

Influence of Teacher Demand and Supply on Students' Academic Performance in North-West, Nigeria

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Abstract: The importance of teachers in developing human capacity needed for nation building cannot be over-emphasized. However, Nigeria, as a nation is experiencing student population explosion while the number of teachers is decreasing especially at the basic level. Therefore, this study investigated influence of teacher demand and supply on students' academic performance at upper basic schools in North-west, Nigeria. One research question and three hypotheses were raised to guide the study. A descriptive research design of survey type was employed for the study. The population for this study was 6,126 principals in upper basic schools in the North-west, Nigeria while a sample size of 356 was determined through the Research Advisors (2006) at 95% confidence level and 5% margin of error. Stratified and purposive sampling techniques were used to select the sample. Two researcher instruments entitled 'Students Academic Performance Inventory' (SAPI) and a questionnaire titled 'Teacher Demand, Supply and Students' Academic Performance, TDSSAPQ' were validated by five experts and used for this study. The reliability of the questionnaire was done using test-retest method within the interval of four weeks and was analysed through the use of Chronbach Alpha and reliability co-efficient of 0.84 was obtained. Descriptive statistic of Percentage was used to analyse the trend of students' academic performance while multiple regression was used to analyse the main hypothesis and Pearson Product-Moment Correlation was used to analyse the operational hypotheses at 0.05 level of significance. The findings of this study revealed that there was effectiveness in the trend of students' academic performance of upper basic schools in North-west, Nigeria (1,726,934 (93%) passed and 131,960 (7%) failed); also, there was a positive significant inter-relationship among teacher demand, supply and students' academic performance; positive significant relationship between teacher demand and students' academic performance (r -value = .014, p -value = 1.014); and teacher supply and students academic performance (r -value = .053, p -value = .041). This study recommended that more teachers are needed and should be employed in UBE schools North-west, Nigeria to teach core subjects like Mathematics, English Language, Introductory Technology and Science Subjects for better improvement of students' academic performance.

Keywords: Demand and Supply, Teacher, Academic Performance, Basic Education

1. Introduction

Based on the 1948 Universal Declaration of Human Rights, education is fundamentally declared as human right. Also, the Federal Government of Nigeria [1] recognized education as the greatest investment that the nation can make to bring about civilization, modernization, development and socio-economic progress. It is a preparatory ground for human

development all the countries of the world. The Universal Basic Education scheme in Nigeria was launched in Sokoto on Thursday 30th September, 1999. The aims of the programme as stated in the implementation guidelines include developing a strong consciousness for education and strong commitment to its vigorous promotion in the entire citizenry. It is to cover the first nine years of schooling, that is; six years in the primary schools and three years in the

Junior Secondary Schools. The intention of the Universal Basic Education in Nigeria is to provide free and compulsory education to all Nigerian children. Also, to make a child accessible to positive learning experience that will help him earn a living after the Junior Secondary School. It aims at providing the child with basic skills in reading, writing and arithmetic skills within the first nine years of schooling. These skills would make them to live a meaningful life and contribute to the development of their society at the end of their education.

The situation of increase in enrolment seriously calls for more teachers in junior secondary schools in Nigeria. There is no educational system that can rise above the quality of its teachers and that no nation can rise above the level of its teaching staff [1]. This statement has proven the key role teachers play in any progressive society. Hence, teachers play very significant roles in the attainment of the objectives of any educational system. Teachers are the most important input in the school system coupled with the material resources. The efforts of teachers guarantee the attainment of the school objectives. Subair and Talabi [2] remarked that teachers are the group of people that hold the key to the door of modernization. They are responsible for implementing the curriculum. Thus, they are the determinants of the survival of the nation's educational system. Nwogwu [3] observed that without inspiring and well-informed teachers, there cannot be hope for long, to meet successfully, the challenges of a changing world. This assertion affirms the laudable roles of teachers in any school system.

The shortage of teachers in public secondary schools is one of the significant policy issues confronting every nation of the World as qualified teachers both in the developed and developing countries are rapidly becoming the hardest segment of the teaching profession to attract and retain. It is therefore, a global phenomenon. The UNESCO Report of 1997 states that as at 1980, the world with total population of 5.5 billion only had 40 million teachers engaged in its teaching profession which gave the ratio of one teacher to 112 inhabitants. In 1965, there was one secondary school teacher for 10,000 people in Europe and one for 150,000 people in Africa [4].

Teacher shortage in Nigeria is an age-long challenge right from the beginning of education activities (establishment of schools) by the Missions. Many authors such as Fafunwa [5] and Taiwo [6] reported the shortage of teachers as the missions began to establish schools; as well as during the era of colonial government control of education; and during the period of self-government. It must however be noted that, the Missions did not go into establishment of schools because they saw education as good in itself, but because they found that they could not succeed in their evangelism without giving their adherents, and especially their clergymen, much of the formal learning required for the study of the sacred writings and for the performance of their religious duties [7]. Be that as it may, the expansion and the interest of the populace to be educated especially in the South-west led to a significant shortage in the supply of qualified teachers, which

prevented the Missions from using their certificated teachers during the period especially by the year 1940 [4].

The quantity and quality of teachers put in place will have a great influence on the kind of school products released to the society. Teachers determine the involvement and contributions of individuals to the growth and development of society in which they live. In order to accomplish the educational goals, practical steps have been taken by educational planners to design instructional programmes that run in schools where teachers and learners (students) are the focus. The realization of these goals is academic performance. Ricarda, Anja, Weidinger and Wirthwein [8] described academic achievement as representing performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in schools, colleges, and universities. It is a multifaceted construct embracing a wide range of learning outcomes, one of which is students' academic performance (SAP) in standardized Junior Secondary School Certificate Examinations (JSSCE). Many factors ranging from teacher, student, family and society related factors affect students' academic performance. For teacher-related factors, Murunga, Kilaha & Wanyonyi [9] identified the need to assess the characteristics of the secondary school teachers in terms of qualification, experience and teaching methodology in order to ensure the quality of education given to the youths.

To transit from the ninth year of the basic education to the senior secondary, the Junior School Certificate Examination (JSCE) is conducted for candidates in their final year of the Basic education. The JSCE is being administered by the various state Ministries of Education for all the state-owned schools, while National Examinations Council (NECO) conducts the examination for Federal Unity Colleges, Armed Forces Secondary Schools and other Federal establishments operating secondary schools across the country. Private-owned schools field their candidates for both NECO/JSCE on the approval of the state Ministries of Education. A candidate is expected to sit for a minimum of ten subjects and a maximum of thirteen out of the 22 subjects that are offered at the upper Basic level. For a candidate to transit to senior secondary school level, he/she is expected to pass at credit level in six subjects which must include English and Mathematics. However, the grading system includes A – Distinction, C – Credit, P – Pass and F – Fail. Learning achievement is very high at upper basic school but low in Senior Secondary Schools. From 2001-2005, 79%-91% of the candidates were successful in JSCE core subjects [10].

2. The Problem

The introduction of Universal Basic Education (UBE) in Nigeria is bedeviled with uncontrollable students' population while teacher demand and supply are in arithmetic progression; this in turn has impacts on students' academic performance. Based on these impacts Afolabi [11], Iliasu [12], Tomori [13], Tijani [14], Muritala [15] and Adebayo

[16] conducted various studies on teacher demand and supply without quantifying the gap between the two variables. Although, Adedeji [17] conducted a study on teacher demand and supply in Zamfara State but none of the researchers carried any study on teachers and students' enrollment projection in Upper Basic Schools in North-west, Nigeria.

The students' academic performance of students in Junior Secondary School Examination (JSCE) in upper basic schools has not been consistent over the years in North-west, Nigeria. Afolabi [11] submitted that the performance of students in JSCE reduced from 86% to 60% between 2007 and 2008 in Zamfara State schools. This, therefore, necessitated the call for this study to investigate the influence of teacher demand and supply on students' academic performance in North-west upper basic schools, Nigeria.

2.1. Purpose of the Study

The main purpose of this study was to examine the influence of teacher demand and supply on students' academic performance in North-west, Nigeria. The specific purposes of this study were to:

- 1) examine the trend of students' academic performance in North-west, Nigeria.
- 2) investigate the interrelationship among teacher demand, supply and students' academic performance in North-west, Nigeria;
- 3) Examine the relationship between teacher demand and students' academic performance in North-west, Nigeria; and
- 4) Find out the relationship between teacher supply and students' academic performance in North-west, Nigeria.

2.2. Research Question/Hypotheses

The following research question and null hypotheses were raised to guide the study:

- 1) What is the trend of students' academic performance in North-west, Nigeria from 2013-2017?
- 2) There is no significant interrelationship among teacher demand, supply and students' academic performance in North-west, Nigeria.
- 3) There is no significant relationship between teacher demand and students' academic performance in North-west, Nigeria.
- 4) There is no significant relationship between teacher supply and students' academic performance in North-west, Nigeria.

3. Materials and Methods

This study was a descriptive research design of survey type. It required a systematic collection of data from a sampled population, using the identified instrument (proforma). This method was considered appropriate in this study because it allowed the researcher to examine the trend of students' academic performance and find out the

relationship that exists among teacher demand, supply and academic performance of students at the upper basic schools in North-west, Nigeria.

The population for this study comprised all students at the upper basic schools in North-west, Nigeria. The population was 6,126 principals (Field work, 2017) from basic schools in North-west, Nigeria. The sample size according to the Research Advisors (2006) was 365 principals at 95% confidence level and 5% margin of error. Therefore, the sample size for the study was 365 principals in upper basic secondary schools in North-west, Nigeria. Stratified and purposive sampling techniques were used to select the sample. The principals were selected because they could provide relevant data for the conduct of the study.

The research instruments used in this study were "Students Academic Performance Inventory" (SAPI) filled by officials of SUBEB and a researchers-designed questionnaire titled 'Teacher Demand, Supply and Students' Academic Performance, TDSSAPQ' filled by school principals. Furthermore, SAPI collected data on students' academic performance in Junior School Certificate Examination (JSCE) between year 2013 and 2017.

In order to ascertain the validity of the instruments used in this study, copies of the draft instruments were given to three experts in the fields of Management and Educational Test and Measurement at the Federal University, Gusau for face and content validity the instruments. The criticism and corrections made were incorporated into the final draft of the instruments. The reliability of the instruments was not carried out for the "Students Academic Performance Inventory" (SAPI) because it was a secondary data while the reliability of the instrument (questionnaire) was done using test-retest method within the interval of four weeks. The instrument was administered to 113 vice principals in Gusau Local Government Area, Zamfara State, Nigeria. The data collected was analysed using. The analysis of the data collected was done through the use of Chronbach Alpha and reliability coefficient of 0.84 was obtained. This signifies that the instrument was reliable.

The researchers administered the instruments to the respondents in the officials in SUBEB offices at the North-west, Nigeria. All procedures in this research were adhered to strictly and conformed to the principles of research. Descriptive statistic of Percentage was used to analyse the trend of students' academic performance while multiple regression was used to analyse the main hypothesis, Pearson Product-moment Correlation was used to analyse the operational hypotheses at 0.05 level of significance.

4. Results

Research Question 1: What is the trend of students' academic performance in Junior Secondary Schools Examination in North-west, Nigeria from 2013-2017?

Table 1. The trend of Students' Academic Performance in Junior Secondary Schools Examination in North-west, Nigeria from 2013-2017.

Years	Total Number of Candidates	No of Passes (Including English and Mathematics)	% of Passes	No of Fail	% of Fail
2013	24,872	11,341	46	13,531	54
2014	25,188	12,041	30	13,147	70
2015	22,047	13,804	62	8,243	38
2016	24,876	12,433	50	12,443	50
2017	24,644	13,322	54	11,322	46

Table 1 shows the trend of academic performance of upper basic schools in North-west, Nigeria from 2013 to 2017. The table reveals that out of 209,596 candidates that sat for Junior Secondary Schools Examinations in 2011, 193,234 (92%) passed while 26,362 (8%) failed. In 2012, 321,423 candidates sat for the examination, 301,423 (94%) candidates passed while 20,320 (6%) failed. Also, out of 384,521 candidates

that sat for the examination, 343,311 candidates passed and 41,210 (11%) failed the examination. The table further shows that 432,109 candidates sat for the examination, 409,054 (95%) passed and 23,055 (5%) failed in the examination. In 2015, 501,236 sat for the examination, 480,223 passed and 21,013 (4%) failed in the examination. This is further presented graphically as follows:

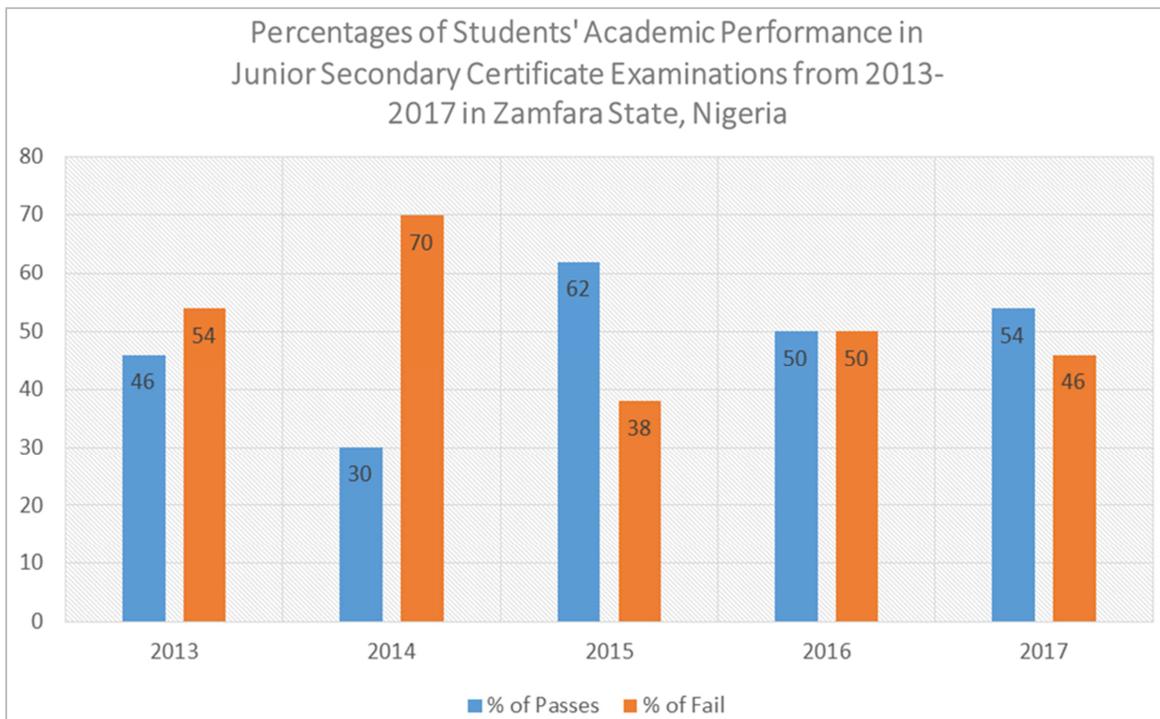


Figure 1. The trend of academic achievement of upper basic schools in North-west, Nigeria from 2013 to 2017.

As shown in figure 1, there was highest rate of effective academic performance of students in upper basic schools in North-west, Nigeria in 2015 with 96% pass rate and the lowest rate of fail (4%). Students' academic achievement at the upper basic schools was also effective in 2014 with 95% pass rate and 5% rate of failure. In 2012, the pass rate was 94% and failure rate 6%. As well, in 2011, the pass rate was 92% and failure rate was 8%, in 2011, the pass rate was 92% and 8% rate of failure. However, there was higher rate of failure

of 11% and lower rate of pass (89%) in 2013 as compared to other years in this study. This implied that there was effectiveness in the trend of academic performance of upper basic schools in ZamfaraState, Nigeria from 2013 to 2017.

Hypotheses Testing

Main Hypothesis

Ho: There is no significant inter-relationship among teacher demand, supply and students' academic performance in North-west, Nigeria.

Table 2. Adjusted R Square Value for the Model summary of teacher demand, supply and students' academic performance in North-west, Nigeria.

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	.365	.217	.208	3.04952

Predictors: (Constant), teacher demand and supply

From the result in table 2, the adjusted R² (0.217) has poor fit. This reveals that the constructed multiple regression model

of the independent variables (teacher demand and supply) account for 22% variance in the dependent variable (students'

academic performance). The results on the Analysis of Variance (ANOVA) for the model are as shown in table 2.

Table 3. Adjusted R Square Value for the Model summary of teacher demand, supply and students' academic performance in North-west, Nigeria.

Model	Sum of squares	df	Mean square	f	sig
1	Regression	1447.784	2	241.297	25.947
	Residual	5235.648	363	9.300	.000 ^b
	Total	6683.432	365		

a. Dependent variable: Student' academic performance

b. Predictors: (Constant), Teacher demand and supply

The results of the Analysis of Variance (ANOVA), $F(df\ 6, 563) = 25.947, p < 0.000$, indicated a statistically significant relationship (stronger than 0.05) in the independent variables (teacher demand and supply) and dependent variable (students' academic performance). Based on this significant relationship, the coefficient for the Beta weight for the

amount of standard deviation unit of change in the dependent variable for each standard deviation unit of change in the dependent variable was calculated as shown in table 2.

Ho1: There is no significant relationship between teacher demand and students' academic performance in North-west, Nigeria.

Table 4. Significant Relationship between Teacher Demand and Students' Academic Performance in North-west, Nigeria.

Variables	N	X	SD	Df	r-value	p-value	Remarks
Teacher Demand	365	2.28	1.19				Ho rejected
Students' Academic Performance	365	1.59	1.20	364	.140	.014	

From Table 4, the mean for teacher demand was 2.28 and standard deviation was 1.19. Also, the mean for students' academic performance was 1.59 and the standard deviation was 1.20. The r-value was 0.140 while the p-value was 0.014. As shown in the Table, the p-value was less than the level of significance 0.05. Therefore, the null hypothesis which stated that there was no significant relationship between teacher demand and students' academic performance in North-west,

Nigeria was rejected. This implied that there was a significant relationship between teacher demand and students' academic performance in North-west, Nigeria. Also, there was a positive relationship between teacher demand and students' academic performance in North-west, Nigeria.

Ho2: There is no significant relationship between teacher supply and students' academic performance in North-west, Nigeria.

Table 5. Significant Relationship between Teacher Supply and Students' Academic Performance in North-west, Nigeria.

Variables	N	\bar{X}	SD	Df	r-value	p-value	Decision
Teacher Supply	365	2.43	.76				
Student' Academic Performance	365	3.28	1.14	364	.053	.041	Ho rejected

From Table 5, the mean for teacher supply was 2.43 and standard deviation was .76. Also, the mean for students' academic performance was 3.28 and the standard deviation was 1.14. The r-value was 0.53 while the p-value was 0.41. As shown in the Table, the p-value was less than the level of significance 0.05. Therefore, the null hypothesis which stated that there was no significant relationship between teacher supply and students' academic performance in North-west, Nigeria was rejected. This implied that there was a significant relationship between teacher supply and students' academic performance in North-west, Nigeria. Also, there was a positive relationship between teacher supply and students' academic performance in North-west, Nigeria.

5. Discussion of Findings

The first purpose of this study was to find out the trend of academic performance in upper basic schools in North-west, Nigeria from 2013 to 2017. The findings to this purpose revealed that the students' academic performance was on the average. This could be as a result of the qualities of teachers recruited to teach in the upper basic schools. This is because

the quality of teachers determines the quality of product that is produced because the teacher has a unique influence on student's academic performance. This finding agreed with Kayode [5] that the teacher demand, supply and utilization have significant roles to play in ensuring a successful implementation of effective educational planning programme.

The second purpose of this study was to find out the inter-relationship that exists among teacher demand, supply and students' academic performance in North-west, Nigeria. The findings to this purpose revealed that there was a positive significant inter-relationship that exists among teacher demand, supply and students' academic performance in North-west, Nigeria.

The third purpose of this study was to find out the relationship that exists between teacher demand and students' academic performance in North-west, Nigeria. The findings to this purpose revealed that there was a positive significant relationship between teacher demand and students' academic performance in North-west, Nigeria ($r\text{-value} = .014, p\text{-value} = 1.014$). The finding of this study contradicted the assertions of Andrew [18] and Oyeboode [19] that demand for teachers in all educational system and in secondary schools in

particular is always higher than the supply.

The fourth purpose of this study was to find out the relationship that exists between teacher supply and students' academic performance in North-west, Nigeria. The findings to this purpose revealed that there was a positive significant relationship between teacher supply and students' academic performance in North-west, Nigeria (r -value = .053, p -value = .041). However, Adebayo [16] admitted that many teachers are needed in UBE schools to teach core subjects like Mathematics, English Language, Introductory Technology and Science Subjects. The supply of teachers in these core areas is highly limited. This creates a shortage of teachers in our UBE schools.

6. Conclusion

Teachers are very important in the implementation of school curriculum. When they are recruited in the required quantity and quality with periodic training, it is believed that students' academic performance will improve and the overall goals of education at basic level will be effectively achieved for a sustainable national development.

7. Recommendations

Based on the conclusions from this study, the following recommendations were made that;

- 1) In order to improve students' academic performance, emphasis should be laid on recruitment of more teachers based on core subjects like Mathematics, English Language, Introductory Technology and Science Subjects.
- 2) More infrastructure and resources should be provided to cater for the growing students' population.

Authors' Contributions

- 1) ADEDEJI, Israel Olusegun Ph.D. – Data Analysis, Interpretation and Discussion of Findings (Lead Researcher).
- 2) OKONKWO, OnyekachiIhuoma – Original Draft Preparation.
- 3) ADEGBILE-NNAEDOZIE, Oluchi- Review and Editing.
- 4) YAKUBU, Dauda – Data Administration and Collection.

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