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Students' Time Allocation to School Activities and its Effect on Academic Performance in Senior High Schools

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Abstract:

The management and use of time is very important in ensuring student learning in schools. This paper reviews the time students in public senior high schools in the Northern Region of Ghana spent on academic and non-academic related activities and its influence on their academic achievement. Five hundred students were sampled from 7 public senior high schools to participate in the study. A combination of the cross-sectional survey and of documentary evidence was used. A questionnaire was used to collect data from the students. Analysis of the data was done using multiple regressions. The results suggest that the time students spent attending classes, group studies and self-studies have positive and significant influence on their academic performance. Class attendance; group studies and self-studies times are however complements instead of substitutes. It would be useful for students to have the opportunity to effectively manage their time in school and make use of academic school activities to improve their academic performance.

1. Introduction

Education is often regarded as the key to the socio-economic development of countries. It builds up the human capital to help with development. As a result of the important role education plays in the economic development of countries, 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 their time in the process of acquiring knowledge. That is, how do students make use of allocated time and what is the relationship between the amounts of time students spend on various activities in the school and their academic achievement?

A review of research literature on students' time allocation and academic achievement reveals some level of controversy regarding the findings. The findings show mixed results with regard to the link between the time students spent on various activities in school and their academic performance. For instance, Frisbee (1984), Papalardo (1986), and Schmidt (1983) found a positive and significant relationship between time spent on academic related activities and academic achievement although the relationship they said is not large in terms of its magnitude. On the other hand, Kember, Jamieson, Ponfret and Wong (1995); Schuman, Walsh, Olson and Ethridger (1985) found little or no relationship.

One explanation postulated by the writers to explain these mixed findings is the lack of a measure of quality of study time. Quality of study time is a multi-attribute variable and thus is difficult to measure. Zulauf and Gortner (1999) examined the use of time and academic performance of 93 college students. Both quantity of study time and quality time management skills were included in the study. A recursive regression analysis revealed that time management skills and study time were positively related with students quarterly grade point average (G.P.A.). Students' grade point average increased only 0.04 points (4.0 scales) per additional study hour suggesting that a substantial improvement in G.P.A require substantial increase in study time. Time variables included in their study were sleep, study, planned recreation, leisure, travel time, T.V, eating, personal hygiene, student organisation and phone making time. The study, however did not include students' background characteristics such as age, gender, socioeconomic background of their parents, their ability levels, as well their religious affiliations. Yet these variables also impact on academic achievement and leaving them uncontrolled may bias the results or findings.

The interest of this paper is not only on the proportion of school allocated time that is spent on classroom instruction as investigated by the time allocation researchers (Anderson, 1983; Fredrick, Walberg, & Rasher, 1979; Honzay, 1987; Karweit, 1985; Seifert & Beck, 1984; Olugbade & Solomon, 2011). Beyond that, the study attempted to investigate the link between students' allocated time and their academic achievement. Therefore, this paper looks at the time students spend on academic and non-academic school activities, specifically; classroom instruction, group study, self-study and religious activities and how it influences the academic achievement of the students. The study was confined to public senior high schools in the Northern Region of Ghana. This was because there has been a debate in the country as to whether students need three years or four years to attain secondary education. Also, the Northern region has more challenges than other regions in relation to access and participation in education at all levels.

2. Literature

2.1 Student Time Allocation and Academic Performance

Time is an invaluable resource that students need to manage and use effectively if they are to be successful in school. Cotton (1989) defined allocated time as the amount of time specified for an activity or event. He contended that when educators and educational researchers speak of allocated time, they are referring to school time, classroom time, instructional time, time on task, and academic learning time. Destefano (2012) looks at time from a wider perspective whereby he indicates that allocated time is the time that represents the total number of days (hours) during which students are supposed to be in school, based on the number of days in the school calendar and the length of school day. Time can be looked at as an input that when effectively used by administrators, teachers and students can lead to an outcome of quality education. Waweru and Nyagosia (2013) investigated the utilisation of allocated time and academic achievement of secondary school students in Kenya. The study concluded that schools performing well in national examinations were putting more emphasis on time-on-task. They therefore recommended that school administrators and teachers should put more emphasis on time-on-task and ensure opportunity to learn for all students. From the investigation a study on student perceptions of time allocation and academic achievement, by Ogundipe and Falade, (2014) it was evident that there is a relationship between time allocated to academic activities and academic achievement of students.

Oghuvbu (2010) investigated class attendance and academic achievement of students in secondary schools of Delta State in Nigeria. The study identified average percentage of attendance, academic performance and the correlation between attendance and academic performance of students in secondary schools. The study revealed that; the mean score of students in attendance was 68% and academic performance 66%. It also revealed a fair positive correlation between attendance and academic performance. It showed the coefficient of determination $r^2 = 0.22$, an indication that 22% of students academic performance was caused by a variation in attendance in secondary schools in Delta State, Nigeria. Wassmer and Jez (2011) investigated the impact of classroom learning time on academic achievement of elementary school pupils in California. Using regression analysis and a data set drawn from California's elementary school sites, they found a statistically significant and positive relationship between the number of instructional minutes in an academic year and school-site standardized test scores. More specifically, about 15 more minutes of school a day (or about an additional week of classes over an academic year) relate to an increase in average overall academic achievement of about 1.0 %, and a 1.5 % increase in average achievement for disadvantaged students, even after controlling for student and school characteristics. All these studies reiterate the importance of the management and use of time within an educational institution. What specific school activity time is used for also has influence on learning outcomes. Bralti and Staffolani (2002) for instance investigated the effect of self-study on academic achievement, using first and final year economic students of the University of Ancona (Italy) they found out that while attendance at lectures seems to improve performance especially in quantitative discipline such as Mathematics and Economics, self-study seems to be more important for non-quantitative disciplines such as Law and Economic History.

2.2 The concept of measuring academic performance

Academic performance or achievement is the outcome of education which measures the extent to which a student, teacher and institution have achieved their educational goals. Most educational production function studies measure academic achievement by standardized achievement test scores (Dolton et al., 2001; Grave, 2010; Hanushek, 1979; McMullen, 2007; Smith, 1990). Others consider other measures such as student attitude, attendance rates, and college continuation and dropout rates (Michelson, Boardman, Davis, Sunday, Katzman, Bulkhead, Fox and Holland as cited in Hanushek, 1979) as measures of academic achievement.

Performance on test is used to evaluate educational programmes and even to allocate funds and there are some pragmatic arguments for the use of tests scores as output measures (Hanushek, 1979). Besides their common availability, one argument is that test scores appear to be valued in and of themselves. A more persuasive argument for the use of test scores relates to continuation in schooling. Test scores appear to have an increasing use in selecting individuals for further schooling. Thus, they may relate directly to the real output through the selection mechanism (Hanushek, 1979). Tests are often available in grade level equivalent, percentile ranking or raw scores forms, all of which provide ordinal ranking.

The current study focused on the use of cumulative terminal examination score of students as outcome or achievement measures of the educational production process. The scores are accumulated over a period of time by students. Test content is presumably standardized in accordance with provisions of the various syllabi and thus provides an adequate measure of educational output of student achievement in the absence of data on other output measures such as the development of attitudes and skills. The cumulative terminal score does not only rank students but also show some kind of differences in terms of intellectual ability (Hanushek, 1979).

3. Problem Statement

It appears that one of the fundamental scarce resources in human society is the availability of time. In the educational system, time use or allocation to academic and non-academic activities is critical to achieving quality education. The focus of this study aimed at shedding further light on the process by which time input is transformed into educational output. Many questions have been asked as to what influences student achievement. Attention therefore needs to be given to allocated time as an important factor in accounting for differences in academic achievement of students.

The purpose of this study was to investigate the time students in public senior high schools in the Northern Region of Ghana allocate to academic and non-academic related activities and its effect on their academic achievements. The key research question therefore that guided the study was: How does students' time allocation for both academic and non-academic school activities influence their academic achievement?

4. Methodology

A cross-sectional survey was used to investigate the relationship between time allocation and academic achievement of second year senior high school students in the Northern Region of Ghana. Students responded to a questionnaire regarding their use of time on academic and non-academic related activities. The study was confined to some selected public senior high schools. Second year students in these schools were sampled to fill a questionnaire on how they make use of their time.

The study population comprised all second year students of public senior high schools in the Northern Region of Ghana. The rationale for using the second year students was that unlike the first year students, these students had had time to adjust to the school system. The third year students were preparing for their terminal examinations. Also second year students had cumulative terminal exam records for at least one year providing an opportunity for the researcher to use them as proxy for academic achievement. This provided fair grounds for analysis of what the student was capable of achieving. Seven schools were purposively sampled to represent each of seven zones (zone categories was based on socio-cultural and ethnic similarities) of the districts in the Northern region. Stratified random sampling was used to select a total of 500 students from the seven selected schools. The strata were based on program of study and then gender to ensure a fair proportion of students were selected from these groups. Multiple regression analysis was used to analyse the data to ascertain the causal effect of time allocation on academic achievement. Data of academic achievement was derived from school records of students' cumulative terminal exams scores. The instrument was pretested on 100 students from five schools and a Cronbach alpha coefficient of 0.7 was obtained indicating a strong internal consistency of the items.

5. Results

The study sought to determine whether there was a significant influence of the time students spend on academic and non academic school activities on academic achievement. The school activities assessed were class attendance, group study, self-study and religious activities. To accomplish this, a multiple linear regression analysis was conducted to determine how well students' time use predicted academic achievement. The results are presented in Table 1.

Variable	Specification 1			Specification 2		
	B.	B	ρ	B.	B	P
Class Attendance	.036	.133	.003	.035	.131	.004
Group Study	.023	.089	.007	.022	.075	.009
Self-study	.040	.104	.042	.043	.110	.033
Religious Activities	.031	.084	.062	.028	.074	.105
Constant	1.334					
R ²	.16					
Age				-.004	-.005	.913
Gender				-.001	-.001	.980
Religion				.089	.083	.067
Boarding Status				.072	.071	.119

Table 1: Results of Regression analysis of Academic Achievement and Time Variables

* $R^2 = 0.16$, adjusted $R^2 = 0.13$, $F(4, 494) = 6.4$, $\rho = 0.034$. *specification 1
 ** $R^2 = 0.14$, adjusted $R^2 = 0.11$, $F(10, 488) = 1.9$, $\rho = 0.043$. **specification 2
 $P < 0.05$

First, the linear combination of the time use variables (specification i) was significantly related to achievement, $R^2 = 0.16$, adjusted $R^2 = 0.13$, $F(4, 494) = 6.4$, $\rho = 0.034$. This suggests that 16% of variation in academic achievement is explained by the time students spend on various activities in the school. The analysis further revealed a significantly positive influence of time spent attending classes ($\beta = 0.133$, $\rho = 0.003$); group studies ($\beta = 0.089$, $\rho = 0.007$) and self-study ($\beta = 0.104$, $\rho = 0.042$) on academic achievement. Exception was time devoted for religious activities which was positive but insignificantly related to academic achievement ($\beta = 0.084$, $\rho = 0.062$). The overall model of fit was $R^2 = 0.16$.

Next, the regression analysis was conducted with both time use variables and students background characteristics as predictors (specification ii). The linear combination of the time use variables and students demographic variables was also significantly related to academic achievement, $R^2 = 0.14$, adjusted $R^2 = 0.11$, $F(10, 488) = 1.9$, $\rho = 0.043$. This is an indication that 14% of the variation in academic achievement is explained by the combined influence of students' background variables and the time they spend on various activities mentioned. The inclusion of the students background characteristics in the regression equation however reduced the magnitude of influence on academic achievement of class attendance ($\beta = 0.131$, $\rho = 0.004$), group studies ($\beta = 0.075$, $\rho = 0.009$) and time spent in the religious activities ($\beta = 0.074$, $\rho = 0.105$). The magnitude of the influence of self-study ($\beta = 0.110$, $\rho = 0.033$) on academic achievement however improved.

The analysis further suggests that students who spent more time in student group studies earn significantly higher grades ($\beta = 0.089$, $\rho = 0.007$). The result is an indication that it is profitable for students to devote more time for group studies. The results also revealed a positive and significant influence of self-study time on academic achievement ($\beta = 0.104$, $\rho = 0.042$). This means that as students' increase the time they devote for self-study, their academic achievements increase.

6. Discussion

The results suggest that time spent in class attendance has a positive and significant influence on students' academic achievement ($\beta = 0.133$, $p = 0.003$). This is an indication that students who spent more time attending classes have significantly higher grades than students who spent less. The significant influence is not much affected when the demographic characteristics of the students such as age, gender, boarding status, and religious affiliation are controlled for. The mediating effect of these variables is hence not significant. Andrietti and D' Addazio (2012) similarly found a positive and significant influence of class attendance on academic achievement when he used "proxy variables" such as those used in this present study to capture the effect of unobservable factors possibly correlated with attendance. Grave (2010) investigations also yielded the same results when students' demographic variables were added to her regression equation. This finding about time for class attendance and academic achievement needs to be interpreted with caution. What is not clear in the results is the extent to which these results reflect three different effects. Firstly, the higher number of hours provided by the schools for lessons; secondly the high rate of attendance by the students and thirdly the high rate of attendance by teachers.

Looking at the regression coefficients for class attendance, group study and self-study, though all the three variables have positive and significant impact on academic achievement, it appears that the class attendance coefficient is higher than that of self-study and group study. This further suggests that increase time for class attendance is more beneficial than doing same for self-study and group study. Schmidt(1983) found similar results when he used the ordinary least square estimator and found the elasticity of performance with respect to class attendance to be high than that of self-study. He concluded that time spent attending classes is far more productive than hours spent studying.

The findings of a positive influence of group study on academic achievement differs from findings of Grave (2010) who found that devoting time for student work groups is negatively correlated with academic achievement. However it gives credence to Van den Bossche et al. (2006) model of group learning effectiveness. According to this model, group effectiveness is affected by both cognitive and social factors which ultimately promote effective learning. The cognitive factors that contribute to the effectiveness are referred to as team learning behaviour and include construction, co-construction and constructive conflict. The study group environment in deed appears to offer students the opportunity to engage in a more in-depth discussion with peers, sharing information and knowledge about programmes they are collectively enrolled in.

The findings of the influence of self study time on academic performance confirm Frederick and Wahlberg (1980) findings that time spent on learning is positively related to achievement. Frederick and Wahlberg (1980) however argue that this relation is influenced by the quality of instruction and student ability. Some other researchers (Allen, Lerner, & Hinrichsen, 1972; Beer & Beer, 1992; Gortner, Lahmers & Zulauf, 2000; Hinrichsen, 1972; Michaels & Miethe, 1989; Schuman, Walsh, Olson, & Etheridge, 1985; Wagstaff & Mahmoudi, 1976) found little to no relationship between self- study time and academic achievement.

The findings on the influence of time allocation on academic achievement revealed that students who spend more time on class attendance, self-study and group study earn significantly high grades. The relationship between the academic related time variables (class attendance, self-study, and group studies) is small but positive. This suggests that the time-use variables are complements instead of substitutes. An increase in time spent on one variable leads to an increase in time spent on the other.

7. Conclusion

Engaging in classroom instruction, self-study and group study is beneficial to students. Students who spend more time on these academic related activities significantly earn high grades. The academic related activities are also complements and not substitutes. Students who spend more time on classroom instruction equally spend more time on self-study and group study. It would be useful for students in terms of academic performance when enough opportunity is given to them to manage their time and make use of academic school activities.

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