



## TEXTBOOKS USE AND ACADEMIC ACHIEVEMENT OF SENIOR HIGH SCHOOL STUDENTS IN CORE SUBJECTS

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### **Abstract:**

Standardized textbooks are very important resources that are used in teaching and learning to facilitate learning and learning outcomes in schools. This article determined the association between standardized core subjects' textbooks use and academic achievement of senior high school students in West Africa Secondary School Certificate Examination (WASSCE) in the Volta region of Ghana. A correlation design was used to carry out the study. A random sample of 32 senior high schools was obtained for the study. Questionnaires were administered to 96 teachers and 32 librarians to rate how often textbooks were used in the classrooms and in the library. The study found that textbooks were very much used in teaching and learning as well as in the library and that a positive correlation exists between textbooks use and academic achievement in the schools. Moreover, schools that had high textbooks use rating scores had statistically significant achievement test scores than schools that reported relatively low textbooks use rating scores. The study suggested standardized textbooks should be fully utilized to facilitate learning in schools rather than storing them for safekeeping.

**Keywords:** standardised textbooks use, academic achievement, performance expectation, teaching and learning

### **1. Introduction**

Countries, worldwide have over the years used education as a tool for their social and economic development. Through education, countries have developed both their human and material resources and have subsequently improved all aspects of their national lives. However, for the aspirations of a 21<sup>st</sup> century nation to be continually met, the quality of education offered to learners must be the utmost priority. Quality education, however, depends on certain indicators. Republic of Ghana (2002) identified the

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indicators of quality education to include; adequate teaching and learning resources, infrastructural facilities, well-motivated and committed teachers, management and supervision, and setting of performance standards for each subject specialization inter alia. These indicators would lead to considerable success being achieved in the area of students' academic achievements at the pre-tertiary level. However, much still need to be done to meet the challenges of twenty-first-century education needs and high public expectations.

In the light of the significant role education plays and the need for education to be of high quality, states provide many resources to ensure delivery of quality education. Learners' achievements in national and international examinations are then used as an indicator for measuring success education. One key input that facilitates student learning at the secondary school level are textbooks. Textbooks, according to Webster's dictionary (1941) are manuals of instruction and are "*used as a basis of instruction*" (p. 1033). In confirmation, research on teachers' use of textbooks revealed that the overwhelming majority of teachers use textbooks as their main curriculum guide and source of information for lesson plans (Tyson, 1997).

Textbooks are designed attractively with content covering stipulated policy standards (curriculum content) in core subjects and provided to all public schools in Ghana. They provide a common standard and manual for all public schools in the country irrespective of school size or location. The significant role of textbooks cannot be overemphasized as many rural schools lack the capacity to access electronic learning resources. Studies have found several benefits associated with textbooks used in teaching and learning in schools.

## **2. Benefits of using standard textbooks to support lessons**

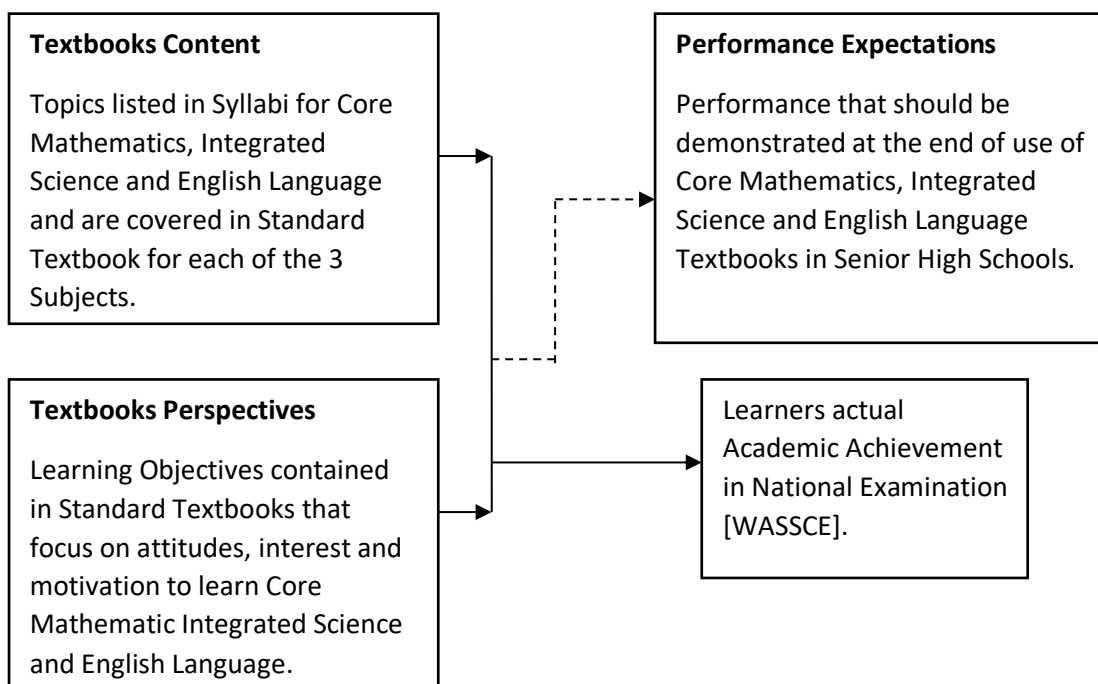
In a study to establish what teachers and students consider as the strengths and negatives using textbooks and alternative materials in upper secondary schools in Sweden, Nilsson, (2006) found that teachers and students had common views on about textbook and alternative materials. The study found that using textbooks saves time as teachers no longer spend long hours to prepare alternative materials for the lesson. Learners were happy in using textbooks because they know what to do at each point in time and may choose to learn in advance if they wished. Furthermore, teachers indicated that textbooks are of significant benefit in supporting classroom work due to weak students as they feel more secure working with textbooks because of the guide books give them. By having all the material in one book, students feel that they are in control of their learning (Woodward, 2001). Harmer (2001) indicated that "*many good textbooks are attractively presented and they are prepared with a good structure that offers a coherent syllabus, satisfactory language control and motivating texts and tapes*" (Harmer 2001, p 304). Christenbury (1994) in supporting textbooks use argue that teachers are already overwhelmed with work and so to be tasked to create original curricula which is not guided by textbooks. Also, money

and time required for such preparation will be a challenge as compared to approving standard textbooks to support curriculum delivery (Christenbury, 1994).

The study, however, noted that textbooks appreciate western cultures but demonstrated other cultures as inferior. Moreover, women were not portrayed as equal to men. This agrees with Johnsen (1993) who also observed that textbooks may contain biases or discriminate against one gender. Moreover, textbooks lack real-life examples where learners can share their experiences on a variety of issues. Textbooks can also be outdated and boring. This supports Harmer (Yule, 1996; Harmer, 1998; Brown, 2000). Nilsson (2006) noted that responses from participants can be greatly influenced by the kind of textbook participants use or have in mind. Harmer (1998) however, argued that some teachers do not like textbooks because they claim that both they and their students are bored by using textbooks that much of the times contain materials that are not interesting enough.

In spite of the weaknesses noted in some studies, textbook remains a unique resource that facilitates teaching and learning at the pre-tertiary level of education in Ghana. Education policymakers and curriculum developers come up approve standard textbooks that contain all topics that is covered in the syllabus for use in schools with the hope that when the objectives stated in the syllabus and textbooks are achieved, performance expectations will be met and learners achievement will equal performance expectations, Figure 1 shows the relationship textbooks use, performance expectations and actual achievement.

## 2. Conceptual Framework



**Figure 1:** Adapted TIMSS Conceptual Framework illustrating the Relationship between Standard Textbooks Content, Performance Expectations and Actual Learning Achievement (Source: Robitaille et al. (1993))

### 3. Review of Relevant Literature

Pepin and Haggarty (2001) carried out a cross-national study in English, German and French schools about how mathematics textbooks are used in the classrooms. The study sought to establish what things are the same and what things are different about junior high school textbooks in the three countries. The study revealed that English teachers prefer to prepare their lessons from textbooks but allowed students limited access to textbooks in class. German teachers prefer to give examples other than those given in the textbook while the French teachers start their lessons in a much different way than what is in the textbook. The authors noted that teachers relied on textbooks activities to give exercises to the students in the three countries. In a study of the curriculum material that guide mathematics lessons in Finland, according to Roj-Liberg (as cited in Johansson, 2003) observed that mathematics teachers often used textbooks to guide their lessons. The author reported that not less than 86% of the teachers indicated that they frequently used textbooks to guide their lessons.

Researchers have for some time now being getting impressive results from their studies of the inputs into students' education that affected their performance in achievement tests. World Bank publications state that the availability and use of textbooks was one of the more consistent indicators of achievement (Heyneman & Jamison, 1980; Heyneman & Loxley, 1983; Fuller, 1987). Even though Cronbach (1955) observed that more research on textbook use in the classroom is needed, this has not been a topic of keen interest to researchers. Yet, it deserves more attention in developed and developing countries. Here are some relevant studies on how teachers use textbooks globally in school classrooms.

Educational Products Information Exchange Institute [EPIE] (1977) selected representative sample of principals and teachers across the United States and mailed to them a questionnaire concerning their use of textbooks and other print materials in the classroom. From a sample of about 12,000 teachers, the researchers found that an average of 62.5% of class time is structured around print materials, with little variation across school districts; a total 51% of teachers received some training in the use of the materials, 30% of teachers used locally developed materials such as worksheets and tests. The EPIE researchers confirmed the data taken from the written survey with visits to two full-class meetings in 150 classrooms in 56 schools across the United States.

In a survey of 1,580 elementary school teachers and 141 elementary school principals, Barton and Wilder (1966) found that 98% of first-grade teachers and 92% to 94% of second and third-grade teachers used basal readers on all or most days of the year. In a survey of 339 teachers, Turner (1988) found that 85% of them used basal readers and that 56% of districts represented by the teacher sampled required basal to be followed strictly. Weiss (1987) found that 90% of science and math classes at each grade used textbooks. Woodward and Elliott (1990) researched textbook use and teacher professionalism, textbooks, and schooling in the United States and found that many teachers depend on teachers' guides in their teaching and suggested that textbooks are

ubiquitous and widely used in classrooms. Describing the teachers who rely heavily on textbooks, Woodward and Elliot (1990) concluded that the teacher's role becomes that of an administrator of a pre-planned lesson. These conclusions are in sharp contrast with what pertains in Botswana and Ghana where teachers' use of textbooks in the classroom seems to be minimal unlike the United States where some teachers rely too much on textbook use. But who are the teachers who depend on textbooks? In answering what might account for the range of dependence among teachers on textbooks and accompanying guides, Woodward and Elliott (1990) found that less experienced teachers and those whose subject-matter expertise is weak rely more heavily on textbooks than other teachers.

These findings support Lockheed, Fuller, and Bail (1986) suggested that textbooks substitute for teacher education and explained that in classrooms lacking textbooks, teacher education was significantly related to students' achievement and that in classrooms with textbooks, teacher education was a minimal factor. Other variables they suggested were; teachers' and school administrators' belief that textbooks hold content expertise and authority, expectations by parents, cultural support for their use, seemingly high-quality design and apparent coherence with local curricula. The authors noted that in the U.S. teachers are expected by their mentors, peers, bosses, and client parents to use textbooks extensively. The situation seemed slightly different in some developing countries where the authors found how teachers used textbooks in planning and making decisions about teaching. It was observed that teachers used textbooks outside the classroom as aids in planning lessons.

Freeman and Porter (1989) researched teachers' styles of textbook use and examine the overlap between contents taught and textbook contents in elementary school mathematics. Their main interest was the extent to which teachers relied on the textbook to dictate what and how they teach. The researchers found that textbooks were limited in how they can direct teachers' activities. The authors noted that textbooks were largely silent on how much time should be devoted to a subject matter over the course of the year, how to vary content for different students, and what standards of achievement to target. On the other hand, textbooks do provide guidance on other content decisions, what topics to cover, how much time to allocate to each topic, and in what sequence to teach them.

As part of a comprehensive series of studies of how teachers decide what to teach, Freeman and Porter (1989) conducted a year-long case study of seven elementary school teachers. These teachers demonstrated three distinct styles of textbook use. The first style was the "textbook bound". In this style, the teacher began the school year with the lesson on page one and progressed page-by-page through the book over the course of the year. In order to get through the book, some omitted selected chapters, the "basics" teacher focused on chapters that reviewed addition, subtraction, multiplication, and division, and introduced fractions and the "management by objectives" teacher worked in a school district that required teachers to ensure that all students acquire minimal competencies. As an aid to teachers, the district provided a list that coordinated textbook exercises with

each instructional objective. The researchers looked for differences between the three styles of teaching in the relative strength of the teacher's view of the textbook as a content authority and the teachers' own content convictions.

The authors found that both the "textbook bound" and the "focus on objectives" teachers viewed the book as high in authority while the others viewed it as low or moderate. Freeman and Porter (1989) found differences in the amounts of time teachers allocated to concepts, skills, and applications, their grouping practices, and their standards of achievement. They also saw differences in the degree to which teachers presented the content of the textbook around each topic. The "textbook bound" teacher not only taught a higher proportion of lessons but also was more likely to present these lessons in a style that conformed to the textbook. The "basics" teachers were more selective in deciding which sections of each lesson to use, and the "management by objectives" teacher used selected sections suggested by the school district. Freeman and Porter came to two conclusions. First, textbooks do not control content as they are believed to be, rather, teachers' content decision-making is a function of several other factors including student aptitude, duration of instructional time, and teachers' own convictions. Second, the teachers who followed their textbooks more closely placed most emphasis on applications and conceptual understanding while the teachers who deviated most from their textbooks did so to augment an already heavy emphasis on drill and practice of computational skills.

Stodolsky (1989) examined the assumption that textbooks drive instruction because they are ubiquitous. The author studied how fifth-grade teachers used textbooks in mathematics and social studies and how their uses differed between these two subjects. The researcher observed nine teachers in Chicago schools serving lower-class, working-class, middle-class, and upper-middle-class pupils. The teachers, whose years of experience varied widely, were observed during two consecutive weeks of instruction in mid-year. The researcher investigated three aspects of textbooks use; the extent to which teachers cover topics presented in the textbooks, the sections of the book and/or supplementary materials that were used and the extent to which suggestions in the teachers' copy followed.

In mathematics, Stodolsky found as did Freeman et al. (1983) that teachers covered only the topics in the books, though not necessarily all of the topics or in the order presented in the textbook. But findings go deeper than those of Freeman. Stodolsky categorized the contents of the textbooks and examined how teachers used each category introductory or developmental, exercises, maintenance, review tests, and enrichment. The researcher constructed a table showing each of these categories on one axis, each of the six teachers on the other axis, and indicating in each cell whether the teacher used the content and, if notable, how. The author found a wide variation in how teachers used textbooks at different stages, but the introductory and exercise sections had more consistent use than the maintenance, review, test, and enrichment sections.

Teachers did not seem to consider the suggestions in the teachers' copy when they planned or presented their lessons. In the findings in mathematics teaching, the

researcher reported that teachers were very autonomous in their textbook use and that only a minority of teachers really followed the text in a page-by-page manner. Textbook use was much more varied than usually suggested, particularly when one considers more than just the topics contained in the books. Stodolsky (1983) noted that developers of teachers' editions might be disappointed by the finding that suggests a weak link between their suggestions and what teachers do. In social studies, the researcher focused on the topics taught in class and their match with the textbook and supplementary material and observed that as in mathematics, enrichment suggestions in teachers' guides were ignored rather consistently as were in most instructional suggestions. Rather, teachers used texts in the styles they felt most appropriate for themselves and their students, consistent with general school policies. Stodolsky concluded by suggesting that the common wisdom about textbooks pervading instructional decisions and actions must be treated with a more deliberate analysis of the specific ways in which such an assertion is valid and the conditions under which it is true.

Sosniak (1993) who pursued Stodolsky's earlier research began by pointing out that systematic attention to textbooks and their use by teachers and students are long overdue and their role in education frequently has been either overlooked or assumed. Although others had addressed textbook use, they had not considered how teachers view textbooks within the framework of their instructional plans and actions, both within and across specific subjects. Sosniak observed how often and in what ways teachers used textbooks and other materials in the course of teaching language, mathematics, and social studies, and how consistent textbook use was within and across these subjects.

Sosniak then went beyond this descriptive information to find out what teachers thought about textbooks and their use within and across subjects, how their thoughts related to instruction, and how consistent their thinking was about textbooks. The researcher carried out his investigation in four fourth-grade classrooms in the Chicago school district, studying two pairs of teachers in two different schools. He collected data over the course of a year, including two week-long visits to each class. During these visits, he kept narrative records and presented his findings in a richly detailed description of each teacher's practices and how they differed.

Sosniak (1993) found that the use of textbooks in their designated sequence was typically a teacher pattern, largely independent of the materials themselves, the subject and culture of the school, for example, two teachers used most of their textbook materials in the sequence designed by the publishers. In contrast, the other two typically chose sections from the various books without apparent concern for textbook-designed sequence. The author also reported that none of the four teachers used textbook materials in the same manner across subjects considering, for example, how much instructional time was spent with textbook materials, how the materials were used, which aspects of the materials were used, and how much and what sorts of materials were used in addition to the text. Instead, the teachers worked with materials and subjects in distinctive ways. Even more revealing was teachers' explanations of their uses of textbooks and other materials. While two teachers maybe observed to use the textbook in a similar way, or

while one teacher may seem to use textbooks in the same way across subjects, their thoughts about why they behave in these ways may differ dramatically, from teacher to teacher and subject to the subject. In contrast, teachers who appeared to use materials differently may not be very different in the thinking that underlies their behaviour. In asking teachers their views of textbook materials, the researcher observed that textbooks did not necessarily play the dominant role that was often assumed.

The teachers saw themselves as teaching knowledge and skills to a group of children, not teaching a book or a specific set of materials, textbooks apparently were something akin to props these teachers used in putting on the play of fourth-grade education. They were essential to the action but did not demand or receive focused attention or analysis in most instances. The observations that there was great variation among teachers' use of textbooks and that teachers' own explanations of their behaviour often confounded what was observed, highlighting the importance of examining how and why teachers used textbooks in other specific contexts. The researcher concluded the report of the study with a practical implication that suggests that to become more aware of teachers patterns of textbook use, their selectivity and the consequences of the choices they make for instructional activities is an important avenue to pursue (Sosniak, 1993).

Durkin (1984) studied the match between what teachers do and what Basal Readers Manual recommends in the U.S. through the find out if there any pattern in, or conscious reason for, what teachers use, skip, or alter from among the many suggestions in basal reader manuals. whether there were differences in the way manuals function at different grade levels, why teachers use or not use manual suggestions. Sixteen teachers in grades one were observed, the author recorded ten responses to activities suggested by teachers' guide whether teachers did those activities and if they altered their form or sequence. The teachers were interviewed after each observation to confirm the accuracy of the observation records and to get some explanation of their use of the guide's suggestions.

Durkin found that most teachers used some suggestions generously; primarily those for assessment questions and written practice assignments, but others had only minor influence background information, vocabulary, and pre-reading questions. Across the three grade levels, there was much similarity in how teachers used the manuals. Durkin concluded that teachers spent so much time on oral reading and written exercises and so little on background information, vocabulary, and pre-reading questions. It could certainly be speculated that oral reading at all three grade levels was as much a device for controlling students as for teaching them. The same motive applies to the time given to practice assignments, where all the teachers said that one goal was to keep students occupied.

Lockheed, Fuller, and Bail (1986) examined existing observation and interview data that provided some information on textbooks use in Thailand and reported on their analysis of longitudinal data entailing pre-tests and post-tests to study textbook use in Thailand. They analyzed data from the Second International Mathematics Study (SIMS) carried out by the International Association for the Evaluation of Educational



Achievement (IEA). In this study, textbook use was a variable in a multivariate analysis. The authors reported that 62% of the teachers often used published textbooks in their instruction of the target class. The researchers further found that students of teachers who reported using textbooks often scored significantly better on achievement tests. The authors suggested that textbooks substituted for teacher education. In classes lacking textbooks, teacher education was significantly related to student achievement. In classes with textbooks, teacher education was not a strong factor in student performance. The authors, however, noted that teachers who used textbooks did not necessarily use time more effectively. Textbooks did not necessarily encourage teachers to assign more homework

Lockheed and Komenan (1989) analyzed the use of textbooks in Nigeria and Swaziland. As in Thailand, they used the SIMS data collected by the IEA. The researchers found different results in the two countries. In Nigeria, the use of published materials was positively related to achievement but in Swaziland, material inputs were unrelated to achievement. The researchers suggested that the differences might have been methodological, thus sampling, data quality, and reliability. Again, the researchers relied on teacher response questionnaire data on textbooks use and did not actually observe teachers using books. In these studies, researchers used three different methods to define the availability and use of textbooks; counting the number of books and other materials in the classrooms, making books available and encouraging teachers to use them, and asking teachers to respond to questionnaire about their use of textbooks.

Two studies in which the researchers used classroom observation as a method of data collection to better understand how textbooks affect learning were conducted in Ghana and Botswana as educational researchers in developing countries began to place more importance on factors accounting for the cultural context of instructional inputs. Another one was in Chile where Sepulveda-Stuardo and Farrell (1983) studied how teachers in Chile used textbooks. The researchers were interested to know why teachers did or did not use textbooks. The presence of textbooks may not be sufficient since if the teachers thought that the textbooks were not useful, they would not use them. The effectiveness of textbooks depends upon the use made of them by teachers. The researchers sampled 900 eighth-grade students and 400 teachers in 72 schools. The researchers used three instruments; a written questionnaire for teachers, a written questionnaire for students, and observation of some teachers during three different sessions. The variables they constructed included teacher preference to use textbooks, teachers' experience, teachers' training, and subject area. The outcome of this study was the difference between how teachers reported their use of textbooks and how they were observed using them.

Observation showed that teachers tended to exaggerate their use of textbooks when they answered questionnaires. It was clear that there was the need for more research into the actual and obviously varying patterns of textbook use. This discovery has implications for not only Chile's study, but for others such as the analyses of SIMS data in which data was generated only by teacher questionnaires and the Nicaragua

study, which also used teacher questionnaires. The researchers also gained some insights from their survey of teachers about their use of textbooks. 78% expressed an ambivalent attitude toward textbook use, 52% said they did not use textbooks because they are not the best didactic material or they were not necessary and only 49% claimed they had some training or retraining in how to use textbooks in the teaching and learning process. In analyzing their survey data, the researchers found a significant relationship between teachers' exposure to training in textbook use and the desire to use textbooks. Also, there was a slight desire for more experienced teachers to use textbooks more often than inexperienced teachers. This was contrary to the findings of Lockheed, Fuller, and Bail (1986) that textbooks substitute for teacher education. In addition, teachers seemed to use textbooks more often in language than in mathematics or science. In surveying students, the researchers asked, *inter alia*, about students' perceptions of the usefulness of textbooks in the teaching-learning process. The authors found that generally, students had a positive perception of textbooks more than their teachers and that about half the students used textbooks when they did not understand what the teacher had presented. About one-third, however, did not resort to textbooks for assistance (Fuller and Bail, 1986).

In Botswana, Fuller, Conrad, and Snyder (1991) studied how teachers used class time and textbooks among others. The author observed 127 primary and 154 junior secondary school classrooms on three separate occasions over a three-month period. They devised observation instruments to quantify teacher and student behaviour including students' use of textbooks and allied print materials. In 12 % of the time researchers were in the classroom, students were observed using a textbook, and in 1% of the time, they were observed using other print materials. In junior secondary schools, in 11% of the time researchers were in the classroom, students were observed using a textbook, and in 5% of the time, they were reading other print materials. Using regression analysis of their data, the researchers discovered that textbooks were more frequently used when English Language was being taught, and they were more often used in smaller schools as defined by the number of teachers on the staff. While this study presented information about how often students actually used textbooks, it did not tell how a student or their teachers used the textbooks.

Harris, Beatrice, Anthony and Harrison (1997) reported on their intensive study of teaching practices in 14 schools under a survey conducted in 1991 in the University of Cape Coast Centre for Research on Improving Quality of Primary Education in Ghana, 1993. The authors reported that most teachers were not using textbooks in the classroom because they feared they would be held responsible for textbooks losses and damage. Teachers also knew that children could not communicate in the English language in which the textbooks were written and that the books were not aligned with the children's reading ability. The teachers did not have the skills to adapt the books to children's skill levels.

Beatrice, Anthony, and Harrison (1997) worked in 14 rural and urban schools for two and a half years to improve English language learning. All the schools received a

good supply of textbooks, and teachers and supervisors in seven schools received supplementary instructional materials, participated in on-going professional development workshops, and received on-site instructional support. The researchers traced the path of textbooks from the head-teachers' office to the students and studied how teachers used textbooks. Their methods of data collection included interviews with teachers, head-teachers, circuit supervisors, parents, and students, classroom observations, formative assessment of individual students' performance, and an inventory taken late in the process of the condition of available textbooks. The research team found that simply managing the movement of textbooks within the school and between school and home was a major effort. Because the books had a high value on the open market, neither school officials nor parents wanted the responsibility for their security. The Ministry of Education had to announce to teachers that they would not be asked to pay for lost books before most teachers would let the books out of the cupboard. Moreover, some students and even teachers did not come to school regularly, and so it was difficult to entrust those individuals with textbooks. Because the books were not durable and were subject to rough treatment, they were easily damaged while not easily replenished.

In the classroom, the gap between students' skill levels and that which the textbooks required was large in rural schools, while in urban schools, the books were better matched to the skills of most students. Teachers in rural schools, therefore, had to devise strategies for bridging this gap, which most teachers were not prepared to do. The assistance offered to teachers in seven schools proved successful in showing teachers how to group students in reading and to prepare supplementary materials to help students improve their language and reading skills. The authors concluded that merely putting textbooks into the hands of students was not enough to guarantee their successful use. The researchers suggested that teachers' use of communicating by writing on the chalkboard needed explicit training in moving toward the use of books as the medium of reading and writing. Enough textbooks, therefore, needed to be available for students to use them individually, at least in language and mathematics, teachers needed written materials to supplement the textbooks, remedial materials for those whose skill level was too low and enrichment materials for those who mastered the material easily. Teachers also needed training in how to conduct group work using textbooks, headteachers, parents, and students needed guidance in managing textbooks. Schools where headteachers set forth clear policies on textbook management fared better than those where guidance was vague, and students and parents needed to understand how to use textbooks at home and how to take care of them.

#### **4. Material and Methods**

The study used a correlation design specifically the Pearson Product Moment Correlation Coefficient to establish the relationship between textbooks use and senior high school academic achievement. A total of 32 senior high schools were randomly sampled from a

total of 45 schools for correlation study (Fraenkel & Wallen, 2000). The schools were divided into four groups based on the Ghana Education Service categorization of senior high schools into categories 'A', 'B', 'C', and 'D' (Ghana Education Service 2009). Category A' four schools, Category B' two schools Category C' ten schools and category D' sixteen schools were sampled randomly for the study. Each school constituted a stratum from which three Head of Programs and one librarian were sampled giving a total of 96 teachers (Head of Programs) and 32 Librarians for the study. Participants responded to questionnaires while schools WASSCE results were obtained from offices of Assistant Headmasters of the schools. Permission was obtained from the headmasters of the schools for data to be collected. Participation by respondents was voluntary.

## 5. Results and Discussion

Response rate to the instruments in this study was 93.75%. Table 1 shows the distribution of responses by status and gender in the schools.

**Table 1:** Distribution of Respondents by Status and Gender

Status	Gender				Total	
	Male		Female		No.	%
	No.	%	No.	%		
Librarians	24	22.43	6	46.15	30	25
H. O. Ps	83	77.57	7	53.85	90	75
<b>Total</b>	107	100	13	100	120	100

Source: Field Data.

H. O. P. – Heads of Programme

Table 1 showed that 107 of the respondents representing 89.12% were males while 13 respondents representing 10.88% were females. Table 1 further showed that 30 respondents representing 25% of the respondents were librarians while 90 respondents representing 75% of the respondents were teachers (heads of department).

Table 2 shows the distribution of respondents by status and duration of stay in their schools.

**Table 2:** Distribution of Respondents by Status and Years of Service in their Schools

Duration In Years	Status					
	Librarian		H. O. P.		Total	
	No	%	No	%	No	%
0-4	5	16.67	13	14.44	18	15
5-9	7	23.33	39	43.33	46	38.33
10-14	8	26.67	18	20.00	26	21.67
15-19	7	23.33	12	13.33	19	15.83
20 or more	3	10.00	8	8.89	11	9.17
<b>Total</b>	30	100	90	100	120	100

Source: field data.

Table 2 shows that 15% of the respondents had worked in their schools for a period between one and four years, 38.33% had worked in their schools from five years to nine years, 21.67% had worked from 10 to 14 years, 15.83% had worked for 15 to 19 years and 9.17 % had worked for twenty years or more. This shows that the respondents had worked in their schools long enough to be able to provide reliable information on textbook situation in their schools over the past five years.

**Research Question 1:** How often are textbooks of English Language, Core Mathematics and Integrated Science used in the teaching-learning process in senior high schools?

In an attempt to analyze this research question, English Language, Core Mathematics and Integrated Science textbooks use in the teaching and learning process in the classroom were analyzed. Teachers who were heads of department of English Language, Core Mathematics and Integrated Science and Liberians responded to questionnaires on the use of textbooks in these core subjects in their schools. The books are in some cases kept at the library and retrieved for lessons after which they are sent back to the library.

Table 3 shows the distribution of responses by the librarian and the teachers on how often textbooks were used in schools.

**Table 3:** Distribution of responses on how often core textbooks were used

Response	Status					
	Librarians		H. O. Ps		Total	
	Score	%	Score	%	Score	%
SA	423	32	1260	35	1683	34.20
A	760	57.6	2215	61.5	2975	60.46
D	97	6.1	90	2.5	187	3.80
SD	40	4.3	35	1.0	75	1.54

Source: field data.

Table 3 summed up the ratings of each type of responses given by librarians and heads of programs which stood at a total 4,920 out of which respondents gave a rating of 1,683 representing 34.20% in strong agreement with the statement that core subjects' textbooks were very often utilized in the teaching and learning process in senior high schools in the Volta Region. Similarly, respondents gave a rating of 2975 representing 60.46% in agreement with the statement that core subject textbooks were used very often meaning that they are highly utilized in the teaching-learning process.

On the other hand a rating of 187 representing 3.8% was recorded in strong disagreement with the statement that core subjects' textbooks were very often utilized in the teaching and learning process in senior high schools while a rating of 75 representing 1.54% was given in strong disagreement with the statement. The analysis showed that core subjects' textbooks were very often used and thus highly used in the teaching learning process in senior high schools in the Volta Region. The high textbooks use recorded in this study supports the assertion of Weaver and Bollinger (1968) that; "The

taking of notes is not an adequate substitute for books: - despite any wishful thinking the average teacher needs help and the textbook appears to give the most tangible assistance'' (p.23). This further supports the argument made by Saveland (1965) that textbooks may be considered as launching paths for the class. That is, the point at which further reading, discussion and other teaching-learning activities start. Moreover, the finding supports (Barton & Wilder 1966; Turner, 1998; Weiss, 1987) who found that 90% to 98% of teachers use textbooks in their teaching. This further confirms Roj-Liberg (as cited in Johansson, 2003) who found that mathematics teachers often used textbooks to guide their lessons as not less than 86% of the teachers indicated that they frequently used textbooks to guide their mathematics lessons. The finding, however, ran contrary to Harris, Beatrice, Anthony and Harrison (1997) who reported that most teachers were not using textbooks in the classroom because they feared being held responsible for textbooks losses and damage at the basic schools.

**Research Question 2:** What relationship exists between core subjects' textbook use scores and schools' academic achievement?

To address this research question, responses on core textbooks use (independent variable) on the Likert scale were converted into rating scores and correlated with schools' mean academic achievement scores (dependent variable). The relationship between the independent and the dependent variables was analyzed using Pearson's Product-moment Correlation Coefficient. Table 4 illustrates the relationship between core subjects' textbooks use and schools' academic achievement.

**Table 4:** Relationship between Core Textbooks Use and Schools' Mean Academic Achievement

Subject	N	R
English Language	30	.80
Core Mathematics	30	.63
Integrated Science	30	.70
All Three Subjects	30	.90

$\alpha = .05$

Source: field data.

In table 4, the relationship between core, textbooks use rating scores of the three subjects' and mean schools' academic achievement scores had correlation coefficients of .80 in English Language, .63 in Core Mathematics, .70 in Integrated Science and .90 in all the three subjects put together. The correlations are positive for all the three subjects and moderate for Core Mathematics but strong for English Language, Integrated Science and all three subjects put together. All the relationships were significant at  $\alpha = .05$  alpha level. The positive correlation between core subjects' textbook use and academic achievement supports the findings of Lockheed and Komenan (1989) report that, in Nigeria, the use of published materials was positively related to students' achievement but goes contrary to their findings in Swaziland in the same year by the same authors that students' academic

achievement and use of print materials input were unrelated. Table 5 shows the overall correlation between textbook use and senior high schools' academic achievement.

**Table 5:** Relationship between Over-all Core Subjects' Textbook Use and Schools' Academic Achievement

N	R	r <sup>2</sup>	r <sup>2</sup> ×100	P	Remark
30	.911	.83	83.0	.001	Significant

Source: field data.

Table 5 shows the variation in schools academic achievements in the three core subjects in the West African Secondary School Certificate Examination due to textbooks use in senior high schools in the Volta Region.

### 5.1 Null Hypothesis

**Hypothesis 1:** There is no significant difference between the academic achievements of public senior high schools which were considered to have high core subjects' textbook use rating scores and public senior high schools which were considered to have low core subjects' textbook use rating scores.

The independent sample t-test was the statistical tool used to test this hypothesis. This helped to determine the significance of the difference, if any, between academic achievements of public senior high schools considered having high textbook utilization scores and public senior high schools considered to have low textbook utilization score. The grouping is on the basis that all senior high schools use core subjects' textbook and allied print materials for studies towards the WASSCE and yet some public senior high schools had high textbook use score while others had low textbook use score. Table 6 illustrates the result of the independent sample t-test on academic achievement differences between public senior high schools which used core subjects' textbooks more and those which used them less.

**Table 6:** Result of t-test on Mean Achievement Differences between Public Senior High Schools which used Core Subjects' Textbooks more and those which used them less

Group	N	M	SD	Df	T	Sig (2-tailed)
HTBUS	15	72.4000	8.98252	28	7.594	.001
LTBUS	15	51.8667	5.38340			

Significance,  $p < .001$

HTBUS = High Textbooks Use Schools

LTBUS = Low Textbooks Use Schools

From Table 6, schools considered to have high textbooks use rating scores recorded higher academic achievement ( $M = 72.4$ ,  $SD = 9.0$ ) than schools considered to have low textbooks use score ( $M = 51.9$ ,  $SD = 5.4$ ). This difference was significant at  $t(28) = 7.594$ ,  $p < .001$  (two-tailed) at an alpha level of .05. Therefore, the null hypothesis that, there is no significant difference between the academic achievement of senior high schools considered to have high textbook use rating score and senior high schools which were

considered to have low textbook use rating score is rejected and a conclusion is drawn that there is a significant difference between the academic achievements of senior high schools which were considered to have high textbook use rating score and senior high schools which were considered to have low textbook use rating score.

This supports the findings of Lockheed, Fuller and Bail (1986) observation that students of teachers who were reported to have used textbook often scored significantly higher marks on achievement test. This further confirms Okumbe (1998) who ranks teaching and learning resources use by teachers very high. This is also in line with UNESCO (1985) study report which states that; *“Without readily –accessible, well stocked and well-staffed libraries and other resources and individual familiar with their use through in-service experiences, the learning to learn approach cannot succeed and the effectiveness of lifelong education will be reduced”*(p.112). This means that in spite of the application of information communication technology to the teaching and learning process in recent times the world over, students and teachers in senior high schools in less developed countries still use textbooks and allied print materials to a very large extent to support the teaching and learning process.

**Hypothesis 2:** There was no statistically significant difference in achievement test score among categories A' B' C' and D' public senior high schools.

The statistical tool employed to test this hypothesis was the one-way ANOVA. This helps to determine the differences, if any, in achievement test scores among the four categories of senior high schools sampled for the study. A one-way ANOVA was performed to compare the achievement test scores of categories A', B', C' and D' senior high schools. The output variable was found to be normally distributed and equal variances assumed based upon results of Levene's statistic [(F (3, 26), = 16.366, p =.001)]. There were statistically significant differences among achievement test scores of the four categories of schools. Post-hoc comparison using the Cheffe's <sup>a,b</sup> test indicated that Category A' schools (M=72, SD =2.71, 95% confidence level). Category B' schools (M = 66.5, SD = 4.95, 95% confidence level). Category C' schools (M = 66.7, SD = 4.5, 95% confidence level) scored higher in achievement test than Category D' schools (M=55.36, SD=6.05). The null hypothesis stating that there was no statistically significant difference among test achievement of the four categories of senior high schools was therefore rejected and the alternate hypothesis adopted.

## 6. Conclusions

The result of the study concluded that core subjects' standardized textbooks were very often used by students and teachers in the teaching and learning processes in senior high schools. This means that the standardized core textbooks were useful to the schools and hence steps needed to be taken to monitor textbooks use as well as ensure their provision in adequate quantities. The study noted that Core subjects' textbooks use also showed large variations in the academic achievement of public senior high school students in the



West African Secondary School Certificate Examination. Furthermore, public senior high schools that reported high textbook use rating scores had higher academic achievement than those schools which reported low textbooks use rating scores. Standardize textbooks use is thus a significant indicator of students' success in achievement tests.

### **6.1 Recommendations**

The study proposes the Ministry of Education and the Ghana Education Service should provide Teachers' guides or manuals, standard textbooks and syllabi in the required quantities to senior high schools because they are very much used by teachers and learners in teaching and learning. Ghana Education Service (GES) and school heads should exercise effective supervisory role over the use of textbooks in public senior high schools to overcome the issue of some schools setting aside the recommended textbooks and using other unapproved textbooks in their schools.

### **About the author**

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