International Journal of Evaluation and Research in Education (IJERE)
Vol.6, No.3, September 2017, pp. 243~251
ISSN: 2252-8822, DOI: 10.11591/ijere.v6i3.pp243-251

Factors Influencing Candidates' Performance in English Language and Mathematics at West African Senior School Certificate Examination

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Article Info

Article history:

Received Jun 21, 2017
Revised Aug 10, 2017
Accepted Aug 21, 2017

Keyword:

Attitude
Performance
Socio-economic background
Study hours
Wassce

ABSTRACT

The study investigated influence of some factors on the performance of selected West African Senior School Certificate Examination (WASSCE) candidates. It also examined the relationship between these factors and candidates' performance. Factors investigated include socio-economic background of the candidates (SEB), study hours (SH), attitude towards English Language (ATTENG) and attitude towards Mathematics (ATTMAT). Secondary schools in Lagos State were divided into private and public secondary schools. Simple random sampling was used to select five out of the six educational districts in Lagos State. Then one public and one private secondary schools were selected in each of the five educational districts earlier selected in stage one. Thereafter, 30 senior secondary school III students were selected in each of the ten schools (5 public and 5 private schools). A total of 600 candidates (consisting of male and female participants) were expected, however, only 564 participants with complete data were found suitable for the study. An instrument tagged "Candidates Rating Scale (CRS)" was developed and used to measure their SEB, SH, ATTENG and ATTMA which were the independent variables while candidates' scores at WASSCE was used as the dependent variable. Obtained data were analyzed by using multiple regressions. The results of the study indicate that there exists a positive correlation between WASSCE grades and all the variables in Mathematics but correlate with socio economic background only for English language.

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1. INTRODUCTION

Education is the bedrock on which the development of any nation depends. It is what makes a man/woman to be self-reliant and able to contribute his/her quota to the growth and development of his/her family, community, nation and the world at large. According to Ukaoha [1], any country that wants development in all ramifications should depend basically on sound educational development because the human development will lead to national development.

Education could be formal, informal or non-formal. Formal education involves teaching and learning process in a school or within the four walls of a classroom; informal education is the type of learning that is acquired as individuals interact with other people in the society, it takes place everywhere and throughout an individual's life; while non-formal education has to do with the acquisition of skills through vocational training outside the classroom setting. Apprenticeship is a form of non-formal education.

According to UNESCO [2], formal education is that type of education that is institutionalised, intentional and planned either through public organisations and recognised private bodies while non-formal education is the type of education that involves programmes contributing to adult and youth literacy and education for out-of-school children, as well as programmes on life skills, work skills, and social or cultural development. It can also include learning activities pursued for self-development and may not be necessarily for job.

In formal education, there is the need for proper schooling. Since it is a planned, intentional and institutionalised process, the learners are expected to fulfil certain criteria before they can be certified or awarded certificates. In Nigeria, the system of education being practiced is 6-3-3-4/5/6: with the 6 and the first 3 years constituting the Basic education programme which is compulsory for every Nigerian child (Basic 1 to JSS 3); three years in the senior secondary school (SSS 1 to SSS3); and 4/5/6 years in the university depending on the course of study. The first level which is 6 years duration is done in the Primary Schools, the next 2 levels are done in the secondary school; junior and senior secondary schools. Secondary school education is of great importance to the education sector of any country; this is because it is the link between the primary and tertiary education. The secondary level prepares the learners for further education and the world of work.

The outcome of any educational pursuit (secondary education inclusive) is always weighed against the performance of the learners. Teachers' effectiveness is also measured in terms of their students' academic performances. Ali, Jusoff, Ali, Mokhtar, and Azni [3] opined that academic performance has always been used as yardstick for determining success or otherwise of school years. Social and economic development of a country is directly linked with students' academic performance. This is because students' academic achievement plays an important role in producing quality graduates who will become great leaders and will be responsible for the country's economic and social development.

Candidates' performances in examinations are influenced by a number of factors. Studies have been carried out to identify the numerous factors that may influence academic performance. According to Irfan and Shabana [4], these factors are social, personal, psychological, environmental and political. The social factors include the parents' level of income, parents' educational background, home conditions and peer relationship. Personal factors are aspiration capacity, academic inclination, personality, interest, attitude and motivation. Psychological factors include level of intelligence, genetic trait, gender and age. School environmental factors include teacher's educational qualification, teaching style/methods, class environment, and class size among others. Political environment could also influence the performance of students. This is because, in a country where there is political serenity, tranquility and is devoid of any distraction, students are more likely to perform very well.

In a study by Ali et al [3], five factors influencing students' performance are identified. These factors are demographic, student attendance, active learning, involvement in extracurricular activities and course assessment. Using CGPA as a measure of student performance, they found four (demographic, student attendance, active learning and involvement in extracurricular activities) out of the five factors to be positively related with students' CGPA, while course assessment was negatively related with the students' academic performance.

Victor [5] identified students' evort, previous school, parents' education, family income, self-motivation, age of student, learning preferences, class attendance and entry qualifications as factors that have significant effect on students' academic performance in various settings. Adeyemi and Adeyemi [6] also identified some factors that affect students' performance. These factors include student-teacher ratio, teachers' interest, teachers' ability, teaching method, commitment and intelligence. They deduced that intelligence has the most significant effect on students' ability to do well in school. By implication, without the mental capacity to comprehend and retain information, students will not be successful in school. They also found that teacher's ability also influences how well a student will perform. This is because a teacher who is competent, interested in helping students, approachable and efficient will produce students who will be academically sound.

Harb and El-Shaarawi [7] discovered that student's competence in English Language and participation in the class positively affect students' academic performance while absence in classes and living in crowded household were identified as factors that negatively affect student's academic performance while Ray and Lancaster [8] discovered that parent's motivation, students' study habit, diligence and children's personality and strength were factors that may influence students' academic performance. A student who is not interested in school or learning cannot be forced to become interested in education even with the best of schools, best teachers and best materials.

Home factors may also have great influence on students' academic performance. Students from physically, sexually or emotionally abusive homes have greater chances of viewing education in a negative manner. Without strong role models to encourage such students, it is difficult to convince them that education is important to their future. Peer pressure from friends could also influence students' performance. A student

who has friends who do not take education seriously, skip classes and show signs of other negative behaviour is likely to imbibe such behaviours that will subsequently affect his/her academic performance negatively. Hence, school environment remains an important factor that has to be well managed to enhance students' academic performance.

In Nigeria today, there are so many factors influencing the ability of students to cultivate effective and efficient study habit. The advent of internet has made most students vulnerably exposed to social media. The internet has so many websites that are attractive and whose contents are not related to students' academic pursuit. Surfing such sites occupy a larger percentage of most student's time and thereby distracting them from learning. Most students now prefer surfing the internet than reading their books. Ozmert, Yurdakök, Soysal, Kulak-Kayıkçı, Belgin, Laleli, and Saraçbaşi [9] emphasised the importance of environmental influence as a major factor in the development of students' studying habit. In the same vein, Adetunji and Oladeji [10] found that boarding students read regularly because they have scheduled time for reading, they sometimes use library and library books. Day students on the other hand, read occasionally especially during examination. In their academic performances, boarders were above average while day students were below average. The students affirmed that reading has positive influence on academic performance. They submitted that because there is no conducive environment for studying at home, some parents have resorted to sending their children to boarding school for proper discipline and to inculcate better reading habit. Good study habit is a very important factor to success in studies. There is therefore no gainsaying that study habit is an important factor that can influence student's academic performance.

Parents play a more dominant role in a child's education. Researchers differ on the influence of parental socio-economic status on students' academic performance. While some observed a great influence of parental socio economic background, other discovered that socio economic background does not have any influence on students' academic performance. The argument of the former group of researchers was based on the premise that parents are like backbones in providing financial and mental confidence to their children. Hence, the parents' socio economic status has a great influence on the quality of home environment, type of school, provision of basic instructional facilities and other factors that could have great impact on the students' academic achievement. Vellymalay [11] found that parents' socioeconomic status has a relatively stronger impact on academic achievement than other variables. Olufemi [12] investigated the effect of socio-economic status of parents on educational attainment of female secondary school students in Rivers state, Nigeria. He found significant effects of financial and educational status of parents on academic achievement of female secondary students. Also, WAEC [13], it was revealed that socio-economic background of candidates has significant effect on their academic performance in The Gambia.

On the other hand, Machebe and Ifelunni [14] found in their study on influence of parental socio-economic status on academic achievement of Students in Enugu State that parental socio-economic status did not have significant effect on the academic performance of the students. They however identified parental educational qualification and health status of the students as factors that have statistically significant effect on the academic performance of the students. Candrasekaran [15] discovered in his study that some aspects of creativity were related to academic achievement for both males and females. Laidra, Pullmann & Allik [12] found in their study of general intelligence and personality traits as predictors of academic achievement that intelligent was the best predictor of students' grade point average (GPA) in all grades.

Other variables in this study are the students' attitudes toward English Language and Mathematics. According to Araromi [16], attitude could be described as an expression of favour or disfavour toward a person, place, subject, thing or an event. He further posited that positive attitude towards a particular thing will result in favourable expression towards such thing and vice versa. In a classroom setting, the attitude of a student toward a subject or a teacher could have positive or negative effect on the performance of such student. Some researchers are of the view that students' achievement in any subject depends largely upon the attitude of such student toward the subject (Farooq & Shah, [15]; Pepin, [17]; Samar, [18]). Farooq & Shah [15] found that students' performance and rate of learning in Mathematics depend on their attitude toward the subject. Pepin [17] found in a comparative study of the attitude of Norwegian and English Secondary Students toward Mathematics that students in both countries had a positive attitude toward Mathematics in year 7 & 8. It dropped in year 9 and increased in years 10 to 11. He established that despite, the differences in the language and environments, the attitude of students toward the subject is similar. Similarly, Samar [18] investigated Business students' attitude toward English Language, the study found that the students have positive attitude towards English Language which is associated with their academic achievement.

Thus, it could be deduced that a positive attitude toward a subject will lead to high performance in the subject and vice versa. This is because a student with positive attitude toward a subject will attend classes, participate actively in the class, put in extra effort in the subject and create time to study the subject. All these efforts will in turn result in high performance in the subject. The West African Examinations Council (WAEC) conducts examination for candidates who have completed six years of secondary school

and awards certificates for such examinations. The examination is called West African Senior School Certificate Examination (WASSCE). Candidates' performance at the examinations serves as indicators of the effectiveness or otherwise of the education system in Nigeria. The performance of Nigerian candidates in the WASSCE has been of concern to stakeholders in educational sector. Thus, this study aimed at investigating the possible factors that might influence candidates' performance at the WASSCE in Nigeria and in particular, Lagos State. Although previous studies have revealed individual factors that may influence academic performance, there are limited information on the combined influence of SEB, SH, ATTENG and ATTMAT in Lagos State. Therefore, this study is an investigation of some the factors influencing candidates' performance at the WASSCE with a view to suggesting ways of improving candidates' performance. Factors to be investigated in this study include candidates' socio-economic background (SEB), study hour (SH), attitude towards English Language (ATTENG) and attitude towards Mathematics (ATTMAT).

2. METHOD

Survey design was employed to collect data. The population for the study comprised all candidates who sat for the WASSCE as internal candidates in English Language and Mathematics in the year 2016 in Lagos State, Nigeria.The study adopted a multi-stage sampling procedure to select 600 participants. The first stage of the selection process was dividing the secondary schools in Lagos State into private and public secondary schools. Also, the six educational districts in Lagos State were adopted as strata for the study.

Simple random sampling was used to select five out of the six educational districts in Lagos State. Then one public and one private secondary schools were selected in each of the five educational districts earlier selected in stage one. The last stage involved selecting 30 senior secondary school III students in each of the ten schools (5 public and 5 private schools). A total of 600 candidates (consisting of male and female participants) were expected, however, only 564 participants with complete data were found suitable for the study. The distribution of the respondents is as shown in Table 1.

Table 1. Distribution of Respondent across Gender and School Type

Gender	School Type		Total
	Private	Public	
Male	114	156	270
Female	117	177	294
Total	231	333	564

A rating scale titled "Candidates Rating Scale (CRS)", developed by the researchers, was used to elicit appropriate information from the students. The CRS had four sections. Section A was used to elicit response on demographic data, Section B had a 3-point Likert-type rating scale on students' socioeconomic background and study habit and Section C had a 4-point Likert-type scale on students' attitudes towards English Language and Mathematics.

The Candidates Rating Scale (CRS) was content validated by specialist in Measurement & Evaluation and seasoned researchers. Thereafter, test-retest reliability was carried out in order to ascertain the stability of the instrument. The CRS was administered and re-administered with two weeks interval to a group of 40 participants (consisting of 20 male and 20 female) in a secondary school randomly selected in the educational district that was not selected for the study. The scores obtained were analysed using Cronbach Alpha. The reliability coefficient of the scale ($r = 0.773$).

The three-point options of Section B were coded 1, 2 and 3. 1 indicates low, 2 indicate average and 3 indicate high. Similarly, the four-point options of Section C were coded as 1- strongly disagree, 2 - disagree, 3 – agreed and 4 – strongly agreed. Responses of each candidates on each of the variable (socio economic background, study hour, attitude towards English Language, attitude towards mathematics,) were summed together to arrive at a single value for each candidate. The WASSCE scores which have been graded using reversed 9-points scale (1 to 9) with 1 being the highest score and 9 being the lowest score was reversed such that 9 became the highest and 1 became the lowest.

Research officers administered the rating scale on the randomly selected candidates in the selected schools. The WASSCE grades in English Language and Mathematics for the selected candidates were obtained from WAEC office Lagos. Explorative Data Analysis (EDA) was carried out. Multiple regression analysis was carried out using (socio economic background, study hour, attitude towards mathematics and attitude towards English Language and Mathematics) as independent variables while grades in WASSCE

were the dependent variables. In addition, the open-ended aspects of the instrument was analysed qualitatively. The regression equation models for the study is as stated.

$$Y_E = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (1)$$

where Y_E is the grade in English Language, βo – constant, X_1 – SEB, X_2 - Study hour, X_3 -Attitude towards English Language and ε is the error term.

$$Y_M = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (2)$$

where Y_M is the grade in Mathematics, βo – constant, X_1 – SEB, X2 – Study hour, X3 –Attitude towards Mathematics and ε is the error term.

3. RESULTS AND ANALYSIS

A Pearson Moment Correlation Coefficient was computed to establish that there was no multicollinearity among the independent variables and to assess the relationship between the independent variables and the dependent variable. The results are shown in Tables 2 and 3.

Table 2. Correlation between Candidates' Performance in English Language, Socio-Economic Background, Study Hour and Attitude towards English Language

		Wassce Grade	Socio Economics Background	Study Hour	Atttitude Towards Eng Lang
Wassce Grade	Pearson Correlation	1			
	Sig. (2-tailed)				
Socio Economics	Pearson Correlation	.134**	1		
Background	Sig. (2-tailed)	.001			
Study Hour	Pearson Correlation	.028	.040	1	
	Sig. (2-tailed)	.255	.170		
Atttitude Towards	Pearson Correlation	.024	-.026	.073	1
Eng Lang	Sig. (2-tailed)	.282	.270	.042	

Note: N = 564, ** p < 0.05 (2-tailed)

Table 2 shows that the independent variables were not highly correlated which satisfy the assumption of no multicollinearity. There exist positive relationship between candidates' performances at WASSCE and all the three independent variables. The only significant correlation coefficient was between candidates' socio-economics background and WASSCE grades in English Language which is r = (564) = .134**, n = 564 p≤.05. It could be inferred that as the all the independent variables increase, the performance of the candidates in English language also increases and vice versa. This finding is similar to the findings of Laidra, et al (2007), where intelligent was found to be the best predictor of students' grade point average (GPA) in all grades.

Table 3. Correlation between Candidates' Performance in Mathematics, Socio-economic Background, Study Hour and attitude towards Mathematics

		Wassce Grade	Socio Economics Background	Study Hour	Attitude Towards Maths
Wassce Grade	Pearson Correlation	1			
	Sig. (2-tailed)				
Socio Economics	Pearson Correlation	.240**	1		
Background	Sig. (2-tailed)	.000			
Study Hour	Pearson Correlation	.048	.040	1	
	Sig. (2-tailed)	.129	.170		
Attitude Towards	Pearson Correlation	.132**	-.074**	.298**	1
Maths	Sig. (2-tailed)	.001	.039	.000	

Note: N = 564, ** p < 0.05 (2-tailed)

Table 3 shows that there is no multicollinearity among independent variables. It further shows the level of relationships that exist between WASSCE grades in Mathematics and candidates' socio-economics background, study hours, attitude towards Mathematics. It could be observed that there exists a positive significant correlation between WASSCE grades in Mathematics and candidates' attitude towards Mathematics, r = (564) = .132**, n = 564 p≤ .05, between WASSCE grades in Mathematics and candidates' socio-economic background, r = (564) = .240**, n = 564 p≤ .05. This could be inferred that as the all the independent variables increase, the performance of the candidates in Mathematics also increases and vice versa. It could always be noted attitude towards Mathematics correlated negatively with candidates' socio-economic background r = (564) = -.074**, n = 564 p≤ .05 and also positively with study hour r = (564) = .298**, n = 564 p≤ .05.

Also, F-ratio in the ANOVA table as depicted in Table 4 tests whether the overall regression model is a good fit for the data i.e. does it examines the degree to which the relationship between the dependent variable and the independent variables are linear?

Table 4. Regression ANOVA in relation to performance at WASSCE in English Language and Mathematics

Subject		Sum of Squares	Df	Mean Square	F	Sig
English Language	Regression	22.400	3	7.467		
	Residual	1152.209	560	2.058	3.629	.013**
	Total	1174.610	563			
Mathematics	Regression	200.522	3	66.841		
	Residual	2290.178	560	4.090	16.344	000**
	Total	2490.700	563			

** Predictors: Constant, Socio-Economics background, Study hour, Attitude towards English Language and Mathematics. Dependent variables: WASSCE grades.

Table 4 shows that the independent variables (i.e. socio economics background; study hour and attitude) statistically and significantly predict the dependent variable (i.e. candidates' performance in the 2 subjects in WASSCE). From Table 4, the Model- F (3, 560) = 3.629 and (3, 560) = 16.344, p < .05 for English Language and Mathematics respectively show that the regression models are good fits for the data. This means that the relationship is linear and therefore the model significantly predicts the dependent variables (i.e. candidates' performance in the 2 subject at WASSCE in Lagos). This is an indication that the test of significance of the model using an ANOVA is not by chance but due to the predictor variables. This could also be interpreted to mean that the Regression effect is statistically significant.

Table 5 shows the Model Summary of the regression analysis in relation to performance in English Language and Mathematics. From Table 5, for English Language, a value of R= 0.138 indicates a low level of prediction and also, R^2 value of 0.091 (Coefficient of Determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables. This shows that all the independent or predictor variables in this study explained 9.1% of the variability of the dependent variable. This means that 9.1% of the total variance in candidates' performance in English Language in WASSCE in Lagos state is accounted for by candidates' socio-economics background; study hour and attitude towards English Language.

Table 5. Model Summary for performance in English Language and Mathematics

Subject	R	R Square	Adjusted R Square	Std. Error of the Estimate
English Language	.138	.091	.014	1.434
Mathematics	.248	.081	.076	2.022

The Table 6 shows that for Mathematic, a value of R= 0.248 indicates a moderate level of prediction and the Coefficient of Determination (R^2), i.e. the proportion of variance in the dependent variable that can be explained by the independent variables was 0.081. This shows that all the independent variables in this study explained 8.1% of the variability of the dependent variable. This means that 8.1% of the total variance in candidates' performance in Mathematics in WASSCE in Lagos state was accounted for by candidates' socio-economics background; study hour and attitude towards Mathematics. Table 6 shows the coefficients in relation to performance in English Language vis-à-vis other independent variables.

Table 6. Coefficients on performance in English Language

	Unstandardized Coefficients		Standardised Coefficients	T	Sig
	B	Std. Error	Beta		
CONSTANT	3.613	.669		5.403	.000
SEB	.038	.012	.134	3.187	.002**
SH	.013	.026	.021	.489	.625
ATTENG	.010	.015	.026	.626	.532

** Sig @ p< .05

Table 7 shows that candidates' socio-economic background (β_1 = .252; t = 6.191, p < 0.05) and attitude (β_3 = .153; t = 3.597, p < 0.05) towards Mathematics are most influential predictors of candidates' performance in Mathematics at WASSCE in Lagos state. The Table further revealed that candidates' study hour (β_2 = -.008; t = -.190, p > 0.05) did not contribute significantly to the prediction model of candidates' performance in Mathematics.

Table 7. Coefficients on performance in Mathematics

	Unstandardized Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
CONSTANT	-.274	.895		-.306	.760
SEB	.105	.017	.252	6.191	.000**
SH	-.007	.039	-.008	-.190	.849
ATTMATHS	.070	.019	.153	3.597	.000**

The results showed that in English Language, the independent variables satisfy the assumption of no multi-collinearity and there exists a positive significant correlation between WASSCE grades in English Language and candidates' socio-economic background. Also the independent variables statistically and significantly predict the dependent variable and the significance observed in the model is not by chance but due to the predictor variables and all the independent or predictor variables in this study explained 9.1% of the variability of the dependent variable.

The study further revealed that candidates' socio-economic background is the most influential predictors of candidates' performance in English Language at WASSCE while candidates' study hour and attitude towards English Language did not contribute significantly to the prediction model of candidates' performance in English Language at WASSCE.

In Mathematics, the results also showed that the independent variables satisfy the assumption of no multi-collinearity and there exist positive relationships between candidates' performances and all the three independent variables. The independent variables statistically and significantly predict the dependent variable and the significance observed in the model is not by chance but due to the predictor variables and all the independent or predictor variables in this study explained 8.1% of the variability of the dependent variable.

Furthermore, candidates' socio-economic background (β1) and attitude towards Mathematics (β3) are most influential predictors of candidates' performance in Mathematics at WASSCE and candidates' study hour (β2) did not contribute significantly to the prediction model of candidates' performance in Mathematics at WASSCE in Lagos state.

4. CONCLUSION

The problem of poor performance in English Language and Mathematics has been a major one in our educational sector today in Nigeria. Socio economic background, attitude of the student toward the subjects and the number of hours used in studying has been identified has been responsible for such noticeable trend. There is the need for teachers to look at ways to arouse the interest of students in those subjects which will invariably increase the number of hours spent in their studies. Also government would need to stimulate the economy so as to lift the economic status of most parents which will have positive effect in the performance of their children.

ACKNOWLEDGEMENTS

The authors of the paper would like to express their profound gratitude to the principals and students of the selected schools for their cooperation during data collection exercise. Also their deep regard goes to the West African Examinations Council for additional data provided for the project. Also to all researchers who assisted in one way or the other towards making this paper worthwhile.

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