showed that the respondents were ill-prepared for death and dying. Also, significant age differences were observed in retiring civil servants' preparation for death and dying; younger pre-retirement civil servants had made less preparation for death and dying than their older counterparts. The critical challenges that these findings pose for counselling practice in Nigeria were then succinctly highlighted.

Keywords: Civil servants, counselling, death and dying, pre-retirement, retirement preparation

Introduction

The ultimate goal of life should be for one to put it to full use and enjoy doing so. Becoming aware of the reality of one's own mortality as one ages, and preparing for it, are right steps in the direction of

achieving that goal. Since the natural phenomenon of ageing is irresistible, society has ways of recognizing this group of people who Adegoroye (1992) calls the "greying population." One of the ways that the Nigerian society in general, and the government in particular, adopts for recognizing its "greying population" is by setting up retirement age limits so that those who reach such limits - usually 60 or 65 years - will be able to put their houses in order and get prepared to exit this life.

From the above, it can be seen that ageing is a phase of human development; it terminates either naturally or prematurely. If birth is the first phase of that development, then death is its final phase. According to Udoh (2000), dying is that phase of human existence which precedes death. It may be short-lived or protracted. Death, on the other hand, is the conclusion of the dying process when lifelessness is pronounced. In spite of the fact that dying and death are common occurrences in all societies including Nigeria, it is always treated with trepidation. Activities (including pre-retirement ones) geared towards preparing for those inevitable eventualities are usually unattended to.

Also, it is probably true that most people acknowledge the reality of death for other persons. However, the dying infrequently accept the possibility of their own demise. Similarly, the expectations of premature death are unthinkable to many, even though premature deaths occur every now and then. Nevertheless, and according to Kubler-Ross (1969), the most appropriate and ultimate human adaptation should be the acceptance of the reality of death.

Retirement is an important transition (Orbach, 2003). A transition that results in the loss of not only daily routine of work, but also loss of earning power, loss not only of a person's partner but of contemporary friends (bereavement), and loneliness; having to live alone, perhaps for the first time, without anyone on hand for sharing thoughts and memories. And most critical of the transition is facing the reality of death; having to let go of life itself, - a final loss. Faced with the empty years ahead, retirees may look on retirement as a waiting room for death (Orbach, 2003).

Many studies in Nigeria and elsewhere have been carried out on retirement (Atchley, 1976; Akinade, 1993, 2006; Bukoye, 2005; Ndaman, 2005; Ogidan, 2005 & Nwokedi, 2006) and the aged or ageing (Asonibare, 1998; Bako, 1998; Ihedioha, 1986; Omotosho &

Adeyemi, 2001; Imogie, 2007; Udoh, 2008; Amali, Obine & Adikwu, 2008) as separate entities. Adeniyi and Chedi (2010) found that lack or inadequate physical activity may have dire health implications on pre-retirement and retired individuals. They concluded that pre-retirement civil servants and retirees were physically active in both work and leisure. Olatunde and Onyinye (2013) observed that retirees in Nigeria face problems ranging from sudden loss of life to loss of the usual monthly salary, anxiety about a residential home, lack of occupation, dwindling status, decreased strength and deteriorated health condition, physical abilities and aging. Inaja and Chima (2013) found that civil servants' perception of retirement significantly influences their attitudes towards pre-retirement counselling with respect to income and expenditure management, health-related issues, management of loneliness and change of physical environment.

The present study, however, looked at the level of preparation for death and dying that pre-retirement civil servants in Nigeria have achieved. Its secondary purpose was to determine whether or not age is of significance in their level of preparation for death and dying.

Research Question

The research question for the study was: 'What is the level of preparation for death and dying among pre-retirement civil servants in Nigeria?'

Hypothesis

The following hypothesis was tested for study: 'There is no significant difference among pre-retirement civil servants in Nigeria in their preparation for death and dying with respect to age'.

Methodology

Population and sample

The target population of this study comprised all civil servants in Nigeria. This was a national study on the preparation for death and dying among pre-retirement civil servants in Nigeria. Since it was impracticable to collect data from the entire population, a sample was selected for the study using the multi-stage sampling technique.

The multi-stage sampling technique used was in four stages. At Stage 1, in order to give the study a national spread, and for technical ease, the country's six geopolitical zones served as clusters

from which participants were selected. The six geopolitical zones were South-West, South-East, South-South, North-West, North-East and North-Central.

At stage 2, simple random sampling technique was used to select one state from each of the six geopolitical zones. The states selected included Oyo (South-West), Enugu (South-East), Bayelsa (South-South), Kebbi (North-West), Borno (North-East), and Kaduna (North-Central).

At stage 3, purposive sampling procedure was used to select ministries and non-ministerial departments from where respondents were selected for the study. Three ministries and two non-ministerial departments were purposively selected in each of the six states in order to further ensure the representativeness of the sample (Hassan, 1995).

Stage 4 was the purposive selection of 40 respondents from each of the ministries and ministerial departments. This gave a total of 200 respondents from each state and a grand total of 1,200 as the sample size for the study. Purposive sampling technique was used at this stage also because the researchers were interested only in those civil servants who had put in more than 25 years in service and those who were already 50 years of age or more. These were the ones labelled as pre-retirement civil servants in this study.

Instrument

The instrument used to collect data for the study was a questionnaire entitled "Preparation for Death and Dying Questionnaire (PDDQ)". It was self-developed by the researchers, using information gathered from related literature. It had two sections, A and B. Section A sought information on the personal data of the respondents such as gender, age, years of working experience, geo-political zone and location. Section B was a four-point Likert-type scale which had 20 items geared towards obtaining information on respondents' level of preparation for death and dying.

The highest score for an item in Section B was 4, while the lowest score was 1. The range was 3 (i.e. 4-1) and the midpoint was 1.5 (i.e. 3/2). Therefore, the cut-off point was 4-1.5 or 1 + 1.5, which in either case comes to 2.5. Thus, items whose mean scores fell below 2.5 were the ones which indicated that respondents were ill-prepared for death and dying.

The instrument was pilot-tested to determine its usability. It was tested on a representative sample of 20 pre-retirement civil servants who were not part of the target sample in Ibadan, Oyo State. Through the pilot-testing, ambiguous statements that were indicated by respondents were restructured and replaced with more appropriate ones.

The content validity of the instrument was also determined by a panel of three experts in guidance and counselling from the Department of Counsellor Education, University of Ilorin. This process, according to Bamidele, Seweje and Alonge (2002), involves essentially the systematic examination of the test content to determine whether it covers a sample of the behaviour domains to be measured and to ensure that it measures what it intends to measure (Falaye, 2009). These experts perused the instrument and made suggestions which were taken into consideration in constructing the final version.

Reliability, according to Abiri (2006) and Daramola (2006), is the extent to which the instrument is free from random error, thus measuring over time the variables of interest. Thus, an instrument is said to be reliable when it yields consistent results whenever administered. The coefficient of stability of PDDQ was determined by using the test-retest method. The instrument was administered to a sample of 20 randomly selected civil servants in Ibadan, Oyo State. After an intervening period of four weeks, the same instrument was re-administered to the same sample. The two sets of scores obtained were subjected to the Pearson's Product Moment Correlation Formula. The correlation coefficient obtained was 0.85 which was significant at the 0.05 level of significance.

Procedures for data collection and analysis

The administration of the questionnaire in the North-East (Borno) was done by one of the researchers, while those of the other five geo-political zones were handled by five research assistants hired and trained for the purpose of data collection. A total of 200 copies of the questionnaires were administered in each zone, making a total of 1,200 respondents.

Results

The results are displayed in Tables 1 and 2. Table 1 depicts the mean scores of respondents' level of preparation for death and dying in

descending order of magnitude. Table 2 depicts the results of t-test comparing mean values on the basis of age.

Table 1. Ranking of mean scores on preparation for death and dying

	Mean Order	Rank	Nature
Death is a reality and I would be ready for it whenever it comes	2.47	1st	Negative
I have prepared my obituary notice/eulogy before death comes.	2.41	2nd	Negative
I am more religious now that I am near retirement	2.37	3rd	Negative
I have an insurance policy (life assurance) for myself	2.37	3rd	Negative
I have made some funeral pre-arrangement before my death	2.37	3rd	Negative
Even if I were diagnosed as having a terminal illness, I would not feel anxious	2.36	6th	Negative
I am ready to volunteer/donate any of my organs for use by any one in need of it.	2.35	7th	Negative
I have invested in landed properties	2.34	8th	Negative
I have discussed with my children/relatives how I wish to be buried	2.33	9th	Negative
I am embarking on a small/large scale business before retirement	2.33	9th	Negative
I have purchased enough of viable shares	2.32	11th	Negative
I have discussed the issue of death with my children/relatives already	2.32	11th	Negative
I have been engaging myself in some kind of activities for which I want to be known and remembered after I die	2.32	11th	Negative
I have knowledge of the states people go through before dying	2.30	14th	Negative
I can attend seminars on death and dying	2.29	15th	Negative
I would be ready/prepared to live in a special home for the aged or hospice as I approach death	2.28	16th	Negative
I can pass through/by a cemetery without fear/nervousness	2.27	17th	Negative
I have talked about my own death with family/ friends/relatives	2.26	18th	Negative
I have made a written will already	2.23	19th	Negative
I have written my own epitaph before death comes	2.23	19th	Negative

Table 1 indicates that the item: "Death is a reality and I would be ready for it whenever it comes" had the largest mean of 2.47 and

was therefore ranked as first. It was followed by the item: "I have prepared my obituary notice/eulogy before death comes" positioned second with a mean of 2.41. On the other hand, the two items worded thus: "I have made a written will already" and "I have written my own epitaph before death comes" each with a mean of 2.23 were tied for the 19th and last position. The remaining 16 items were ranked in-between these two sets of extreme values (seeTable 1). More importantly, it could be observed that none of the mean values of these items on preparation for death and dying was up to 2.50, the cut-off point. Hence, one could say that, in all cases the respondents were ill-prepared for death.

As indicated earlier, Table 2 depicts the results of t-test comparing the means of level of preparation for death and dying on the basis of age. The Hypothesis was stated thus:

> "There is no significant difference among preretirement civil servants in Nigeria in their preparation for death and dying on the basis of age".

Table 2. Results of t-test comparing pre-retirement civil servants in their preparation for death and dying on the basis of age

Age	No	X	SD	Df	Cal. t-value	Sig.
50-54 years	700	44.02	6.44	1198	-13.22*	0.001
55-60 years	500	50.00	8.54			

* Significant, $p < .05$

Table 2 shows that the calculated t-value of-13.22 is larger in absolute terms than the critical t-value of 1.96, at the 0.05 level of significance, alpha (a) and 1198 degrees of freedom. Hence, the null hypothesis is rejected; t (df = 1198) = -13.22, $p < 0.05$. There is statistically significant difference among preretirement civil servants in Nigeria in their pre-paration for death and dying on the basis of age. In other words, age has a significant influence on the level of preparation for death and dying among pre-retirement civil servants in Nigeria. A comparison of their means showed that younger pre-retiring civil servants (with a mean of 44.02) were less prepared for death and dying than their older counterparts (with a mean of 50.00) (Table 2).

Discussion

This study has shown that pre-retirement civil servants in Nigeria are ill-prepared for death and dying. This result finds corroboration in the work of Udoh (2000) which indicated that in Nigeria, most people are not ready for death when it comes. The possible explanation for the similarities in these results could be that, though the two findings are separated by more than a decade in time, the fact of death and dying is so real and so deeply ingrained that people of all ages grapple with it with fear and trepidation.

This study has also found that age is a significant factor when it comes to preparing for death and dying. The studies by Levy (2001) and Jafar (2005) indicate similar outcomes. This finding is quite understandable in the sense that when all other variables are held constant, death is largely a function of age.

Lastly, it was found that, on the basis of age, younger pre-retirement civil servants were less prepared for death and dying than their older counterparts. The report by Betzold (1999) had the same conclusion, viz, that people of different age groups prepare differently for death and dying. The explanation for the similarity of the results of the two studies could be that, older people are less anxious about death than middle age people and so, the former are more relaxed and calculated in preparing for death and dying. In addition, the older people were better prepared for death and dying probably because they had a longer time on hand to prepare for the process.

Conclusions

From the results of the study the following conclusions were made:

1. Pre-retirement civil servants in Nigeria are ill-prepared for death and dying;
2. Age has a significant influence on the level of preparation for death and dying among pre-retirement civil servants in Nigeria; and
3. Younger pre-retirement civil servants are less prepared for death and dying than their older counterparts.

Challenges for Counselling

The following challenges to counselling practice in Nigeria emerged from the findings of this study:

- Career development is influenced by many variables, including economic crisis, age and people's level of preparation for retirement. However, all these variables must be integrated into the career development process. Nevertheless, and as Zunker (2006) has posited, retirement counselling is often overlooked as part of career development and as a career counselling objective. This is the critical challenge that counselling practice must face in 21st century Nigeria. In other words, retirement counselling must be made a major component in the practice of career development.
- The various ministries, non-ministerial departments as well as private employment agencies should consider developing pre-retirement programmes that offer their employees assistance in projecting pensions, gratuities and other future benefits when they reach retirement age. The challenge to career guidance and counselling is obvious from these facts. Hitherto, the domain of career guidance and counselling has been the secondary school. There is now a dire need, as indicated by Omotosho (1995), to take such services to other domains or arena as well.
- The Counselling Association of Nigeria (CASSON) faces the imminent challenge of keener competition from other helping relationship professionals such as those of social welfare, psychology, medicine, regarding the issues of ageing, preretirement and dying. Their goal would be to snatch CASSON's usual clientele. Hence, unless CASSON gets poised in time to retain such prospective clientele with efficient and relevant services, they might be lost in the nearest future. Such a situation will not augur well for CASSON's frontline role as an association of helping relationship professionals of the counselling genre. Hence, the time to act is now.
- Lastly, death and dying are phenomena that are common to all humans, irrespective of country of origin. This fact is even more profound in the African context. In most African countries, especially the sub-Saharan region, beliefs about, and attitudes towards death, as well as burial rites and rituals are deep and profound in the meanings attached to them. Hence, the challenges posed by the findings of this study as

highlighted above for Nigeria, could as well be applicable to other sub-Sahara African countries that share similar historical, cultural, colonial and religious experiences with Nigeria.

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2014 REVISED SOCIAL STUDIES SYLLABUS FOR COLLEGES OF EDUCATION IN GHANA-MATTERS ARISING

Francis Hull Adams
Holy Child College of Education,
Takoradi Ghana.

Abstract
The study examines the 2014 Revised Social Studies Syllabus for Colleges of Education in Ghana. Twelve tutors were sampled from six Colleges of Education in the Western and Central Regions of Ghana using the purposive sampling technique. The main research instrument used was an interview guide. Data collected were transcribed and analyzed using qualitative procedures. The structure and contents of the syllabus were first discussed followed by the data collected from the respondents. The study confirmed the perception held by many that social studies offered in the Colleges of Education in Ghana is integrated, based on the social sciences. It was revealed that the content areas of the subject are based on disciplines such as Geography, Economics, History, Sociology and Government. More so, inspite of the few gaps found between the syllabus and the JHS Social Studies syllabus, to a very large extent, the Social Studies syllabus for the Colleges of Education is consistent with the JHS syllabus. Among the recommendations made was the need for tutors to adopt innovative approaches in teaching to enable them to complete the outline for each semester before End of Semester Examinations.

Key words: Integration, contents, methods, social science.

Introduction

The University of Cape Coast, which is the mentoring institution for all the Colleges of Education in Ghana undertook a comprehensive review of programmes of study and syllabuses of all courses in the Colleges of Education in Ghana in 2014. This was done to reflect the new five semester programme which has come to replace the In-In-Out programme. The rationale, according to the policy document, is geared towards the training of a generalist teacher who would be able

to teach at both primary and Junior High School (SHS) levels. This means that, in addition to courses in Education, practical activites and general studies, students are expected to take at least seven foundation subjects namely: English, Mathematics, Ghanaian Language and Culture, Integrated Science, Environmental and Social Studies, Pre-vocational Skills, and Religious and Moral Studies. As per the new regime, level 300 students are expected to spend their 4th semester on campus and use one semester for the out-segment.

Social Studies is one of the key foundational courses offered in the Colleges of Education. In the basic schools in Ghana, Social Studies is taught from pre-school level to the JHS level. At Kindergarten, it is taught as Environmental Studies, in the upper primary, it is taught as Citizenship Education while in the JHS it is taught as Social Studies (Adams, Andoh & Quarshie 2013; Revised Social studies syllabus, 2014). It is therefore expected that a social studies graduate from a College of Education in Ghana should be able to effectively teach the course at any of the basic education levels. This is reflected in the five-pronged general objectives of the syllabus which carefully touched on all the levels in basic education where Social Studies is taught. The syllabus is intended to help pupils to:

1. describe the structure of the Social Studies learning area of the basic school (kindergarten, primary, junior high) syllabuses.
2. explain the rationale for including Social Studies as a learning area in the basic school (kindergarten, primary, junior high) syllabuses.
3. state the general the aims for teaching Social Studies as a learning area in the basic school (kindergarten, primary, junior high) syllabuses.
4. outline the content of the Social Studies learning area of the basic school (kindergarten, primary, junior high) syllabuses.
5. design appropriate activities and materials for teaching each unit/topic in the Social Studies learning area of the basic school (kindergarten, primary, junior high) syllabuses.

The syllabus has been designed for four semesters covering two years. The first three semesters have been allocated for courses on content while the fourth semester is for topics in methodology. The first page of the syllabus has a brief introduction which highlights what the syllabus is about, after which, five general objectives were outlined for the entire syllabus. Each semester begins with the year

and the semester, course code, course title, credit hour and a brief description of what the semester's work contains. After that, there are general objectives for each semester before the tabular structure which shows the outline of units and topics. The table has three columns indicating Unit, Topics and Suggested duration.

Year One Semester One exposes students to the nature of Social Studies which expatiates on meaning, scope, attributes, purpose, goals and importance of Social Studies. It also deals with the environment and environmental problems of man. Among some of the key environmental issues include: air pollution, water pollution and land degradation. It covers the concept of the environment, specifying the physical, cultural and social environment of man. Another major topic meant to be treated in the semester is about the earth and its natural occurrences. Students will learn about the solar system, earth movements, continents and oceans, weather and climate, types of rainfall and major landforms. Students are prepared on the use of land. This entails the concept of layout, settlements, sites and situation, slums, natural disasters and ways of using the land. The next topic is Maps and mapping skills. In this context, learners are expected to grasp the concept of maps taking into account, types of maps, components and essentials of map as well as measurement of distance and area using the scale of a map. The last topic for semester one is Presentation of direction, position and features on maps. This topic takes into account sub-topics such as; Compass/cardinal points (including True, magnetic and Grid north). It also focuses on longitudes and latitudes, conventional signs, methods of showing relief and drainage patterns.

Year One, Semester Two outlines eight topics for students to go through. The first is on geography and natural resources of Ghana. This topic examines the land area of Ghana, regions and capitals as well as relief and drainage of Ghana. It also emphasizes rainfall patterns, vegetation and mineral deposits. Topic two is on the people of Ghana. It encompasses the various ethnic groups and their migration. It deals with culture and some outmoded cultural practices such as FGM, Trokosi, Widowhood rites and Betrothal. The national symbols and ways of promoting national unity are also stressed. The next topic is Colonization in Ghana. This spans from the activities of the early Europeans in the Gold Coast through the process of colonization, effects and how to deal with the negative effects of

colonization. Pre-independence political developments in Ghana; the next topic, examines developments such as the Bond of 1844, the Poll Tax Ordinance of 1852, the Segranti War of 1874, the Lands Bill of 1897 and the Yaa Asantewa War of 1901. Other issues include Leadership under Sir Gordon Guggisberg, the activities of the UGCC and the activities of the CPP. Another topic for the semester is on Independence and Constitutional Governance. Sub-topics considered include: Meaning, Types and Forms of Constitutions, Features of 1960, 1969 and 1992 Constitutions of Ghana. Structures and Institutions of Governance such as Executive, Legislature, Judiciary, CHRAJ and NCCE are to be discussed with the students. The concepts of Separation of Powers and Checks and Balances as well as Rights and Responsibilities of citizens are discussed. The last but one topic is on Promoting Peaceful Co-Existence and Political Stability in Ghana. The important sub-topics for this include Maintaining Law and Order, Understanding Conflict and Managing Conflicts, Democracy as a System of Governance and other practices such as upholding good governance practices and defending the Constitution and rule of law. The last unit for Semester Two examines Ghana's relationship with international organizations such as ECOWAS, AU, Commonwealth of Nations and UNO.

Year Two, Semester One consists of seven units. Unit one is on production in Ghana. The unit takes into account the factors of production and various types of occupations. It also deals with promoting high productivity by demonstrating positive attitudes and values in the work place. The unit also looks at food security, post harvest losses and how to deal with it. Unit Two is on Technology and Work. Meaning, forms of technology and challenges facing the use of technology in Ghana are to be discussed. Unit Three is Entrepreneurship. Areas under the unit include: types of business enterprises such as sole proprietorship, partnership, joint stock companies, and cooperative societies. It also examines the relationships between State Enterprise and Private Enterprise. The major topic for Unit Four is Money and Financial Management. The Nature, and Characteristics of money and the Functions of money are to be discussed. Other areas include proper and improper ways of using money and ways of saving money for future security. The next unit deals with development and problems of development in Ghana. The concepts of growth and development as well as dimensions of

development will be examined. More so, ways of utilizing resources such as natural, cultural and human will also be learnt. The last issue under Unit Five is the problems of development. Unit Six is on Health, Tourism and Leisure which examines Adolescent reproductive Health, Responsible and irresponsible adolescent behaviours and the benefits of chastity. Other areas include the concept of tourism and leisure and ways of promoting tourism in Ghana. Unit Seven is the last unit for the semester. The Unit discusses the role of community institutions in socio-economic development of Ghana. The sub-topics include: the family, Religious organizations, Traditional Authorities, District Assemblies and national Government.

Year Two, Semester Two is mainly about methodology of teaching. The course title is "Principles and Methods of Teaching Social Studies". Eleven major units are spelt out for discussions. The first topic focuses on approaches for designing Social Studies programmes. The two main approaches outlined include the "Concentric" and "Spiral" approaches. Unit Two is based on the Analytical Study of the Basic School Social Studies Syllabuses. It emphasizes the Citizenship Education Syllabus and the JHS Social Studies Syllabus. Unit Three on the other hand deals with Teaching and Learning resources. Units Four to Nine focus mainly on the techniques of teaching Social Studies. The techniques are: field work, brainstorming, role playing, and simulation, debate, discussion and the use of resource persons. The last unit (Unit 11) focuses on planning and preparing instructional plans. This involves preparing scheme of work and lesson plan.

Social Studies in Colleges of Education

Integrated Social Studies was first introduced in the then Teacher Training Colleges in 1940 when the Colleges were established. "At the time, Social Studies was taught in three colleges namely, Presbyterian Training College (PTC) at Akropong, Wesley Training College in Kumasi, and Achimota Training College in Accra" (Cobbold, 2013:1). However, the programme was short-lived because of a number of national challenges it encountered. Kankam Boadu and Oto (2014) identified some of the challenges as being lack of trained-personnel, fear of subject specialists losing their identity and a natural collapse resulting from the fact that some of the teachers retired and there was no replacement while others were transferred. Social Studies

education in Ghana and particularly in the training colleges resurrected after the Mombasa Conference in 1968. In 1978, the University of Cape Coast prepared an integrated Social Studies syllabus for the Three Year Post-Secondary Teacher Training Colleges in the country. This was reviewed in 1980 so that Social Studies remained examinable throughout the colleges.

In 1987, the Provisional National Defence Council (PNDC) administration introduced a new Educational Reforms programme which also re-introduced and revised the Social Studies syllabus in the Colleges. According to Cobbold (2013), the University of Cape Coast started a Bachelor of Education programme in Social Studies to train teachers for teaching the subject at the secondary and college levels. He further explained that in 1989 the then University College of Education, Winneba (UCEW) also began a diploma programme to train Social Studies teachers. Thus, by the close of the twentieth century Social Studies had been firmly established as a subject that is examined for certification at the basic, senior secondary and tertiary levels of education in Ghana (Cobbold, 2013:2)

Social Studies and Social Sciences

Social studies has been defined by many proponentss of the subject in various ways. The National Council for Social Studies (1994) defined Social studies as the integrated study of the Social Sciences and the humanities to promote civic competence. On his part, Marttorella (1994) seems to have a long definition of Social Studies. He explained Social Studies as the selected information and modes of investigation from the Social Sciences, selected information from any area that relates directly to an understanding of individuals, groups and societies, and application of the selected information to citizenship education. A third from Tabachnick (1991) considered Social Studies to be part of the school curriculum which deals with human relationships, and aims to contribute to the development of good citizenship. Kazi (1994) also defined Social Studies as Citizenship Education. In essence, it is the kind of education that is aimed at making a person a good citizen.

All the four definitions agree that Social Studies aims at producing good citizens by inculcating citizenship ideals in them. There is therefore a consensus in Social Studies literature based on the above and many more that the major goal of Social Studies is

citizenship education (Ajiboye, 2009; Adler & Sim, 2008; Ross, 2006; Hahn, 2001). According to the Ghana Teaching Syllabus for Social Studies in JHS (CRDD, 2007), the subject prepares the individuals by equipping them with knowledge about the culture and ways of life of their society, its problems, its values and its hopes for the future. These clearly show that it is accepted that the ultimate aim of Social Studies is seen as citizenship education.

In addition to the concept of citizenship education, most of the authors also agree that the subject is integrated in nature. In the view of Quashigah, Dake, Bekoe, Eshun, and Bordoh (2014:11) "Although, both the College of Education and the Junior High School Social Studies curricula see the subject as an integration of knowledge, the point of contention has been the nature and acceptable level of integration. Integration therefore becomes the pith and core of social studies as it selects ideas, concepts, principles, theories and generalizations from mainly the social sciences with the main aim of promoting citizenship education". However, Cobbold (2013:12) introduced a very relevant dimension in the explanation of Social Studies which is so vital to the meaning of what Social Studies is. He wrote that "the focus of Social Studies is the network of relationships that evolve among people as they try to co-exist in the various group settings that compete for their loyalties". Cobbold (2013:12) remarks that "Of all the attributes that distinguish humans from other creatures, the most remarkable is their abiding interest and earnest longing for association with others of their species". From Cobbold's explanations it is clear that Social Studies is indeed about man and how he/she relates with the physical, cultural and social environment. To ensure effective interaction of man with the environment, there is the need for man to exhibit certain right attitudes and values which Cobbold (2013:12) refers to as "individual qualities such as critical thinking, diligence, patriotism, obedience and honesty, as well as group ideals such as cooperation, tolerance, interdependence and any other socially desirable habits, ideals, attitudes and values"

What are the Social Sciences? This question is relevant to this discussion because of the fact that Social Studies derives its content areas mainly from the Social Sciences. It is a common knowledge that Social Studies gains its identity from Social Science subjects such as History, Political Science, Economics, Sociology and Psychology. Starting with Beard (1934), the Social Sciences have been explained

as being primarily concerned with those manifestations of human activities and those occurring within the society that involve social consequence and relations. Martorella (1985) agrees with Beard but goes further to explain that the Social Sciences employ the scientific methods that focus on understanding and explaining human behavior and employ systematic approach in the collection and application of data. Again, the Social Sciences forecast trends (patterns) and behavior, a concern for verification, a desire for objectivity and interest in furthering knowledge and standards for scholarship. Throwing more light on the scientific method as mentioned by Martorella, eight attributes of the scientific method as applied in social studies have been identified by Cobbold (2013: 66) as:

1. Conceiving a problem
2. Formulating an informed guess (hypothesis)
3. Systematically collecting and analyzing data
4. Using both quantitative and qualitative methods in the collection and analysis of data
5. Interpreting and applying data
6. Predicting patterns of behavior
7. Having a concern for verification of data
8. Approaching data collection, analysis and interpretation with objectivity

Based on the philosophies of the two subjects, Social Studies and Social Science, a number of differences can be identified between the two. First, Social Studies is integrated in nature, while Social Science consists of distinct subject areas. Secondly, while, Social Science deals with the production, organization and dissemination of knowledge in Economics, Geography, History, Sociology, etc, Social Studies focuses on the production, organization and dissemination of knowledge about people and their environment. Thirdly, social scientists give inadequate attention to the feeling, humanistic elements of citizenship and to the needs of ethical decision-making that go beyond scientific empiricism (Shaver, 1967). But Social Studies attaches much importance to values. Fourthly, in the field of school curriculum, Social Studies ante-dates Social Science which means the Social Sciences came first before Social Studies emerged.

The purpose of this study was three-fold: first, to examine the content areas semester by semester and find out the core issues involved in the Five-semester Social Studies programme in the

Colleges of Education. Second, to ascertain how the Social Science disciplines influence the Social Studies Curriculum. Third, to suggest ways by which both tutors and students can immensely benefit from the syllabus.

Research questions

The study was guided by these research questions:

1. What are the core issues involved in the Five-semester Social Studies programme in the Colleges of Education?
2. To what extent do the Social Science disciplines influence the Social Studies curriculum?
3. What are the views of Social Studies tutors about the Revised Syllabus?

Methodology

Qualitative content analysis and descriptive research method were used. In all, there are four courses run over the four semesters. The analysis was done on semester basis. Each semester's contents were examined. Units were assessed with regard to the number of sub-topics and duration for teaching it. The topics were also investigated to find which of the Social Science subjects lend themselves to the topics for the semester. The population consisted of Social Studies tutors from six Colleges of Education in Central and Western Regions of Ghana. Sample consisted of 12 tutors (2 from each College). Structured-interview schedules were used to solicit information from the respondents

Results and discussions

Research question 1:

What are the core issues involved in the Five Semester Social Studies Programme in Colleges of Education?

Research question one seeks to ascertain semester by semester the dominant units tutors and students have to contend with. A critical analysis of the course outline for each semester was done to identify the dominant units, number of sub-topics under each unit, the social science-based discipline which the sub-topics conform to and the number of weeks delineated to cover each unit. Table 1 indicates the breakdown of the course structure for Year One, Semester One.

Table 1: Social Studies and Human-Land Issues

Unit	Number of topics	Social science based-discipline	Number of weeks
The nature of social studies	5	Philosophy	2
The environment and environmental problems	4	Geography	2
The earth and its natural occurrences	7	Geography	3
The use of land	6	Geography	2
Mapping	7	Geography	2
Presentation of Direction and features on maps	5	Geography	
Total	**34**	**Geography: 5**	**13**

(Source: Revised 2014 Social Studies syllabus for CoE)

Table 1 indicates the breakdown of the course outline for Year One Semester One (FDC 118). The Course title is Social Studies and Human-Land Issues. Six major units are listed to be taught which have been sub-divided into 34 topics for 13 weeks. Unit 1 is based on the Philosophy of Social Studies which deals with the meaning, scope, attributes, purpose, goals and importance of Social Studies. Units 3 and 4 have the highest number of sub-topics (7 each) followed by unit1and 6 (5 each) and then Unit 2 with 4 topics. However, apart from Unit 3 which has a duration of 3 weeks, all the others have 2 weeks. It is therefore obvious that judging by the number of sub-topics, and subsequently the duration, Unit 3 can be said to be the major unit for Semester One. All the others have a teaching duration of 2 weeks, inspite of the number of topics. Unit 2 has the least number of topics (4) but it equally has a duration of 2 weeks.

Out of the 6 major topics, 5 of them in Units 2 to 6 are Geography-based topics meant to be taught within a duration of 11 weeks. Out of the 34 topics, a whopping 29 of them are Geography-based. From this, it is clear that Year One Semester One Social Studies course syllabus is Geography-biased. One needs therefore to keep abreast of the requisite Geographical concepts to be able to teach effectively.

Table 2: Ghana as a Nation

Unit	Number of topics	Social science based- discipline	Number of weeks
Geography and natural Resources of Ghana	6	Geography	2
The people of Ghana	7	History, Sociology	2
Colonization in Ghana	5	History	1
Pre-independence political development in Ghana	8	History	2
Independence and Constitutional Governance	7	Government	2
Promoting peaceful co-existence and political stability in Ghana	5	Government	2
Ghana's relationship with international organizations	4	Government	2
Total 7 Units	**42**	**Geography: 1** **History: 3** **Government: 2** **Sociology: 1**	**13**

(Source: Revised 2014 Social studies syllabus for CoE)

Year One, Semester Two (FDC 128) breakdown of the syllabus is represented in Table 2. In all, 7 major units are to be covered; sub-divided into 42 areas to be taught within the duration of 13 weeks. Unit 4 has the highest number of topics (8). This is followed by Units 2 and 5 with 7 sub-topics apiece. Unit 1 has 6 topics while Units 3 and 6 have 5 topics each with Unit 7 has the least number of topics (4). Apart from unit 3, which has a suggested duration of 1 week, the rest of the units have 2 weeks duration each. The 7 major units and 42 topics can be grouped under 3 main Social Science disciplines namely: History, Geography and Government. Unit 1 is the only one with Geography topic. Unit 2 is a blend of history and Geography whiles units 3 and 4 are solely History topics. Unit 5, 6 and 7 are also Government topics. The semester is therefore dominated by History and Government topics.

Table 3: Socio-Economic Development in Ghana

Unit	Number of topics	Social science based- discipline	Number of weeks
Production in Ghana	7	Economics	2
Technology and work	5	Economics	2
Entrepreneurship	6	Economics	2
Money and Financial Management	5	Economics	1
Development and problems of development in Ghana	4	Economics	2
Health, Tourism and Leisure	6	Economics	2
The role of Community institutions in socio-economic development	5	Sociology	2
Total 7 Units	**38**	**Economics: 6** **Sociology: 1**	**13**

(Source: Revised 2014 Social Studies syllabus for CoE)

Table 3 shows the breakdown of Year Two Semester One course structure (FDC 218). It has seven major units and 38 topics which have been spread over a period of 13 weeks. Unit 1 has 7 topics, units 3 and 6 have 6 topics each, while units 4 and 7 also have 5 topics each. The least number of topics are 4 which come under unit 5. Unit 4 has the least number of weeks to cover (1 week). The suggested duration for the other units are 2 weeks each. The semester is dominated mainly by Economics topics apart from unit 7 which is a Sociology topic. The implication is that one needs to be well versed in the principles in Economics before teaching the course. A tutor who does not have the relevant subject matter on Economics is likely to scratch the surfaces of the topics and not delve into details. If that happens, students are likely to suffer not only during the End of Semester Examination, but also in the field of work after school since such a teacher cannot teach Social Studies well in the basic school.

Table 4: Principles and Methods of Teaching Social Studies

Unit	Number of topics	Number of weeks
Approaches for designing Social studies programmes	3	1
Analytical study of the Basic school Social studies syllabus	2	2
Teaching and Learning Resources	7	2
Field work Technique	8	1
Brainstorming Technique	4	1
Role playing Technique	4	1
Simulation Technique	4	1
Debate Technique	4	1
Discussion technique	4	1
Use of Resource persons	4	1
Planning and preparing instructional plans	6	1
Total 11 Units	**46**	**14**

(Source: Revised 2014 Social studies syllabus for CoE)

Table 4 illustrates the scope of contents to be covered for Year Semesters Two (PFC228). Eleven major units are outlined for the semester. They have been sub-divided into 46 areas meant to be taught within a duration of 14 weeks. There are 7 topics under Unit 3, 6 under Unit 11, 3 under Units 1 and 2. Units 3 to 10 have 4 topics each. In terms of the duration, apart from Units 2, 3 and 4 which have 3 weeks to cover, the rest of the units have 1 week each. This implies that Units 2, 3, and 4 have broader content areas which need more attention and time by the tutor.

The major issues identified from each semester include 'the earth and its natural occurrences' in Year One, Semester One, Unit 3. It has seven topics and an instructional duration of three weeks. This is followed by 'Mapping' in Year One, Unit 5. Mapping has seven topics and an instructional duration of two weeks. The First Semester's units are dominated by Geography topics. Ghana as a

Nation (Unit 4) is the first major unit for Year One, Semester Two. It has 8 topics and an instructional duration of two weeks. Independence and Constitutional Governance (Unit 5), is the next major unit for Year One Semester Two. It has seven topics and an instructional duration of two weeks. Year One, Semester Two is dominated by History and Government topics. Two major issues were identified from Year Two, Semester One. First, is Production in Ghana inUnit 1 and it has7 topics to be treated within two weeks. This unit is followed by Entrepreneurship (Unit 3). The unit comprised six topics to be taught within two weeks. The major issues identified from Year Two, Semester Two include Teaching and Learning Resources and, Planning and Preparing Instructional plans in Unit 3. The duration for the two units is two weeks per unit.

What are the implications? These major units identified have each a number of topics under them, which cannot be brushed aside by tutors. As a result of the broad nature of such units, tutors are more likely to ignore some of the topics in order to complete the course outline early. This will be disingenuous and can negatively affect the students.

Research question 2:

To what extent do the Social Science disciplines influence the Social Studies curriculum for Colleges of Education?

Social Studies as an integrated study of the Social Sciences and the humanities is purported to derive its content areas from mainly the Social Science subjects. However, the extent to which the Social Sciences influence the scope of Social Studies has been argued merely on perceptions. It is against this background that research question two seeks to find out how the Social Sciences dictate the contents of Social Studies.

Table 5: Influence of Social Sciences on Social Studies Syllabus for Colleges of Education in Ghana

Social science elements	Number of occurrences				Percentage (%)
	Year 1 Sem 1	Year 1 Sem 2	Year 2 Sem 1	Total	
Philosophy	1	0	0	1	5
Geography	5	1	0	6	30
Economics	0	0	6	6	30
History	0	3	0	3	15
Government	0	2	0	2	10
Sociology	0	1	1	2	10
Total	**6**	**7**	**7**	**20**	**100**

(Source: Revised 2014 Social Studies syllabus for CoE)

The Social Studies syllabus is divided into four semesters of content work with one semester for out-segement where students do practicum teaching. Twenty topics are taught over three of the four semesters. Year Two Semester Two was not factored into this discussion because it focuses only on Methodology. This discussion is intended to unearth the Social Science elements in the content areas of the programme. Table 5 explains that Geography and Economic-related topics occurred six times, denoting 30 percent each of the total number of occurrences of the Social Science elements. History registered 15 percent of occurrence, while Government and Sociology accounted for 10 percent each. There is only one major topic on Philosophy which focused on the meaning and nature of Social Studies which constituted 5 percent of the total number of occurrences. The statistics clearly explains that there are more Geography and Economic topics than any of the Social Science elements.

Breaking the compostion of Social Science further down, it can be stated that Year One, Semester One is Geography-biased; Year One, Semester Two is History-dominated while Year Two, Semester One is Economic-dominated, History and Government topics are found mainly in Year One, Semester Two while, Sociology topics can be found in Year One, Semester Two and Year Two Semester One. Economics topics are found in only Year Two, Semester Two, while Geography topics cut across two semesters: Year One, Semester One and Year One, Semester Two.

There is no denying the fact that, Social Studies as a discipline is heavily dependent on the Social Sciences. It can therefore be said that without the Social Sciences there can be no Social Studies. This assertion is proven based on the grounds that it is through the integration of relevant ideas, concepts, principles and theories that Social Studies gets its content areas (Adams, et al., 2013). Integration is therefore the backbone of Social Studies. It can also be said to be the nature of Social Studies. The elements of the Social Sciences that form the basis for the Social Studies are the single Social Science subject areas such as Economics, Geography, History, Political Science, Sociology, Anthropology and Psychology (Kazi, 1994). Social Studies therefore selects relevant concepts from these subjects and integrate them in a manner devoid of subject area distinctions to form a holistic source of knowledge.

Research question 3:
What are the views of Social Studies tutors about the Revised Syllabus?

The respondents expressed their opinions on the Revised Social Studies Syllabus and for the purpose of this discussion the focus is on respondents' demographic characteristics, content coverage of the syllabus, and methodology coverage of the syllabus.

Table 6: Demographic Characteristics of Respondents

pseudonym	Gender	Age	No of years spent in teaching Social Studies	Highest academic
Nyanzu	M	38	6	M.Ed Teacher Education (Social Studies)
Nancy	F	48	7	M.Phil Social Studies
Amachie	M	54	10	M.Phil Curriculum Studies
Aquah	M	47	10	M.Ed Environmental Management & Policy
Mabel	F	38	11	M.Ed Teacher Education (Social Studies)
Vesta	F	36	3	M.Ed Environmental

				Management & Policy
Christopher	M	40	5	M.Ed. Teacher Education
Kojo	M	41	5	M.Ed. Environmental Management & Policy
Laurence	M	42	5	M.Ed Teacher Education (Social Studies)
Isaac	M	47	7	M.Phil Curriculum Studies
Christy	F	44	8	M.Ed. Teacher Education (Social Studies)
Philip	M	43	9	M.Phil Curriculum Studies

(Source: Field Survey, 2015)

The 12 respondents who granted interview to the researcher are tutors who teach in some of the Colleges of Education in Ghana. In terms of gender, four of them are females, while eight are males. Five of them are aged between 36 and 41. Four are in the age range 42-47, while the ages of the three are in the range of 48 and 54 years. Number of years spent in teaching Social Studies in the college was also solicited from the respondents. With the exception of one person who has taught for a period of 3 years, all the respondents have taught Social Studies between five and eleven years in the College of Education. Respondents gave their highest academic qualification as follows: M.Phil (Curriculum Studies): 3; M.Ed (Teacher Education in Social Studies): 5; M.Phil (Social Studies): 1; M.Ed (Environmental Management and Policy): 3.

The basic characteristics of the respondents as indicated in Table 6 speak volumes of what they can do as far as teaching Social Studies at the college level is concerned. In terms of age, the majority of them are aged above 41 years (7 of them). It is believed that most of the respondents are matured enough to teach the course in the College of Education. It is interesting to note that all the respondents have gained a lot of experiences in teaching the subject. This is because 11 out of the 12 have taught Social Studies between 5 and 11 years in the College of Education. Concerning highest academic qualification, all the respondents have their second degrees and their areas of specialization are also related to Social Studies directly or

indirectly. Based on their qualification (masters degree), one can infer that all things being equal, the tutors are better placed to teach Social Studies as compared to having only first degrees.

Content coverage

Many of the respondents expressed satisfaction with the structure of the syllabus in terms of the three semesters allotted for contents and one semester for methodology. Isaac explained that "the trainee needs more content areas than methods so as to become an authority of the subject". He indicated that "If one knows all the techniques of teaching Social Studies but little content, he/she cannot deliver to expectation". On his part, Vesta compared the topics in the revised syllabus to the topics in the JHS Social Studies syllabus and assessed that there are few gaps between the CoE Syllabus and the JHS syllabus. According to Vesta, even though most of the topics in the JHS syllabus duly reflect the CoE syllabus, there are still a few things that can be done to align the two syllabuses. She suggested that Year One, Semester One topics should cover all the topics in Section One of the JHS Syllabus, Year One Semester Two should cover all the topics of Section Two of the JHS Syllabus while Year Two Semester One should also fully cover all the topics in Section Three of the JHS Syllabus.

Nyanzu specifically identified "Statistical maps and diagrams" as a missing topic in the syllabus which ought to be added. According to him, even though the topic is not found in the 1987 JHS syllabus, it exposes the learner to mapping skills which are essential for his everyday life. Philip also explained that the syllabus is a very useful material. He, however, was of the view that the topic "Layout" should be replaced with "Mapping". Nancy agreed with the first two contributors but sharply disagreed with Vesta that everything in the CoE syllabus should reflect the JHS Syllabus. She stated" Even though the Colleges train teachers for the basic schools, including the JHS level, it does not mean that every topic in our course outline should also be found in the JHS syllabus". Explaining further, Nancy said the Colleges are higher than the JHS and therefore can do things differently from the JHS. The rest of the respondents; James, Amachie, Aquah, Christopher, Mabel, Kojo and Laurence commended the content of the revised syllabus saying it is "well

stuffed" with relevant materials needed to make good Social Studies teachers for the basic schools.

Methodology coverage

Topics under methodology are captured in the second year second semester course. The course covered the Approaches to designing Social Studies programme, viz: Concentric and spiral approaches, the critical study of the citizenship education syllabus as well as the JHS syllabus. It finally deals with the techniques of teaching Social Studies and planning instructions in Social Studies.

Most of the respondents expressed their absolute faith in the Methodology aspects of the syllabus. According to them, the syllabus touches on every relevant method and technique needed to make a good teacher. They, however, opined that a lot will depend on the teacher implementing the syllabus. James for example specifically commented that "Teachers who do not posses good pedagogical skills will just brush over the topics and cause the students to cram them without practically demonstrating what it means". This assertion is supported by Cobbold (2010) who stated that: "the nature and philosophy of Social Studies imply that the teacher who handles the subject at any level should adequately exemplify scholarly and professional competence. Given appropriate resources and adequate time, the teacher should be able to concoct a special mix of content and pedagogy to achieve desired objectives with learners possessing the requisite background knowledge, skills and experiences" (p. 67).

Adams et al. (2013:23) buttressed the discussion. A good Social Studies teacher, according to them should be able to select the appropriate techniques and strategies to use in teaching a particular topic in class. This is because some topics are suitable for some techniques while others are not. For example, a topic like; 'Knowing myself' will not lend itself to the use of 'Lecture' or 'Debate'. Instead it will be more appropriate to use, 'Discussion', or even 'Story telling'.

Conclusion and recommendations

Based on the findings, it is concluded that: First, the Revised Social Studies Syllabus for Colleges of Education was designed based on the concept of integration of the Social Sciences. Predominant Social Science elements used were; Geography, Economics, History,

Government and Sociology. There are however, more Geography and Economics topics than other Social Sciences disciplines. Secondly, the content areas of the syllabus are largely based on the JHS syllabus. The content areas for the various units are very much loaded since each unit has many more sub-topics to be treated (Average of 6 topics). Thirdly, the methodology aspects of the syllabus are well tailored to meet the professional needs of students. Subject tutors from the target institutions are largely qualified and highly experienced who are better placed to teach the course and their professional and academic qualifications could have positive impact on their teaching and on their students.

It is recommended for Social Studies tutors to use the problem-solving techniques more frequently in order to make lessons more realistic and meaningful to students. This will help the tutors to cover topics within time. To address the problem of inadequate duration for the topics as enshrined in the syllabus, it is recommended that tutors should adopt the use of innovative techniques such as a Jigsaw which could allow students to quickly learn topics and then pass on the information to other members of the group within a relatively short time. Finally, it is recommended to the Institute of Education, University of Cape Coast, that any subsequent review of the Social Studies Syllabus should consider either replacing topics or removing topics but not adding topics to the existing ones. Further addition of topics will make the syllabus very difficult to be implemented by tutors because it is just a one credit course. However, if it becomes necessary for topic(s) to be added then the credit hours should as well be revised upwards.

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EXPLORING PROBLEM-SOLVING SKILLS AMONG JUNIOR HIGH SCHOOL ONE STUDENTS IN MATHEMATICS AT AKATSI SOUTH DISTRICT, GHANA

Eric Anane
University of Cape Coast, Ghana.

Justine Awudetsey
OLA College of Education , Ghana.

&

Bliss Cornelius Sedegah; Mark Mishiwo; Godwin Awuitor
Akatsi College of Education, Ghana.

Abstract

The purpose of this study was to explore how Junior High School (JHS) 1 students solve word-problems in Mathematics. A total of 112 JHS 1 students were purposively selected from 41 public basic schools in the Akatsi South District of Ghana. Interview guide and test items comprising questions on word-problems in Mathematics on "Fractions", "Perimeter" and "Area" were used to collect data. Percentages and frequency distribution tables as well as descriptive statistics (mean, mode, median and standard deviations) were used for data analysis. It was found that most of the students were able to read the word-problems in Mathematics but a majority of them could not read the concept names correctly. It was also found that a majority of the students could not solve the word-problems in Mathematics (fractions, perimeter and area) correctly resulting in very low performance. It is recommended that the Institute of Education, in collaboration with the Ministry of Education in Ghana, should include problem-solving skills in Mathematics as a course in the curriculum of Colleges of Education in the country. The Institute of Education should collaborate with the Ghana Education Service to organize in-service training programmes for teachers to equip them with the skills and strategies needed to enforce the teaching and learning of Mathematics using problem-solving approach.

Keywords: error analysis, mathematical concepts, problem-solving, word-problems.

Introduction

The development of students' problem-solving abilities is the primary concern of Mathematics education in most countries (Nelson, 2011). From 1989, international development partners such as Japan International Cooperation Agency (JICA) have embarked upon professional development programmes in Ghana to improve upon the level of teaching through problem-solving in an effort to add to the quality of teaching and learning in order to enhance students' achievement. Despite a decade of reforms, there are still concerns that student achievement in Mathematics and Science has not improved sufficiently to reflect the huge investment in Basic Education in Ghana, which is made up of two years of kindergarten, six years of primary school and three years of junior high school education (Ansu-Kyeremeh, Casely-Hayford, Djangmah, Nti, & Orivel, 2002).

Ghana participated in Trends in Mathematics and Science Study (TIMSS) 2003 to assess its educational system with other countries of similar curriculum aspirations and standards. According to Anamuah-Mensah, Mereku and Asabre-Ameyaw (2004), Ghana's participation in TIMSS 2003 was strategic, as it enabled the country to find out the performance of her eighth graders in Mathematics. However, Ghana performed poorly in TIMSS 2003, TIMSS 2007 and TIMSS 2011.

According to Fredua-Kwarteng (2005), Ghana's abysmal performance in TIMSS 2003 and TIMSS 2007 could be attributed to the idea that Mathematics teaching at Junior High Schools (JHS) was characterized by the transmission and command models. Students were not encouraged to pose questions or engage in problem-solving activities in order to attain both conceptual and procedural understanding of what they were being taught. Nabie, Akayuure and Sofo (2013) identified among teachers teaching Mathematics at the junior high schools that teachers did not involve students in real problem solving and investigations because these topics do not feature on West African Examination Council (WAEC) examinations. Teachers also perceived problem-solving to be cognitively demanding.

In order to promote problem solving, the Ministry of Education (Ministry of Education, 2007a) carefully designed the Mathematics curriculum content for education with the goal of helping learners develop problem-solving skills and Mathematical

ideas to carry out investigations with diligence, perseverance and confidence. To enhance problem-solving, the Mathematics teaching syllabus for schools in Ghana requires that students are taught problem-solving skills in order to apply their knowledge, develop analytical thinking skills, develop plans, generate ideas and creative solutions, and address everyday Mathematical situations. Teachers are expected to incorporate problem-solving activities in every lesson to develop learners' competencies and skills for a functional life. Specifically, teachers are expected to include appropriate and realistic problems and Mathematical investigations that will require the use of mathematical processes and provide opportunities for students to explore mathematical ideas (Ministry of Education, 2007b).

Literature Review

Lester and Kehle (2003, p. 510) defined problem-solving as "an activity that involves the students' engagement in a variety of cognitive actions including accessing and using previous knowledge and experience to solve problems". Mayer (1987) also identified problem-solving as a process which uses different forms of knowledge that leads to the goal of solving the problem and such knowledge should consists of linguistic and factual knowledge, schema knowledge, algorithmic knowledge and strategic knowledge. Hence, it is understood that students who are looking for a solution to a given problem must think consistently with the contexts and content, among others to be able to arrive at parsimonious decisions. Non-routine problems are believed to have given opportunities for students to develop higher-order thinking in the process of understanding, exploration, and application of mathematical concepts.

A number of studies have indicated that difficulties students face in solving word problems lie not only in one stage but in two or more stages. For example, the study of Marinas and Clements (1990), Ellerton and Clements (1996) and Singhatat (1991) noted that a large proportion of errors first occurred at the comprehension or transformation stages. They likewise reported that approximately 71% of errors made by Grade-7 students on Mathematical questions were at the comprehension or transformation levels. Considering all variables, the high percentage of errors in comprehension and transformation levels suggested that students have considerable difficulty in

understanding and developing appropriate mathematical representation of word problems.

Similarly, Trance (2013) used Newman's error analysis and found that higher proportion of errors made on the transformation stage accounted for almost 50% of the total number of errors committed. In fact, at least 45% of students' errors were on the transformation stage. It was also found that most participants were able to identify the topics and concepts related to the questions raised, However, many could not read the mathematical symbols used in the instruments.

Singhatat (1991) also observed that students made 68% of errors at the comprehension or transformation stages. However, it was reported that no student in the sample made any reading error. Clements (1980) analysed 6,595 errors made by 634 students using Newman Error Analysis model and realised that 70% of errors belonged to transformation or carelessness categories. The Mathematics procedure level of process skills registered 25% and encoding accounted for about 5%.

Kaur (1995) also studied students' errors when solving word problem and found that students experienced at least three problem-solving difficulties: (1) lack of comprehension of the problem; (2) inability to translate the problem into Mathematical form; and (3) lack of strategy in solving the problem. Such difficulties were very evident when students' errors were classified into categories by topics. Students have not related well to basic topics taught at elementary level. A closer look at the given questions revealed that students could not answer the problems given simply because they did not know how to read the mathematical symbols included in such questions.

It is important to assess students holistically to capture the demonstration of what they know, how they know it, and their ability to apply the knowledge acquired. Monaghan, Pool, Roper, and Threlfall, (2009) pointed out that while most of Mathematics requires convergent thinking, problem-solving requires some degree of divergent thinking which is best assessed by authentic assessment approaches. As far as problem-solving is concerned, formal assessment alone cannot capture holistic information about a student's thinking processes (Kennedy, Tipps & Johnson, 2004), as paper and pencil tests offer only a glimpse of what students know and think (Glanfield, Bush & Stenmark, 2003). Therefore, to tap the full range

of student information, teachers need to utilize a wide range of assessment strategies. According to Monaghan et al. (2009), assessment of problem-solving requires access to evidence of processes in which students produce extended responses from which the problem-solving process can be inferred.

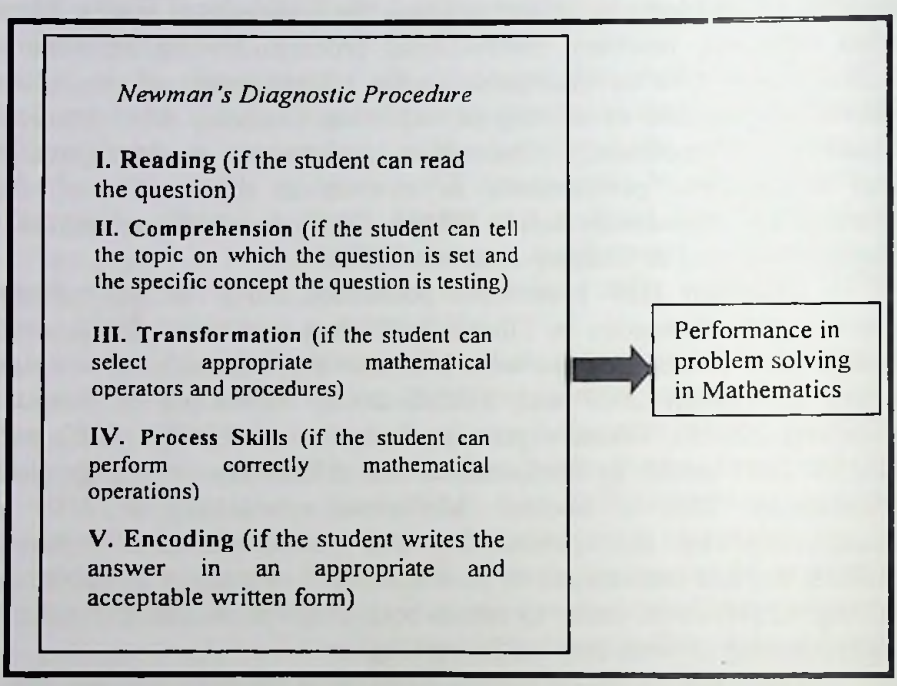
However, no study in Ghana has particularly examined how students undertake problem-solving activities in order to explore the errors that the students make and the extent to which the students can solve word problems in Mathematics at the basic school levels. More often than not, teachers' instructional problem-solving assessment techniques tend to be insensitive to the ultimate goal of producing individuals capable of solving or exploring everyday Mathematical situations. Instructionally, insensitive assessments in Mathematics lead to abysmal performance as evident in the results of the international assessment tests- TIMSS, 2003 and 2007 (Anamuah-Mansah, Mereku, & Ghartey-Ampiah, 2008).

Ghanaian JHS 1 students performed better in the content domain in Mathematics in TIMSS 2007 than in TIMSS 2003, even though their average scores were less than the International average scores in TIMSS 2007 and TIMSS 2003. According to Fredua-Kwarteng (2005), Ghana's poor performance in TIMSS 2003 and TIMSS 2007 could be attributed to the differences in pedagogical orientations. This is because Mathematics teaching at JHS is characterized by the transmission and command models where students are not encouraged to pose questions or engage in problem-solving activities in order to attain both conceptual and procedural understanding of what they are being taught.

Thus, the recurring student failures in problem-solving tests warrant investigations into the problem-solving techniques of Ghanaian students. This study sought to investigate problem-solving skills among JHS 1 students in word problems in Mathematics (fractions, perimeter and area) using Newman's (1977, 1983) Error Analysis Model (NEA) to capture the holistic information on how JHS1 students go through the five hurdles of Reading (or decoding), Comprehension, Transformation, Process Skills, and Encoding when solving word problems in Mathematics.

Conceptual Framework

The study was based on Newman's (1977, 1983) Error Analysis Model' (NEA model). The model allows researchers to identify and analyze students' errors made when solving word problems in order to know the extent to which students can solve word problems in Mathematics. Newman's' five fixed sequence as shown in Figure 1 includes: Reading (or Decoding), Comprehension, Transformation (or Mathematizing), Process Skills, and Encoding.



The first stage of the sequence is *Reading*. It is concerned with the student actually decoding the question. This is concerned with the student recognizing the words or symbols within the question. The second stage of the diagnostic procedure is *Comprehension*. Thus, once the student has decoded (or read) the words or symbols, he or she needs to understand the question in terms of general understanding related to the mathematical topic and specific mathematical concepts and symbols as well as the demands of the question. The third stage is the *Transformation*, which demands that the student indicate how she or he is going to solve the question. The student needs to choose an appropriate process or algorithm to solve the problem. The fourth stage is the *Process Skills*. The student should accurately do the

operation(s) he or she has selected at the transformation stage. The fifth stage of the procedure is *Encoding*. The student should relate his or her answer back to the original question to record the answer in an appropriate written form.

Research Questions

In order to answer the four research questions, a conceptual framework of Newman's Error Analysis (1977, 1983) model was adapted. The ideas in this model were used because they enable the researchers to explore problems students encounter and errors they make when solving word problems in Mathematics. The questions framed are the following:

1. To what extent can JHS 1 students read word-problems on fractions, perimeter and area in Mathematics?
2. To what extent can JHS 1 students comprehend word-problems on fractions, perimeter and area in Mathematics?
3. What errors do JHS 1 students make when solving word problems on fractions, perimeter and area in Mathematics?
4. To what extent can JHS 1 students solve word-problems on fractions, perimeter and area in Mathematics?

Methodology

Research Design

The research made use of descriptive survey to provide detailed description of errors students make when solving word-problems in Mathematics. This method was used to help the researchers ascertain the errors students make in solving mathematical word-problems among JHS 1 students in Akatsi South District in the Volta Region of Ghana.

Participants

The population of the study was 1,110 JHS 1 students in public basic schools in Akatsi South District in the Volta Region of Ghana. The sample comprised 112 students systematically selected using a 5% quota assigned to each basic seven class in the district. JHS 1 students were selected for the study because they were usually selected to represent Ghanaian students in TIMSS and other national and international assessments.

Measures

The instruments used for the study were an interview guide, and achievement test comprising four questions on word-problems in Mathematics (Fractions, perimeter and area). The questions were adapted from the students' Mathematics book 7 and were further validated by test-experts.

Data Collection

In the first week of February 2016, the researchers visited all the 41 public basic schools in the Akatsi South District with a letter to seek permission to carry out the study. The purpose of the visit was explained to the head teachers in order to prepare the school environment to cooperate with the researchers. The mode of sample selection was also explained to the head teachers to systematically select 5% of students in each basic seven class in their schools to be included in the sample for the study. In all, 112 students were selected to take part in the study.

On February 8, 2016, the researchers moved round the schools with a bus to convey the students to Akatsi College of Education campus. On arrival, the students were briefed after which they were divided into four groups and interviewed. During the interview each student was required to read the problems aloud to enable the researchers identify those students who could mention the concept correctly. Also, each student was asked to mention the topic and the specific concept the problem was testing. Immediately after the interview session, answer booklets and the question papers were given to all the students to solve the word-problems in Mathematics. After the examination the students were conveyed to their various homes. The answered scripts were later rated independently using a numerical scale to determine the extent to which the students could solve word-problems in Mathematics. The students' solutions were also analyzed using Newman's five fixed- sequence of error analysis.

Data transformation, encoding and analyses

In the analysis in relation to reading, a stroke (/) each was given a student who was able to read the problem and the concept names correctly (R) and a cross (x) was given to a student who read the problem but could not read the concept names correctly (R^1). In the analysis in relation to comprehension, a stroke (/) each was given to a

student who was able to mention (have an idea of) the topic and the specific concept the question was testing (C) and a cross (x) was given to a student who could not mention (did not have an idea of) the topic and the specific concept the question was testing (C^1).

In the final analysis, a stroke (/) each was given to a student who was able to transform the problem (T), carry out the process skills (P) and encode the answer correctly (E) at each stage while a cross (x) each was given to a student who failed to transform the problem (T^1), failed to carry out process skills (P^1) and failed to encode the answer correctly (E^1) at each stage. In addition, students' solutions to the problems were scored independently using a numerical scale and the scores were later analyzed to determine the extent to which JHS 1 students could solve word problems in Mathematics. Data were then analyzed using percentages and frequency distribution tables. To be able to determine the extent to which students could solve word-problems in Mathematics, descriptive statistics (mean, mode, median and standard deviation) were used to determine the direction of performance. In addition, histogram and frequency polygon were used to determine the direction of performance.

Results

Research Question 1

To what extent can JHS 1 students read and comprehend word-problems in Mathematics?

Research Question 1 sought to find the extent to which JHS 1 students can read and comprehend word-problems in Mathematics in *Problem 1* which states:

"Jack and Joan bought a bar of chocolate. Jack ate $\frac{1}{2}$ of the chocolate and Joan also ate $\frac{1}{3}$ of the chocolate. What portion of the chocolate did they eat?"

As shown in Table 1, it was evident that 90 students representing 80.4% were able to read Problem 1 correctly but failed to pronounce the concept names correctly. Of the 112 testees, only 22 students representing approximately 20% read the problem and pronounced the concept names correctly.

Table 1: Percentage of students who could read and comprehend Problem 1

Level	Successful at level	Not Successful at level
Reading	R (%)	R^1(%)
	22 (19.6%)	90 (80.4%)
Comprehension	C (%)	C^1(%)
	95 (84.8%)	17(15.2%)

On the contrary, it was revealed that 95 students, constituting about 85% could mention the topic and the specific concept the question was testing. Only 17 students constituting about 15% could not mention the topic and the specific concept the question was testing.

Problem 2:

In a school of 250 students, $\frac{3}{5}$ are boys and the rest are girls. How many students are girls?

It was evident that 90 students representing about 80% were able to read Problem 2 correctly but failed to pronounce the concept name correctly (see Table 2). Out of the 112 students who took the test, 22 students, representing 19.6% read Problem 2 and pronounced the concept name correctly.

Table 2: Percentage of students who could read and comprehend Problem 2

Level	Successful at level	Not Successful at level
Reading	R (%)	R^1(%)
	22 (19.6%)	90 (80.4%)
Comprehension	C (%)	C^1(%)
	95 (84.8%)	17(15.2%)

With regards to comprehension, it was revealed that 95 students, constituting 84.8%, could mention the topic and the specific concept the question was testing. Only about 17 students constituting about 15% could not mention the topic and the specific concept the question was testing. This result was the same as the results of Problem 1 because the topic tested in both problems were the same and seem to be one-dimensional in ability.

Problem 3:

Mr. Azumah wants to build a rectangular fish pond that is 30 metres long and 5 metres wide. Find the total length of wire mesh that he can use to fence the entire fish pond.

As shown in Table 3, all the 112 students were able to read the problem correctly. However, 85 students, constituting about 76% could not mention the topic and the specific concept the question was testing.

Table 3: Percentage of students who could read and comprehend Problem 3

Level	Successful at level	Not Successful at level
Reading	R (%)	R^1(%)
	112 (100%)	-
Comprehension	C (%)	C^1(%)
	27(24.1%)	85(75.9%)

Only 27 students constituting approximately 24% could mention the topic and the specific concept the question was testing. This was due to the fact that most of the students said the question was on *area of a rectangle* instead of *the perimeter of the rectangle* and thus could not tell the demands of the question.

Problem 4:

A path is designed between two rectangular play grounds. The outer play ground is 70 metres long and 50 metres wide and the inner play ground is 50 metres long and 30 metres wide. Calculate the space occupied by the path.

Concerning Problem 4, all the 112 students, representing 100% were able to read the problem correctly. In the same vein, all 112 students, representing 100% were able to mention the topic and the specific concept the question was testing.

Research Question 2

What errors do JHS 1 students make when solving word-problems in Mathematics?

Problem 1:

Jack and Joan bought a bar of chocolate. Jack ate $\frac{1}{2}$ of the chocolate and Joan also ate $\frac{1}{3}$ of the chocolate. What portion of the chocolate did they eat?

As shown in Table 4, 98 students representing about 88%, were able to transform Problem 1. Only 14 students, constituting about 13%, could not transform the problem. At the stage of process skills, 67 students representing 59.8% could process the problem correctly while 45 students representing about 40% failed to process Problem 1. Even though, 98 students (87.5%) were able to transform the Problem 1, 66 (58.9%) were able to reach the final destination of encoding the answer correctly. This brought a deficiency gap of some 32 students, constituting about 32.6%, who even though were able to transform Problem 1, failed to follow through to the final destination of encoding.

Table 4: Percentage of students who could read and comprehend Problem 1

Level	Successful at level	Not Successful at level
Transformation	T (%)	T^1(%)
	98 (87.5%)	14 (12.5%)
Process Skills	P (%)	P^1 (%)
	67 (59.8%)	45 (40.2%)
Encoding	E (%)	E^1(%)
	66 (58.9%)	46 (41.1%)

Problem 2:

In a school, there are 250 students. Three-fifths ($\frac{3}{5}$) are boys and the rest are girls. How many students are girls?

As shown in Table 5, 83.9% of the students could not transform Problem 2, a sharp deviation from what was revealed in Problem 1. Only 18 students, constituting about 16%, were able to transform Problem 2.

Table 5: Percentage of students who could read and comprehend Problem 2

Level	Successful at level	Not Successful at level
Transformation	T (%)	T^1(%)
	18 (16.1%)	14 (12.5%)
Process Skills	P (%)	P^1 (%)
	3 (2.7%)	109 (97.3)
Encoding	E (%)	E^1(%)
	3 (2.7%)	109 (97.3)

Out of the 18 students who were able to transform Problem 2, 15 (83.3%) of them could neither process nor represent the final answer correctly in a written form.

Problem 3:

Mr. Azumah wants to build a rectangular fish pond that is 30metres long and 5 metres wide. Find the total length of wire mesh that he can use to fence the entire fish pond.

As shown in Table 6, of the 112 students, 75, representing about 67% could not transform Problem 3, a similar trend of what happen happened in Problem 2.

Table 6: Percentage of students who could read and comprehend Problem 3

Level	Successful at level	Not Successful at level
Transformation	T (%)	T^1(%)
	37 (33.0%)	75 (67.0%)
Process Skills	P (%)	P^1 (%)
	22 (19.6%)	90 (80.4%)
Encoding	E (%)	E^1(%)
	21 (18.8%)	91 (81.3%)

Even though 37 students representing 33.0% were able to transform Problem 3, 15 of them constituting about 40.5% were not able to process Problem 3. The majority of the students (81.3) could not encode the problem correctly.

Problem 4:

A path is designed between two rectangular play grounds. The outer play ground is 70 metres long and 50 metres wide and the inner

play ground is 50 metres long and 30 metres wide. Calculate the area of the path.

As shown in Table 7, 65 students representing about 58%, were able to process Problem 4. It was also clear that 47 students constituting about 42% were not able to process the problem. It was indeed revealing that out of the 65 students who were able to transform Problem 4, 60 (92.3%) of them could not process the problem. Out of the total sample, 98.2% could not encode the problem as well.

Table 7: Percentage of students who could read and comprehend Problem 4

Level	Successful at level	Not Successful at level
Transformation	T (%)	T^1(%)
	65 (58%)	47 (42%)
Process Skills	P (%)	P^1 (%)
	5 (4.5%)	107 (95.5%)
Encoding	E (%)	E^1(%)
	2 (1.8%)	110 (98.2%)

Research Question 3

To what extent can JHS 1 students solve word problems and represent the answer correctly in Mathematics?

Frequency distribution of the scores obtained by students in the group was discussed. 86 students, constituting 76.8% had scores below 10. Also 19 students representing 17.0%, had scores ranging from 10 to 14. Only seven students constituting 6.3%, had scores from 15 to 19 and no students, representing 0%, had scores from 20 to 24. The skewness of the obtained scores from the sample is presented in Figure 2.

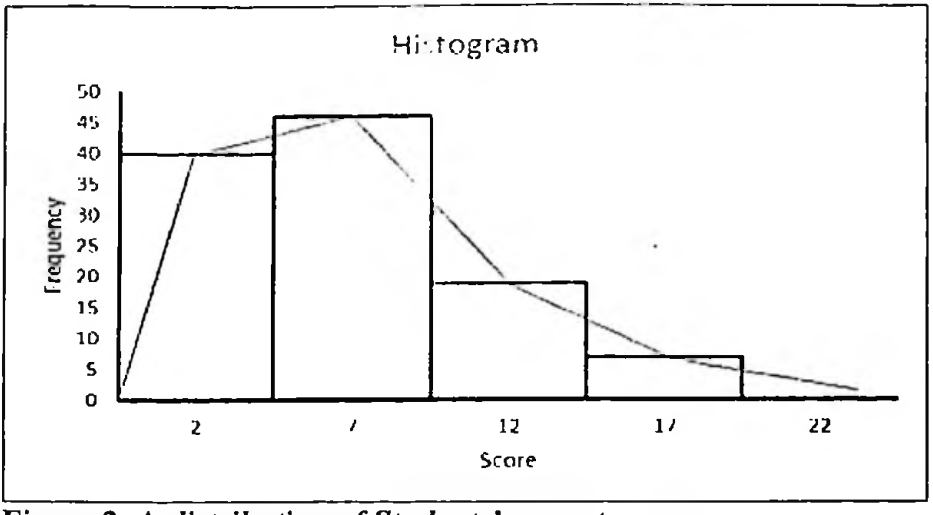


Figure 2: A *distribution of Students' correct answers*

As indicated in Figure 2, students' performance on the achievement test is skewed to the right (positive skewness) indicating that the group performed very low in solving word-problems on fractions, perimeter and area in Mathematics. Furthermore, the group statistics indicated that mean (6.7) > median (6.2) > mode (5.4). This also confirmed that the majority of the students had scores below the mean indicating low performance in solving word-problems on fractions, perimeter and area in Mathematics. The high standard deviation of 23.5 indicated that the group is heterogeneous, hence, students performed at different or varying ability levels.

Discussion

From Tables 1, 2, 3 and 4 it was found that generally students were able to read the word problems in Mathematics but the majority of them could not read the concept names correctly. Our finding on reading was consistent with the study of Marinas and Clements (1990), Ellerton and Clements (1996) and Singhatat (1991), who found out that, reading (decoding) errors accounted for less than 5% of initial errors. However, our finding was not consistent with that of Trance (2013) who reported in his study that many students could not read the mathematical symbols included in his instruments. In our case, students were able to read similar symbols used.

It was revealing that most of the students were able to mention the topic and the specific concepts the problems were testing

(comprehension) but this could not reflect very well in the transformation of the problems. This finding is consistent with that of Trance (2013) who reported in his study that most participants were able to identify the topics and concepts related to the questions. However, they relatively failed to convert this knowledge when highly needed at the transformation stage.

Our findings on comprehension contradicted the findings of Marinas and Clements (1990), Singhatat (1991), Ellerton and Clements (1996), and Clements (1980) who reported that approximately 70% of errors made by Grade-7 (12-13 year olds) students on Mathematical questions were at the comprehension level. These differences might have arisen owing the to the level of difficulty of the items on the tests.

From Tables 5, 6 and 7, it was evident that on the average students had difficulty in transforming word-problems in Mathematics. Indeed, out of a total number of 448 cases in transformation involving 112 students, 230 cases, representing 51.3%, could not transform the word-problems in Mathematics which was supposed to be the first stage in the process of finding solution to the word-problems. Only 218 cases, representing about 48.7% successfully transformed the word problems.

In fact, only 97 cases out of 448 cases representing about 21.7% were able to process the word problems. Indeed, 351 cases out of 448 cases representing about 78.3% failed to process the word-problems. In addition, it was found out that 356 cases out of 448 cases representing about 79.5%, failed to encode the final answer correctly. Furthermore, out of the total number of 448 cases of transformation involving 112 students, only 218 cases, representing about 48.7%, successfully transformed the word-problems. Out of the 218 cases of successful transformation, 121 cases, representing about 55.5%, were not able to reach the process skills stage. Only 97 cases out of 218 cases, representing about 44.5% were able to reach the process skill stage.

Moreover, out of the 97 cases, of processing, only 5 cases, representing about 5.2% failed to encode the answer correctly. These findings were in agreement with the findings of Marinas and Clements (1990), Singhatat (1991) and Ellerton and Clements (1996) who reported that approximately 70% of errors made by JHS 1 students on Mathematical questions were at the transformation levels. It was also

consistent with the findings of Trance (2013) who also reported in his study that high proportion of errors made on the transformation stage accounted for almost 50% of the total number of errors committed with at least 45% of students' errors committed on the transformation stage. It was also in line with Clements (1980) who analyzed 6,595 errors made by 634 students using Newman Error Analysis model and found that 70% of errors belonged to transformation category. The Mathematics procedure level of process skills registered 25% and encoding accounted for about 5%. As shown in Figure 1 and the analyses for Research Question 3, the students performed very low (the group performance was positively skewed) in solving word-problems in Mathematics on topics such as fractions, perimeter and area.

Conclusions

As in the case of empirical studies, only some of our findings add to the contextual and theoretical understandings in the area and that caution is required when considering generalizations to other situations. That having been said, we proceed on some findings that we think are of particular significance in the area of Mathematics teaching and learning. To provide the necessary background, the study explored problem solving skills among Junior High School Grade 1 Students in Mathematics at Akatsi South District, Ghana.

To conclude, this study has revealed the strengths and weakness of JHS 1 students in solving word-problems in Mathematics. The findings show that most of the students were able to read the word-problems in Mathematics but a majority of them could not read the concept names correctly. Again, the majority of the students could not solve the word-problems in Mathematics (fractions, perimeter and area) correctly with regards to transformation, processing and encoding. These challenges that the students are facing could be as a result of the weaknesses in the teaching and learning processes in Ghanaian classrooms.

Recommendations

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

1. The Institute of Education in collaboration with the Ministry of Education should include problem-solving skills in

Mathematics as a course in the curriculum of Colleges of Education to equip teacher trainees with problem-solving skills and strategies in order to teach problem-solving in the basic schools in Ghana.

2. The Ministry of Education in collaboration with Ghana Education Service and other stakeholders in education should organise in-service training programmes for teachers already on the field on problem-solving skills in order to equip them with the skills and strategies needed to enforce teaching and learning of Mathematics using problem-solving.

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INFLUENCE OF LEADERSHIP FOR LEARNING PROGRAMME ON HEADTEACHERS' PERFORMANCE IN THE CENTRAL REGION OF GHANA

Saani Abddul-Jaleel
Islamic University College,
Ghana.

Abstract

The purpose of the study was to examine the influence of Leadership for Learning (LfL) programme on headteachers' performance, focusing on the views of teachers and headteachers in the various public basic schools in the Central Region of Ghana. The design adopted for the study was ex post facto design. The sample size for the study was 393 made up of 24 headteachers, 192 teachers and 177 JHS 1, eight and nine pupils from the 24 public basic schools selected randomly. Twelve headteachers, 95 teachers and 87 pupils belong to schools whose headteachers participated in the LfL project, while the other 12 headteachers, 97 teachers and 90 pupils belong to schools whose headteachers did not participate in the LfL project. The census method was used to capture all the headteachers and teachers in the 24 selected schools, while the pupils were selected randomly. Questionnaire was used to elicit data from respondents. Data for the study were analysed using both descriptive and inferential statistics. The findings indicate that, the LfL programme has influenced both headteachers' and teachers' work performance, and also pupils' academic performance significantly. It is, therefore, recommended to the headteachers that they should request management to ensure that the training programme is expanded to capture more headteachers and circuit supervisors.

Key Words: Leadership for learning, pupils' academic performance, training, teachers, Work performance.

Introduction

Education is universally considered the most effective means through which individuals learn to write, read, do complex calculations, gain knowledge, and acquire virtues. As White (1987) noted, virtues such as prudence, courage, temperance, benevolence, and other moral virtues, lucidity, independence of mind, wisdom, humour, and vitality are the hallmarks of the educated person. The importance of formal education to a country like Ghana cannot be overemphasised. Education is the corner stone of every country's development. The type of provision made for formal education in a nation determines the calibre of its human resources.

The quality of education in Ghana has been a matter of concern to the people of Ghana (Ghana News Agency, 2011). The performance of pupils and students in public basic and Senior High Schools has been a matter of serious concern to the government of Ghana, the Ministry of Education and the Ghanaian public who look to an effective education as the child's first step towards getting a good job and eventual success in life (Bediako, 2012). Most important is the education at the early stages of the child's life, basic and secondary education that lay the foundation upon which the subsequent educational levels build and shape the learner's life.

The Government of Ghana has put in place measures to increase access to education, and also ensure good quality education in Ghana. These measures include tuition-free education at the basic level and heavily subsidised education at the secondary and tertiary levels. Additionally, the government has introduced capitation grant at the basic school level, school feeding programme in some basic schools, provision of classroom blocks, provision of text books and other teaching and learning materials, best teacher award scheme, distance learning programme for teachers, study leave with pay to Science and Mathematics teachers, biennial workshop for Mathematics and Science teachers at the basic level among others (National Development Planning Commission, 2009).

However, the higher academic standard expected in Ghanaian public schools is still far from being achieved (Ghana News Agency, 2011). The Ghana News Agency noted that the 2009, 2010 and 2011 Basic Education Certificate Examination and West African Senior School Certificate Examination results indicated falling academic performance as many candidates failed to secure passes to their next

stage of education. Bediako (2012), supporting this claim, asserts that authorities of education in Ghana, especially in public education, have not addressed adequately the quality aspect of education. Bediako also notes that increased enrolment often went hand-in-hand with decrease in quality.

There are a number of factors that account for the decline in the quality of education and the subsequent mass failure in Ghanaian public schools. According to Bediako (2012), most headteachers who are supervisors of learning and instruction in Ghanaian public basic schools are not up to their task, hence the mass failure at the pre-tertiary levels. These events have led highly placed government officials to cast some blame on training institutions, such as the Institute for Educational Planning and Administration (IEPA), at University of Cape Coast (UCC). This is because such institutions are charged with the training of educational administrators for educational institutions in Ghana (Bonney, 2011).

This suggests that less performance, on the part of headteachers can lead to pupils' poor academic performance significantly. Therefore, school leadership, which is mostly exercised at school level, plays an important role in student academic performance. This view is shared by Hallinger and Heck (2010) who state that school leadership is a critical element of school activity which has direct influence on the performance of both teachers and students. The leadership for Learning (LfL) training project helps in addressing leadership challenges in schools, especially basic schools (Robinson, Hohepa & Lloyd, 2009). This belief was primarily the reason behind the introduction of Leadership for Learning (LfL) project in 2009 at UCC (IEPA, 2011).

The question that must be answered, therefore, is whether the LfL project, implemented by the IEPA in Ghana, is really having the desired positive impact on the performance of beneficiary headteachers. The beneficiary headteachers are expected to apply principles of LfL to effectively manage human resources (teachers and pupils), instructional time, finance, material resources (books, furniture, buildings), and to promote professional development at school level to help achieve performance objectives of their schools. It appeared there had not been any follow-up studies after the initial implementation of the LfL project to empirically examine the situation on the ground in this respect. As a result, the author was motivated to

carry out a study in the Central Region of Ghana to examine the influence of LfL programme on the performance of beneficiary headteachers.

Purpose of the Study

The purpose of this study was to examine the influence of training provided under the LfL project on headteachers' performance, focusing on public basic school headteachers from the Central Region who participated in the LfL training workshops.

Research Hypotheses

Based on the purpose of the study, the following three hypotheses were formulated in order to tackle the main purpose of the study. The hypotheses to be tested are as follow:

H10: LfL programme does not have any statistically significant effect on teachers' perceived work performance.

H11: LfL programme has a statistically significant effect on teachers' perceived work performance.

H20: LfL programme does not have any significant effect on pupils' academic performance.

H21: LfL programme has a statistically significant effect on pupils' academic performance.

H30: LfL programme has no direct influence on headteachers' perceived performance in the schools.

H31: LfL programme has a direct influence on headteachers' perceived performance in the schools.

Significance of the Study

The findings and recommendations of this study will be useful to all stakeholders of the LfL project, Ghana. This is because the findings will serve as feedback to the implementers of the project. The findings of the study may also enable the leadership of the Ghana Education Service (GES), the IEPA and the Ministry of Education (MoE), Ghana to be aware of the extent of impact of the LfL project on the performance of beneficiary headteachers in the Central Region and the performance of their schools. It is also hoped that the recommendations of the study will help the leadership of the GES and the MoE, Ghana to formulate policies and also develop strategies that could sustain the application of the LfL principles in Ghana.

Principles of Leadership for Learning

The practice of LfL is governed by five fundamental principles (Townsend & MacBeath, 2011) and these principles are: a focus on learning, conditions for learning, dialogue, shared leadership, and a shared accountability. A focus on learning demonstrates headteachers' commitment to making learning the top priority by ensuring that all activities in the school, including co-curricular activities, are geared towards promotion of learning for every member of the school. Conditions for learning principle examine headteachers' commitment in ensuring that teachers take into account the needs, interests and ability of learners in the design and use of teaching and learning materials as well as determining appropriate style of presentation and teaching methodology. Dialogue principle involves creating an atmosphere in which the goals, the aims, the mission and the vision of the school are discussed or made known to all the stakeholders of the school, including the community, in order to create an atmosphere of trust and belongingness among the parties within the school.

Shared leadership principle involves the sharing of leadership in which school structures and procedures support participation in developing the school as a learning community where the headteacher can delegate certain tasks to other staff to perform. Shared accountability principle ensures that all members in the school (teachers, students and headteachers) as well as those outside the school (PTA, SMC, DEOC) are guided to develop a sense of collective responsibility towards meeting public accountability demands. It allows members of the school to have a better experience concerning the school they are working in.

Conceptual Framework

Generally, educational administration is a complex phenomenon which requires active involvement of all stakeholders in the activities and programmes of the schools if goals and performance objectives are to be achieved (Hallinger & Heck, 2011). As indicated earlier, the values, the attitudes, behaviours and practices of the headteacher have direct influence on the performance of both teachers and students. Educational leadership is a unique phenomenon which requires specialised form of training in human skill, technical skill and conceptual skill. This form of training helps in improving the work performance of the personnel in the educational sector. The LfL

training project implemented by the IEPA for headteachers of basic schools within the GES is of special importance in this regard. This is because, through the training workshops, administrators of education in Ghana are trained and equipped with appropriate skills and competencies required for 21st century educational leadership. It is believed that the training has improved teachers, headteachers and pupils' performance directly or indirectly. The conceptual model was, therefore, designed to depict the link between the principles of the programme and headteachers' performance as presented in Figure 1.

The dependent variable is headteachers performance, while the independent variables are the five principles of LfL programme, which are focused on learning, conditions for learning, dialogue, shared leadership and shared accountability. Effort in transferring learning is treated as intervening variable and it is believed to ignite the potency of the independent variables on the dependent variable. The conceptual framework is illustrated in Figure 1.

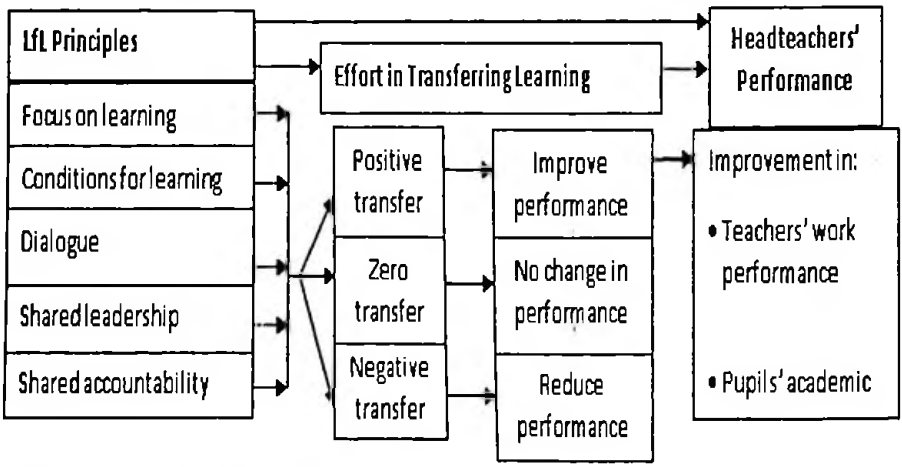

Figure 1: Effect of Leadership for Learning Principles on Headteachers' Performance

Source: Adapted from IEPA, 2011

The general argument is that the principles of LfL, when used by headteachers as expected, will influence their performance. Headteachers are perceived to be performing when their work translate into teachers' work performance and pupils' academic performance. However, headteachers' performance is assumed to be more potent and strong when the headteachers who have been exposed

to the LfL principles are able to exhibit some effort in transferring what they have learned to the work place, which is the school. In other words, if the headteachers are able to transfer what they have imbibed or learned to the school positively, then the performance in the school is likely to improve significantly based on the five principles learned. Again, the performance of the headteachers in the school as a result of their knowledge regarding the five principles will lead to an improved performance of teachers in the school and also improvement in pupils' academic performance.

Research Methods

The design used for the study was the ex post facto design. Ex post facto research is a method of teasing out possible antecedents of events (LfL training programme) that have happened and cannot, therefore, be controlled, engineered or manipulated by the investigator (Cohen, Manion & Morrison, 2007). The population consisted of all headteachers and teachers in public basic schools in the Central Region of Ghana. As at 2012, there were 947 public basic schools in the region (MoE, 2014). Also, as at the end of 2011/2012 academic year, there were 3487 trained-teachers and 135,228 pupils at the various public basic schools in the region (Education Management Information System [EMIS], 2012).

The sample size for the study was 393 made up of 24 headteachers, 192 teachers and 177 basic seven, eight and nine pupils from the 24 public basic schools selected randomly. Twelve of the headteachers, 95 of the teachers and 87 basic seven, eight and nine pupils belong to schools that the headteachers participated in the LfL project while the other 12 headteachers, 97 teachers and 90 basic seven, eight and nine pupils belong to schools that the headteachers did not participate in the LfL project. The census method was used to capture all the headteachers and teachers in the 24 selected schools while the pupils were selected using the lottery method of simple random sampling procedure. The sample distribution is presented in Table 1.

Table 1: Distribution of Sample for the Study

Category of Respondent	Schools that Participated in LfL Programme	Schools that did not Participated in LfL Programme	Total
Headteachers	12	12	24
Teachers	95	97	192
Pupils	87	90	177
Total	**194**	**199**	**393**

Two set of questionnaires were the data collection instrument used in collecting the primary data. The questionnaire for teachers was made up of four sections while that of the headteachers was made up of three. Section A of both questionnaires dealt with the demographic information of respondents. Again, Section B of both questionnaires contains 26 statements on the five LfL principles. Sections C and D of teachers' questionnaire was used to elicit data on headteachers' effort in transferring learning to their workplace and their performance as a result of LfL training interventions. Statements on headteachers' effort in transferring learning were based on the number of hours headteachers spend in implementing the principles and their adherence to the principles. Section C of the headteachers' questionnaire elicited data on teachers' work performance.

Headteachers' performance was measured using multiple items that were formulated based on dimensions such as punctuality, regularity, participation in school activities, assessment of teachers lesson notes, monitoring of teaching and learning activities in the school and assessment of pupils' exercise and academic work. Also, teachers' work performance was measured using multiple items based on dimensions such as punctuality, regularity, participation in school activities, lesson note preparation, and assessment of pupils exercise and academic work. With the exception of Section A, responses to all the items were measured using five-point unilinear scale such that one (1) represents the least agreement to the issues while five (5) represents the strongest agreement to the issues.

The items in each section with regard to Sections B, C and D were pooled together using the mean score of the responses since they were measured numerically using unilinear scale. The pooled items for each specific dimension and variable produced an average score which was used to represent the said variable in order to analyse the

data using inferential statistics. These procedures were largely adapted because the distribution was normal.

With regard to the secondary data, basic seven, eight and nine pupils' end of first term examination scores for Mathematics, English Language, Integrated Science and Social Studies were obtained from the various schools selected. The examination scores of the pupils were scored 100%. This was used to determine pupils' academic performance using the average scores of the first term examination scores in the core subjects. These scores were converted into five-point scale to be consistent with the five-point unilinear scale used to measure the responses of both teachers and headteachers in order to have the same scale of measurement. The scales were 1: 0-20, 2: 21-40, 3: 41-60, 4: 61-80, and 5: 81-100. Using the Predictive Analytic Software (PASW) Version 18.0, the independent sample t-test and multiple regression analysis were used to analyse the data in order to test the research hypotheses since the distribution was normal.

Results and Discussion

The first specific objective of the study was to examine the effect of LfL programme on teachers' perceived work performance and pupils' academic performance, focusing on the views of both teachers and headteachers. Two hypotheses were formulated to deal with this objective.

H10: LfL programme does not have any statistically significant effect on teachers' perceived work performance.

H20: LfL programme does not have any significant effect on pupils' academic performance.

Two groups of respondents were considered. That is, those who are in schools that the headteacher participated in the LfL training activity (Group A) and those who are in the schools that the headteachers did not participate in the training activity (Group B). Since the two groups were homogeneous, the independent sample t-test was conducted to compare the views of the two groups in order to examine the effect of LfL programme on teachers' perceived work performance and pupils' academic performance. The results are presented in Table 2. The measurements of the variables have been explained under the subsection "research methods".

Table 2: Effect of LfL Programme on Teachers' Work Performance and Pupils' Academic Performance

Variables	Groups	N	Mean	Std. Dev.	t-value	p-value	η2
Teachers' work performance	Group A	12	4.271	0.57			
	Group B	12	4.023	0.51	2.822**	0.000	0.261
Pupils' academic performance	Group A	87	55.324	0.55			
	Group B	90	47.515	0.59	3.896**	0.000	0.408

Source: Field Data, 2013. **p<0.01 Where η2 = Eta Square

The results in Table 2 indicate that there is a statistically significant difference in headteachers' view on their teachers' work performance with regard to schools with headteachers who participated in the LfL training activity (Mean = 4.271, Std. Dev. = 0.571) and schools with headteachers who did not participate in the training activity (Mean = 4.023, Std. Dev. = 0.513), [t = 2.822, df = 22, p < 0.01]. The magnitude of the difference in the means with regard to headteachers' view on their teachers' work performance is high (η2 = 0.261), meaning that 26.1% of the variances in headteachers' view of their teachers' work performance in the schools is explained by their headteachers' participation in the LfL training activity.

In relation to pupils' academic performance, Table 2 shows that there was a statistically significant difference between the scores of pupils whose headteachers participated in the LfL training activity (Mean = 55.324, Std. Dev. = 0.552) and those whose headteachers did not participate in the training activity (Mean = 47.515, Std. Dev. = 0.591), [t = 3.896, df = 175, p < 0.01]. The magnitude of the difference between the two group of schools with regard to pupils' average scores in Mathematics, English Language, Integrated Science and Social Studies was also high (η2 = 0.408), meaning there was a 40.8% of the variance in pupils academic performance that was explained by their headteachers' participation in the LfL training activity. The pupils whose headteachers participated in the LfL training performed significantly better than those whose headteachers did not participate in the training programme. The study, therefore, rejects the first and second hypotheses since LfL programme has a

statistically significant effect on teachers' perceived work performance and pupils' academic peformance.

In all, the findings show that the LfL training activity has contributed significantly in improving teachers' work performance and pupils' academic performance. The findings are congruent with that of the IEPA (2011) which asserted that the adherence of LfL principles by headteachers has enhanced the ability of teachers in the school to take initiative, without any fears, even in the absence of the headteacher. This approach invariably harnesses the leadership potentials of all the members of the school.

The study further examined the influence of LfL programme on headteachers' perceived work performance. As indicated earlier, teachers' work performance was assessed by headteachers while that of headteachers was assessed by teachers using the already mentioned indicators. The hypothesis formulated is as follows and the results are presented in Table 3.

H30: LfL programme has no direct influence on headteachers' perceived performance in the schools.

Table 3: Influence of LfL Programme on Headteachers' Perceived Performance

Variables	Model I Beta (β)	Sig.	Model II Beta (β)	Sig.	Collinearity Statistics	
					Tol.	VIF
Shared leadership	0.176 (0.028)*	0.021	0.135 (0.029)**	0.000	0.878	1.139
A focus on learning	0.362 (0.031)**	0.000	0.231 (0.025)**	0.000	0.913	1.096
A learning dialogue	0.162 (0.027)	0.073	0.177 (0.028)**	0.000	0.821	1.219
Shared sense of accountability	0.257 (0.031)**	0.004	0.221 (0.039)**	0.000	0.703	1.422
Conditions for learning	0.065 (0.024)	0.089	0.171 (0.026)*	0.034	0.698	1.432
Effort in transferring			0.321 (.06)**		0.836	1.196
Constant	1.194		0.915			
R	0.709		0.859			
R Square	0.555		0.774			
Adjusted R Square	0.546		0.759			

Source: Field Data, 2013. **p<0.01 *p<0.05 (N = 107)
(Standard errors are in parentheses)

Dependent Variable = Headteachers' Perceived Performance in the School

Where Tol. = Tolerance, VIF = Variance Inflation Factor

In the first model, the five principles of LfL were entered as independent variables with headteachers' performance in the school operating as dependent variable. The results as shown in Table 3 indicate that the standardised beta co-efficient for conditions for learning and learning dialogue were not statistically significant. However, focus on learning (□ = 0.362, $p < 0.01$), shared sense of accountability (□ = 0.257, $p < 0.01$), and shared leadership (□ = 0.176, $p < 0.05$) were statistically significant with regard to their contributions to headteachers' performance. The unique proportional contribution of the LfL principles to headteachers' performance was 0.556, with an adjusted R2 of 0.526. This means that the LfL training activity is able to predict or explain only 55.6% of the variance in headteachers' performance in the school.

In the second model, headteachers' effort in transferring learning to the school as a variable was introduced into the model and all the independent variables became statistically significant. The resultant shrinkage, increments and significance in the beta co-efficient in the second model means that the LfL principles do not directly influence headteachers' performance in the school strongly. They do so only when the headteachers are able to transfer what they have been taught in the training activity to the school. However, it is important to observe that the unique proportional contribution of LfL training activity and headteachers' effort in transferring learning to the school was 0.774 with an adjusted R2 of 0.749. This means that the LfL training activity and headteachers effort in transferring learning were able to predict or explain 77.4% of the variance in headteachers' performance in the school. It, therefore, means that besides these main variables identified, other variables that are in the model have a chance of predicting about 22.6% of headteachers' performance in the school.

The significant increase with regard to the unique proportional contribution of the independent variables and the mediating variable on headteachers' performance in the school mean that when headteachers are able to transfer what they have been taught in the LfL training project, the work performance of teachers increases and also the predictability of the LfL principles becomes more potent on

pupils' academic performance in the school. The finding suggests that when headteachers are exposed to the LfL principles and they are able to transfer what they have learnt positively, they will be able to improve in their work performance in the school which will in turn increase their teachers work performance and pupils' academic performance. Therefore, the current study rejects the hypothesis that the LfL training programme has a direct influence on headteachers' performance in the schools, since the influence is indirect through headteachers' effort in transferring learning. The findings support the view that training and development in school management organised for headteachers help them to maximise their performance at school level which is likely to lead to teachers' performance and students' academic performance (Robinson et al., 2009).

Conclusions

The LfL training programme has ended up impacting positively on headteachers, teachers and pupils' performance. This impact has manifested in diverse ways in the schools whose heads were involved. The findings show that these headteachers ensure that there is continuous teaching and learning activities in their respective schools. They monitor the activities closely by collaborating with teachers and students. This demonstrates the commitment of the various headteachers in making learning the top priority in the school. To these headteachers, the school is accountable to various stakeholders and that all members in the school as well as those outside the school must help to develop a sense of collective responsibility towards meeting public accountability demands. In all, it can be concluded that the LfL training project has contributed significantly in improving headteachers' performance. Also, the effort exerted by headteachers to create conditions favourable to learning has helped in improving their performance significantly.

Limitations of the Study

The study assumed that the selected respondents had adequate knowledge and comprehension of the issues, concepts and what is expected of them to answer the questions in the survey precisely and honestly, yet this was not checked. Another limitation is that the variables considered in this study may not be static; a cross-sectional study would not capture the possible dynamic quality of these

relationships. A longitudinal approach is thus warranted. Only one term examination scores were used in measuring pupils' academic performance which may not adequately measure general performance. It would have been better to use average scores of three terms. In addition, the findings of the study may not be anticipated for the future since issues related to LfL project, teachers' work performance and pupils' academic performance keep changing with time.

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TEACHERS' EFFICACY BELIEFS IN THE IMPLEMENTATION OF SENIOR HIGH SCHOOL ECONOMICS CURRICULUM

Mumuni Baba Yidana
University of Cape Coast, Ghana.

&

Albert Henry Ntarmah
University of Cape Coast, Ghana.

Abstract

The purpose of this study was to assess the level of economics teachers' efficacy beliefs in the implementation of Senior High School Economics curriculum. This study did not only assess the level of Economics teachers' efficacy, beliefs, but also examined the differences in teacher efficacy beliefs across gender and professional qualifications. The study focused on Senior High School Economics teachers in the Western Region of Ghana. Descriptive survey design was used to determine the level of Economics teachers' efficacy beliefs and the differences in teacher efficacy beliefs across gender and professional qualification. Simple random sampling was used to select 123 Economics teachers. The long form of Teacher Sense of Efficacy Scale (TSES) was used to collect the data and the data collected were analyzed using mean and standard deviation and T-test. The results showed that teachers have high efficacy beliefs in the implementation of Senior High School Economics curriculum. Again, there were no statistically significant differences in teacher efficacy level across gender and professional qualification. It was recommended that teacher-educators, Ghana Education Service and school authorities should organize self-efficacy enhancement programmes for teachers so as to sustain or improve their efficacy beliefs.

Keywords: Teacher efficacy beliefs, implementation, economics, curriculum, professional qualification.

Introduction

Successful curriculum implementation is a major concern to stakeholders in education. Several attempts have been made by governments, institutions and individuals to improve curriculum implementation through provision of requisite materials, workshops,

seminars, training of teachers, among others (Ministry of Education, 2014; Zainul-Deen, 2011). Existing studies on curriculum implementation have reported that curriculum implementation in Ghana has not been impressive (Owusu, 2014; Kwarteng, 2009, 2013). Teachers resort to their own beliefs or ways of implementing the planned curriculum to achieve results that may not be similar to what it was intended (Owusu, 2014). Ghana as a country adopts the fidelity model of curriculum implementation and therefore the degree of implementation is one of the key areas of determining successful curriculum implementation. In line with up-to-date studies, earlier studies have also revealed that many innovations introduced into educational organizations do not yield their intended outcomes (Hopkins, 1990).

Factors that have been identified to be affecting the successful implementation of the Senior High Schools (SHSs) curriculum in Ghana include, conservatism on the part of teachers, lack of commitment from teachers, lack of clarity about the curriculum programme to be implemented, teachers' incapability to implement the curriculum, and constraints such as large class size, and insufficient resources, limited time to implement the curriculum, among others (Yiboe, 2011 as cited in Owusu, 2014). The analysis of the factors that influence the successful implementation of curriculum shows that, involving and committing classroom teachers to innovative programmes is a prominent challenge. However, in the face of these challenges, the teachers' participatory behaviour needs to be improved (Roth, 2005).

Self-efficacy has been widely used as a powerful theoretical approach for determining and improving a person's participatory behaviour and its successful implementation (Bandura, 1977, 1997). Self-efficacy belief influences how much effort is spent on an activity, how much perseverance and persistence are evident when encountering obstacles, and how much resilience is brought forth in the face of adverse circumstances (Bandura & Adams, 1977). Self-efficacy has remained a very important variable in education over the past 25 years (Cakiroglu, 2008). When applied to teaching, self-efficacy has constantly been found to relate to positive student and teacher behaviours, and has a positive effect on educational system and its improvements (Soodak & Podell, 1993). Thus, self-efficacy serves as a crucial factor in improving teacher education, promoting

education reforms and implementation (Ashton, 1984; Goddard, Hoy, & Hoy, 2000). The valuing, adoption, and successful implementation of curriculum are related to teachers' efficacy beliefs (Stein & Wang, 1988). Specifically, teachers who expressed higher levels of efficacy for teaching also tended to express a valuing for successful educational innovations (Cousins & Walker, 2000). More efficacious teachers also rated new classroom practices of teachers as more aligned with their current routines, more important for students' learning, and less difficult to implement than teachers with less efficacy (Guskey, 1988).

Statement of the problem

Teacher efficacy plays an important role in the achievement of successful curriculum implementation and this has attracted both local and international investigations. Some studies on teacher efficacy beliefs concentrated only on sources of self-efficacy beliefs (Uzuntiryaki, 2008; Kahyaoglu, 2011; Zelenak, 2011), teacher efficacy beliefs (Senemoglu, Demirel, Yagci & Ustandag, 2009; Dibapile, 2012) or relationship between self-efficacy beliefs and other variables (Kay, 2006; Bounds, 2013). It is evident from the literature that most of the studies on teacher efficacy beliefs were conducted outside the African continent. Klaseen, Tze, Betts and Gordon (2011) used Psyc info, Web of science and Eric databases to investigate studies conducted in Africa from 1998 to 2009 on teacher efficacy beliefs. They reported that only 2% of the articles written in English were done in Africa.

Teacher self-efficacy beliefs vary in different contexts, as teachers may exhibit different levels of self-efficacy depending on the subject, student characteristics or school environment (Tschannen-Moran & Woolfolk Hoy, 2001). It appears the literature has revealed little work on teacher efficacy beliefs especially in the Ghanaian context, in general, and in the area of Economics education in paarticular. In the Ghanaian context, teacher efficacy studies focused on Kindergarten teachers (Cobbold & Boateng, 2015) and elementary school teachers (Mitchual, Owusu-Banahene & Donkor, 2008 as cited in Cobbold & Boateng, 2015). This has created a gap which this study seeks to fill. Focusing on Senior High School Economics teachers, this study seeks to assess economics teachers' efficacy beliefs in the implementation of SHS Economics curriculum and further examines

the differences between teacher efficacy beliefs across gender and professional qualification.

Purpose of the study

The purpose of the study was to assess teachers' efficacy beliefs in the implementation of Senior High School Economics Curriculum. Specifically, this study finds out Economics teachers' efficacy beliefs level and further examines the differences in teacher efficacy beliefs across gender and professional qualification.

Research question

What is the level of economics teachers' efficacy beliefs in the implementation of senior high school economics curriculum?

Research hypotheses

H1: There is statistically significant difference in teacher efficacy belief scores between professional and non-professional teachers in the implementation of SHS Economics Curriculum.

H2: There is statistically significant difference in teacher efficacy belief scores between male and female teachers in the implementation of SHS Economics Curriculum.

Literature Review

Self-Efficacy Theory

Bandura's (1977) Self-efficacy theory served as the theoretical framework for this study. In Social Cognitive Theory, Bandura introduced the concept of self-efficacy as the primary motivational force behind an individual's actions. An individual's action could be best explained by his or her level of efficacy. Self-efficacy is one of the most widely and consistently defined motivational constructs used in teacher efficacy research (Murphy & Alexander, 2001). As an aspect of Social Cognitive Theory, self-efficacy can be defined as teacher's belief in his or her capabilities to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context (Tschennen-Moran & Hoy & Hoy, 1998). A person's efficacy determines what he/she can do with a given task. The level of an individual's self-efficacy influences his/her choice of activities and behavioural settings, how much effort they expend, and how long he/she will persist in the face of obstacles and

aversive experiences (Bandura & Adams, 1977). Self-efficacy has been demonstrated to be a strong predictor of both current behaviour and the effect of treatments on behaviour change (Henson, 2001).

The basic principle behind self-efficacy theory is that individuals are more likely to engage in activities for which they have high self-efficacy and less likely to engage in those they do not (Van der Bijl & Shortridge-Baggett, 2002). Self-efficacy is what an individual believes he or she can accomplish using his or her skills under certain circumstances. Self-efficacy has been thought to be a task-specific version of self-esteem (Lunenburg, 2011). According to self-efficacy theory, people behave in the way that executes their initial beliefs; thus, self-efficacy functions as a self-fulfilling prophesy.

Level of Teachers' Efficacy Beliefs

Teacher efficacy level research has been examined by different researchers. In the Ghanaian context, Cobbold and Boateng (2015) studied "Exploring the instructional practices efficacy beliefs of Kindergarten teachers in the Kumasi Metropolis." The authors limited their study to an aspect of implementation (instructional practices) and Kindergarten teachers. Their research findings indicated that kindergarten teachers in the Metropolis have high efficacy beliefs in instructional practices. This signifies that they have a high sense of efficacy in instructional practices and therefore there is a positive relationship between efficacy and instructional practices of Kindergarten teachers. To the authors, high ratings of efficacy beliefs imply that the kindergarten teachers have high confidence in their ability to implement appropriate instructional practices in their attempt to implement the kindergarten curriculum.

In the Turkish context, Senemoglu, Demirel, Yagci and Ustundag (2009) studied elementary school teachers' self-efficacy beliefs. The study employed quantitative approach with a sample of 97 elementary school teachers. Teacher Self-efficacy Scale composed of 5-point likert type 32 items was used to collect the data. The results indicated that, teachers' average sense of self-efficacy beliefs was at "good level''. Sarfo, Amankwah, Sam and Konin (2015) indicated a relatively higher mean score and this indicated that teachers had a better self-efficacy in devising instructional strategies, managing the classroom and engaging students as well. The impression is that,

teachers' self-efficacy beliefs were found to be high suggested that they had strong beliefs that adequate knowledge and skills of effective teaching behaviours with respect to instructional strategies, classroom management and student engagement. Bruce, Esmonde, Ross, Dookie and Beatty (2010), found that teachers with higher efficacy levels are more likely to persevere in their attempt to reach learning goals when they encounter obstacles and so are more prone to experiencing effective instructional strategies that represent a challenge and are more willing to run risks in their classrooms.

Differences in Teachers Efficacy Beliefs across Gender and Professional Qualification

Teacher self-efficacy varies in different contexts, as teachers may exhibit different levels of self-efficacy depending on the subject, student characteristics, or school environment and other variables such as gender and professional qualification (Tschannen-Moran & Woolfolk Hoy, 2001). However, it is unclear to what extent the level of self-efficacy beliefs depends on personal characteristics of teachers, in particular, on teachers' gender and professional qualification. For instance, whilst some studies identified differences in teachers efficacy beliefs across gender (Klassen & Chiu, 2010; Tabak, Akyildiz & Yildiz, 2003; Gurbuzturk & Sad, 2009; Hamurcu, 2006), other studies did not (Shaukat & Iqbal, 2012; Karimvand, 2011). Even studies that identified differences between male and female teachers, these studies revealed inconsistent results. While some studies reported higher efficacy beliefs for female teachers (Gurbuzturk & Sad, 2009; Hamurcu, 2006) other studies reported higher efficacy beliefs for male teachers (Klassen & Chiu, 2010). It is important to clearly know the differences between male and female regarding their efficacy beliefs levels, because if male and female differ in their beliefs in implementing the Economics curriculum, male and female teachers will require different efficacy building programmes and respond differently to actions aimed at enhancing teachers' efficacy beliefs.

Similarly, there is lack of clarity in the literature with regard to differences in teachers' efficacy beliefs across professional qualification of teachers. While professional teachers tend to have higher level of efficacy beliefs (Azar, 2010; Wilson & Tan, 2004) than non-professional teachers, these differences can be reversed or cannot

be identified (Fives & Looney, 2009). Thus, in line with empirical evidence that suggests that professional and non-professional teachers respond differently to their level of efficacy beliefs, the value of efficacy programmes may be ineffective to some teachers across professional qualification. Therefore, the goal of this research is to assess the level of Economics teachers' efficacy beliefs as well as identify the differences in Economics teachers' efficacy beliefs in the implementation of the Senior High School economics curriculum across gender and professional qualification.

Methodology

Research Design

The study employed descriptive survey design. The design was found most appropriate because it allows researchers to study and gather information from or about groups of people in order to state their answers or responses; the ultimate goal of which is to make a generalization to the entire population (Leedy & Ormrod, 2005 as cited in Kwarteng, 2013). By employing descriptive survey design, the researchers gained insight into Economics teachers' efficacy beliefs in the implementation of SHS Economics curriculum.

Population

The target population was all Economics teachers in Ghana. The accessible population was 176 Economics teachers from the 44 Senior High Schools (Ghana Education Service, 2015) in the Western Region. The teachers' population in the region is sparsely distributed.

Sample and Sampling Procedure

The sample was 123 Economics teachers. According to Krejcie and Morgan (1976), a population of 176 should have a minimum sample size of 113. Hence, 123 Economics teachers used in the study was a representative sample. The simple random sampling technique specifically the lottery method was used to select 123 teachers from 176 Economics teachers in the region. This technique is considered the least biased method of sampling (Jawale, 2012).

Instrument

The long form of Teacher Sense of Efficacy Scale (TSES) was adopted and used to collect data from the respondents. TSES had 24

items with 3 subscales (Efficacy for Student Engagement, Efficacy for Instructional Strategies and Efficacy for Classroom Management). Each of these subscales had 8 items in total. TSES was originally developed by Tschannen-Moran and Woolfolk Hoy (2001) and has been well established in the literature to be valid and reliable for collecting teacher efficacy data. The items on the instruments were measured on a 100 point scale with 10 point intervals starting from 0 which means 'certainly cannot do' through to 100 which means 'certainly can do'. Pre-test was done in the Cape Coast Metropolis and the instrument proved reliable. The reliabilities for the full scale were 0.93 and the subscales were 0.87 for Student Engagement; 0.96 for Instructional Strategies; and 0.96 for Classroom Management.

Data Collection Procedures

The researchers sent letters to the heads of school to seek approval to collect the data. The researchers administered the questionnaires themselves to the teachers and participants were assured of the confidentiality of their responses.

Data Analysis

Descriptive statistical tools such as mean and standard deviation, and inferential statistical tools such as T-test were used to analyse the data. Mean and standard deviation were computed to find out the level of teacher efficacy beliefs. The t-test was used to examine the differences in teacher efficacy beliefs across gender and professional qualification. The 0.05 alpha level was used to examine the differences in teachers' efficacy beliefs across gender and professional qualification.

RESULTS

Level of Teacher Efficacy Beliefs

Research Question: What is the level of Economics teachers' efficacy beliefs in the implementation of Senior High School Economics curriculum?

Each of the eight items on the scale that measured students' engagement, instructional strategies and classroom management were transformed to one variable called Efficacy for Students Engagement (ESE), Efficacy for Instructional Strategies (EIS) and Efficacy for Classroom Management (ECM). The level of teacher efficacy beliefs

was based on the overall mean. An overall mean score between 0 and 30 was interpreted as low efficacy beliefs, 40 and 60 as moderate efficacy beliefs and 70 and 100 as high efficacy beliefs (Bandura, 2006). Table 1 shows the result of the level of teacher efficacy beliefs in the implementation of the Senior High School Economics curriculum.

Table 1: Teacher Efficacy Beliefs

Item	M	SD
Efficacy for Students Engagement (ESE)	74.91	13.72
Efficacy for Instructional Strategies (EIS)	80.64	9.50
Efficacy for Classroom Management (ECM)	76.48	14.70
Teacher Efficacy Beliefs	77.34	11.95

Source: Field Data, 2016 N=123

The result in Table 1 shows that Senior High School Economics teachers in the Western Region have high efficacy beliefs (M = 77.34, SD = 11.95) of implementing the Senior High School Economics curriculum. With regard to the subscales, the study reveals high level of efficacy beliefs for all the three subscales with Efficacy for Instructional Strategies reported as the highest (M = 80.64, SD = 9.50) and student engagement as the lowest (M = 74.91, SD = 13.72).

Hypotheses Testing

Professional Qualification and Teacher Efficacy Beliefs

Ho1: There is no statistically significant difference in teacher efficacy scores between professional and non-professional teachers

An independent sample t-test was used to find the differences between professional and non-professional teachers' regarding their level of efficacy beliefs. Table 2 presents the result of differences between teacher efficacy beliefs on the basis of professional qualification.

The result in Table 2 shows that there was no statistically significant difference between professional and non-professional teachers in the overall teacher efficacy level and the subscales. Professional teachers reported higher mean scores in teacher efficacy level and the subscales, but the differences were not statistically significant.

Table 2: Professional Qualification and Teacher Efficacy Beliefs

	Professional Qualification	M	SD	T	df	Sig
SE	Professional	75.61	13.59	1.073	121	0.286
	Non-professional	72.41	14.17			
IS	Professional	81.24	9.28	1.317	121	0.190
	Non-professional	78.52	10.14			
CM	Professional	77.64	13.49	1.412	34.590	0.167
	Non-professional	72.36	18.04			
TEB	Professional	78.16	11.42	1.440	121	0.152
	Non-professional	74.43	13.50			

Significant level 0.05(2-tailed) for all groups. SE = Student Engagement, IS = Instructional Strategies, CM = Classroom Management and TEB = Teacher Efficacy Beliefs

Gender and Teacher Efficacy Beliefs

Ho2: There is no statistically significant difference in teacher efficacy beliefs scores between male and female teachers

An independent sample t-test was conducted to find if male and female teachers differ significantly in terms of their level of efficacy beliefs. The result is presented in Table 3.

Table 3: Gender and Teacher Efficacy Beliefs

	Professional Qualification	N	M	SD	T	df	Sig
SE	Male	104	74.25	13.45	-1.239	121	.218
	Female	19	78.49	15.01			
IS	Male	104	80.60	9.54	-.107	121	.915
	Female	19	80.86	9.55			
CM	Male	104	75.76	14.91	-1.266	121	.208
	Female	19	80.39	13.14			
TEB	Male	104	76.87	11.94	-1.019	121	.310
	Female	19	79.91	12.00			

Significant level 0.05(2-tailed) for all groups. SE = Student Engagement, IS = Instructional Strategies, CM = Classroom Management and TEB = Teacher Efficacy Beliefs

Table 3, shows that, there was no statistically significant difference in mean scores of teacher efficacy beliefs between male and female teachers in terms of teacher efficacy level, student engagement, instructional strategies and classroom management. Female teachers

reported slightly higher mean scores (see Table 3) than male teachers but the result was not statistically significant.

Discussion

This study revealed that Economics teachers have high efficacy beliefs in the implementation of the senior high school Economics curriculum. In other words, the teachers believe they are efficacious in the implementation of the curriculum. This means that teachers are capable of setting themselves challenging goals and maintain strong commitment to these goals. They heighten and sustain their efforts in the face of failure (Bandura, 1994). It also implies that teachers quickly recover their sense of efficacy after failures or setbacks. The finding of this study confirms the study by Sarfo, Amankwah, Sam and Konin (2015) who found higher self-efficacy belief among teachers in devising instructional strategies, managing the classroom and engaging students as well. Cobbold and Boateng (2015) also found that kindergarten teachers in the Kumasi Metropolis had high efficacy beliefs in instructional practices. The high level of efficacy beliefs reported by the teachers could be attributed to the opinion that most of the teachers in this study are professional teachers. Hence, teachers participate in professional trainings, workshops and get further professional education to become more competent and knowledgeable to implement the curriculum (Shah, 2006).

This study could not reveal any significant difference between professional and non-professional teachers. The result of this study confirms the null hypothesis and this contradicts the logical assumption that professional teachers have higher teacher efficacy levels than non-professional teachers (Cobanoglu, 2011). This finding supports that of Fives and Looney (2009), who could not reveal any statistically significant difference between the professional level of teachers and their self-efficacy level. However, considering the idea that the field of education has a strong practical dimension, experience might wash out the differences between professional and non-professional teachers on efficacy and may influence the non-professional teachers to teach as professional teachers, equipping them with a broad range of skills, knowledge, and behaviours which formal education alone cannot provide (Cobanoglu, 2011). Also, one major implication from this result is that non-professional teachers believe that they can equally demonstrate professionalism in the

implementation of curriculum. This could be possibly due to the fact that access to various conferences, workshops and in-service training organized to improve teachers' capabilities may also bring both professional and non-professional teachers on equal levels regarding their efficacy beliefs (Shah, 2006).

Furthermore, there was no statistically significant difference between male and female Economics teachers, regarding their level of efficacy beliefs. This suggests that both male and female teachers at the Senior High Schools in the region have similar level of beliefs. Even though female teachers reported slightly higher mean scores of teacher efficacy beliefs than the male teachers, the result was not statistically significant, unlike in the case of Hamurcu (2006) where there was a significant difference in teacher efficacy beliefs in favour of female teachers.

One of the variables that can help explain similar beliefs among male and female teachers is teaching experiences. In this study, most of the participants have more than five years teaching experiences. Relatively longer teaching experience as in the case of participants involved in this study may influence teachers to be more efficacious, especially where previous implementation has been successful and this might render gender differences ineffective in the level of teacher efficacy beliefs. Again, commitment and motivation of teachers in their job could also influence teachers' efficacy beliefs regardless of their gender. The finding supports earlier studies such as Chacon (2005) and Karimvand (2011). For instance, Karimvand reported that gender had no significant effect on the participants' efficacy. On the other hand, this study partly contradicts the study of Shaukat and Iqbal (2012) who revealed a significant difference in classroom management in favour of males.

Conclusions

Based on the findings of this study, the following conclusions were drawn. First, Senior High School Economics teachers in the Western Region of Ghana are efficacious, which means that they believe in their capability to implement the Economics curriculum. Second, gender and professional qualification do not have any impact on the level of Economics teachers' efficacy beliefs.

Recommendations

Based on the findings of the study, the following recommendations were made.

1. First, Ghana Education Service (GES) and school authorities should continuously organize workshops, seminars and conferences for teachers to enable them sustain or improve their efficacy beliefs.
2. Second, GES and school heads should organise self-efficacy enhancement programmes for the teachers irrespective of their gender and professional qualification to sustain or improve their self-confidence to enable them successfully implement the SHS Economics curriculum.

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GENDERED EXPERIENCES OF GHANAIAN FEMALE ACADEMICS AND SCIENTISTS

Fred K. Boateng
University of Ghana, Legon,
Ghan.

Abstract

Although women's roles in development are vital, they are generally marginalized in all spheres of society's development including Science, Technology, Engineering, and Mathematics (STEM). This article explored the experiences of women in STEM domains in Ghana's tertiary education and research institutions. Thirty participants (students, faculty, and research scientists) were selected through purposive/criterion sampling. Their experiences were elicited using semi-structured interviews. The interview data were thematically analysed using initial coding, axial, and selective coding under grounded theory. The findings confirmed that the Ghanaian society is still deeply patriarchal. On the STEM trajectories of the participants, gender discrimination was manifested in comments, structures, and practices. In the face of the gender discrimination experienced, the support system of the female faculty interviewed, enabled them to succeed in their professional and educational endeavours.

Key Words: Women, gender, discrimination, science, Ghana.

Introduction

Women universally grapple with inequalities in society as they struggle to assert their identity in a male dominated society (Galor & Weil, 1996; UNDP, 2007; Wollstonecraft, 1975). Inequalities in societies do not emanate from the "fact that different people do different things but from the fact that different tasks are valued differently and carry with them different amounts of prestige and power" (Hubbard, 1989:120). These normative injustices make women susceptible to higher risks and discriminatory practices (Mensah-Kutin, 2010). They are largely kept from participation in education, politics and decision-making at various levels and other

critical activities that are considered to be the sole preserve of men (Bem, 1993; Hill & King, 1993; Morimoto, Zajicek, Hunt, & Lisnic, 2013; UNDP, 2007). These realities contradict the fact that their roles are very essential (Adeyemo, 1990; Gutek & Larwood, 1987; Hall, 1987; UNDP, 2007; USAID, 1982).

Gender relations in Ghana are moulded by deep, complex, and complicated patriarchy (Baden, Green, Otoo-Oyortey, & Peasgood, 1994; UNDP, 2007). This is against the background of extant legal frameworks and constitutional safeguards to end various gender discrimination practices in Ghana. The Ghanaian Constitution, among other mandates, enshrines equality in the protection and promotion of all basic human rights and freedom, premises the implementation of policies and programmes aimed at redressing social, economic and educational imbalances through legislative enactments. The Constitution also prohibits the holding of persons in slavery or servitude. Some legislative or legal instruments dealing with gender bias are the Criminal Code Amendment Law (1998), the Human Trafficking Act (2005), the National Land Policy (1999), National Gender and Children's Policy (2004), and the Education Strategic Reduction Plan (2003-2015). Despite these laws, many gender inequalities are still prevalent in Ghana (UNDP, 2007).

Several studies point to the persistence of gender inequalities and inequities in Ghana and its prevalence in the tertiary education sector (Addae-Mensah, 2000; Ardayfio-Shandorf, 1995; Atuahene & Owusu-Ansah, 2013; Bunyi, 2003; Girdwood, 1998; Manuh, Budu, & Gariba, 2007; Prah, 2004). Some of the factors prompting the high rate of gender disparities in Ghana's education system are socio-cultural considerations, gendered social practices within households, financial difficulties associated with women, education, lack of role models for girls in schools, hostile school environments such as sexual harassments from male students and inadequate institutional facilities (Atuahene & Owusu-Ansah, 2013; Daddieh, 2003; Morley, Leach, & Lugg, 2009; UNDP, 2007).

Science and technology (S&T) are considered to be the panacea to underdevelopment (UNESCO, 2007) and are recognized by all governments, including those in Africa as the drivers of development (Juma, 2005; Mensah-Kutin, 2010). S&T can help in poverty reduction by promoting economic development which in turn reduces the gender gap. The human resources of women are however

seldom tapped to enhance socio-economic and technological development (UNESCO, 2007). The marginalization of women encompasses the Science, Technology, Engineering, and Mathematics (STEM) fields. Women in prospective and existing STEM academic/research careers have faced a myriad of barriers and hindrances in their careers (Ginther & Kahn, 2006; National Academy of Sciences, 2007) including higher education careers. Every level of the academic pipeline-graduate education, hiring, tenure/promotion, and leadership is characterized by systematic, historical and widespread inequities (National Academies Report, 2006). Women in STEM grapple with persistent discrimination in the academic workplace. Institutions also fall short in the hiring, retention, and promotion of women faculty (Morimoto et al., 2013).

Universally, there are clear disparities across all levels of education with fewer enrolments of girls in S&T subjects (UNESCO, 2007). In Africa and Ghana specifically, enrolments in S&T are symptomatic of gender imbalances (Bunyi, 2003). The enrolment ratio of S&T to Humanities in public universities in the 2006/2007 academic year was 38 percent for STEM and 62 percent for Humanities (Somuah, 2008). The statistical information of female academic staff of Ghana's premier university, the University of Ghana, in 2008 illuminates these gender disparities among faculty members (Tettey, 2010). The composition of female academic staff as compared to male academic staff was 24 percent and 76 percent respectively. The proportions of female academic staff at various ranks of Lecturer, Senior Lecturer, and Professor were 25 percent, 24 percent, and 17 percent respectively. The trends in female academic staff qualifications in the same year were for Masters and Doctorates, 29 percent and 20 percent respectively.

A number of studies have focused on gender discrimination in Ghana's education system, including its higher education system (Ardayfio-Schandorf, 1995; Atuahene & Owusu-Ansah, 2013; Britwum, Prah, & Oduro, 2014; Daddieh, 2003; Manuh et al., 2007; Shabaya & Konadu-Agyeman, 2010; Tsikata, 2001). Nevertheless, issues about gender in Science, Technology, Engineering, and Mathematics (STEM) in Ghanaian tertiary education institutions are scantily discussed. As a consequence, the objective of this study was to inquire in-depth and detail into the experiences of female graduate students, faculty, and scientists in Ghanaian academic and

professional STEM institutions based on their experiences. It was also crucial to augment the innovative capacities of women in STEM careers through gender research to inform gender-friendly S&T policies. The research questions that guided the study were:

1. What gender discrimination do women in STEM fields in Ghana experience in their educational and professional lives?
2. How do women in STEM experience gender biases or discrimination relating to their STEM experiences?
3. How do women in STEM succeed in their STEM educational and professional endeavors in spite of the gender discrimination they face?

From August to October, 2014, the experiences of thirty STEM female scientists and academics in three universities and a research institution were elicited through semi-structured interviews. The interviews were done using an interview protocol as a guide. The findings of the study emerged from thematically analyzed data.

Universities as Catalysts of Gender Inequalities

Universities have the responsibility to provide leadership in gender equity (Manuh et al., 2007). Unfortunately, they are also replete with gender contradictions, because their power and bureaucratic set up stifle efforts at attaining gender equity (Acker, 2000; Morimoto et al., 2013) Bird (2011) confirmed that universities are bureaucratic agencies that enhance gender inequalities. They have distinctive gendered bureaucracies characterized with "formalized institutional-level policies and procedures" and are simultaneously "decentralized and staffed by relatively independent faculty members" (Bird, 2011, p. 205, cited in Morimoto et al., 2013). As performance standards and evaluative criteria are department-based and department-determined respectively, the tendency for individual faculty members to be following university and departmental formal guidelines as against informal norms is ambiguous (Bird, 2011, cited in Morimoto et al., 2013).

Gender disparity arises as women in academia do not have mentors and networks to assist them navigate through the inconsistencies and ambiguities (aforementioned). As such, men subjectively formulate and utilize standards and expectations based on their own experiences without any regard to the barriers and challenges women in academia face (Etzkowitz, Kemelgor, & Uzzi,

2000; Morimoto et al., 2013). It appeared that research into gender issues has not addressed the manner in which the ambiguities and inconsistencies that contribute to gender disparities in educational institutions affect women in academia in general and those in academic STEM fields in particular.

Acker (1990) proffers the abolition of the bureaucratic set-up but Britton (2000) advocates more clarity and formalization of bureaucratic structures as well as addressing structures and processes of power and increasing the recruitment of female STEM workers (Britton, 2000, Morimoto, et al., 2013). Such clarity should incorporate work and family role conflict and as such the assessment of the productivity of female scientists should be different from that of the males (Ward & Wolf-Wendel, 2004). An area of inquiry in the study was the power structures of departments, universities, and workplaces as a whole and, the manner STEM females navigate through such structures.

The STEM Classroom Environment

The classroom environment plays a role in college students' persistence and success (Kinzie, Gonyea, Shoup, & Kuh, 2008). It is therefore not surprising that the ambience in the STEM classroom leads to STEM girls dropping out (Seymour & Hewitt, 1997). According to a survey findings of Murray, Meinholdt and Bergmann (1999), three factors account for the perceived hostility towards women on science and engineering programmes dominated campuses in the United States, a nation known for its excellence in science and technological fields. These are course and curriculum structure, faculty beliefs and behaviour toward women, male students' beliefs and behaviour towards their female counterparts, to some extent, and female faculty and students' experiences with their male students.

As a product of the curriculum, the "weed-out" pedagogy that many STEM faculty members adopt sends signals to many female students who do not identify with the pedagogy that they are not part of the domain. Faculty members in general cover as much material as possible, assign excessive homework, give difficult examinations, and adopt severe grading policies (Murray et al., 1999).

A lot of female STEM students' complaints about disorganization of faculty are associated with drop-outs in STEM programmes (Etzkowitz, Kemelgor, Neuschatz, Uzzi, & Alonzo,

1994). Murray et al., (1999) found that interests of many female students in STEM are largely ignored by male faculty even though many of these faculty members are compelled to seek help from their male counterparts. This is because many male faculty members do not know how to relate academically to the few female students as they fear their outreach may be misinterpreted as sexual harassment.

Many female faculty members operate in chilly STEM classroom environments with lack of support from their male students (Allen & Niss, 1990; Etzkowitz et al., 1994; Murray et al., 1999). When some women excel in Science and Mathematics classes, some of their resentful male colleagues take credit for their success and often accuse them of flirting with their teaching assistants or professors (Murray et al., 1999). These accusations are not corroborated denoting, the patriarchal belief that women cannot be successful in male dominated endeavors. Many male students make suggestive sexual remarks about their female teachers and mates, call them, sarcastic names, and often socially ignore them, citing them as unattractive (Murray et al., 1999). Therefore, an inquiry into the experiences of STEM women relative to their classroom settings in Ghanaian universities was a focus of this study.

Research Design

This study sought to inquire into the gender experiences of women in STEM fields in Ghanaian tertiary educational institutions in a quest to create a theory concerning their gender experiences of STEM women in Ghana. The framework of any methodological section is composed of ontology, epistemology, methodology, and method (Crotty, 2008). Ontologically, the study was based on constructionism which denotes that participants internally construct their perceptions of the world (Patton, 2002; Creswell, 2008). The study's epistemological lens was interpretivism, holding the belief that meanings in human behaviour can be understood and known subjectively because there are multiple realities (Crotty, 2008). The findings of the study emerged from themes generated from participant data through coding.

Participants, research sites and sampling methods

Thirty participants were interviewed between August and September of 2014 in Ghana. The research sites were the University of Education, Winneba (UEW), the University of Cape Coast (UCC), the

Kwame Nkrumah University of Science and Technology (KNUST), and the Center for Scientific and Industrial Research (CSIR). Based on institutional differentiation, the first two sites are predominantly non-STEM institutions, KNUST is a STEM institution, and CSIR is Ghana's science and technological research body. Geographically, the sites were fairly spread across the country.

Two sampling methods were utilized. The foremost, purposive/criterion sampling, which focuses on the selection of participants based on certain characteristics (Patton, 1990), which in the context of the study were discipline, gender, and position or status of participants, was adopted. Formal letters addressed to the Deans of various STEM departments asking them to allow me interview their female academics and scientists were sent. I also utilized snowball sampling in the study. This is the kind of sampling used when the participant pool developed is based on the suggestions of major participant figures who would provide valuable perspectives (Flick, 2009). This method was necessitated by a faculty strike in Ghana which transpired for half of the data collection period. Participants interviewed on the first day of each research site led me to their influential colleagues. I was able to get close to two-thirds of the sample through the snowball sampling. There were 7 participants sampled out of a population of 13,3 out of 6, 9 out of 20, and 11 out of 22 participants recruited from UCC, UEW, CSIR, and KNUST respectively.

Table 1: Participants and their Disciplines

Participant	Discipline
KB	Materials Engineering
JB	Materials Engineering
ML	Mechanical Engineering
LA	Agronomy
PH	Soil Science
CR	Soil Science
DM	Agricultural Economics
PT	Forestry/Natural Resources
BR	Entomology/Wildlife
MB	Entomology/Wildlife
LS	Entomology/Wildlife
RM	Biology

RK	Biology
PB	Biotechnology
YD	Microbiology
PL	Microbiology
BF	Physiology
YO	Optometry
DI	Nursing
ND	Medical Laboratory Technology
WH	Medical Laboratory Technology
CV	Clinical Psychology
HU	Chemistry Education
IJ	Biology Education
SV	Science Education
NT	Analytical Chemistry
TM	Polymer Chemistry
BE	Planning
YM	Physics
DY	Mathematics

Participants were made up of graduate students, faculty members, and research scientists. Postgraduate students were selected for interviews because of their vast educational experiences.

Data Collection

Semi-structured interviews are flexible interviews in which the researcher in advance prepares a set of general questions, from which follow-up questions are asked, to produce fluid conversations (Rubin & Rubin, 2012). An interview protocol (See Appendix) was used to guide the researcher in the interviews. The protocol contained leading questions which when posed, elicited information and acted as the basis for follow-up questions and prompts to be posed further. The interviews were done face-to-face in various office locations mostly with an audio recorder. About half of the participants knew beforehand (including those who made me reschedule interview dates) that they would be interviewed. This was because I had emailed them informing them about the research. The other half was interviewed once I went to their offices and informed them about the study. Twenty-seven participants, constituting 90 percent, were interviewed with an audio recorder. The remaining 10 percent however requested not to be audio-recorded owing to the sensitivity and uneaseness they

had for job security and legal reasons. I utilized short-hand notes-taking to capture the essential interview data for participants necessary for data analysis. The interview sessions were characterized by rapport between the participants and researcher in serene and quiet ambiences. The interviews lasted between 45 minutes and 60 minutes.

Data Analysis

Themes were generated from the data by the identification of patterned meanings pointing to the gender experiences of STEM females in Ghanaian tertiary education institutions congruous to the research questions. The themes were analyzed and connected through three coding phases. The open coding stage word by word and line by line analyses were done to disaggregate the data into concepts and categories which were further dissembled later (Strauss & Corbin, 1990).The axial coding process involved connecting categories to subcategories, while relating them to the central phenomenon (Charmaz, 2006; Strauss & Corbin, 1990, 1998). The coding process of connecting categories and sealing them with a set of discursive narrative is selective coding (Strauss & Corbin, 1990).

The Female STEM Experience

Gender discrimination was pervasive in the trajectories of the women in STEM whether it was school/university, workplace or home, gender discrimination of institutional, cultural, and/or educational bearing manifested in their STEM trajectories. The theory included support that was present in the journeys of the participants.

The three stages of the STEM experiential journeys were Interest Creation and Development (pre-higher education), Higher Education Participation, and Career Dynamics were found to be characterized with gender discrimination and support. The participants began with an interest in STEM before accessing higher education. In the universities, they had academic relationships influenced by their backgrounds especially determined by the type of high school (girls' or co-educational) they attended. They experienced change and/or continuity depending on the type of family/parental background and academic relationship they had in STEM. The career dynamics stage was quite similar to the higher education participation stage except that it had in addition the contextual realities of work.

Gender Discrimination

Gender discrimination or bias was expressed in subtle, sarcastic or explicit comments and embedded in cultural, institutional, curricular practices, institutional, and classroom structures. Participants, throughout their STEM educational and/or professional journeys, experienced varying degrees or magnitudes of gender discrimination. The responses to the discrimination or bias they experienced based on their gender were different, nuanced or similar.

Gender Discrimination Exhibited in Cultural Practices/Notions

Pertaining to gender relative to STEM fields, sexual stereotyping (emanating from culture) between disciplines determines the choice of females in enrolling in other fields and shunning others (Jacobs, 1986, 1995). This situation is a corollary of gender tagging of disciplines by society and explains why when women "cross the borders" to undertake science programmes, they are met with hostilities. This is because they have apparently broken cultural norms or expectations pertaining to the enrolment into science programmes. At the centre of the belief is the idea that science is intricate and very arduous to be undertaken by females:

> *I even got people scaring me, like, science is difficult so why do you want to...friends and neighborhood people...saying science is difficult and I'm a woman and what am I going to do in science? And basically, it's difficult and even guys don't want to do science and I am a lady, that kind of stuff. Even when I had my undergrad degree, I was told by my friends that they wouldn't associate themselves to me because I was more educated than them. One of them treated me with contempt, insulting me and all that.*

The cultural notion heralding the inferiority of women to men extends and cascades into the educational realm and STEM disciplines for that matter. The Ghanaian society with its socio-cultural and associated religious, ethnic, geographical, and economic ramifications generally endorses gender roles to which both males and females are supposed to conform. According to such norms, women are supposed to preeminently undertake domestic roles (managing the home). Even when they add on career roles to their domestic duties, the latter are not to be compromised. Serving children and especially the husband is

a cardinal domestic responsibility. Males are generally not supposed to undertake housekeeping duties (Erinosho, 1994).

The Ghanaian society implicitly places some limits to education on females. It generally places preference for males to females. In many rural areas in Ghana, females are generally dissuaded from going to school. Females with higher educational credentials like Master and Doctorate degrees, and even in some cases Bachelor degrees holders, are regarded as threats, spurned, and sometimes stigmatized. The rationale for the discrimination is that when they achieve such laurels, they may tend to compromise on the domestic roles the society sets for them for their careers. Fearing that they may be perceived as anti-social in a milieu where marriage and procreation are heralded, they are mostly susceptible to all forms of gender bias and discrimination (Tsikata, 2001).

A participant was confronted with the reality of gender tagging within her particular broad STEM disciplinary area. In a setting where a course like Mineral Engineering unlike Mechanical Engineering was perceived to be appropriate for females that chose Engineering, she was confronted with the societal perception that Engineering, and specifically Mechanical Engineering, are meant for males. This was because it was perceived that males were believed to be smarter than females in Engineering. Hence, the very few female Mechanical Engineering students, based on the participant's account, were underestimated. However, when they proved to be smart in the discipline, they were branded as witches:

> *Everybody I spoke to was pushing me towards mineral engineering. Because they felt mechanical was very hardcore, something for men, not for women...They didn't think that women would be that focused to be able to do it. And they also felt that we would be the last in the class every time because men well...they have an expectation of women and they expect that you fall in line with that expectation so anybody that does a little bit or falls a little bit outside that line they think you've done something really extraordinary. We were actually called witches by some of our colleagues and some elderly men and who you would talk to. It is said you have to be a witch to be able to read Mechanical Engineering.*

Classroom Structures as Sources of Gender Discrimination

Gender discrimination also emanated from the structural composition of students during their lectures. In the classrooms or lecture halls, it appeared that women get a tacit message that they do not belong to those classroom or lecture halls. The overwhelming male dominance in those environments affected them negatively. Some of them questioned their decision to undertake those disciplines because of the overwhelming number of men in the classes. For those participants who graduated from girls' schools, such classes were structurally different. They were in the same classrooms or lecture halls with many people with whom they were not accustomed to studying. In pre-requisite course classes, where they had students from related departments studying those pre-requisite courses and the class participation gap was wider, the effects on them exacerbated. A participant who majored in Mathematics narrated the manner the preponderant male presence in her classes impinged on her in her STEM journey:

> *In my class we had just seven ladies and there were seventy-seven guys. So the ratio was discouraging and we had joint lectures and with other Engineering and Science students and even that one was worse. So you go for lectures and it's like a male-dominated thing and that one in itself can discourage you...there were times when it did. Because you wonder, am I at the right place, am I doing the right thing?*

Gender Discrimination Manifested in Comments

Comments that people make are illustrative of the manner culture controls our remarks, observations, and speech. Culture influences the manner people think, perceive, act, and speak. In other words, there is a cultural linkage or association between culture and the utterances or comments people make. Deductively, in patriarchal contexts accustomed to relegate females to the peripheries, it is not uncommon for people to make discriminatory remarks when they observe that the former are violating socio-cultural norms governing them. Thus, women who pursue education to the advanced stages grapple with discriminatory comments in their university years (Daddieh, 2003).

One participant discussed how her male mates frequently questioned her and other female mates' decisions to undertake postgraduate studies. The men were surprised their female mates did

better than them in their studies. Implicitly, they thought that female postgraduate students did not have a place in graduate school and that undergraduate education should be their limit. The perpetrators in this regard, according to her, were men mostly from northern part of Ghana, highlighting a geo-cultural dimension to gender bias. Those areas appear to be deeply even more rooted in patriarchy where women seldom progress in the educational pipeline. Men are powerful forces in such societies who determine the destinies of the female in their societies in various spheres, including education. Such comments and utterances were more profound for Muslim students who had mates who were women in their graduate classes as the aforementioned participant:

> *I don't know but everywhere I go I can say that the ladies perform better than the guys. Even with the PhD it was serious. With the PhD, they were like: "what are you doing here?" I mean the guys in class, the Biochemistry; what are you doing here? You know, they are I don't know what to say, they're not Christians but Muslims from the north–they wouldn't allow their wives to study it; yeah they wouldn't allow their wives to come that far: "what are you doing here?"*

In the girls' schools, where some of the participants attended, they received support from their mates and teachers. In spite of that, they grappled with gender biases from people in their STEM classroom environment. However, they were not perturbed at all by any gender biased comments including sarcastic ones. One participant stated that she enjoyed support from her STEM mates and teachers but was met with gender stereotyping for being a Science student from non-STEM students (females) in her school as well as her sister. She was unfazed by the stereotyping by commenting that:

> *Those of us who did Science were very few and then we were encouraged by our teachers. The relationship among my mates was fine. Nobody would ridicule you because you did Science. Sometimes those not in the Sciences like the Arts students in my school would...would say – even my sister used to do that-sarcastically to the effect that you are always studying, like you are "anti–so" sort of. I didn't care though. It didn't push me at all.*

Curricular Practices as Sources of Gender Discrimination

Curricular practices also exacerbated gender gaps in the STEM areas. A participant recounted the manner a particular course in the curriculum objectified her and her female mates, making them objects of mockery to their male mates. The course (a STEM course) Beading, is linked to a cultural norm of women wearing beads around their waists, to evoke their sexual attraction in order to satiate their husbands. In a particular university, students in some STEM programmes were taught how to make waist beads. In the course of making those beads, the men teased or mocked the women by making sexually suggestive and performative comments. The women did not like the idea of that class being taught because they felt objectified. They felt degraded in the institution supposed to facilitate learning and advancement. Their gender was linked to the patriarchal notion that women are nothing but sex objects:

> *We did a course called Bead making. Most ladies didn't like that course because you know it had so much to do with women...you sort of feel some way...when that course is being taught...I think they are still doing that...and my class was male dominated. They were just laughing at us...and you know, making funny jokes...implying we are sex objects for male pleasures.*

There were other courses that implicitly or remotely heightened gender biases in the STEM journeys of the participants. Some of the activities in some of the classes required physical activities, which usually do not attract women. The problem was that such manual activities were old technologies that were in vogue many decades ago and are still being utilized in the STEM Departments. The participants spoke about those curricular practices in the universities that remotely affect the women in STEM. One participant stated a curricular practice affecting her interest and those of her female mates in their STEM field:

> *Casting is part of our courses...It's a course that should be studied but probably the content. I don't know how to say it...casting is manual but now I think there are other automated ways of casting...they haven't. They are still using the same approaches.*

Gender Discrimination Embedded in Institutional Practices

Universities through some of their practices, foster gender disparities. The universities, from their perspectives gave the participants the opportunity to utilize their expertise in the areas of teaching, research, and service. They relished the opportunity but indicated the disparities in the distribution of roles. As members of academia, they are supposed to teach for a certain number of hours per week. They also are expected to do high quality research intensively to yield outputs in terms of publishing papers in peer-reviewed journals as well as securing grants from external sources, and finally serve their Departments and communities.

Navigating these roles can be challenging in view of the fact that the Department, which evaluates the faculty based on these criteria, paradoxically tends to steer the latter not to suit the realities of motherhood and academia. Such navigation even becomes worse when the roles are not evenly distributed among the faculty and there are disparities in terms of gender. When the criteria are not focused on because of departmental overload, they are negatively evaluated. These practices do not take into consideration the domestic realities that women face in their lives. Women have to bear all these expectations and when those expectations especially those of the academy are not fairly set to consider their family or domestic roles, they are deeply disadvantaged. A respondent complained of being unfairly overburdened with a lot of service roles while her male colleagues were not given much service roles to perform. Such service roles were delegated to women irrespective of their reproductive conditions such as pregnancy:

> *I love teaching for the twenty hours given me, research is my favorite role, and I have no issue with service roles which I also love but I have a particular problem...Let's say we need somebody to arrange this and then maybe because I am a female, I am always given those other jobs compared to the males. Maybe there is a dinner or something and they will say you will be the chair; you will do this and those kinds of things. It affects my teaching and research...Sometimes you are pregnant and you are still being given a lot of things and you go like, "really"? They don't even care about my situation...They don't even delegate it to*

someone else to handle it. Not forgetting I have to take care of my home too.

Support Surmounting Gender Discrimination

Although the research questions focused on gender discrimination in the experiences of the participants, the support that they gained from various quarters was incorporated in the study. This was done to give a perspective to the gender biases. There were various categorizations of gender discrimination experienced by the participants relative to the support that they benefited from.

The family was a major source of support to the participants. Parents, the foremost people from families, were bulwarks in the development of the participants' interests. There were some of them who had STEM backgrounds and that was a great impetus for their daughters who were in STEM programmes or had undertaken STEM courses/subjects unlike those who lacked parental STEM backgrounds. This phenomenon from participants with other relatives was similar.

Faith was another great source of support the participants benefited from. The idea that God had the ability to help them through the support system to surmount whichever impediments or challenges they had in their STEM journeys was very solid and strong among the participants. Their abilities to succeed in their STEM endeavours heavily relied on their performances. Although the aforementioned factors had an influence on their performances, their innate or inherent love for the STEM programmes or courses they undertook was vital to their success. Finally, institutional efforts or inputs from employers of the participants enhanced their progression in their STEM journeys. Institutional support came in the form of financial aid, collaboration, promotion, professional development opportunities, and so forth.

In order for some of the participants to succeed, they had to consolidate their support networks. In other words, their eclectic reliance on an array of supports from various sources or quarters was beneficial to them in their STEM journeys. A participant, like some others, incorporated a potpourri of networks to enhance her development in her journey. These networks were of spiritual, biological, and academic significance. Benefiting from these diverse networks mostly composing of males (teachers, heads of *Departments*, study mates), they regarded the "fatherly" roles of their role models as

having positive effects on their academic lives as females. They encouraged and supported them in the face of gender discrimination:

> *My social networks also helped. I mean apart from God, my father, lecturers, my pastor was strong. Actually they came into my life quite younger so he's no really – I want to say an academic person but then he believes in education. I call them fathers. I have academic fathers and my biological father and then my spiritual father. So these fathers were strong, even than the women in my life. So basically, those were the issues.*

The Milieu of the STEM Classroom Environment

The manifold experiences of female STEM students in Ghanaian schools/universities based on the study's findings are consistent with the nuanced classroom experiences women in STEM even to the same classroom stimuli relative to gender among others (Seymour, 1995; Seymour & Hewitt, 1997). Under similar conditions like the structural composition of the class overwhelmingly composed of males and/or subtle and explicit chauvinist/sexist comments mostly from their male colleagues, some of the girls/women as students and/or as faculty were adversely affected, others were adamant and resilient. The latter depended on the agency (Oyewumi, 2003), support and mentorship from their lecturers (Etzkowitz et al., 1994, 2000) among others were resourceful, or both factors. Some of the females had to think, behave and associate with the males, analogous to the unitary male model where females identify with power holders, i.e. men, in order to succeed (Etzkowitz et al., 1994). Nonetheless the experiences of those who were victims of gender bias attest to the point that STEM women find themselves in chilly classroom environments lacking support from their male counterparts, whether students or faculty. They are not given credit for their accomplishments which is given to the males and are wrongly accused of flirting with their tutors and professors (Seymour, 1995), consequently, they become victims of sexually suggestive remarks, and are spurned as unattractive because of their linkage to the STEM realms (Murray et al., 1999).

The Milieu of the STEM Workplace

Institutions like universities and their ilk are bastions for democratization and development (Mama, 1998) and thus, they have

the capacity to provide leadership on issues of gender equity (Manuh et al., 2007). Some women in STEM fields in the universities and other research institutions have fulfilling career experiences. Apart from their self-motivation and solid background in the STEM fields, they benefit from cooperation, collaboration, and respect from their work colleagues who are overwhelmingly male. Universities and Departments in which they work are seen to provide leadership in gender equity (Manuh et al., 2007). This may seem to be at variance with various literatures on stark gender imbalances in STEM fields (Etzkowitz et al., 1994, 2000; Harding, 1982). However, in consonant with the findings of the study, many women in STEM career fields find their institutional working atmospheres largely uneven and intimidating, including those in Ghana (Campion & Shrum, 2004) and its universities and research institutions (Lundgren & Prah, 2009; Mama, 2008; Manuh et al., 2007).

Summary of Findings

The study sought to explore the experiences of Ghanaian female academics and scientists. Throughout their educational and professional experiences, they experienced sorts of gender discrimination manifested in comments and embedded in structures and practices of their departments, universities, and workplaces. The subtle and explicit comments discriminating against their gender were made by some of their mates including the females, parents, and work colleagues. They were victims of cultural notions that portray STEM disciplines as the preserve of males, and as such were shunned by some of their male mates in school. They also felt intimidated in the classrooms by the numerical dominance of their male mates. The participants perceived a few prerequisite courses as objectifying them. Within their workplaces, some of their male colleagues and seniors belittled them and attempted to impede their professional development. Nonetheless, their families, colleagues, employers, faith and they themselves were instrumental in their successes.

Conclusion

Women's roles in development are vital but many of them experience marginalization in all spheres of society's development including Science, Technology, Engineering, and Mathematics (STEM) areas. This is against the background that the STEM fields are necessary for

socio-economic development. Although there are regulatory/legislative instruments implemented to check gender equality, gender discrimination is prevalent in Ghana. There are myriads of gender research studies about Ghana's education sector in general. However, gender issues in STEM areas are scantily discussed. The experiences of 30 women in STEM domains in Ghana's tertiary education and research institutions were explored. The perspectives of participants were elicited and analyzed through semi-structured interviews and grounded theory respectively. The findings illustrate that the Ghanaian society is still deeply patriarchal. On the STEM trajectories of the participants, gender discrimination was manifested in comments, structures, and practices. The magnitude of gender discrimination however nuanced depending on the level of support they had. Thus, the support system they had, provided a perspective to the gender discrimination meted out to them.

University stakeholders should assist the institutions in drawing up gender policy frameworks with the Science, Technology, and Innovation (STI) Policy, the national gender policy, and National Council for Tertiary Education (NCTE) norms as their rostrums in order for effective coordination to be achieved. Such frameworks should be standardized among universities and research institutions. Two mutually inclusive components of such frameworks encompassing all fields including STEM should be equity and accountability which are achievable by gender mainstreaming/affirmative action policies and gender auditing respectively.

In STEM institutions, there should be clarity in workplace policies on service and/or division of labour. Modalities for service roles, regarding committee membership for example, should be spelt out clearly. It should also be made clear who qualifies to sit on which committee, at which period, duration of service, and to whom allowances should be paid

The outcomes of the research present some recommendations for future research work.These include, prospective research in the experiences of women in non-STEM disciplinary areas, a comparison of the experiences of women in STEM and non STEM disciplinary areas, comparative studies between men and women in STEM and non-STEM areas, and international comparative studies including women in STEM disciplinary areas. Moreover the regulatory

institutions, their Departments, faculty, and especially government should make funds available and procure equipment and logistics to help make the STEM areas attractive to prospective and existing female STEM students and professionals.

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APPENDIX
INTERVIEW PROTOCOL
STUDENTS

1. To what disciplinary domain or major do you belong?
2. Why did you choose that major or program?
3. What do you think about the supports and/or obstacles you face(d) in undertaking your program?
4. Tell me about the networks you belong to or lack or need in your studies.
5. How do you experience conflicts between your study and family responsibilities? How do you negotiate through the conflicts?
6. Tell me about your relationship with your students, mates, and faculty in the classroom and/or laboratory.
7. What do you think about your male students, mates, and faculty?
8. How do you deal with all the challenges or problems you face in your studies?
9. What do you recommend to be changed in your classroom/lab/department/institution concerning your studies?
10. Do you have anything else to add?

Thank you.

FACULTY MEMBERS/RESEARCH SCIENTISTS

1. To which level of faculty or research scientist do you belong?
2. To what disciplinary domain or major do you belong?
3. Why did you undertake a faculty career in STEM?
4. What do you think about the supports and/or obstacles you face(d) in undertaking your career?
5. Tell me about the networks you belong to or lack or need in your academic or research career.

6. How do you experience conflicts between your study and family responsibilities? How do you negotiate through the conflicts?
7. Tell me about your relationship with your students, peers, and senior colleagues in the classroom and/or laboratory.
8. What do you think about your male students, peers, and senior colleagues?
9. What do you think about the impact about the impact of departmental processes and practices on your work? Explain your role in departmental decision-making. Tell me the difference (if any) between your roles and those of your male peers
10. How do you deal with all the challenges or problems you face in your career?
11. What do you recommend to be changed in your classroom/lab/department/institution concerning your career?
12. Do you have anything else to add?

Thank you.

Notes for contributors

1. Manuscripts should conform to style set forth in the publication manual of the American Psychological Association (APA) 5th edition by having the following characteristics among other things:
    a. A title page with a title of 10-12 words. Below the title should be written the author's name in the order: first name, middle initial and last name. Below the author's name is the institutional affiliation of the author, mailing address(es), email address(es), phone and fax numbers.
    b. An abstract on page 2, written as a single paragraph and having a maximum of 150 words.
    c. A text which starts on page 3 should begin with the title of the paper centered at the top. The text begins below the title without the label "Introduction". The sections of the text follow each other without a break. If the paper is a research report it should include an introduction (which comprises the background, purpose and research question(s)/hypotheses), method, results, discussion, conclusion and recommendation(s)/implication(s).
    d. References. This list starts on a new page. References should be written in alphabetical order and should include only the cited works within the body of the paper. The APA Sixth Edition format should be followed in writing all references.
    e. Tables and figures should be presented using the APA format and be numbered consecutively in the order in which they are first mentioned in the text.
    f. Manuscript should be typewritten using the Times New Roman with font size of 12, double-spaced throughout on A4 sheet of paper.
    g. All paragraphs should be indented five to seven spaces. Type all remaining lines of the manuscript to a uniform left hand margin.
    h. Authors are responsible for obtaining permission from copyright owners to reprint or adapt tables or figures or to print a quotation of 500 words or more.

2. Manuscripts most acceptable to space requirement would be 15-20 typewritten pages or between 3500-6500 words including the references.
3. Submit your manuscript file in MS word electronically to ioejedp@gmail.com. Authors are advised to keep a copy of their manuscript to guard against loss.
4. Manuscripts are welcome throughout the year.
5. Contributors to the journal would have to pay a publication fee of GH₵ 100.00 (if in Ghana) for a complimentary copy of the journal. Those outside Ghana would pay a publication fee of $50.00. Monies are payable to the Institute of Education Accounts Officer or to Account number 30211300000655, Ghana Commercial Bank with the Account Name: Institute of Education Exams. Evidence of payment should be sent to the Accounts Officer, Institute of Education, University of Cape Coast Ghana, West Africa or to the email address: ioejedp@gmail.com.

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