

Effective Use of Instructional Time: What is Happening in Our Schools?

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Abstract

Effective use of instructional time has engaged the attention of many writers and researchers in recent times. This study investigated effective use of instructional time in public senior high schools in the Northern Region of Ghana. 500 students were sampled from 7 public senior high schools to participate in the study. Three programmes of study namely; general arts, general science and home economics were sampled for the study. The research design employed was a combination of the cross sectional survey and the use of documentary evidence. Analysis was done using frequencies and one way ANNOVA. The analysis revealed that out of 364 days in a school year, only 177 days,

representing 49% of the entire period did public senior high schools engage in various school activities. The remaining 187 days, representing 51% of the period was not used for any school learning activity. The findings further revealed that the three programmes of study were allocated equal amount of time for classroom instruction. However, only 71% of this time is reflected in the school time table as actual class engagement time. Majority of the students spent 58% of the entire school time actually engaged in classroom instruction. The study recommended that the Ghana Education service should take steps to ensure improved efficiency with regard to the use of instructional time in public senior high schools.

Efficiency in this regard can be improved by either reducing the number of school holidays in the year or reducing the hours spent on co-curricular activities to make room for more instructional hours.

Introduction

Education is often regarded as the key to the socio-economic development of countries. There are a number of studies (Downes, 2007; Olaniyan & Okemakinde, 2008; UNDP, 2006) that examined the role which human capital acquisition plays in the economic development of countries. In a study on the implications of human capital for development, Olaniyan and Okemakinde (2008) for instance, found that investment in education has positive correlation with economic growth and development. It is on account of the enormous role education plays in the economic development of countries that governments all over the world are making a lot of interventions aimed at improving upon the mechanism of human capital acquisition. In spite of this positive development, relatively few researchers focus their attention on how students make use of

instructional time in the process of acquiring knowledge. That is, how do students make use of instructional time in school?

Previous research findings which estimated how students achieve their examination grades simply examined the impact of a number of inputs on student academic achievement. These include school funding (Altonji & Dunn, 1996), class size, teacher characteristics and training (Hanushek, 1979; Hanushek & Rivkin, 2007); the performance of student peers (Sacerdote, as cited in Smith, 1990; Zimmerman, 2003) and characteristics of students and their families including parents permanent income (Blau, 1999; Dahl & Lochner, as cited in Smith, 1990;). In all these findings, students' behaviour regarding the use of time is usually not taken into account as an input factor. Indeed there has been little research on effective use of instructional time in public senior high schools in the Northern Region of Ghana. A review of this research on students' use of time in public senior high schools in the Northern Region of Ghana reveals that not much has been done to link school-allocated time to actual time

spent in the classroom. For instance, Al-hassan (2009) assessed the effects of teacher absenteeism on quality teaching and learning in public primary schools in Northern Ghana. He found that on average 70% of the sampled teachers agree that absenteeism has significantly negative effect on teaching and learning. Apart from the fact that this study was done in a primary school, Al-hassan (2009) failed to further analyze the proportion of allocated time actually used in the classroom.

Due to the high value parents and stake holder place on the academic performance of students, one question that preoccupies the mind of the researcher is why some public schools consistently perform well in examinations while others consistently perform poorly. Researches by Daggett, (2005); Edmonds, (1981); and Lezotte, Skaife & Holstead, (2002) have established that successful schools have unique characteristics and processes, which help all children, learn at high levels. Among the factors identified as contributing to academic performance is utilization of instructional time. How effective are our public senior

high schools in terms of instructional time usage? This is what the study sought to find out.

Literature

Use of Instructional Time

Classroom instructional time is the portion of the classroom time spent teaching students' particular knowledge, concepts and skills pertaining to school subjects. It is the time when classroom learning actually takes place. It excludes routine procedural matters such as marking of register, transition time or time for disciplinary matters (Cotton, 1989). Instructional time, an important aspect of student learning is linked to all aspects of classroom learning opportunities. For example, educational progress is expressed in terms increments of grade years and credit hours and student engagement can be measured by attendance rates, attentive time, time-on-task, homework hours, and school-related activities (Aronson, Zimmerman, & Carlos, 1998).

According to Destefano, (2012) students' allocated time is the amount of time during which they are

supposed to be in school based on the number of days in the school calendar and the length of the school day. Although it can be argued that within that school allocated time, classroom instruction is not the only activity that the students engage in. Time is apportioned and spent on other co-curricular activities as well. Some of these activities include students' self-study activities, group studies, entertainment and religious activities all of which count towards the academic success of the student. However, OCED (2014) noted that no clear link has been shown between academic achievement and time spent in after school lessons and individual study. This study has focused on the use of classroom instructional time because as stated by MQI-Time (2007) research reveals a complicated relationship between time and learning and suggests that improving the quality of instructional time is at least as important as increasing the quantity of time in school. Also as noted by Gettinger and Seibert (2002) instructional time or academic learning time is one of the most important correlates of achievement, and its linkage with learning is one of the most consistent findings in educational research.

Theories Related to Time Allocation in Schools

The study based its assumptions on two theories firstly, Bratti and Staffolani (2002) theoretical model of optimal time allocation that states that under normal circumstances, time spent on academic related activities such as class attendance time, group studies time and self-studies time are positively correlated with academic achievement and that the activities are complements instead of substitutes. An increase in class attendance time leads to an increase in self-studies and group studies time and the ultimate effect is increase in academic achievement measured in grades. Bratti and Staffolani (2002) used this theoretical model in their investigation of the relationship between university student's absenteeism and academic achievement in which students decide the optimal allocation of their time among class attendance, self-study and leisure. Under some specific assumptions, they found a positive correlation between class attendance and time devoted to self-studies from which they infer that estimates of students' performance regression which omits self-studies might be biased.

Secondly the effective schools model of Lezotte (2010) identifies time on task or opportunity to learn as one of the characteristics of an effective school. Opportunity to learn simply means that students learn during most of the lessons they spend time on. So to offer the student opportunity to learn is to offer him or her enough time and other resources to learn and this ultimately brings about improvement in academic achievement.

Statement of the Problem

In most educational institutions, one of the major resources that apparently determine how successful they are in the achievement of their objectives is the availability of time and how it is allocated and used. Educational institutions are often challenged with this time allocation problem. How best do schools make use of allocated time (especially instructional time)? Although there have been many studies of educational production, the evidence would suggest that there is still a long way from understanding how education is produced in terms of how hours of studying is transformed into knowledge. Therefore, there is a rationale for a new empirical study which will shed further light on the

process by which time input is utilized in the process of acquiring knowledge. This study therefore investigated the use of instructional time using second year senior high school students of the Northern Region of Ghana. This study is of particular importance if we bear in mind the apparent inadequate number of studies which address the problem of instructional time usage in public senior high schools in the Northern Region. The research question asked therefore was: What proportion of school allocated time is actually spent on classroom instruction?

Methodology

The study employed a combination of the cross sectional survey and the use of documentary evidence. For the survey 500 students were sampled from 7 public senior high schools to participate in the study. Three programmes of study namely; general arts, general science and home economics were sampled for the study. Analysis was done using frequencies and one way ANOVA. The documentary analysis comprised a combination of an analytical study of the 2013/2014 academic year (school calendar) as a resource document and

other resources such as syllabi of the various subjects of the three programmes of study (General Arts, General Science and Home Economics) as well as the school time tables. The materials were selected on the basis of the following:

Authenticity

All the documents were obtained directly from the various headmasters of the senior high schools. To ensure that they were authentic and genuine, the researcher cross checked to ensure that they were authenticated with the stamp of the Ghana Education service and the senior high school in question.

Credibility

All the documents used were prepared independently and beforehand. None of the documents were produced for the benefit of the study. Although a possibility exists that an incorrect entry could have been made in the documents, for instance, some words are not always spelt correctly, such occurrences as genuine typographical errors and not a fraudulent activity.

Meaning

Apart from reading the various time tables and syllabi to get the face value meaning, the various heads of departments were consulted to ensure that the interpretation given to the documents were correct.

Results

First of all, an estimate of the school time was made using documents such as the syllabi of the various subjects of the three programmes of study, school calendar, the school time table and the class time tables of the various programmes. Tables 1, 2 and 3 show the time allocated to each of the programmes of study by the Curriculum Research and Development Division of the Ghana Education Service.

Table 1: Time Allocated to the General Science

Subject	Number of periods	Period Duration (minutes)	Weekly Duration(hrs)
English Language	5	40	3.20
Mathematics (Core)	5	40	3.20
Integrated Science	5	40	3.20
Social Studies	3	40	2
ICT	3	40	2
Biology	6	40	4
Chemistry	6	40	4
Physics	6	40	4
Elective Mathematics	6	40	4
Total	45	360	30

Table 2: Time Allocated to the Home Economics Programme

Subject	Number of periods	Duration (minutes)	Weekly Duration(hrs)
English Language	5	40	3.20
Mathematics (core)	5	40	3.20
Integrated Science	5	40	3.20
Social Studies	3	40	2
ICT	3	40	2
Biology	6	40	4
Food and Nutrition	6	40	4
Management Living	6	40	4
Economics	6	40	4
Total	45	360	30

Table 2: Time Allocated to the General Science Programme

Subject	Number of periods	Duration (minutes)	Weekly Duration(hrs)
English Language	5	40	3.20
Mathematics	5	40	3.20
Integrated Science	5	40	3.20
Social Studies	3	40	2
ICT	3	40	2
History	6	40	4
Economics	6	40	4
Geography	6	40	4
Religious Studies	6	40	4
Total	45	360	30

A careful study of the time allocated to each of the programmes in Tables 1, 2, and 3 revealed that a total of 30 hours per week are allocated to each of the programmes for the teaching of the various subjects (weekly classroom instructional time allocation). There are therefore no differences among the three programmes of study with respect to time allocated to them for classroom instruction by the Curriculum Research and Development Division of the Ghana Education Service.

The Proportion of School Allocated time Spent on Classroom Instruction

Analysis of the school teaching time tables further revealed that a total of 7

hours a day are allocated as school time. School hours start from 7:30 a.m. and end at 2:30 p.m. each working day. The weekly hourly allocation for school attendance is therefore 35 hours. Out of this, 1 hour is devoted for first and second breaks (30 minutes each). This sum up to five hours each week. The transition from one lesson to the other according to school norms also takes a maximum of five minutes. These sum up to 45 minutes a day (for the 9 periods) and 3 hours 45 minutes a week. Taking the 5 hours of break time and 3 hours 45 minutes of transition time out of the weekly school allocated time, the amount of time actually spent on classroom instruction is 26 hours 15minutes. Further analysis of the time

table revealed that 1 hour 20 minutes a week is specified as free periods. Students and teachers can use this time to do revision or assessment. That invariably means that practically, 24 hours 55 minutes are now left to be devoted for instruction or what is popularly called academic learning time in the various subjects. This implies that each of the three programmes of study is allocated this time frame. The following demonstrate the analysis:

1. Weekly time allocation for school attendance = 35 hours
2. Weekly cumulative class breaks (lunch and breakfast breaks) = 5 hours
3. Weekly class attendance time = 30 hours (35 hours - 5 hours).
4. In-class transition time = 3 hours 45 minutes.
5. Free periods = 1 hour 20 minutes
6. Actual class engagement period = 24 hours 55 minutes (i.e. 30 hours - 5 hours 5 minutes)
7. Percentage of school time devoted for actual classroom lessons

Comparing the 30hrs per week allocated to each of the programmes by the curriculum research and development division of the Ghana Education service with the time allocated for classroom instruction by the various schools (24hrs 55minutes a week), it was realised that a time gap of about 5hrs deficit. Seventy one percent of the school time is actually used for classroom instruction. This means that the real time allocated for classroom instruction in the various schools is about 5 hours lower than what is allocated to them by the Curriculum Research and Development Division of the Ghana Education Service.

Students were asked how they make use of the 24hrs 55 minutes a week actually engage in classroom instruction (i.e. academic learning time). The responses were coded as follows: 4-10 hours, 1; 11-17 hours, 2; 18-24 hours 3; 25-31 hours, 4. Two hundred and twenty-five respondents representing 50% of the sample reported that they spend an average of 18-23 hours a week attending lessons. That is an average of 20hrs 30 minutes (class midpoint).

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Taking this report as a percentage of the school time allocation one finds the following: $1230/2100 \times 100 = 58\%$

Note: Time is expressed in minutes.

These analyses revealed that majority of the students are exposed to only 58% of the school time for actual

classroom instruction with their teachers. The mean differences in class attendance time by students of the three programmes of study are presented in Table 4.

Table 4: Mean Differences in Class Attendance Time

Programme	Frequency	Mean	Standard Deviation
General Arts	184	3.2	1.3
General Science	166	3.3	1.3
Home Economics	150	3.3	1.5

A one way analysis of variance confirmed that the difference in time spent on class attendance (academic learning time) by students of the three programmes of study is not statistically significant, ($F(2, 497, p = 0.47)$) with means ranging from 3.2 to 3.3.

Analytical Study of the 2013/2014 Academic Year (Yearly Time Allocation)

An analysis was done on the total time allocated and time used in the senior high schools for the 2013/2014 academic year. The following

represent the analysis of the academic year time allocation:

1. Span of 2013/2014 Academic Session:
2. Began 16th Sept., 2013 Total of 52 weeks = (52×7) days
3. Ended 11th Sept., 2014 = 364 days (Note: 1 week = 7 days)
4. Saturdays and Sundays = 52×2 days = 104 days
5. Remaining days 364 days – 104 days = 260 working days

Issues of 1st Term, 2013/2014 Academic Session

1. Span: 13th Sept., 2013 to 20th December, 2013.
2. Mid-term break (30th Oct., 2013 to 6th Nov., 2013) - 5 working days
3. Public holidays:
 1. El-del Adha holiday (22nd August, 2013) - 1 day
 2. National Farmers day (1st Dec., 2013) - 1 day
 3. 1st term, holidays (21st Dec., 2013 to 12th Jan, 2013) (3 weeks) - 18 working days
4. Total number of days for recess for 1st Term - 25 days

Issues of 2nd Term, 2013/2014 Academic Session

1. Span: 13th - Jan, 2014 to 11th April, 2014
2. Mid-term break (7th March, 2014 to 13th March, 2014) - 5 working day
3. Public holiday:
 1. Independence day (6th March., 2013) - 1 day
 2. Independence holiday for school children - 1 day
 3. 2nd term holidays (12 April, 2014 to 4th May, 2013) (3 weeks) - 18 working days

4. Total number of days for recess for 2nd term - 25 days

Issues of 3rd Term, 2013/2014 Academic Session

1. Span: 5th May, 2014 to 1st August, 2014.
2. Mid-term break (16th June, 2014 to 23rd June, 2014) - 5 working days
3. Public holidays:
 1. Iddle Fitr (28 July, 2014) - 1 day
 2. Republic day (1st July, 2014) - 1 day
 3. African Union Day (25th May, 2014) - 1 day
4. 3rd term holidays (2nd August, 2014 to 11th Sept., 2014) (5 weeks) - 25 days
5. Total for 3rd term - 33 days.
6. Grand total of holidays = total for 1st term + total for 2nd term + total for 3rd term = 25 days + 25 days + 33 days = 83 days.
7. Days secondary schools were opened for classes in the 2013/2014 academic session = (260 - 83) days = 177 days

8. Days senior high schools were on holidays for 2013/2014 academic session = $(364 - 177) = 187$ days
9. % of days senior high schools were opened for 2013/2014 academic session = $177 \text{ days} / 364 \times 100\% = 49\%$
10. % of days secondary schools were on holidays in 2013/2014 Academic session = $187/364 \text{ days} \times 100\% = 51\%$

The analysis represents the case of Senior High School A. Table 5 shows the school calendar of senior high schools in the Northern Region.

Table 5: Senior High School Academic Year Calendar - 2013/2014 Academic Year

Term	Period	Duration		
		From	To	No of Weeks
One	School session	16 th Sept. 2013	20 th Dec. 2013	14
	Midterm	30 th Oct. 2013	6 th Nov. 2013	1
	Holidays	21 st Dec. 2013	12 th Jan. 2014	3
Two	School Session	13 th Jan. 2014	11 th April, 2014	13
	Mid term	7 th March, 2014	13 th March, 2014	1
	Holidays	12 th April, 2014	4 th May, 2014	3
Three	School Session	5 th May, 2014	1 st August, 2014	13
	Mid term	16 th June, 2014	23 rd June, 2014	1
	Holidays	2 nd August, 2014	11 th Sept. 2014	5

The school calendar is the same calendar for all senior high schools in the Northern Region. The only difference is the timing of the mid-term break which is slightly different but the duration remains the same. From the analysis, senior high schools spent 51% of the days for holidays while only 49% of the entire 2013/2014 academic session was used for school activities. The results reveal that the senior high schools appear not to be efficient as more than 50% of the academic year is not used for any school academic activity.

Discussion

In terms of time allocation no differences among the three programmes of study with respect to time allocated to them for classroom instruction by the Curriculum Research and Development Division of the Ghana Education Service. However the issue is the proportion of allocated time used for classroom instruction or teaching and learning activities. The findings of this study are consistent with Honzay (1987); Karweit (1984/1985) and Olugbade and Solomon (2011); that only about half the typical school day is actually used for instruction, the remainder of

the time being taken up by school wide and classroom matters of a non-instructional nature. The findings are however at variance with the assertion that half of the classroom instructional time is used for classroom procedural matters, transitions, and disciplinary matters as indicated in the studies of Anderson, (1983); Fredrick, Walberg and Rasher, (1979); and Seifert and Beck, (1984). Glass (2010) argued that the number of days allocated to the school within the academic year has implications for time apportioned for classroom instruction in the various programmes which ultimately influence academic performance of students.

The findings also indicate that the difference in time spent on class attendance (academic learning time) by students of the three programmes of study were not statistically significant. This finding is inconsistent with Grave's (2010) report that Social Science students invest significantly more time in classroom instruction than General Science and Arts students.

The Lezotte's (2010) theoretical model of effective school states that an effective school is the school that gives students the opportunity to learn. The ways the school days are used in the school year therefore determines the level of efficiency in the educational system and how far students are given the opportunity in a form of time to learn. This implies that the senior high schools studied appear not to be efficient as more than 50% of the academic year is not used for any school academic activity. Looking at the case of senior high schools in Nigeria, in their analysis of the time frame and syllabus completion rates for senior high school students in Nigeria, Olugbade and Solomon (2011) found that out of 365 days in the school year only 146 days representing 40% of the entire session did schools engage in various school activities. The remaining 218 days representing 60% of the session was observed as different holidays. This also appears to show inefficiency as the proportion of time spent on school activities is less than time spent on non school activities. Also Bratti and Staffolani (2002) theoretical model of optimal time allocation indicates that under

normal circumstances, time spent on academic related activities such as class attendance time, group studies time and self-studies time are positively correlated with academic achievement. This implies that if students spend a higher proportion of school allocated time on these academic related activities academic performance will improve.

Conclusion

There appears to be a gap between policy formulation and real policy implementation with regard to the use of classroom instructional time. Majority of the students are exposed to only 58% of the school time for actual classroom instruction with their teachers. Educational policy strategy should focus on efficient and effective curriculum implementation within the allocated time, the engaged time and the academic learning rate time. The findings also reveal that public senior high schools in the Northern Region of Ghana appear not to be efficient as only 49% of the academic year is spent on school activities. This is likely to have negative implications on the academic performance of students in senior high schools. Efforts must be made to focus on 'time on task' and

ensure more time is used for teaching and learning. It must be noted however that the issue is not on increasing time but effectively using instructional time. As indicated by OCED (2014) the amount of time spent in school is much less important than how the available time is spent and on which subject, what methods of teaching and learning are used, how strong the curriculum is, and how good the teachers are.

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