
TEACHERS' TEACHING EXPERIENCE AND STUDENTS' ACADEMIC PERFORMANCE IN SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) PROGRAMS IN SECONDARY SCHOOLS IN BENUE STATE, NIGERIA

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Abstract

This study investigates the effect of teacher's teaching experience on the academic performance of secondary school students in Science, Technology, Engineering and Mathematics (STEM) in the three senatorial zones of Benue State, Nigeria. The study adapted descriptive research design. A sample of 300 including students and teachers were randomly drawn from 150 secondary schools, 50 schools from each senatorial district through the process of simple random sampling technique. An inventory schedule was the instrument used for data collection. 300 questionnaires, two questionnaires per school were administered. 278 (92.67%) questionnaires were returned. Their responses were analyzed through content analysis. Findings reveal that teachers teaching experience significantly influenced students'

academic performance in SSCE examinations and as perceived by the respondents. Schools having more teachers with above 10 years teaching experience achieved better results than schools having more teachers with 10 years and below teaching experience. The result also shows that perception rather than skills is the major impediment on the side of students and teachers in improving the study of STEM related subjects. It is recommended that all relevant stakeholders including parents, teachers and students should embrace and combine informative and persuasive efforts to tackle the challenges of STEM education through innovations for the benefit of the state to enhance technological development.

Key words: Teaching experience, perception, Academic performance, STEM.

This study investigated teachers' teaching experience and academic performance in Science, Technology, Engineering and Mathematics (STEM) in secondary schools in the three senatorial zones (Zone A, B and C) in Benue state, Nigeria. Education is a continuous process in life. It is the process of training and developing the knowledge, skill, mind and character of people. It is the process by which the latent abilities of individuals are developed so that they may be useful to themselves and the society (Olaniyonu et al., 2008). Meaningful improvements in the quality of education that students receive are determined by the quality of teachers (Ewetan and Ewetan, 2015). As a result, quality teaching and learning are sine qua non for students' academic performance (Okeke, 2008). The role of science and technology in national development cannot be overemphasized. Any society which fails to adequately consider Science, Technology, Engineering and Mathematics (STEM) education has planned to be left behind in all spheres of development. Speedy and viable growth of a country can only be attained through scientific research, coherent application of STEM knowledge and skills (Gbamanja, 1991). STEM is a tool for sustainable development of a nation. The Contribution of STEM to industrialization of the world in general and Nigeria in particular have been felt on all phases of human life. The knowledge of STEM has played an important role in the improvement of the quality of life, economic growth and transformation of the society. For a nation that wants to achieve rapid technological development, academic performance in Science, Technology Engineering and Mathematics (STEM) is the key to the attainment of this laudable goal. STEM related subjects are the foundation science subjects used in solving problems resulting from human interaction with environment like health care delivery and industrialization. STEM is an indispensable tool for technological development.

The controversy over the deteriorating quality of education in Nigeria has been on the front burner of national discourse over the past decades without any realistic approach to improve the situation. Poor academic performance has been linked to several factors which include high teacher-student ratio, shortage of good teaching staff, poor quality of educational leadership, political instability and politicization of educational programmes, automatic promotion, age of the learners, and inadequate essential physical facilities and equipment (Ewetan, 2010; Akinwunmi and Odunsi, 2008).

Science deals with search for and understanding of knowledge about nature while Technology is concerned with the application of knowledge of science in solving practical problems of everyday living. The ability of a nation to exploit the potentials of its environment depends on the quality of Science and Technology education provided to the citizenry, and how well the citizenry have imbibed the culture of science and technology. Nigeria has remained a developing country with low economic, social, political, cultural, and technological indicators (UNESCO, 2009). In recognition of the impact of STEM development to the overall national development, Federal Government of Nigeria has been supporting (STEM) through policies, actions, and programmes (Ugo & Akpoghol 2016). Despite all the effort of the Federal Government of Nigeria, performance of students in STEM related subjects as measured by their scores in senior secondary school certificate examinations have been very low (Federal Ministry of Education, 2004).

Sustainable development suffers where STEM is not embraced as expected. It is a cause to worry when a nation is lagging behind in this area as it concerns teaching and learning of these subjects. Science can exert a dominant, if not decisive influence on the life of individual as well as on the developmental effort of a nation (Adesoji & Olatunbosun, 2008)). The global recognition of the above submission is responsible for the prime position that has been accorded science and in particular, subjects like biology, chemistry, physics, mathematics and perhaps ICT worldwide (Ugo & Akpoghol 2016). Within the context of science education, biology, chemistry, physics and mathematics has been identified as a very important school subjects and its importance as the primary engine in scientific and technological development of any nation has been widely reported. It was as a result of the impart of these subjects in the development of the individual and the nation that they are made core - subjects among the natural sciences and other science- related courses in the Nigerian education system. However, the inclusion of these core subjects in science in the secondary school calls for effective teaching. This is because effective teaching can lead to the attainment of scientific and technological greatness (Ugo & Akpoghol 2016).

Information gathered through the National Bureau of Statistics shows that as at 2008, there were 14829 secondary schools in Nigeria. Out of this number 2,335 secondary schools were from North Central while 526 secondary schools were from Benue State. One of the essential ingredients in developing good schools with high academic performance is regular supply of human and material resources (Ewetan &

Ewetan, 2015). There are several states in Nigeria whose school teachers at the primary and secondary level are so unqualified that the percentage could be as high as eighty percent (Adesina 1986). Thus the high percentage of unqualified teachers in secondary school is a major factor responsible for the poor students' academic performance. A major feature of this poor academic performance is the dismal performance in STEM in the Senior Secondary Certificate Examination (WASSC and NECO) in Nigeria in the recent years which has been linked to decline in the quality of teaching and learning. Better students' results are the main indicator of the experience and effectiveness of teachers (Ewetan & Ewetan, 2015). In developing and developed countries the teacher factor has been linked to low achievement in STEM (Ugo & Akpoghol, 2016). In Benue State, they have been a low enrolment, achievement and interest in STEM subjects at the WASCCE/NECO as indicated in Table 3 and 4. The issue of the increase of academic failure among the secondary school science students is a menace to both the government and education stakeholders. This is due to the fact that science education is the foundation of scientific and technological breakthrough of any nation (Aniodoh & Egbo, 2013). The research question is: what is the reason (s) responsible for poor performance in STEM related subjects.

Student achievement in learning tasks is, to an extent, influenced by the method employed by the teacher. Adzape (2015) posited that teachers' inability to use necessary techniques in teaching science subjects is a contributing factor to students' poor performance in school subjects. The studies observed that the teaching and learning of science is too teacher-centred and the teacher dominates in explanation of concepts, thereby making students passive. He also observed that the teachers mainly give directions or topics on the chalkboard for the students to copy. They also observed that the teachers rarely use innovative teaching strategies nor students' ideas in planning their choice of experiments and students rarely perform experiments on their own, nor do they use the library or other sources other than the textbooks. Therefore, the teaching and learning of science is mainly through the traditional approach rather than the science process skill approach.

Atadoga (2001) and Oluwole (2008) observed that the problems of language in science subjects run across all levels of education. Language is communication, verbal and nonverbal. For effective teaching and learning to take place, there must be proper communication between the teacher and the students. STEM subjects are taught and learnt in the English language in Nigerian schools. Both the teacher and the students must be able to express themselves in the language of sciences for better understanding and effective performance. Mathematics is another language of physics and chemistry which is expressed in symbols and equations. Consequently, those who are poor in mathematics may not be able to handle calculations in physics and chemistry which are mathematical in nature (Ugo & Akpoghol, 2016).

The issue of teacher as a factor that affects students' academic performance has received a lot of attention in the literature and findings have been mixed and inconclusive (Ewetan & Ewetan,2015). Some literature revealed that a number of teacher variables which include years of teaching experience, level of educational attainment or academic qualifications, teacher development programmes, availability of qualified teachers, teacher-student ratio, teacher attitude, degree of job satisfaction, motivation and salary affect students' learning outcomes (Ewetan & Ewetan, 2015; Daso, 2013; Akpo, 2012; Odiri, 2011; Ewetan, 2010; Akinsolu, 2010). Other literatures also found that a number of teacher variables which include teacher years of experience, teacher academic attainment or qualifications, teacher-student ratio, and teacher development programmes had no significant influence on students' academic performance (Ewetan & Ewetan, 2015; Yara and Surumo, 2012; Ayodele and Ige, 2012).

Akpo (2012) examined the impact of teacher-related variables on students' junior secondary certificate mathematics results in Namibia using questionnaire, multi-correlation and regression analysis and found that teacher educational qualifications, teaching experience, subject specialization, standards-based professional development, standard-based classroom activities, and classroom management beliefs are related to students' academic performance in JSC Mathematics. Similarly, Daso (2013) carried out a study on teacher variables and senior secondary students' achievement in Mathematics in Rivers State, Nigeria. He reported that there is a significant relationship between teachers' method of teaching, teachers' attitude, teacher quality and students' achievement in Mathematics. Akinsolu (2010) investigated teachers and students' academic performance in Nigerian secondary schools and its implications for planning using questionnaire, Anova and Spearman Rank Correlation coefficient and found that teachers' qualifications, years of experience, and teacher-student ratio were significantly related to students' academic performance. In their study on 'Student, Teacher and School Environment Factors as Determinant of Achievement in Senior Secondary School Chemistry in Oyo State, Nigeria', Adesoji and Olatunbosun (2008) adopted an ex-post facto research type and used four sets of instruments. They found that 7.2% of the total effect on achievement in chemistry was accounted for by all the seven predictor variables when taken together. It was also revealed that only four variables, school location, laboratory adequacy, teachers' attitude to chemistry teaching and teachers' attendance at chemistry workshop had direct causal influence which significantly contributed to the prediction of achievement in chemistry. In a similar study of the relationship among teacher variables and adult learners' academic performance in the part-time sub-degree programme of the University of Ibadan in Nigeria, Abu and Fabunmi (2005) discovered that there is a significant and positive relationship between teacher's qualification, age, and years of experience, teacher-learners ratio, and adult learners' academic performance.

Student achievement in learning tasks is to an extent, influenced by the method employed by the teacher. Adzape (2015) observed that teachers' inability to use necessary techniques in teaching science subjects is a contributing factor to students' poor performance in school subjects. The study observed that the teaching and learning of science is too teacher-centered and the teacher dominates in explanation of concepts, thereby making students passive. The study also observed that the teachers mainly give directions or topics on the chalkboard for the students to copy. The study revealed that the teachers rarely use innovative teaching strategies nor students' ideas in planning their choice of experiments and students rarely perform experiments on their own, nor do they use the library or other sources other than the textbooks. Therefore, the teaching and learning of science is mainly through the traditional approach rather than the science process skill approach. Chhinh and Tabata (2003) in their study on the effects of selected teacher factors on the Mathematics achievement of urban primary school pupils in the state of Cambodia, used questionnaires and achievement test to construct an index of academic performance. The results of the stepwise regression analysis revealed that teachers' economic status, their years of teaching experience and job satisfaction have statistically significant relationships with the achievement of the pupils whose economic status had been held constant. However, these three teachers' variables explain only about 20 percent of the variance in the pupil learning achievement. In a similar study on the impact of different teacher and class characteristics on third graders' outcomes in Germany, Bressoux et al (2008) found that teachers' training substantially improves students' test scores in Mathematics, and small class is more beneficial to low-achieving students within classes, and to all students in low achieving classes.

Abuseyi (2001) examined student and teacher related variables as determinants of secondary school student academic achievement in Chemistry in Epe and Ibeju-Lekki Local Government Areas of Lagos State, Nigeria, using questionnaire, and adopted an ex-post facto design. He found that teacher age, teacher gender, qualifications, and experience had direct causal effect on students' achievement in Chemistry. Ayodele and Ige (2012) examined the relationship between utilization of teachers and students' academic performance in senior secondary schools in senatorial zones of Benue state, Nigeria, using questionnaire, descriptive survey, and ex-post factor design. The results of the multiple regression analysis and t-test statistic revealed that the effective utilization of teachers rather than its mere availability impacts students' academic performance. Adeyemi (2008) examined teachers' teaching experience and students learning outcomes in the secondary schools in Benue State, Nigeria, using questionnaire. The result of the chi-square test, correlation analysis, and t-test statistic revealed that teachers' teaching experience was significantly related to students' learning outcomes.

Low performance of students in STEM subjects has continued to be a major cause of concern to all, particularly science teachers and other stakeholders (Akpoghol

et al., 2013). The minimum entry requirement into Nigerian tertiary institutions is that candidates wishing to study science courses must possess credit passes in ordinary level science subjects, which include Biology, Chemistry, Physics and Mathematics. In Benue State, indices from examinations organized by WAEC and NECO showed both low enrolment and poor achievement in chemistry. Chemistry results of the May/June West African Senior School Certificate Examination (WASSCE) and June/July National Examinations Council Senior School Certificate Examination (NECO/SSCE) for Benue State from 2009 to 2013 reveals a low percentage pass at credit level as shown in Tables 3 and 4. The SSCE result over the period indicate low performance in STEM subjects which implies that either the teachers are not teaching the subject properly or the students do not understand the subjects. Benue State is a state in a developing economy that desire change in the right direction towards development. STEM study is a principal change agent in the 21st century; it is therefore an issue of concern which must be addressed in order to improve learning and performance.

As emphasized earlier, teachers play a significant role in ensuring excellent academic standards measured by students' learning outcomes in both developed and developing countries. This study is another attempt to shed more light on the connection between teacher variables and students' academic performance in STEM subjects within the context of education in a developing country.

Research Questions

In addressing the research problem, this study seeks to provide answers to the following research questions:

- What is the awareness of students to take to STEM subjects
- What is the status of teachers in terms of qualifications in the selected secondary schools in Senatorial Zone A, B and C, in Benue State?
- What is the level of students' academic performance in the selected secondary schools in Senatorial Zone A, B and C in Benue state?
- What is the relationship between teachers' years of experience and students' academic performance in the secondary schools in senatorial Zone A, B and C of Benue State?
- What is the relationship between teachers' development programmes and students' academic performance in the selected secondary schools in Senatorial Zone A, B and C of Benue State, Nigeria?

Methodology

The study employed descriptive research design. The population of the survey study includes all STEM teachers and students. A sample of 300 STEM teachers and 300 science students were randomly drawn from 150 (50 schools each from the three educational zones) Secondary Schools in Benue State to secure data

for this study. A structured questionnaire was used to collect data for the study. The instrument used for study was a questionnaire titled “Teachers’ Teaching Experience and Academic Performance” (TTEAP). It contains three sections. Section A contains demographic information about the respondents such as: name of school, local government area, age, sex, and marital status. Section B elicited responses to the following: academic qualifications, STEM teachers’ years of experience, STEM teachers’ development programmes, and classroom population. Section C elicited responses to the following: Does seminar/workshop participation contribute to teachers’ teaching experience? Do teachers’ years of teaching experience contribute to students’ academic performance? Is there a strong relationship between availability of teachers with long years of teaching experience and academic performance? Do inexperienced teachers contribute to poor academic performance? Other relevant data such as each school’s SSCE results analysis were obtained from the Benue State Ministry of Education from 2009 to 2013. The reliability of the questionnaire was tested using Cronbach’s Alpha coefficient. Cronbach’s coefficient alpha of 0.82 was obtained. The results confirmed high reliability of the instrument.

Results and Discussions of Findings

Research Question 1

What is the awareness of students to take to STEM subjects?

Table 1 showed out that students are Ignorant of the relevance of STEM subjects, hence lack the desired exposure. Data in table 1 showed that students had poor interest/enrolment in STEM subjects. The high mean score of 3.67 confirms lack of interest in STEM subjects amongst secondary school students.

Table 1. Problems Associated with Students

Assessment Techniques	Mean	S.D	Remarks
1. Poor enrolment/interest in STEM subjects.	3.67	1.39	Poor
2. Poor attendance to STEM lessons.	3.08	1.32	Poor
3. Lack of counseling services rendered before choosing services rendered.	3.92	1.25	Poor
4. Lack of textbooks and other relevant learning materials.	3.96	1.43	Poor

Table 1 also revealed that most schools lacked counselors (mean score of 3.92). If properly counseled, students will take to science. One wonders how student’s placement is done in SS1. This May be due to the fact that most of the students including the parents were exposed to only a few individuals working in administrative offices like local government which tend to narrow their minds. Another problem associated with students’ performance is poverty. Most of the students come from poor backgrounds such that leaving the village to study in good science schools will

deny the parents having them work on their farms not to talk of the inability of paying such fees and buying of relevant textbooks. Table 1 also revealed a mean score of 3.96 implying that because of poverty, their parents could not afford textbooks and scientific calculators.

Research Question 2

What is the status of teachers in terms of qualification in the selected public secondary schools in senatorial zone A, B and C in Benue State?

Table 2. Teachers' Status by Qualifications in the Selected Secondary Schools in Zone A, B and C and in Benue State

Teachers' Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
NCE	74	26.62	26.62	26.62
HND	55	19.78	19.78	46.40
B.Sc	50	17.99	17.99	64.39
B.Sc (ED)	80	28.78	28.78	93.17
M.Sc	13	4.68	4.68	97.85

Source: *Field survey 2013*

Table 2 shows that of the 388 respondents, 95 (24.48%) hold B.Sc (ED), there are 95 (24.48%) university graduates with specialty in education while 69 (24.82%) are university graduates without specialty in education made up of 50 (17.99%) B.Sc (Bachelor of Science) holders, 13 (4.68%) M.Sc (Masters of Science) holders, and 6 (2.15%) PhD (Doctor of Philosophy) holders. The table also reveals that 74 (19.1%) teachers hold NCE certificates while 55 (19.78%) are HND holders. On the whole teachers with specialty in education that is both university graduates and NCE holders are 154 (55.40%) while 124 (44.60%) are teachers without specialty in education.

Research Question 3

What is the level of students' academic performance in the selected public secondary schools in Senatorial zone A, B and C of Benue State?

Students' academic performance was examined in this study in terms of the performance level of students in the Senior Secondary Certificate (SSC) examinations in STEM subjects. The grades obtained by students in the SSC examinations in STEM subjects were collected from the State Ministry of Education. Table 3 and Table 4 show the performance level of the students in the core subjects in the Senior Secondary Certificate (WAEC and NECO) examinations.

Table 3: WASSC Results of Students in STEM Subjects in Schools in Benue state from 2009 to 2013

Tabled WASSC Results of Students in STEM Subjects in Public Schools in Benue State from 2009 to 2013

Year	Subject	Number Sat	No.	% with	No. With	% with	N0.	% Failed
			Credit	Credit	Ordinary	Ordinary	Failed	
			Pass	pass	Pass	Pass		
2009	Math	18872	8612	45.6	7369	39.2	2864	15.2
	Chemistry	4257	1867	43.9	1555	36.5	835	19.6
	Physics	3934	2070	52.6	1145	29.1	719	18.3
	Biology	18080	5963	33.0	6956	38.5	5161	28.5
2010	Math	17799	7829	44.0	7497	42.1	2473	13.9
	Chemistry	3813	2441	64.0	1364	35.8	8	0.2
	Physics	3637	2004	55.1	1688	46.4	5	0.1
	Biology	14882	9151	61.5	5650	38.0	81	0.5
2011	Math	19765	8911	45.1	8711	44.1	2143	10.8
	Chemistry	4900	2507	51.2	1733	35.4	660	13.5
	Physics	4662	2785	59.7	1383	29.7	494	10.6
	Biology	18018	6960	38.6	7383	41.0	3675	20.4
2012	Math	21285	10532	49.5	8526	40.1	2227	10.5
	Chemistry	5268	2203	41.8	2261	42.9	804	15.3
	Physics	5223	3583	68.6	1360	26.0	280	5.4
	Biology	19537	8293	42.4	7293	37.3	3951	20.2
2013	Math	22278	11216	50.3	8835	39.7	2227	10.0
	Chemistry	5389	2379	44.1	2206	40.9	804	14.9
	Physics	5396	3676	68.1	1440	26.7	280	5.2
	Biology	19527	8247	42.2	7329	37.5	3951	20.2

Source: *Benue state ministry of Education, 2014.*

Table 4: NECO Results of Students in STEM Subjects in Public Schools in Benue State from 2009 to 2013

Year	Subject	Number	No. With Credit	% with Credit pass	No. With Ordinary	% with Ordinary	No. Failed	% Failed
2009	Maths	1260	3183	25.3	7923	63.1	1454	11.6
	Chemistry	2588	1133	43.8	1066	41.2	389	15.0
	Physics	2753	1116	40.5	1180	42.9	457	16.6
	Biology	1221	7088	58.5	3389	28.0	1644	13.6
2010	Maths	17518	4331	24.7	11209	64.0	1978	11.3
	Chemistry	4040	1790	44.3	1789	44.3	461	11.4
	Physics	4104	1708	41.6	1964	47.9	432	10.5
	Biology	17450	9686	55.5	5516	31.6	2248	12.9
2011	Maths	15793	5200	32.9	9780	61.9	813	5.1
	Chemistry	3966	1384	34.9	2422	61.1	160	4.0
	Physics	3909	1231	31.5	2557	65.4	121	3.1
	Biology	15580	6315	40.5	8635	55.4	630	4.0
2012	Maths	15728	8321	52.9	6646	42.3	761	4.8
	Chemistry	4009	2152	53.7	1755	43.8	102	2.5
	Physics	3943	2122	53.8	1723	43.7	98	2.5
	Biology	15430	8777	56.9	5766	37.4	887	5.7
2013	Maths	16565	9168	55.3	6636	40.1	761	4.6
	Chemistry	4518	2281	50.5	2135	47.3	102	2.3
	Physics	3709	1819	49.0	1792	48.3	98	2.6
	Biology	16242	9334	57.5	6021	37.1	887	5.5

Source: Benue State Ministry of Education, 2014.

In determining the level of students' academic performance in the schools, performance in the terminal examination (WAEC and NECO examination) was computed. Thus, the frequency counts of the number of students who obtained grades 1-6 (credit grades) in STEM subjects in the examinations were transformed from discrete data into continuous data through secondary analysis. This was used to determine the level of students' academic performance in the core science subjects in the Senior Secondary Table 3 and 4 above shows that the performance level of students in each of the four subjects and in SSC examinations (WAEC and NECO) for the three years was low. This confirms the low level of students' academic performance in Mathematics and English Language in the selected public secondary schools in the three senatorial zones (A, B and C) of Benue state.

Research Question 4

What is the relationship between teachers’ years of experience and students’ academic performance in the selected senior secondary schools in senatorial zones A, B and C in Benue State, Nigeria?

Table 5. Teachers’ Years of Experience and Students’ Academic Performance in the Selected Secondary Schools in Senatorial Zones A, B and C of Benue State

	Frequency	Percentage	Valid percentage	Valid Cumulative percentage
Strongly agree	170	61.15	61.15	61.15
Agree	102	36.69	36.69	97.84
Strongly disagree	4	1.44	1.44	98.28
Disagree	2	0.72	0.72	100.0
Total	278	100.0	100.0	

Source: *Field survey 2013*

Table 5 above shows that 170 (61.15%) of the 278 sampled strongly agree, and 102 (36.69%) of agree that experienced teachers in the various subjects could bring about better performance among students in secondary schools. While 4 (1.44%) of respondents strongly disagree, and 2 (0.72%) of respondents disagree that experienced teachers in the various subjects could bring about better performance among students in secondary schools. As such the analysis shows that experienced teachers in the various subjects could bring about better students’ academic performance in senior secondary schools.

Table 6. Availability of Experienced Teachers and Students’ Academic Performance in the Selected Secondary Schools in Senatorial Zones A, B and C of Benue State

	Frequency	Percentage	Valid percentage	Valid Cumulative percentage
Strongly agree	72	25.9	25.9	25.9
Agree	156	56.12	56.12	82.02
Strongly disagree	17	6.12	6.12	88.14
Disagree	33	11.87	11.87	100.0
Total	278	100.0	100.0	

Source: *Field survey 2010*

Table 6 shows that 72 (25.9%) of the 278 sampled strongly agree, and 156 (56.12%) of respondents agree that there is a strong relationship between availability of teachers with long years of teaching experience and student academic performance.

While 17 (6.12%) of respondents strongly disagree, and 33 (11.87%) of respondents disagree that there is a strong relationship between availability of teachers with long years of teaching experience and student academic performance. The analysis shows that availability of experienced teachers in the various subjects could bring about better students' academic performance in secondary schools.

Research Question 5

What is the relationship between teachers' development programmes and students' academic performance in the selected secondary schools in Senatorial Zone A, B and C of Benue State, Nigeria?

Table 7: Teachers' Development Programmes and Students' Academic Performance in the Selected Secondary Schools in Senatorial Zones A, B and C in Benue State

	Frequency	Percentage	Valid percentage	Valid Cumulative percentage
Strongly agree	126	45.32	45.32	45.32
Agree	141	50.72	50.72	96.04
Strongly disagree	3	1.08	1.08	97.12
Disagree	8	2.88	2.88	100.0
Total	278	100.0	100.0	

Table 7 shows that 126 (45.32%) of the 278 respondents strongly agree, and 141 (50.72%) of the respondents agree that teachers' development programmes contribute to students' academic performance. While 3 (1.08%) of the respondents strongly disagree, and 8 (2.88%) of the respondents disagree that teachers' development programmes contribute to students' academic performance. As such the analysis shows that teachers' development programmes contribute to students' academic performance. Holistic approach: Secondary education is actually a career development stage but all need to start from the primary school. Foundation is very important to any meaningful endeavour. In Benue state, the result shows that more attention needs to be given to students in order to encourage them take to science.

Conclusion and Recommendations

The finding of this study established that STEM teachers' years of experience significantly influenced students' academic performance in the selected secondary schools in senatorial zones A, B and C Areas in Benue State, Nigeria. Also differences in teachers' years of experience had significant impact on fostering persistence and improvement in academic performance in secondary school education. The findings of this study revealed that there is an urgent need for government to address the poor

students' academic performance in public secondary schools in Benue State. Based on the findings of this study the following recommendations are made to improve the academic performance of students.

To foster improved academic performance of secondary school students, government should give priority to the employment of professional and qualified teachers and ensure that such teachers are retained to enable them to acquire experience on the job. The perennial failure recorded in Mathematics SSCE examinations (WASSC and NECO) should urgently be addressed through the organization of workshops and seminars for teachers especially towards pedagogical training. The relevant stakeholders such as teachers, students and parents should be consciously encouraged to partner and combine informative and persuasive force to tackle the challenge of STEM education such as facilities, interest and teaching methods.

There is the need for government to motivate teachers to boost their productivity by providing them with necessary incentives such as adequate salaries, excellent work environment and other fringe benefits that compare favorably with what their counterparts in other professions receives. Additionally all the non-professional teachers should be encouraged in acquiring relevant diplomas and degrees in education to make them eligible for registration with the Teachers Registration Council (TCR). Finally to maintain professional competence and teaching quality standards the issues of training and retraining of teachers at all levels of education should be given a priority in the scheme of things by all the stakeholders in the business of education in Nigeria.

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