

TRENDS IN ACADEMIC ACHIEVEMENT OF SENIOR SECONDARY SCHOOL STUDENTS IN COMPUTER STUDIES IN RIVERS STATE

Obadiaru, Itohonsa

Faculty of Education

Ignatius Ajuru University, Port Harcourt

Abstract

This study was an analysis of the trends in academic achievement of senior secondary school students in computer studies in Rivers state from 2014-2018. Three research questions and two null hypotheses guided the study. The research adopted the ex-post-facto research design. Sample size of 21,976 students in Rivers State who had enrolled and sat for computer studies examination in the Senior Secondary Certificate Examination (SSCE) conducted by the West African Examination Council (WAEC) from 2014 to 2018 was used for the study. The homogenous purposive sampling method was adopted to draw the sample. The instruments used for data collection was the already existing SSCE 2014-2018 computer studies results. The data collected was analyzed using statistical mean scores and standard deviation for the research questions and the independent t-test for the hypotheses. The study found among others that the trend of academic achievements of students in computer studies in Rivers State from 2014-2014 was above average across the years, that there was no significant difference in the academic achievement trend of students in SSCE 2014-2018 computer studies in Rivers State based on gender, and that the difference in the academic achievement trend of students in SSCE 2014-2018 computer studies in Rivers State based on school location was significant. Based on the findings, it was recommended among others that Government should pay serious attention to schools in rural areas particularly in the area of resource allocation.

Introduction

The educational system of any country is the bedrock of its local and global relevance as well as competitiveness in the international scene, it therefore follows that education can be seen as an instrument for national development. In Nigeria, education of its citizens is of national importance as described in the National Policy on Education as an instrument “par excellence” for effecting national development (FRN, 2014). For education to be meaningful, it must be able to positively transform or reform its recipient and by extension the society at large. Uriah and Okachikwu-Agbaraeke (2017)

opined that education is beneficial to both the educated and the society as it has the ability to reform both. To ensure excellence at all levels and forms of education, it is therefore imperative that the process and products of education should be regularly analyzed and evaluated.

Academic achievement of any educational institutions or system is a direct indication or measure of how well the institution has achieved the set goals and objectives for which it was established. Academic achievement is often times measured through examinations and or continuous assessments. The outcome of these examinations or assessments serves as a pointer to the direction of their achievement, whether positive or negative. In recent times, the outcry over the poor academic achievement of students in Nigeria is on the increase. According to Nwadinigu and Azaka-Obieke (2012), the trends in the academic achievement of secondary school students in Nigeria in the last two decades has become a major source of concern to all stakeholders in the education sector.

Secondary school education as defined by the National policy on Education is the “education children receive after their primary education and before the tertiary level of education” (FRN, 2014b). Education at the secondary school level according to Osonwa, Adejobi, Iyam and Osonwa, (2013) is the bedrock and the foundation of higher knowledge in tertiary institutions. It is an investment as well as an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific, and cultural development in the country.

Despite the provision of the National Policy on Education in spelling out the broad and specific goals and objectives of secondary education and the government’s pledge to support it, it would appear that secondary education in Nigeria only serves to prepare individuals for higher education. This is so because most students who leave school at the completion of the secondary school level end up not finding any gainful employment thereby increasing the unemployment market. This situation prevailed partly because there are not enough job opportunities to absorb the teeming population of the unemployed youths (whether middle or high-level manpower), but mostly because school leavers are unemployable and also lack basic skills to be self-employed.

It is in a bid to address this ugly situation and to join in the current technological trend worldwide that the federal government through the Nigerian Educational Research and Development Council (NERDC) created a new secondary school curriculum that emphasizes the importance of technical and vocational education and training (TVET) with computer studies as one of the subjects of emphasis. Computer studies as a classroom subject lies at the foundation of modern science and technical education. As noted by (Kwache,

2013), incorporating the teaching of computer studies in the secondary school system of education is necessary in order to create familiarity with the computer and its various applications at a younger age, particularly within a classroom environment.

Gender is considered by most literatures as a predictor of academic achievement that has significant effect on students' academic performances especially in science and technical subjects. Gender is a generic term that classifies into male and female those identifiable characteristics exhibited by the human population. These characteristics are mostly but not limited to physical, biological, mental and behavioural tendencies possessed by human beings. In terms of education as well as other life endeavours, fixed stereotypes have been formed over time as to what capabilities are socially expected of members of each group. Performance as a precursor of academic achievement is usually rated in relation to gender, based primarily on the perceived socio-cultural differences between boys and girls (male/female). Society has labeled some vocations and professions in the sciences like physics, chemistry, computer studies and engineering, arts and crafts, agriculture etc. as exclusively reserved areas for men because of their high physical and mental demands while professions such as catering, typing, nursing etc. that are considered as to be less demanding are regarded as fit for women. This perception is so deep rooted that even till date, a lot of students as well as their families enroll into schools with these fixed stereotypes. As a result of this way of thinking the larger society still regard females as the "weaker sex".

Several researcher have been conducted in different disciplines to look into these obnoxious societal claims about gender and academic achievement, with a view to providing empirical evidence to either substantiate or disprove it. One of such study carried out by Adigun, Onihunwa, Irunokhai, Sada and Adesina (2015) found in their study that there is no significant difference in the performance of students in computer studies based on gender. Also, Kola and Taiwo (2013) observed in their various studies that there is no significant difference between male and female performance. In contrast, Amao, Adewuyi, Gbadamosi, Salami and Ogunjinmi. (2016) found that there was a significant difference in students' achievement in agricultural science based on gender with male students performing better than their female counterpart. This observed difference they suggested could be as a result of the facts that male students have more positive attitude to learning and higher efficiency in science and practical related subject like agricultural science than their female counterparts. Other studies on gender effects includes Awofala & Nneji (2011); Apata (2011); Dania (2014); Agbaje & Alake, (2014); Atovigba.,

Vershima., O'Kwu & Ijenkeli (2012) etc.). Some of these researchers pointed out that there is no significant gender difference in students' academic achievement and retention in various subjects while other findings indicated that either the boys or the girls performed significantly better the other.

As part of governments' effort to make education accessible to all its citizens particularly at the primary and secondary education levels which is part of its commitment to "Education for All" campaign, more schools have been established across the country (in urban as well as rural locations). Schools' location has consistently appeared in research findings as one of the many factors that influences how students learn and as a result impacts academic achievement considerably. There is a general perception that schools in rural areas are inferior in ways more than one to schools in urban areas. This perception takes root in the fact that most Nigerian Schools in the sub-urban and rural areas are characterized by lack of basic amenities and structures such as conducive classrooms, textbooks and instructional resources, laboratories and libraries and qualified teachers among others. These conditions are relatively better in the urban centers. In their study, Igboegwu and Okonkwo (2012) found that students in urban schools achieved significantly better than students in the rural schools, an indication drawn from their research result that showed a significant difference in students' achievement with respect to school location and education zones. Similarly, Blackmore and Cooky, 2005 as cited by Chime (2012) discovered that urban school students performed significantly better than rural school students. This they attributed to the presence of better teaching materials, supervision and teacher/student ratio among others in urban schools as against the obvious lack in schools in rural areas. Conversely, the findings by Alokun and Arijesuyo (2013) suggested that there was no significant difference between the academic performance of students from rural environments and students from urban environments.

The importance of computer education in the technological development and advancement of a nation cannot be over emphasized. It is common knowledge that there is hardly any job opportunity out there that does not require a certain level of computer proficiency, just as there is hardly any aspect of the economy that does not require the application of computers and ICT, from education, medicine, engineering, agriculture to commerce etc. Since the main aim of secondary education is to prepare individuals for useful living in the society and for higher education, the importance of computer science both as a tool and as a discipline should be given due attention by the relevant authorities. With the introduction of computer studies as a school subject into the secondary school curriculum, it is important to monitor, assess

and measure the performance and achievement trend of the program regularly, as this will help all stake holders; government, school owners, teachers, students as well as parents to assess the level of progress achieved so far.

Since the introduction of computer studies as a school subject and the integration of ICT in teaching and learning, a lot of research had been carried out to investigate the implementation, usefulness and effects of the use of computer and ICT in secondary schools in Nigeria but not much research work has been recorded in the area of academic achievement in computer studies in secondary schools. The focus of this study is to assess the trend of senior secondary school students' academic achievement in the Senior Secondary Certificate Examination (SSCE) in computer studies in Rivers State from 2014-2018 with a view to evaluating the influence of some predictors of academic achievement. This is a gap that this study seeks to fill as academic achievement is a representation of performance outcome.

Three research questions and two hypotheses guided this study:

- What is the academic achievement trend of Senior Secondary School Students in computer studies in the Senior Secondary School Certificate Examination (SSCE) from 2014 – 2018 in Rivers State?
- What is the mean difference in the academic achievement trend of Rivers State students in Computer Studies in Senior Secondary School Examination (SSCE) from 2014 -2018 based on gender?
- What is the mean difference in the academic achievement trend of Rivers State students in Computer Studies in Senior Secondary School Examination (SSCE) from 2014 -2018 based on school location?
- There is no significant difference in the academic achievement trend of senior school students' in computer studies in the senior secondary school examination (SSCE) in Rivers State based on gender.
- There is no significant difference in students' academic achievement trend in computer studies in Senior Secondary Certificate examination (SSCE) from 2014-2018 in Rivers State based on school location.

Method

The study adopted the ex-post facto research design to analyse the trend of students' academic achievement in the West Africa Examination Council's (WAEC), Senior Secondary Certificate Examination (SSCE) in computer studies for five (5) years (2014-2018) in Rivers State. Ex-post facto was selected because it is appropriate for the study in that it is a systematic enquiry in which the researchers have no direct control over the independent variable because its manifestations had already occurred. In other words, it

involves the collection of the proforma of already existing data. The Senior Secondary Certificate Examination (SSCE) school candidate results from 2014 – 2018 obtained from West African Examination Council (WAEC) were used in the study, the design also accommodates generalization.

The target population of this study covered all 21,976 senior secondary school students that sat for computer studies in the Senior Secondary Certificate Examination(SSCE) in Rivers state from 2014-2018. The sample for the research study was all 21,976 senior secondary school students in Rivers state that enrolled and sat for computer studies examination in the West Africa Examination Council's (WAEC) Senior Secondary Certificate Examination (SSCE) within the period under review (2014-2018). The sample was drawn using the homogeneous purposive sampling design, this design is ideal for the study because it is non-probabilistic. Using this design, samples were drawn based on shared characteristics of the population and the research objectives. Ajagbe, Isiavwe, Sholanke and Oke (2015) citing Trochim and James, 2006 referred to purposive sampling as judgmental in nature because it is carried out for a unique purpose.

The instrument used for data collection was the already existing SSCE computer studies results of students in Rivers State for the 5 years under review. These results were collected from the West Africa Examination Council (WAEC) office. For the purpose of scoring, SSCE grades of A1, B2, B3, C4, C5, C6, D7, E8 and F9 were grouped and awarded points as follows: A1 and B2 was awarded 5 points, B3 and C4 was awarded 4 points, C5 and C6 was awarded 3 points, D7 and E8 was awarded 2 points while F9 was awarded 1 point. Grades A1, B2, B3, C4, C5 and C6 are considered to have passed the examination while grades D7, E8 and F9 are regarded as failed. Analysis of the results will provide answers to research questions one, two and three.

The records of already existing senior secondary certificate examination results were used. These results are presumed to be valid and of an acceptable reliability because they are standardized and have been scrutinized by the external examining body.

Result**Table 1: Mean achievement trend of secondary school students in SSCE Computer studies in Rivers State 2014-2018**

MEAN AND STANDARD DEVIATION OF ACHIEVEMENT				
YEAR	M	SD	N	DECISION
2014	3.99	1.22	1470	HIGH
2015	4.29	0.92	6892	HIGH
2016	4.45	0.89	6029	HIGH
2017	4.46	0.9	3664	HIGH
2018	4.29	1.01	3921	HIGH

Table 1 showed the mean achievements of the five years under review to be above the reference mean of 3.00 which indicated a high achievement rate. The year 2014 with a total number of one thousand five hundred and fifty-six candidates recorded the lowest mean value of

(3.99) and the year 2017 with a total of three thousand seven hundred and four candidates recorded the highest mean value of (4.46). The mean values showed a steady increase across the years from (3.99) in 2014 to (4.29) in 2015 and (4.45) in 2016 to (4.64) in 2017. There was a decrease in the mean achievement from 2017 with the mean score of (3.46) to 2018 with the mean score of (4.29), having a mean difference of 0.07.

Table 2: Mean difference between the academic achievement of female and male students in SSCE computer studies in Rivers State from 2014-2018

Gender	N	Mean	SD	Mean Diff.
Female	10134	4.37	0.92	0.06
Male	11842	4.31	0.98	

Table 5 showed the mean scores across five years (2014-2018). The total number of female students was 10,134 while the total number of male students was 11,842 making a total number of 21,976 students. The mean achievement for female students was (4.37) with a standard deviation of 0.92. The mean achievement for male students was (4.3)1 with a standard deviation of 0.98. The mean achievement for both female and male students was above the reference mean of 3.00 indicating a high achievement rate. Nevertheless,

the analysis showed that the mean score for female students (4.37) was numerically higher than the mean score for male students (4.31) with a mean difference of (0.06).

Table 3: Mean difference in the academic achievement of senior secondary school students in computer studies in SSCE in Rivers State based on location (urban/rural)

Location	N	Mean	SD	Mean Diff
Urban	15634	4.35	0.87	0.04
Rural	6342	4.31	1.00	

Table 3 showed the mean scores across five years (2014-2018) based on school location (urban/rural). The total number of urban students was 15,634 while the total number of rural students was 6,342 making a total number of 21,976 students. The mean achievement for urban students was (4.35) with a standard deviation of 0.87. The mean achievement for rural students was (4.31) with a standard deviation of 1.00. The mean achievement for both urban and rural students was above the reference mean of 3.00 indicating a high achievement rate. Nevertheless, the analysis showed that the mean score for urban students (4.35) was numerically higher than the mean score for rural students (4.31) with a mean difference of (0.04).

Table 4: T-test analysis of significant differences in computer studies academic achievement in secondary schools based on gender 2014-2018.

Gender	<i>M</i>	<i>M. diff</i>	<i>N</i>	<i>Df</i>	<i>SE</i>	<i>t</i>	<i>p</i> -value	Decision
Male	10219.80	1359.80	11842	21974	0.12	0.16	0.8768	Accepted
Female	8860.00		10134					

The *t*-value is 0.16011 the *p*-value is .876763.

Table 4 showed the result of an independent-samples t-test conducted to compare the academic achievement of male and female students' in computer studies examination to test for any significant difference in their achievement. Male (N=11842) with a mean value of (10219.80) and female (N=10134) with a numerically smaller mean value of (8860.00). The mean difference was (1359.80) and the degree of freedom was 21974. The *t*-value = 0.16 and the *p*-value = 0.8768 tested at 0.05 level of significance.

When the *p*-value is less than the 0.05, it is assumed that there is a significant difference between each group. From the analysis, the *p*-value is 0.0791 which is greater than 0.05, therefore there is no statistically significant difference

between the academic achievement of male students and female students. The study therefore fails to reject the null hypothesis which stated that there is no significant difference in the academic achievement trend of senior secondary school students' in computer studies in the senior secondary certificate examination (SSCE) in Rivers State based on gender

Table 5: T-test analysis of significant mean differences in students' academic achievement in computer studies in SSCE based on school location (urban/rural) 2014-2018.

Location	<i>M</i>	<i>M Diff</i>	<i>N</i>	<i>Df</i>	<i>SE</i>	<i>t</i>	<i>P</i> -value	Decision
Urban	13615.40	292.40	15634	21974	0.95	0.88	0.4032	Rejected
Rural	5463.80		6342					

The *t*-value is 0.88268 the *p*-value is 0.403151.

Table 5 showed the result of an independent-samples t-test conducted to test if there is a significant mean difference between school location and academic achievement of students' in computer studies examination. Urban (N=15634) with a mean value of (13615.40) and rural (N=6342) with a numerically smaller mean value of (54643.80). The mean difference was (292.40) and the degree of freedom was 21974. The t-value = 0.88 and the p-value = 0.4032 tested at 0.05 level of significance.

When the p-value is less than the 0.05, it is assumed that there is a significant relationship between each group. From the analysis, the p-value is 0.4032 which is less than 0.05, therefore there is statistically significant mean difference between school location and the academic achievement of students. The study therefore rejects the null hypothesis stated that there is no significant mean difference between school location and the academic achievement of senior secondary school students' performance in computer studies in the senior secondary certificate examination (SSCE) in Rivers State.

Discussion

The discussion of findings was done based on the research questions and hypotheses that guided the study. The study found out that the mean achievements for the five years under review were above the reference mean of 3.00 which indicated a high academic achievement trend. The trend showed a steady increase in mean achievement scores from 2014 to 2017. There was a decline in the mean achievement score in 2018. The high achievement trend recorded may likely be as a result of the of the highly academically qualified

teachers employed in Rivers State, it could also be as a result of the increased awareness of the importance of computer knowledge to the development of the total child and the nation as a whole. The findings of this study are in consonance with the findings of Onanuga and Saka (2018) that students' performance in mathematics, science and basic technology were above average regardless of the slight variations across the years studied. The findings are not in line with the finding of Sakiyo and Badau (2015) who noted that students' academic performance trend was low despite the high enrollment rate for WASSCE within the same period.

The study revealed that the general academic achievement trend for both male and female students across the 5 years showed the same pattern with slight variations in numerical values of mean and standard deviations. The mean achievement score for female students was (4.37) while the mean achievement score was (4.31) with a mean difference of (0.06). This indicated that the academic achievement of female students in computer studies in the SSCE from 2014-2018 was numerically higher than the academic achievement of male students. Further analysis on table 4 showed that the difference established between the academic achievements of female and male students in computer studies in SSCE in Rivers State was not statistically significant. Therefore, the study failed to reject the stated null hypothesis that there is no significant difference in the academic achievement of students in computer studies in SSCE in Rivers State based on gender from 2014 - 2018. This difference may have been due to chance. This result agrees with the findings of Adigun et al. (2015) that there is no significant difference in the performance of students in computer studies based on gender. Similarly, Dania (2014); Kola and Taiwo (2013) in their respective studies observed that there was no significant difference between male and female academic performance. The findings of this study negate that of Amao et al. (2016), that there was significant difference in the performance of male and female students, stating that male students performed better than their female counterparts in agricultural science.

The findings of the study showed that students in urban and rural schools both recorded a high achievement trend across the years under review having mean scores higher than the reference mean of (3.00). The observed academic achievement trend was numerically different in both locations despite the overall high success rate. Further analysis revealed that there is a statistically significant difference in the academic achievement trend of students in urban and rural schools. The study therefore rejected the null hypothesis stated that there is no significant mean difference between school location and the academic achievement of senior secondary school students'

performance in computer studies in the senior secondary certificate examination (SSCE) in Rivers State. A number of factors could have contributed to these significant differences. One of such factors could be that urban schools have more computer studies teaching resources than schools in rural areas. It is also likely that teachers and students in urban schools are better motivated to teach and learn computer studies because of the high exposure to social media usage and easier access to internet and communication gadgets. This is an indication that students in rural schools who are of the same intellectual capabilities as students in urban schools may not perform optimally due to these limiting factors. This finding agrees with the findings of Chime (2012) that there is significant difference between the performances of urban and rural students where urban students performed better than the rural students did. Conversely, Alokkan and Arijesuyo (2013) suggested that there was no significant difference between the academic performance of students from rural environments and students from urban environments.

Conclusion

The study based on its findings concluded that the overall academic achievement of senior secondary school students in computer studies in Rivers State for the years reviewed was high, with an increasing trend. There was no significant difference in the academic achievement of senior secondary school students in computer studies based on gender. School location had significant influence on students' academic achievement in computer studies

Recommendations

In the light of the above findings, the following recommendations were made:

- Government should provide adequate fund for school management board to close the existing performance gap between theory and practice at all levels of education by enforcing and monitoring the acquisition and use of computers and computer accessories for teaching and learning.
- Government should pay serious attention to schools in rural areas particularly in the area of resource allocation.
- Private individuals and organized cooperate bodies should be encouraged to invest heavily in equipment for school laboratories and grant access to their establishment for industry- based experiences.

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