



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT



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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v5-i2/2129>

DOI: 10.6007/IJARPED/v5-i2/2129

**Received:** 16 April 2016, **Revised:** 19 May 2016, **Accepted:** 05 June 2016

**Published Online:** 26 June 2016

**In-Text Citation:** (Oviawe, 2016)

**To Cite this Article:** Oviawe, J. I. (2016). Teachers' Effectiveness as Correlates of Students' Academic Achievement in Basic Technology in Nigeria. *International Journal of Academic Research in Progressive Education and Development*, 5(2), 93–102.

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Vol. 5(2) 2016, Pg. 93 - 102

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[www.hrmars.com](http://www.hrmars.com)

ISSN: 2226-6348

## Teachers' Effectiveness as Correlates of Students' Academic Achievement in Basic Technology in Nigeria

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### Abstract

This study sought to investigate the relationship between teachers' effectiveness and students' academic achievement in Basic Technology in Edo State Model secondary schools, Nigeria using descriptive survey research design. The instruments used to elicit information for this study were Teachers' Effectiveness Rating Scale (TERS) and Basic Technology Achievement Test. (BTAT). The simple percentage, t-test and ANOVA were the statistical tools used in the analysis of data. The findings of this study included that Basics Technology teachers' effectiveness was low; teachers' effectiveness had influence on student's achievement and that there was no significant difference on students' achievement in due to teachers' gender. It was recommended among others that government should organize and provide opportunities for training and re-training programmes through seminars, workshops and conference in order to increase teachers' effectiveness.

**Keywords:** Teachers Effectiveness, Academic Achievement, Basic Technology

### Introduction

Teaching is an art and the quality of teaching depends on the love, dedication and devotion of the teacher towards the subject of knowledge. The most single critical element in the education process is the teacher who plans, organizes, designs, directs, motivates and inspires others to learn using standard teaching techniques to impart knowledge (Okolocha & Onyeneke, 2013). Teaching is a purpose profession engaged in human resource development for individual and economic growth (Oyekan, 2000). It is done systematically by professionals who have acquired some skills and knowledge either by training or experience or both. To make desirable impact, teaching must aim at total development of the individual, that is, to enhance intellectual capabilities, developmental and cognitive intellectuality, foster psycho-social skills, and draw out neuro-physical aptitude of the learners (Akinmusire, 2012). All education institutions emphasize

that teaching is important and it gives high priority to developing effective teaching and solving teaching challenges.

Effective teaching may include high level of creativity in analyzing, synthesizing and presenting knowledge in new and effective ways. It should instill in the learners the ability to be analytical, intellectually curious, culturally aware, employable and capable of leadership (Okolie, 2014). According to Omoifo & Urevbu (2007), effective teaching implies the use of clearly formulated objectives by the teacher, illustrated instruction that will enable students to acquire desired knowledge content, apply the knowledge to classroom and other related problem, think and take independent decision and the use of effective evaluation technique by the teacher. Akomolefe (2010) identified the characteristics of effective teaching to include: attention on students achievement, quality teaching responsive to students learning processes, effective and efficient learning opportunities, pedagogical practices that create cohesive learning communities, effective links between school and cultural context of the school, multiple tasks to support learning cycles, aligned curriculum goal effectively, pedagogy scaffolds feedback on students' task engagement among others. The objectives of effective teaching as stated by Adegbile (2008) would include assisting learners to: conceptualize ideas, process thoughts and develop their potentials; contribute to thinking and creativity in the subject; nurture and sustain students' interest; suit the circumstance of teaching and learning; and suit the individual teacher ability and interest.

The quality of any teaching programme cannot rise above the quality of her teachers, teaching is a highly individualized activity, and the student-teacher interaction is an intense human relationship that encompasses a broad range of personalities and behaviours (Okolie, 2014). Adegbile (2008) described an effective teacher as efficient, reliable and courteously equipped with professionalism, creative in imagination, bustling ingenuity and depth of experience necessary for optimal performance and the achievement of goals. The teacher as a good manager of instruction should be able to utilize appropriate techniques to gain and maintain the attention of students. An effective teacher should be to display requisite pedagogical insight and professional qualities and utilize same to guide the teaching/learning process to the point of achieving stated educational objectives. It is not possible to guarantee a meaningful learning of Basic Technology without effective teachers to translate the laudable objectives of the Basic Technology curriculum into the practice in the classroom.

Basic Technology is a prevocational subject at the junior secondary school level which seeks to expose students to the world of work through exploration. Its objectives include:

- (i) to provide prevocational orientation for further training in technology;
- (ii) to provide basic technological literacy for everyday living; and
- (iii) to stimulate creativity (Federal Ministry of Science and Technology, 2007).

Basic Technology being a prevocational subject that seeks to expose students to technology is a veritable tool for educational and technological advancement in Nigeria. It follows thus, that the teacher has a vital role to play in the implementation of Basic Technology curriculum. The effectiveness of the teacher of Basic Technology will determine the conceptualization of ideas by students that can enhance the development of their cognitive, affective and psychomotor domains which are of utmost importance in their contribution to national development.

Considering the foregoing, the importance of effective teaching and learning of Basic Technology cannot be over emphasized.

According to Uwameiye and Onyewadume (1999); Adeola & Oviawe (2009), prevocational education is a functional education which is geared towards general education purposes. Through the exposure of students to prevocational education, they develop a broader understanding of industrial and business processes, and are also able to expose their individual interest and aptitudes. Students can also develop desirable traits and attitudes such as pride in productive work, respect for authority and dignity for labour. These are attributes that can endear interest in technology and self-reliance.

It is therefore not an overstatement that any student who desires to pursue his/her education in technology and engineering to the tertiary level needs to avail themselves of the opportunity which the Basic Technology curriculum provides. Technology plays a vital role towards offering diversified curriculum to cater for the differences in talents, opportunities and future role. To achieve its stated objectives, there must be a crop of dedicated and resourceful teachers.

Teachers are the hub of the educational system. Teachers are the most important factor in students learning next to students themselves (Knapper & Wright, 2001). As such, the importance of teachers, the application of pedagogical knowledge into classroom oriented plan of actions constitute most essential fabric upon which the success of the school, its administration and the entire education system rest upon (Okolocha & Onyeneke, 2013). Education can bring about desirable transformation of one's culture of learning, mindset, and orientation values. This can only happen in learners when the teacher possess a good mastery of the subject matter, have a map to follow in terms of well prepared lesson, grab the students attention through effective class control mechanism, recognize student attention span, plan activity for the students by allowing them participate actively in the teaching and learning process. To this end, Ademola (2007) stated that an educational system with low quality teachers will produce students with poor inspiration and aspiration. Such students, Ademola opined will not grasp enough of the subject matter and cannot learn with ambition. Similarly, Babalola (2009) posited that experience in Nigeria has revealed that students academic achievement in secondary schools largely depend on the competence and dedication of the teacher who has a significant role to play in the reshaping of the creative potentials and ability of students.

From the above, it becomes imperative that Basic Technology teachers should be able to cope with the ever changing knowledge of technology and ensure that students acquire requisite knowledge, skills and values. It should be appreciated that the influence of the teacher on students' personal, social and productive lives is usually the product of the professional training which they received. It probably explains why FRN (2013) stated in her national policy on education that the primary implementers of a nation's education policies and that no country can develop beyond the quality of its teachers'. Thus, teachers have to be well prepared for their job through pre- and in-service training. This sound training should at the end help the teachers in the implementation of the curriculum as they engage in effective teaching, for pleasant and meaningful understanding of students in order to achieve set objectives in the classroom.

In order to promote the effectiveness of Basic Technology teachers, it is important to produce high quality teachers. These teachers should maintain approved lesson period, utilize

visual aids, voice, eye contacts and body movement as a way of stimulation the students, summarize lesson and evaluate lesson using all sort of techniques. Basic Technology teachers in-training should be made to realize that the quality of classroom interactions with students have a vital role to play in their effectiveness as teachers. Oyekan (2000) stated that teachers also rely on classroom interactions with the students to gauge the effectiveness, level and pace of their instruction.

Okolocha & Onyeneke (2013) posited that the success of Nigeria's educational system especially at the secondary school level depends upon a number of factors: the government, the society, students, the teachers', and the quality of teaching, devotion and effectiveness of the teachers. Basic technology teachers' effectiveness can be viewed on the ability of the teacher to employ appropriate techniques and strategies to impart in the learners' knowledge, skills and competencies required for bring about desired positive learning outcomes. Teacher effectiveness is a teacher's ability to produce desired results measured in terms of how well the teacher is able to maximize learning in the students (Diamond 2004).

Ademola (2007) compared the achievement of students taught by male with those taught by female teachers and found that female teachers recorded more absenteeism rates than their male counterparts. On the other hand, Akinmusire (2012) found that female teachers tend to be more effective in the teaching profession than their male counterparts. He asserted that female teachers' performance could be determined in terms of their dedications and longer stay in the profession. This study therefore, sought to investigate teachers' effectiveness and gender as correlates of students' academic achievement in Basic Technology in Southern Nigeria.

### **Purpose of the Study**

This purpose of this study was to find out the relationship between teachers' effectiveness and students academic achievement in Basic Technology. Specifically, this study sought to find out:

1. the level of teaching effectiveness of Basic Technology teachers in Edo State;
2. the relationship between teachers effectiveness and students academic achievement in Basic Technology;
3. if there is any significant difference between the academic achievement of students taught by male teachers and those taught by the female Basic Technology teachers.

### **Methodology**

The design of this study is a descriptive survey on the perception of students and teachers on teachers' effectiveness and gender as correlates of students' academic achievement in Basic Technology in Edo state.

The population of this study consisted of all the Basic Technology teachers from all the public secondary schools in Edo State. Purposive random sampling technique was used in the selection of 12 Junior Secondary School from the three senatorial districts of Edo State, that is four schools from each district. A school was selected if it had a permanent Basic Technology teacher. The principals and vice-principals in the selected schools served as the evaluators and raters because their comments and ratings on teachers' performance appraisal form are part of

teachers' promotion. In each school, 28 JSS III students were randomly selected and used for this study. This gave a total sample size of 360 (24 Principals and Vice Principals, 336 students).

The instruments used for data collection were: Teachers Effectiveness Rating Scale (TERS) and Basic Technology Achievement Test (BTAT). The instruments elicited information on the teachers' lesson note preparation and presentation, subject mastery, punctuality and class attendance, suitability of classroom method of teaching, clear communication, teachers and students' activities, adequate use of instructional materials, creativity and resourcefulness and adequacy of teachers' evaluation of students' academic work. Section A of the instrument contained the respondents' bio-data, while section B had 30-items with a three point Likert-type Scale ranging from Very Effective -3; Effective -2; and Ineffective -1. BTAT is a standardized test which contains 50 multiple choice items (Uwameiye, 1998).

The TERS was face validated by three experts Technical Education and Test and Measurement from Ambrose Alli University, Ekpoma. Their suggestions and corrections resulted in the final draft used in this study. TERS pre-tested on 10 principals within the target population but who were not included in the main study and a reliability coefficient of 0.79 was obtained.

The instruments were given to Principals of the selected schools with the assistance of three research assistants, and they were retrieved after two weeks. The entire 360 copies of the instruments administered were duly completed and returned. This gave a 100% return rate.

Data collected from this study were analyzed using percentage for research question 1, Pearson product-moment correlation for hypothesis 1, linear regression for hypothesis 2 and t-test for hypothesis 3.

## Findings

**Research Question 1:** What is the level of teaching effectiveness of Basic Technology teachers in Edo State?

**Table 1: Level of Teaching Effectiveness of Basic Technology Teachers**

Variable	Number of teachers	%
Low effective teachers (25 -39)	125	69.06
High Effective teachers (40 - 60)	56	30.94
Total	181	100%

Results from Table 1 shows that out of the 181 Basic Technology teachers in Edo State, 125(69.01%) recorded low teaching effectiveness while the remaining 56(30.94) Basic Technology teachers recorded high teaching effectiveness score. This implies that majority of the Basic Technology teachers have low teaching effectiveness.

**Hypothesis 1:** There is the relationship between Basic Technology teachers effectiveness and students academic achievement in Basic Technology?

**Table 2: Relationship between the Teachers’ Effectiveness and Students’ Academic Achievement Basic Technology**

Variables	Number	Mean	SD	r	p	Remark
Teachers Effectiveness	178	42.56	5.32		0.05	
Basic Technology Students Achievement	102	19.35	0.53	-0.11		Not Significant

Results from Table 2 shows that there is low negative relationship between effectiveness of teachers and academic achievement of students in Basic Technology ( $r=-0.11$ ,  $p<0.05$ ). To determine the extent to which teachers’ effectiveness influence students academic achievement in Basic Technology, simple regression analysis was used.

**Table 3: Teachers’ effectiveness as predictor of students’ academic achievement in Basic Technology**

Model Summary						
Model	R	R Square	Adjusted Square	Standard Error		
	0.111	0.012	0.030	6.838		
Analysis of Variance (ANOVA)						
	Sum of Squares	df	Mean Square	F	Sig	
Regression	209.363	1	209.363	4.477	0.035	
Residual	16741.426	358	46.764			
Total	16950.789	359				

Significant ( $p<0.05$ )

Results from Table 3 reveals that teachers’ effectiveness accounted for 1.2% ( $R\text{ sq}=0.012$ ,  $p<0.05$ ) of the total variance in students academic achievement in Basic Technology. Thus, teachers; effectiveness is an important predictor of students achievement.

**Hypothesis 2:** There is no significant difference between the academic achievement of students taught Basic Technology by male teachers and those taught by female teachers

**Table 4: Difference between the Academic Achievements of Students taught Basic Technology by male Teacher and those taught by Female Teachers**

Variables	N	Mean	SD	Std. Error	Df	t-cal	Sig	Remark
Students taught by male teachers	181	45.519	5.010	0.372				
Students taught by female teachers	155	42.570	5.498	0.411	358	-0.091	0.927	Not Significant

Not Significant ( $p>0.05$ )

Results from Table 4 shows that the t-calculated value is 0.86 which is less than the t-table value of 1.96 at .05 level of significance. The null hypothesis which states that there is no significant difference between the academic achievement of students taught Basic Technology by male teachers and those taught by female teachers is thus retained. It is concluded that the

gender Basic Technology teachers had no significant difference on academic achievement of students in Basic Technology.

### **Discussion of Findings**

Findings from Table 1 shows that majority of the Basic Technology teachers have low teaching effectiveness (125(69.01%) recorded low teaching effectiveness while the remaining 56(30.94). This finding is in line with that of Adeola & Oviawe (2009) who reported low teaching effectiveness among teachers of prevocational subjects in Ogun State. Similarly, Adetayo (2008) asserted that the teaching effectiveness of teachers is relatively low and counterproductive to students' achievement. He added that Nigerian teachers cannot utilize modern pedagogy that is technology driven. Adu & Olatundun (2007) reported that effective teachers produced high performing students.

The finding of this study as reveals that Basic Technology teachers' effectiveness has a significant influence on the academic achievement of students in Basic Technology. This finding could be attributed to the fact that an effective teacher plans his/her work to build students' interest in the subject and carries the students' along. This finding is collaborated by Oyekan (2000) who asserted that the effect which the effective teacher produces is expected to be felt positively by the students. Similarly, Onocha (1999) posited that teaching excellence is closely related to students gain in learning.

Contrary to the findings of this study, Blankstein (1996) asserted that students' grades and test scores do not reflect the quality of instruction because teachers' input is not the only factor that influences students academic achievement in schools. In the same vein, Joshua, Joshua & Kritsonis (2006) posited that teachers condemn the use of students' scores to evaluate their effectiveness and performance. Towards this end, Starr (2002) identified peer influence, race, ethnicity, gender, motivation, income, intellectual aptitude of the student, personality of student, self confidence, previous instructional quality received by student, household environment, and parental education as student related factors that influence the academic achievement of students to further support this view.

The findings of this study also revealed that Basic Technology teachers' gender had no significant influence on academic achievement of students. This finding is in line with that of Adeola & Oviawe (2009) who reported no significant gender difference in the teaching effectiveness of teachers of prevocational subjects. Converse to the findings of this study, Akinmusire (2012) reported that female teachers received higher ratings in teaching than their male counterparts. Also, this finding negates that of Ferdinand (2007) that male teachers do not consider teaching as a befitting profession hence, they pay less attention to teaching in the classroom compared to their female counterparts.

### **Conclusion and Recommendations**

This study has examined the relationship between teachers' effectiveness and students' academic achievement in Basic Technology, and has revealed that Basic Technology teachers' effectiveness is relatively low. Considering the importance of Basic Technology in the exposure and development to technology, the researcher recommends as follows:



1. Government should organize and provide opportunities for training and re-training programmes through seminars, workshops and conference in order to increase teachers effectiveness
2. Teacher training institutions should inculcate into pre-service teachers a deeper professional confidence and competence for maximum teachers' effectiveness
3. Ministry of education, principals and other stakeholders should ensure regular monitor and supervision of teachers to keep them always at their best for maximum teachers' effectiveness and productivity.

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