Teacher Effectiveness as Correlate of Students' Cognitive Achievement at Upper Basic Education in Basic Technology

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Abstract

This study sought to find out the relationship between students perception of their teacher effectiveness and academic achievement in Basic Technology. Teacher's personality, teaching techniques/classroom management strategy and appearance, all integrate to make for teacher effectiveness. To carry out this research, two research questions and one null hypothesis guided the study. The design of the study is a correlatioal survey. The population for the study comprised the entire 823 two Upper Basic (UB) students of Basic Technology in Upper Basic schools in Udi LGA. While 442 (53.7%) students constituted the sample. Means, pearson's product moment correlation statistics were used in analyzing the data, which were generated at two levels. Level one was the mean perception score and the second level was the student achievement score. Based on the analysis the following findings were made. There is a low mean perception of students of Basic Technology on their teacher effectiveness. There is positive relationship between their mean perception and their academic achievement. This relationship was found to be significant. Recommendations were made based on the findings among which is that teachers and their trainers should be further trained through workshops and seminars.

Introduction

Teaching preparation of the teacher, includes shaping his knowledge, personality, strategies for teaching, time, energy and interest. Mgba (2010) stated that teaching is an open capacity exercise and its effectiveness ultimately rests not solely upon the method used but on personal formation of the teacher as reflective and compassionate professional. Ultimately, the objective of teaching is to help students develop their potentials on their own journey to adulthood so that they can become good productive and useful citizens to their nations. Thus anyone who wants to teach must have or acquire certain competencies. Knowledge is one aspect of competency that is very important (Abdu 2012). other constituents of teacher's knowledge include: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts and knowledge of educational ends, purposes and values. These imply that teachers must not only know how to manage their classroom, give feedback, make practical plans and wise decisions, but they must also be more than performers, and life long learners of subject matters. Thus, the quality of a civilized society of the future depends on the good work of the effective teachers.

Effectiveness generally refers to the extent to which somebody achieves his purpose. It is about doing the right things in the teaching process so that at the end of the teaching, the goals and objectives of the lesson(s) can be achieved (Awo, 2009). Achievement of goals or objectives connotes that the students for whom the lesson was planned have learnt what they were taught. The aim of an effective teaching technique is for the teacher to understand and interpret the goals and objectives of school curriculum correctly and from it arrange teaching activities that will lead the students to achieve these goals and objectives. This can be done by providing a wide variety of learning experiences through the use of various teaching methods and techniques at his command that are appropriate for the students, subject matter and by the nurturing of creative responses in the students. In fact, Laminack and Long (1986) in Awo (2009) carried out a survey in which University students were required to recall their best elementary school teachers and give reasons for their choices. They classified the response under classroom management, personality, techniques and strategy (teaching) and appearance. They also carried out a study on ''what makes a teacher effective-insight from pre-service teacher'" and came up with what they called descriptors of good teacher classified under classroom management, personality strategies/techniques and appearances.

Research findings have proved that effective teaching leads to good academic performance in all subjects (Ogbu, 2013). The situation in Basic Technology with its diverse and practical nature is not different.

FME (2013) specified that the Upper Basic Education will be pre-vocational and academic. Students who leave school at this stage may then go into apprenticeship system or some other schemes for out-of-school vocational training. Pupils are then expected to cultivate habits in Basic Technological skills and to acquire fundamental ideas and principles governing various aspects of science and technology. To achieve these objectives, Basic Technology was made a core subject in the Upper Basic school curriculum.

Basic Technology being an amalgamation of a number of distinctive technical trade areas namely: metal work, woodwork, building construction, electricity/electronics, ceramics, technical drawing, plastic rubber

etc. is taught by teachers most of whom are generally trained in only one, or two of these technical trade areas,. The implication of this for Basic Technology teachers is that they should work extra miles in teaching processes due to the peculiarity of the subject. They therefore need re-training to be effective

Achievement in Basic Technology has been very poor over the years. (Exams Development Centre (EDC) Enugu report-2010,2014), and Ogbu (2013) had earlier pointed out that many Basic Technology teachers require in-service training in various areas of the subject in order to cope with its teaching. This suggests that teacher's competency might be a factor in Basic Technology achievement. Many researchers had earlier questioned the pedagogical issues in the teaching of basic technology. Accusing fingers had been pointed at the lack of functional equipment to carry out the practical aspects of Basic Technology (Ogbu 2011, Mbak 2012). Lack of use of valid instructions by teachers for evaluating learning outcomes (Mgbo, 2008). Lack of students interest (Okoye 2007), all revolve around the classroom teacher. Hence the purpose of this study is to find out the mean perception of students on the effectiveness of their Basic Technology teachers and as well determine the relationship between students' perception of their teachers' effectiveness and their academic achievement.

Research Questions
The study was guided by the following research questions:
1. What is the mean perception of students on effectiveness of their Basic Technology teacher?
2. What is the relationship between the students' mean perception on the effectiveness of their Basic Technology teachers and their academic achievement?

Hypothesis
There is no significant relationship between the mean perception of students on the effectiveness of their Basic Technology teachers and their academic achievement ($p < 0.05$)

Design of the Study
This is a correlational survey research. It involves eliciting the opinion of respondents on their perception to form the criterion score/variable and obtaining their end of term performances in Basic Technology, which will constitute the predictive score or variable.

Area of the Study
The study was carried out in Udi LGA. of Enugu State. Udi LGA is bound at the South by Oji LGA and North by Enugu North LGA and by the East Nkanu LGA and West by Eziagu LGA.

Population of the Study
The population for the study comprised the entire 823 UB two students of Basic Technology in secondary schools in Udi L.G.A.

Sample and Sampling Technique
Simple random sampling was used to select 12 schools out of 25 secondary schools in Udi LGA. The entire UB two students in the 12 schools numbering 442 (53.7%) constituted the sample for the study.

Instrument for Data Collection
The instrument for data collection is a Likert-type questionnaire. This is modified version of "what makes a teacher effective – insight from pre-service teachers" developed by Liminack and long (1986) presented in Awo as descriptors of good teacher. The questionnaire contains 48 items under 4 sections: viz-classroom management, personality, strategies/techniques and appearance. The instrument was scaled as follows: Strongly Agree (SA), Agree (A), Disagree (D) and Strong Disagree (SD). The students ticked the appropriate option. Weighting followed 4,3,2,1 continuous for positive items and it was reverted for negative items. The questionnaire was also used as interview schedule to ensure that the study clearly understood the meaning of the items.

The students' end of year examination scores in Basic Technology' collated from their report booklet to serve as the predictive variables.

Methods of Data Analysis
In analyzing the data, means, and Pearson's product moment correlation coefficient were used in answering the research questions while the t-test for significant of r was used in testing the null hypothesis. The-students' responses to the questionnaire were computed against their achievement scores (y) using Pearson's formula as follows

$$r = \frac{N(\sum XY - \sum X)(\sum Y)}{\sqrt{[N \sum x^2 - (\sum x^2)(N\sum Y^2 - (\sum Y)^2]}}$$

and the r value was transformed to t-scores using the following formula:

$$t = r\sqrt{\frac{N-2}{1-r^2}}$$

to determine the degree to which the criterion variable contributed to the predict variable, the r-value was squared to obtain the coefficient of determination (r^2)

Research Question 1
Table I
Mean rating of perception of students on their Basic Technology teachers effectiveness.

S/N	Effective Teacher Characteristics	Mean Ratings	Remark
	Class Room Management		
1	Flexibility in class room	2.01	D
2	Organizing classroom well	2.03	' '
3	Treats everybody equally	2.01	' '
4	Treats everybody fairly	2.000	' '
5	Respects students and their opinions	21.96	' '
6	Even tempered	2.02	' '
7	Diplomatic	2.04	' '
8	Disciplinarian	2.56	A
	Personality		
9	Caring	1.25	SD
10	Loving	2.42	D
11	Helpful	2.01	' '
12	Enthusiastic	2.01	' '
13	Encouraging	2.32	' '
14	Perspective	1.88	' '
15	Warm	1.54	' '
16	Vivacious	1.55	' '
17	Positive	1.68	' '
18	Patience	1.82	' '
19	Compatible	2.00	' '
20	Cheerful	1.88	' '
21	Understanding	2.08	' '
22	Sensitive	2.01	' '
23	Honest	2.44	' '
24	Tactful	1.94	D
25	Genuine	2.43	' '
26	Attentive	1.82	' '
27	Open-minded	2.34	' '
	Teaching Strategies/Techniques		
28	Variety of teaching strategies/techniques	1.96	D
29	New ideas	2.14	' '
30	Charity	1.90	' '
31	Interesting	2.36	' '
32	Inductive	1.62	' '
33	Concrete	1.46	' '
34	Visual aids	1.82	' '
35	Confers	2.02	' '
36	Participation	2.33	' '
37	Individualized	2.07	' '
38	Read along	1.86	' '
39	Involved	1.62	' '
40	Parents	1.62	' '
41	Discussion	2.66	' '
42	Supplements	1.84	' '
	Appearance		
43	Young	2.22	
44	Pretty	2.02	
45	Well-dressed	2.02	
46	Jolly	1.92	
47	Happy	1.62	
48	Attractive	1.60	
	Grand mean	1.97	

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The perception of students on their teacher effectiveness was low with grand mean perception of 1.97
Relationship between the mean perception of students on their Basic Technology teacher effectiveness and their academic achievement in Basic Technology.

Research question 2

Table 2: Summary of Pearson's r-value on level of relationship between the Basic Technology teachers' effectiveness and academic achievement.

Sum of Basic Tech. Teachers' Effectiveness	sum of achievement score	sum of X squared	sum of Y squared	sum of X & Y values	correlation Coefficient value (r)
$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XX$	
332	364	8998	9462	6002	0.64

The result in table 2 shows that r-value is 0.64, which is positive and high,

Hypothesis: There is no significant relationship between the mean perception of students on their, Basic Technology teachers' effectiveness and their achievement in Basic Technology.

Table 3: t-test of significant relationship between the mean perception and academic achievement in Basic Technology.

No of cases (N)	Corr. Coeff. (r)	Degree of freedom Df	t-cal	t-tab	decision	Coeff.
442	0.64	440	11.30	1.96	S	0.4096 or 41%

The t-call 11.30 is higher than the t-critical (.96). Therefore the null hypothesis is rejected at 0.05 probability level. Thus, the correlation between Basic Technology teachers' effectiveness and academic achievement was significant. This is strengthened by finding the coefficient of determination i.e. $r^2 = 41$ showing that about 41 variability's in Basic Technology achievement could be explained by a measure of the teachers' effectiveness.

Discussion of Findings

The findings of this study showed that the mean perception of students on their Basic Technology. Teacher effectiveness is very low (1.97). This means that students are very much aware that their Basic Technology teachers' are not doing fully what they are supposed to do for them to achieve success. The teachers are not flexible, organized and caring as shown by questionnaire items 1,2 and 8. Also do not use visual aids, variety of teaching strategies and techniques. The study also reveals that Basic Technology teachers are not enthusiastic, encouraging, vivacious and understanding. The absence of these qualities in Basic Technology teachers indicate that most of them are not well prepared for the job they are involved in. Mgba (2010) had earlier suggested that to produce effective teachers, the content of teacher education programmes should be related to the curriculum of secondary schools and must emphasize skills necessary for vocational competence.

The result of this research has also revealed a positive but above average correlation value (0.64) on students perception of their teacher effectiveness and their achievement. This value was found to be significant at 0.05 level of significant. This implies that teachers effectiveness as perceived by the students was significantly related to their achievement in Basic Technology. In other words, lack of teacher effectiveness was likely to be responsible for poor performance in Basic Technology. These findings suggest that if all other variables were held constant, and effective, teachers will promote higher academic achievement in Basic Technology and vice versa. Thus, if the teachers in addition to being knowledgeable in Basic Technology, are warm, patient, helpful, loving, flexible, organized, diplomatic, even tempered and disciplinarians, also that they involves students in teaching, supplement and improvise instructional materials to drive home their teachings, happy and well dressed among others, there are tendencies for good academic achievement. The place of teacher in educational achievement had been earlier referred to as the major force in determining the quality and the quantity of education in the school and even the hub and pivot on which all other components of educational system revolve (Adame 2000). Ogbu (2011) revealed that many teachers handling the subject Basic Technology are characterized by incompetence, poor classroom management, poor personality and incongruous teaching strategies. To corroborate these findings Abdu (2012) showed that most Basic Technology teachers are unqualified, do not use teaching aids and other motivating items and are not adequately supervised to improve efficiency. All these result in teaching characterized by boredom, drudgery, frustration and teaching just to earn salary and not to impact knowledge. From the fore going it is now very obvious that teachers of Basic Technology had not been effective in their teaching. The government at both Local/State/Federal levels are not

helping in the matter. Also PTA and even communities appear not to be interested in providing the necessary materials and catering for the teachers' welfare.

Recommendations:
Based on the discussion and implications of this study the following recommendations were made:
➢ Basic Technology teachers should be flexible and organized in their teachings. Different teaching methods relevant to the topic should be adopted to introduce variety and increase interest. They should encourage students' participation and involvement in practical lesson as the subject is skill oriented.
➢ The communities, school administrations and PTA should come to the aid of Basic Technology teachers by providing the necessary facilities needed for effective teaching. Thy should motivate the teachers by supplementing their pay packets.
➢ The government at all levels should provide enough Basic Technology equipment/facilities, build workshops and pay teachers hazard allowances in addition to their salaries.
➢ Frequent supervision should be made by education authorities, supported by school administrations to ensure commitment to duty.
➢ Workshops and seminars should be organized for Basic Technology teachers at least annually to keep them abreast of any innovations in the field of technology as well as what it takes to be an effective teacher.

Conclusion
Teacher effectiveness has been found to correlate significantly with students' achievement in Basic Technology. The students themselves have perceived their teachers' effectiveness to be poor. This therefore has accounted to the identified poor achievement in Basic Technology. For the aim of introducing Basic Technology to be achieved, it must be taught by effective teachers. Basic technology teachers should be re-trained to enable them become effective in lesson delivery.

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