International Journal of Innovative Education Research 9(3):208-224, July-Sept., 2021

© SEAHI PUBLICATIONS, 2021 www.seahipaj.org ISSN: 2354-2942

Perceived Performance Of NCE (Technical) Teachers In Teaching Basic Technology In Junior Secondary Schools In North Eastern Nigeria

BAWA, Abubakar

Department of Metal Work Technology,
Federal College of Education (Tech) Potiskum, Yobe State, Nigeria
abfattispo@gmail.com

ABSTRACT

The research on the assessment of the perceived performance of Nigeria Certificate in Education (Technical) teachers in teaching basic technology in junior secondary schools of Bauchi, Gombe, and Yobe states adopted a survey design as the basis for data generation. Relevant literature materials was reviewed to serve as bases and framework for the research. A population involving a total of 1907 respondents, made up of one thousand one hundred and four (1104) administrators and eight hundred and three (803) basic technology teachers was used for the study. To ensure adequate management of the data generated a proportionate stratified random sampling technique will be adopted in selecting the sample for the study. A fifty four item structured questionnaire was used. The item statements were validated by four lecturers and their comments and corrections were used in improving the final instrument. The Cronbach alpha method of calculating reliability was used and data collected was analyzed using the mean and standard deviation and z- test methods of analysis employing the upper and lower real limits of score allotted to each response. The SPSS version 22.0 computer package was used in computing the mean and standard deviation scores which were used in answering the research questions, and the z-test was used in testing all the five null hypotheses for the research at 0.05 level of significance.

Keywords: Perceived, Performance, Basic Technology, Teachers

INTRODUCTION

All teacher training institutions in Nigeria strive within resources to provide the knowledge, skills and abilities that would transform prospective teachers into competent and effective classroom teachers. Teacher effectiveness according to Olaitan, Onyemachi, Nwachukwu, and Igbo (1999) is an indication of a group of activities performed on the achievement of an intended learning outcome. With respect to technical teacher education, this effectiveness depends on the caliber of training received while in college and the experiences acquired on the job.

For teachers of basic technology, another important ingredient apart from being effective is competence. Before technical teachers can be effective, they need first of all to be competent and this cannot be achieved unless they pass through viable training programmes. In support of this, Kabiru (2002) said that a viable teacher education programme is one that aims at turning out teachers who are intellectually, socially and professionally competent. Sarkees and Scott (1985) stated that competent teachers are a key factor in providing quality technical education which is an important ingredient for a healthy economy, because it produces the most important resource that is technical manpower needed for the economy. This is a fact that the Nigerian nation cannot run away from. We need competent technical teachers who can impart the skills and knowledge necessary for the country's technological development.

Colleges of education have for some years been graduating NCE (Technical) teachers to teach pre-vocational subjects at the junior secondary school stage of the education system. The pre-vocational subjects collectively called basic technology prepare junior secondary school students for vocational options at the senior secondary levels. As planned basic technology, a combination of basic elements of metal work, woodwork, electricity electronics and building technology forms the beginning and foundation of Nigeria's effort in providing formal basic technological literacy to its citizens.

Teachers of technology have a vital role to play in Nigeria's march towards technological development. Ukeje (1995) while commenting on the role of teachers said that if education is the key that leads to modernization, it is the teacher that holds the key that unlocks the door. In the same vein the quality of knowledge and skills that students receive from their teachers is a function of how well trained the teachers are. The teacher is the backbone of the entire educational process. Ukeje (1995) submitted that: Teaching is the most vital and strategic profession for national development. Without teachers there can be no good doctors' engineers, lawyers, etc. The mistake of the teacher and therefore a defective education programme has more devastating effects on the nation than the mistakes of other professionals.

In view of the above and for teachers of technology not to mislead students, it is paramount that they should be competently trained. For programmes in education to be viable and to serve the needs of the nation there is the need for competent teachers. The Oxford Advanced Learners Dictionary of Current English (2000) defined competency as having the ability to do something well. The professional teacher must be competent to teach the subject he has been trained to teach at the appropriate level. For teacher competence, the following should be provided:

a. Subject matter:- appropriate and relevant knowledge of facts, principles concepts, and laws needed to sustain cognitive development of the subjects.
b. Pedagogy:- exposure and experience in principles and practice of education and in the art of teaching as an aid to meaningful learning.
c. Skill processes:- facilitate the development and acquisition of appropriate manipulative and other skills.
d. Evaluation: Self and students evaluation through appropriate construction of tests, their analyses and inferences.(Kabiru,2002)

Attempts have been made by Nigeria government through institutions of higher learning to train large numbers of technology teachers. Professional development and training of teachers of technology has occurred over the past two decades and thousands of technology teachers have been teaching basic technology after receiving training in colleges of education spread across the length and breadth of this country. There is the need to examine through research the performance of practicing technical teachers. In addition it would be worthwhile to look at products from colleges of education so as to ascertain whether they are serving the needs of the country through proper teaching of basic technology.

The implementation of the basic technology curriculum in junior secondary schools forms the bedrock on which further technological studies rests. Greater responsibility is placed on the teachers' performance in teaching the subject. It is the teacher's performance that determines what the students acquire in terms of knowledge and basic technological skills at the end of the first three years of secondary school education. Teachers' utterances, actions, leadership styles, knowledge of the subject and skills in teaching were all considered important factors in student learning (Ezeji, 1993). Though the influence of information and communications technology cannot be denied, in actual fact teachers still remain the most influential agents in the teaching and learning process (Abe 2014, Musa and Migosi, 2015). Much of what students learn depends on the strategies, and classroom activities, plans, and processes designed by the teacher. However in spite of the above fact, teachers have been reported to make use of ineffective and outdated teaching strategies that are less learner friendly in the teaching of secondary subjects in Nigeria (Olorundare, 2011). Also Yalams and Fatokun (2007) in a research on students found study habits and teaching methods as factors contributing to student's poor performance. Available statistics from the National Assessment of Learning Achievement in Basic Education (NALABE) 2003, 2006, and 2011 in

Ahmed (2012) showed that the National Performance for both pupils and students were below 50% with worst performances observed in J.S.S 3. Results of 2017 depicted the same picture still below 50%. Assessment in basic science and technology showed a better performance in the Essay test (mean score = 46.08) than the Multiple Choice test (45.71). Inadequate teachers and outdated teaching strategies have been advanced as some the reasons crippling basic education (Kolawole, 2019).

Other reasons notwithstanding, the poor performance cannot be unconnected with teacher's performance in teaching the subject. This is an unsatisfactory state of affairs. What could be responsible for this? Could it be that teachers are not knowledgeable enough? Could it be that teachers are not pedagogically sound? Could it be that teachers are not vast in continuous assessment techniques? While most assessment studies focus on external factors affecting the teaching of basic technology, much is yet to be done by way of research into teacher's performance in teaching basic technology. The study is therefore focused towards investigating the performance of the NCE Technical teachers in teaching basic technology in junior secondary schools in North East Nigeria.

Literature Review

Theoretical Framework for the Study

The theoretical framework adopted for this research was the systems approach model developed by Dick, Carey, and Carey (2005).The theory propounded a systems view of instruction as opposed to viewing instruction as a sum of isolated parts. The model addresses instruction as an entire system, focusing on the interrelationship between context, content, learning and instruction. According to Dick, Carey, and Carey(2005) "Components such as the instructor, learners, materials, instructional activities, delivery system, and learning and performance environments interact with each other and work together to bring about the desired student learning outcomes". The components of the Systems Approach Model are as follows:

i. Identify Instructional Goal(s): goal statement describes a skill, knowledge or attitude (SKA) that a learner will be expected to acquire
ii. Conduct Instructional Analysis: Identify what a learner must recall and identify what learner must be able to do to perform particular task
iii. Analyze Learners and Contexts: Identify general characteristics of the target audience including prior skills, prior experience, and basic demographics; identify characteristics directly related to the skill to be taught; and perform analysis of the performance and learning settings.
iv. Write Performance Objectives: Objectives consists of a description of the behaviour, the condition and criteria. The component of an objective that describes the criteria will be used to judge the learner's performance.
v. Develop Assessment Instruments: Purpose of entry behavior testing, purpose of pretesting, purpose of post-testing, purpose of proactive items/proactive problems
vi. Develop Instructional Strategy: Pre-instructional activities, content presentation, Learner participation, assessment
vii. Develop and Select Instructional Materials
viii. Design and Conduct Formative Evaluation of Instruction: Designer tries to identify areas of the instructional materials that are in need of improvement.
ix. Revise Instruction: To identify poor test items and to identify poor instruction
x. Design and Conduct Summative Evaluation.

With this model, components are executed iteratively as shown in figure 1 below

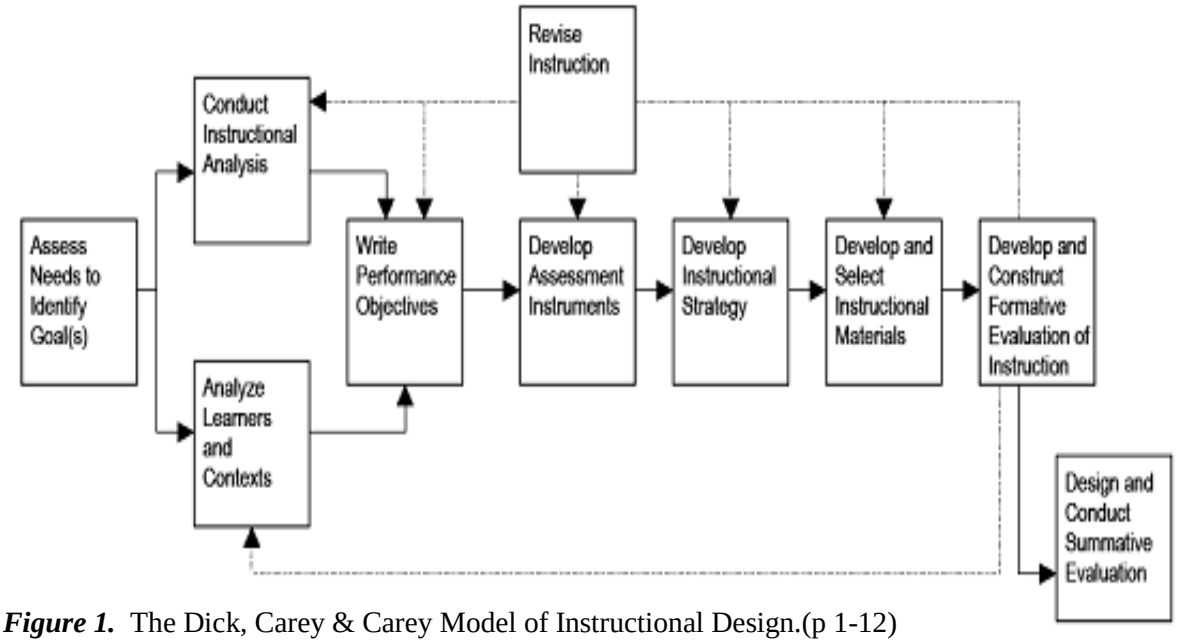

Figure 1. The Dick, Carey & Carey Model of Instructional Design.(p 1-12)

It is simply an example of how learning can be structured in a way that puts the learners' interests first, while incorporating feedback at all levels of the design in order to improve further teaching lessons. The research was on teacher performance that is the teacher's ability to execute of a number of tasks both within and outside the classroom in order to accomplish an expected learning goal. This goal can be immediate or long term, and all the 10 systematic stages in this theory are linked to one teacher action or the other. There is therefore a link between the research and this theory because effective basic technology teaching also involves an interaction between the teacher, learners, materials, instructional activities, delivery systems, and learning and performance environment as propounded by Dick, Carey, and Carey (2005). It is therefore the action of teachers in above elements that are found to be related to the ones used by the researcher that were assessed in this research.

One aim of education for the 21st century is to cultivate the problem solving, critical thinking and higher order thinking skills necessary for students to adapt to the rapidly changing technological age. (Shawn, 2017). The new frontier for education is to empower every youngster with adequate knowledge and skills to function effectively in a world increasingly dependent upon the technological skills and informed actions of all people.

One way through which people can acquire the knowledge of technology is through teaching i.e. technology education as taught by technology teachers through the education system. In Nigeria formal teaching of technology begins at the junior secondary school level where students are made to study basic technology as a subject. The basic technology curriculum objectives according to the federal ministry of education (1985) are:-

i. To provide pre-vocational orientation in technology
ii. To provide basic technological literacy for everyday living and
iii. To stimulate creativity.

The curriculum of basic technology contained many topics that cut across electricity/electronics woodwork, auto mechanics, building technology and metalwork in addition to learning many topics that are specific in each of these areas (Olaitan, 1996). Technology teacher's knowledge of the curriculum content must not be underscored and should come second to none in terms of importance. Teachers cannot teach what they do not know. Because to be able to teach and to make students understand

important concepts and processes, teachers need to know technology as deeply in fact, more so. If technology teachers do not understand deeply the technology concepts they are trying to teach, one cannot expect their students to learn (Rodger and Susane 2000). Technology require people who are fluent in their subject, and people who are fluent in a subject area according to McDiamird, Ball and Anderson (2000) are distinguished from others in at least three (3) respects:-

i. They know a great deal of specific content i.e. facts and ideas
ii. They have formed a variety of complex relationships among those views of content and.
iii. They understand how to approach new problems or dilemmas and how to produce new ideas within the subject for optimum performance in teaching and to make students develop a better appreciation and understanding of the concepts, principles, laws and facts that have been gathered through centuries of inquiry and experimentation in science and technology (p. 11).

The organization and structure of the basic technology curriculum refers to the network of relationships in the content, offered in the three (3) years of junior secondary school education. The facts and ideas are not important in their discrete isolated forms. Instead they are rendered important through the pattern of relationship that are constructed among them. Darling-Hammond (2016) Various lines of research looking at teacher effectiveness have suggested that many kinds of teacher knowledge and experiences may contribute to teacher effects, including teachers' general academic and verbal ability, subject matter knowledge, knowledge about teaching and learning, teaching experience.

Similarly, Goldhaber and Brewer (2000) wrote that technology teachers knowledge of their subject must be different that of their counterparts for, whereas others may be able to draw on a largely tacit understanding of their subjects, and may be able to take many of its premises for granted, technology teachers knowledge must be deeply rooted, and explicit if they are to perform their roles creditable and efficiently.

The purpose of knowledge for teachers is to enable him/her develop a firm and sound base to be utilized in the development of instruction. Lawrence and Palmer (2003) wrote that:-

> Teacher knowledge of content influences what they teach, how they go about teaching it, and the content areas on which they place more intensive focus and elaboration which are directly related to areas where they have better understanding. The depth of content knowledge possessed by the teachers influences teaching strategies. Teachers with good content knowledge are more inclined to formulate high quality questions, explanations and activities for students.(p.25)

Basic technology as part of the technology education drive towards sustainable technology development is dependent, on the quality of the workforce. Obi (2001) in Obi (2006) observed that the "life of technical education programme in any institution, the quality of its activities its image in the community, its survival in the present and particularly its future development depend on the quality and level of its staff" (p. 341).

To be able to cover the basic technology syllabus teachers need a proper mastery of the knowledge, a good understanding of nearly all the topics contained therein. Subject mastery is synonymous to having the ability to interpret, structure, restructure, and analyse content to make it commensurate with method of instruction and students characteristics. Available research is comprehensive and confirms how vital knowledge of subject matter is to teachers (Darling-Hammond, 2009a). What is involved, is more than telling students but rather showing (demonstrating) how to, and later on reflection by the teacher. Reflection according to Ornstein, Thomas, and Lasley (2000) involves reviewing, reconstituting, reenacting and critically analyzing one's own teaching abilities and then grouping those reflected explanations into evidence of changes that need to be made to become a better teacher.

Pedagogy can be described as practical teaching that is, the teachers ability to pass across meaningful information to students. Ornstein, Thomas and Lasley (2000) wrote that pedagogical knowledge and skill deals with the teaching process including the most useful forms of representing and communicating

content and how students' best learn the specific concepts of a particular discipline. Writing on pedagogy, Grossman (1990) said that the main task of teachers is to find ways to represent the subject to students in ways they can understand.

From another dimension pedagogical knowledge according to Stephen and Constance (2017) Pedagogical content knowledge is viewed on a continuum, with educators acquiring more of it through appropriate training and experience. Educators acquire it before they begin teaching, during their pre-service training, and during the teaching careers.. Pedagogical skill and knowledge requires blending of subject matter with knowledge of students. Knowing how students are likely to interpret what they see, what they do and what kinds of misunderstanding students are likely to hold about technological concepts and knowledge

On completing the first three years of junior secondary school education a foundation for technological literacy is supposed to have been laid. This implies that through well planned laboratory/workshop exercises students are made to understand the relationship between the theories learnt in class and practice in the workshop. The task involves planning, organizing and executing workshop sessions with the curriculum objectives in mind. Also the teacher selects the appropriate and relevant curriculum materials that can assist him/her to effectively deliver both theoretical and practical know how.

Furthermore, a pedagogically sound technology teacher should be able to create behavioral changes using available means at his disposal. The pedagogy of teaching calls for effective communication from the teachers. Weglinsky (2000) said that communication ability is a fundamental requirement for teachers if they are to pass across ideas, concepts and skills. As deep as their understanding of technology often is, many individuals cannot teach it effectively.

This is because they lack pedagogical content knowledge which is a special knowledge possessed by expert teachers. In his description of pedagogical content knowledge Shulman (1997) said that it involves knowing how students develop their understanding of a particular concepts, what they are able to understand, what they are apt to stumble over at certain stages of development and through what examples, representations and experiences they will learn best. Still on pedagogical content knowledge Barnes and Cohen (2000) posits that:

In order to build their pedagogical content knowledge teachers need to know technology. They also need to understand how students learn technology, what kind of experiences facilitate their learning and what learning environment foster the exploration and openness to new ideas that must accompany learning (p.21)

Formal teacher training as provided in teacher training institutions provides the basic pedagogical skill and knowledge to enter into teaching. A trained teacher is supposedly one that has gone through such institutions and has acquired enough knowledge in instructional methods, learning, theories, educational measurement, testing and educational psychology. In an interpretive study Grossman (1989), found that secondary school teachers with no pedagogical training (preparation) are limited in their ability to engage students in subject matter. Similarly Adams and Krockover (1997) found that most teachers attribute their knowledge of a range of instructional strategies, classroom discipline and management and classroom routines to their education coursework.

Much of the knowledge and skill of teaching is learnt in school (during preparation and clinical experience i.e. teaching practice) field experience varies across institutions however, its intent is to show what the job of teaching is like, sometimes to develop skills in instruction and classroom management, sometimes to give practical reality to concepts encountered during coursework.

Ability to assess students learning can be regarded as one of vital pre-requisites to successful teaching. This is because when teachers teach, there is an anticipated gain in knowledge, skill, and/or change in behaviour. However, the correct judgement of such achievement or change as well as the proper and unbiased recording and documenting is what assessment is mostly concerned with. Okeke (2004) wrote that vocational/technical education requires making value judgments on some human factors. These human factors include interest, work habit effect, skill, qualities of leadership etc. Okwuanoso, and Okeke (2005) wrote that in secondary schools in Nigeria presently continuous assessment is the trend. The

parents, the teachers and the society at large expect that changes in students behaviour in cognitive (knowledge), affective (attitude) and psychomotor (skills domain) should be effectively assessed and implemented through the use of valid, reliable and fair assessment techniques. Ugodulunwa and Mastapha (2005) and Opoola (2006) submitted that many practicing teachers at all levels of education are incompetent in conducting effective and efficient assessment of learners achievement: that many do not know how to construct and use appropriate instrument, and that they use instruments without making any reference to their validity and reliability.

Most often assessment is seen by beginner teachers as separate from the instructional process Glatthorn (1990) wrote that teachers need to think of assessment as an extension of instruction not as separate from it. The assessment process is often continuous and includes checking for understanding, and misunderstanding before, during interactive teaching and afterwards. Pre-instructional assessment can help teachers determine the most appropriate starting point for instruction and identify non-educational causes that are hampering students learning.

Since basic technology involves more than anything else the teaching of basic psychomotor and cognitive skills in such a way as to change the attitude of the learner towards vocational choices at the senior secondary stage, the skill to assess such learning must be possessed by the teacher. It is required that teachers know how to use the various assessment tools and when to use each tools. Mansel (2000) wrote that the type of knowledge and skill to be assessed can affect the choice of assessment methods, although there is no one to one correspondence between skill types and assessment types.

Writing on the importance of pedagogical content knowledge Reynolds (2017) said that the teacher must have knowledge of using appropriate evaluation methods to assess students understanding of content knowledge. In the same vein Kannapel and Clemens (2005) investigated and found that frequent assessment and feedback as one of the school practices that distinguish high from low performing schools.

METHODOLOGY

The opinion survey design was used in three randomly selected states of the North East Geopolitical zone of Nigeria i.e. Bauchi, Gombe, and Yobe States. A population of 803 (eight hundred and three) teachers of basic technology, and 1104 (one thousand one hundred and four) administrators, made up principals, vice principals, senior masters and heads of basic technology) in junior secondary schools of the study area was used, out of which, using the Yamane (1967) approach a sample size of two hundred and sixty seven (267) teachers and two hundred and ninety four (294) administrators were randomly selected for the research. The proportionate stratified random sampling technique was used in selecting the sample for study. A forty five item structured questionnaire was prepared and used having in mind the research questions. A coefficient alpha α value of 0.86 for teachers and 0.78 for administrators was obtained. This yielded a final reliability estimate of 0.82, indicating that the instrument was reliable. Data was collected through personal administration of the instrument by the researcher and was analyzed using the mean, standard deviation, and z- test methods of analysis employing the upper and lower real limits of score allotted to each response. The Statistical Package for Social Sciences Version 17.0 was used in computing the mean standard deviation and in testing all the three (3) null hypotheses for the research.

Perceived performance scale

5.00	Outstanding (5)	4. 50
4.49	Above average (4)	3. 50
3.49	Average (3)	2.50
2.49	Below Average (2)	1.50
1.49	Low(1)	1.0

RESULTS AND DISCUSSION

The results are presented following the order in which research questions and hypotheses were written in chapter one.

Research Question 1: *What is the perceived performance of NCE (Technical) teachers in imparting the cognitive component of basic technology?*

Table 1. **Mean Response of Teachers and Administrators on the Perceived Performance of NCE (Tech) Teachers in Imparting Cognitive Component of Basic Technology Curriculum**
N_1=160 N_2=221

S/n	Item statement	$\overline{x}_t$	$\overline{x}_{ad}$	$\overline{x}_{com}$	Decision
1.	Ability to use technical drawing instruments.	4.10	3.78	3.93	Above average
2.	Ability to impart properties of engine materials.	4.15	3.62	3.87	Above average
3.	Ability to impart the methods of processing materials.	4.45	3.79	4.10	Above average
4.	Ability to impart of energy sources.	4.32	3.85	4.07	Above average
5.	Ability to impart energy conversion.	4.95	3.87	4.38	Above average
6.	Ability to impart the knowledge of electricity.	4.31	3.79	4.03	Above average
7.	Ability to impart the knowledge magnetism.	4.40	3.92	4.15	Above average
8.	Ability to impart knowledge of electrical/mechanical power.	4.36	3.88	4.09	Above average
9.	Ability to impart the knowledge of appliances that convert electrical to heat energy and vice versa	4.37	4.18	4.27	Above average
10.	Ability to impart the principles of machines.	4.34	3.63	3.96	Above average
11.	Ability to impart the knowledge of electrical measuring instruments.	4.09	3.74	3.90	Above average
12.	Ability to impart knowledge of general machines operations.	4.30	3.66	3.96	Above average
13.	Ability to impart knowledge related to elements of building construction.	4.44	4.15	4.28	Above average
14.	Ability to impart knowledge of principles of fluid flow.	4.33	3.77	4.04	Above average
15.	Ability to impart the knowledge of bench work tools.	4.23	3.77	3.98	Above average
16.	Ability to impart the knowledge safety rules and regulation.	4.03	3.6	3.84	Above average
17.	Ability to impart knowledge of friction and its effects.	4.21	3.74	3.96	Above average
18.	Ability to impart the knowledge of maintenance of simple domestic appliance.	4.22	3.81	4.00	Above average

Table 3 showed the mean rating of respondents on the perceived performance of basic technology teachers in imparting the cognitive component of basic technology curriculum. The analysis revealed means of 4.38, 4.28, 4.27, 4.15, 4.10, 4.09 4.07, 4.04 and 4.00 for items 5, 13, 9, 7, 3, 8, 4, 14, and 18.These indicates an above average performance as perceived by respondents in aspects related to imparting the knowledge of energy conversion, in imparting the knowledge of the elements of building construction, in imparting the knowledge of magnetism and methods of processing engineering materials and the knowledge of electrical mechanical power .

Research Question 2 *What is the perceived performance of NCE (technical) teachers in the pedagogy of teaching basic technology?*

Table 4: Mean Response of Teachers and Administrators on the Perceived Performance of NCE(Technical) Teachers in Pedagogy of Teaching Basic Technology

N_1= 160 N_2=221

S/n	Item statement	$\bar{x}_t$	$\bar{x}_{ad}$	$\bar{x}_{com}$	Decision
19.	Planning lessons prior to teaching	4.16	2.50	3.25	Average
20.	Outlining achievable behavioural objectives for every planned lesson.	4.19	2.54	3.29	Average
21.	Adopting variety of teaching strategies during presentation	4.18	2.35	3.18	Average
22.	Utilizing appropriate instructional materials to facilitate teaching	4.32	2.34	3.25	Average
23.	Teaching simple concept prior to difficult ones.	4.24	2.34	3.20	Average
24.	Constructing teacher made instructional aid using local materials.	4.24	2.34	3.20	Average
25.	Considering students learning characteristics/psychological differences during lesson planning.	4.20	2.46	3.25	Average
26.	Following the basic technology syllabus when planning lesson.	4.40	2.34	3.27	Average
27.	Using simple understandable technical language during presentation	4.12	2.40	3.18	Average
28.	Taking time to explain abstract principles and laws during presentation.	4.30	2.33	3.22	Average
29.	Reinforcing students responses.	4.26	2.33	3.20	Average
30.	Stimulating students in every lesson through questions and answers	4.25	2.52	3.30	Average
31.	Using concrete technological examples during teaching.	4.09	2.30	3.11	Average
32.	Allowing students to participate actively during presentation.	4.33	2.24	3.19	Average
33.	Recapitulating the main points of a lesson before rounding up.	4.00	2.30	3.07	Average

KEY: $\bar{x}_t$ = Mean of teachers, $\bar{x}_{ad}$ =Mean of administrators $\bar{x}_{com}$ = Combined or Weighted Mean

Table 2 showed analysis of data with respect to basic technology teacher's pedagogical performance in teaching basic technology. Items 21, 23, 27, 29, 31, 32, and 33, with means of 3.18, 3.20, 3.18, 3.20, 3.11, 3.19, and 3.07, revealed a average performance in teacher's use of variety of teaching strategies, in teaching simpler concepts before difficult ones, in using understandable language during lesson presentation and in reinforcing students responses. Also e teacher's performed averagely in the use of technical example during presentation, in allowing students to participate during presentation and in comparing topic with current phenomena during teaching. Items 19, 20, 22, 24, 25, 26, and 30, with mean performances of 3.25, 3.29, 3.25 3.22 3.25, 3.27 and 3.20. These obtained values indicate an average performance in planning lessons and in outlining behavioral objectives for every lesson. It also indicate an average performance in utilizing appropriate instructional materials in constructing teacher made instructional materials using local materials. Teachers' performance in recognizing students psychological and learning characteristics during lesson planning was found to above average. Also basic technology teacher's performance in following the basic technology syllabus when planning lesson, and in stimulating students in every lesson through questions and answers was found to be average.

Research Question 3 *What is the perceived performance of NCE (Technical) teachers in the assessment of students learning of basic technology?*

Table 3: Mean Response of Teachers and Administrators on the Perceived Performance of NCE (Technical) Teachers in Assessment of Students Learning

N_1=160 N_2=221

S/n	Item statement	$\bar{x}_t$	$\bar{x}_{ad}$	x_{com}	Decision
34.	Knowledge of assessment types	4.05	2.95	3.45	Average
35.	Ability to develop test items.	3.88	2.97	3.38	Average
36.	Following the syllabus when constructing test.	4.05	2.90	3.42	Average
37.	Administering test based on the time table.	2.80	2.40	2.58	Average
38.	Preparing tests at the appropriate time.	2.86	2.13	2.46	Below Average
39.	Using tests to check for cognitive learning.	4.07	2.20	3.05	Average
40.	Using direct observation of attitudinal change	2.25	2.33	2.29	Below Average
41.	Providing regular feedback of students test scores.	4.05	1.92	2.98	Average
42.	Using suitable continuous assessment approaches to check for students learning.	3.98	2.34	3.08	Average
43.	Keeping students continuous assessment records.	3.94	3.84	3.88	Average
44.	Using lesson objectives as guide when preparing test	4.01	3.72	3.60	Average
45.	Supervising the administration of test to students.	3.93	4.37	4.16	Above average

KEY: $\bar{x}_t$ = Mean of teachers, $\bar{x}_{ad}$ =Mean of administrators $\bar{x}_{com}$ = Combined or Weighted Mean

Table 3 showed analysis of data concerning the performance of basic technology teachers in the assessment of students learning. Results indicate above average performance of teachers in items 34, 38, 36, , 42, 43, 44, and 45 with mean performances of 3.45, 3.38, 3.72, 3.05 3.08, 3.88, 3.60 and 4.16. This goes to show that teachers performed above average in the knowledge of assessment types, in developing test items, in making reference to syllabus when constructing test items. Also basic technology teachers performed was above average in using tests to check for cognitive learning, and in using continuous assessment techniques to check for students learning. In addition, basic technology teachers performed was above average in keeping assessment records, in using lesson objectives as guide when preparing tests, and in supervising the administration of tests to students. However, teachers performed below average in administering test based on the time table, preparing tests at the appropriate time, in using projects to check for basic skills acquired, and in providing regular tests feedback to students as shown by items 37, 38, 40, and 41.

Analysis of Hypotheses

Hypothesis 1

There is no significant difference in the mean rating of basic technology teachers and administrators on the perceived performance of basic technology teachers in imparting the cognitive component of the basic technology curriculum.

Table 4: z – test Analysis Comparing the Mean Ratings of Basic Technology Teachers and Administrators on Perceived Performance of Basic Technology Teachers in Imparting the Cognitive Component of the Basic Technology Curriculum

Subject	N	$\bar{X}_G$	Variance	z–calculated	z-tabulated	Decision
Teachers	160	4.30	0.04	3.27	±1.96	Rejected
Administrators	221	3.81	0.02			

Table 4 showed a calculated z of 3.27 and tabulated z of 1.96. Since the z-calculated is greater than the z-tabulated, the null hypothesis is rejected. This implies that there is significant difference between the mean ratings of basic technology teachers and administrators on basic technology teacher's performance in imparting the cognitive component of the basic technology curriculum. Thus we can conclude that basic technology teachers and administrators indeed differ in their rating of basic technology teacher's extent of performance in imparting the cognitive content of the basic technology curriculum to J.S S students in the study area.

Hypothesis 2

There is no significant difference in the mean rating of basic technology teachers and administrators on the perceived performance of pedagogical performance of basic technology teachers in teaching basic technology.

Table 5: z- Test Analysis Comparing the Mean Ratings of Basic Technology Teachers and Administrators on the Perceived Performance of Basic Technology Teachers in the Pedagogy of Teaching Basic Technology.

Subjects	N	$\bar{X}_G$	Variance	z –calculated	z-critical	Decision
Teachers	160	4.23	0.01	52.34	±1.96	Rejected
Administrators	221	2.40	0.01			

Table 5 shows a calculated z- value of 52.34 and critical z – value of 1.96 at 0.05 level of significance. The calculated z- value is greater than the critical z- value; the null hypothesis is therefore rejected. This means that there is significant difference in the mean rating of respondents on the performance of basic technology teachers in the pedagogy of teaching basic technology. Hence we can conclude that basic technology teachers and administrators indeed differ in their rating of the extent of performance of basic technology teachers on the pedagogy of teaching basic technology curriculum to J.S S students in the study area.

Hypothesis 3

There is no significant difference in the mean rating of basic technology teachers and administrators on the perceived performance of basic technology teachers in the assessment of students learning.

Table 6: z-test Analysis Comparing the Mean Ratings of Basic Technology Teachers and Administrators on the Perceived Performance of Basic Technology Teachers in the Assessment of Students Learning.

Subjects	N	$\bar{X}_G$	Variance	z–calculated	z-tabulated	Decision
Teachers	160	3.65	0.40	2.90	±1.96	Rejected
Administrators	221	2.83	0.58			

In table 6 a calculated z value of 2.90 is obtained while the tabulated z–value is 1.96 at 0.05 level of significance. As a result the null hypothesis is rejected. This implies that there is significant difference in the mean rating of respondents on basic technology teacher's performance in the assessment of students learning. Hence we can conclude that basic technology teachers and administrators indeed differ in their rating of the extent of performance of basic technology teachers on assessment of students learning in the teaching of basic technology curriculum to J.S S students in the study area.

Findings of the Study

1. The perceived performance of basic technology teachers in imparting the cognitive knowledge was found to be above average
2. The perceived performance of basic technology teachers in the pedagogy of teaching basic technology is high.
3. The perceived performance of basic technology teachers in assessment of students learning in the teaching of basic technology is high.
4. Significant difference was found between the mean ratings of basic technology teachers and administrators on the perceived performance of basic technology teacher's in imparting the cognitive component of the basic technology curriculum.
5. Significant difference was found between the mean ratings of basic technology teachers and administrators on the perceived performance of basic technology teacher's in the pedagogy of teaching basic technology.
6. **S**ignificant difference was found between the mean ratings of basic technology teachers and administrators on the perceived performance of basic technology teacher's in the assessment of students learning.

DISCUSSION OF FINDINGS

The teacher's professional tasks and effectiveness indicators/traits highlighted by Ameen (2007) Boterry (2008) and Koleoso (2002), include: understanding of educational goals, sound knowledge of subject matter and assessment of students learning. The possession of these and other factors can be regarded as predictors of high quality teaching performance. Table 1 showed the perceived rating of the respondents on items pertaining to basic technology teacher's performance in imparting the cognitive component of the basic technology curriculum. The results revealed an above average performance in imparting cognitive content of curriculum. This finding was in agreement with the findings of Ferguson and Womack (1997) which found high subject matter knowledge as a determinant of high teaching performance. Within the context of the research problem, this was whether student's unimpressive performance in basic technology examination can be attributed to teacher performances. By interpretation therefore teacher performance in imparting the principles, facts, and ideas was found to be above average, it can be inferred therefore that student's unimpressive performance cannot be attributed to the teacher's performance in imparting the cognitive component of the basic technology curriculum. Furthermore

Bulger, Mohr and Walls (2002) wrote that teacher subject matter knowledge remains a necessary pre-requisite for teaching performance, but is not the sole determinant for achieving long term affective and psychomotor goals of education. This implies that teacher cognitive performance alone cannot create the desired attitudinal change to influence the choice of vocational subjects by students moving from junior secondary school to senior secondary school.

Further more teachers disposition in selecting an appropriate teaching strategy can assist students learning. Denga (2000) posits that vivid and varying techniques will evoke different and exhilarating experiences, which become part and parcel of the learners. The research found a high performance of teachers in this regard (as shown in table 2 item 21) which agrees with the findings of Uwameiye and Abimbola (2008) on the effect of team teaching on the academic achievement of students in basic technology which found significant difference between the mean post test achievement score of students' taught using team teaching and those taught using conventional method. The result revealed that team teaching instructional method is more effective than the conventional method as regards the academic achievement of students in basic technology. This result goes to show that a lot can be achieved in terms of students learning depending on teacher's ability to use the appropriate teaching strategy.

Table 2 showed the mean rating of respondents on the pedagogical performance of basic technology teachers. Most items were rated above average indicating above average pedagogical performance. This finding is in disagreement with the findings of Adebisin (2011) in which respondents agreed that basic technology teachers only talk and give notes to students during teaching. This is an inappropriate method of instruction which connotes a low/poor pedagogical performance. Although a very important constituent, sound pedagogical practices requires the teacher to emphasize connections between ideas, having in mind patterns of student learning, their entry background knowledge, the teacher now utilize different strategies to bring about learning. Researches' on teacher pedagogy often indicate teaching experience as a factor of effective teacher pedagogy. This research focused on planning of lessons and other teacher/student classroom activities that promote students learning excluding teacher reflection as part of pedagogy. Effective teachers know that students learn best when they are able to integrate new learning with what they already understand. When teachers deliberately build on what their students know and have experience, they maximise the use of learning time, anticipate students' learning needs, and avoid unnecessary duplication of content. Teachers can help students to make connections across learning areas as well as to home practices and the wider world.

Another area of concern in teaching basic technology is pertaining to the use of appropriate instructional materials. Whether teacher made, or the ones supplied by the school, the potency of these materials as aid to teaching and learning cannot be downplayed. Ahmed (2010), found that the learning achievement of students taught wood finishing processes using video instruction was high during the achievement test, and that the high performance could be due to the use of instructional media during the presentation. Findings on the use of instructional materials by basic technology teachers showed the performance of teachers was high as shown in table 2 items 22. This finding disagreed with the findings of Afolabi and Ayeni (2012) which found the improvisation and use of instructional materials/equipment as a task least performed by teachers in Nigerian secondary schools. In addition Agbondah (2011) found that there is significant relationship between adequate utilization of instructional materials and effective implementation of migrant fishermen's children education program. In other words achievement of the goals of educating migrant fishermen's children was facilitated by the use of instructional materials.

Table 3 showed the mean rating of respondents on performance of basic technology teachers in the assessment of students learning. It indicates a high performance of teachers in items 34, 35, 36, 39, 42, 43, 44, and 45. The correct and continuous assessment of the progress of students has often been described as very vital to the educational process. Teachers need to be able develop test items, so as to assess both the expected immediate behavioural change in students as well as the attainment of long term educational goals. The correct and continuous assessment of the progress students has often been described as very vital to the educational process. Teacher's performance in developing test items was found to be high in this research as shown by item 38. This finding agree with the findings of Afolabi and

Ayeni (2012) in which respondents rated teachers instructional task performance as very effective (73 %) in assessment of students learning outcomes. It can be deduced from the ratings that one of the major instructional task performed by teachers was periodic assessment of students learning outcomes.

However, teachers were rated low in frequency of administering tests, preparing tests at the appropriate time, using projects to test for skills acquired, and in providing regular tests feedback to students i.e. items 37, 38, 40, and 41.Since majority of items were above average, the performance of basic technology teachers is therefore above average in assessment of students learning. This finding is in contrast with the findings of Ogomaka (2006), Ajuonuma (2006), and Opoola (2006) which found that many continuous assessment practices such as the assessment of students using variety of techniques are not implemented in Nigeria educational institutions. However, the finding agrees with the findings of Joshua (2004) which found 61% of respondents expressing satisfaction with continuous assessment practices in their schools.

CONCLUSION

The study assessed the perceived performance of NCE (Technical) teachers in teaching basic technology in Bauchi, Gombe and Yobe States of North Eastern Nigeria. Based on the findings of the study, it can be concluded that the performance of NCE (Technical) teachers in disseminating the theoretical knowledge (facts, principles concepts, and laws) needed to sustain cognitive development of JSS students in basic technology is above average. As such teacher's cognitive performance cannot be blamed as reason for student's low performance in basic technology examinations as revealed by NALABE. Teachers expressed high ability to blend content, method and students characteristics in teaching basic technology. Also teachers showed some strength in the assessment of students learning. In fact, it is the cumulative effect of their performances in the aforementioned aspects that has kept the attainment of the goals/objectives of teaching basic technology at its present level in study area.

RECOMMENDATIONS

Based on the findings of the study it is recommended that

1. Government should use experts in technical education to organize training programs in form of workshops and seminars for basic technology teachers from time to time. This will enhance teacher performance both theoretically and practically.
2. Government should liaise with teacher training institutes and organise professional teacher training workshops to update and acquaint practicing basic technology teachers in teaching pedagogy.
3. Initial basic technology teacher education should incorporate ICT especially in the assessment of students and teaching methodology.

REFERENCES

Adams, P. E. and Krockover, G. H. (1997). Beginning science teacher cognition and its origin in the pre-service science teacher program. Journal Of Research In Science Teaching, 34: 633-653. Retrieved October 27 2008 from http://www3.interscience.wiley.com/journal

Adebesin,J.B.(2011). The impact of basic technology on its recipients in Lagos.A case study of selected schools in Ikorodu local government area of Lagos state. Technology Education Journal (8), 1. 62-64

Afolabi, E. R. I and Ayeni, A. J.(2012). Teachers instructional task performance and quality assurance of students learning outcomes in Nigerian secondary schools. International Journal of Research Studies in Educational Technology, 1(1), 40-41

Ogbondah, L . Orubite, A.K.O. (2013)The Relevance Of Adequate Teachers In The Effective Implementation Of Migrant Fisherfolks' Children Education Programme In Rivers State Of Nigeria. Journal of Economics and sustainable development 4(5) Retrieved on 5/7 /2020 from www.iiste.org

Ahmed, A. A.(2012). Laying the foundation for enduring STM education in the universal basic education programme. A Keynote Address Delivered At the 53rd Annual Conference of STAN HELD on the 6th -11th August in FCT Abuja.

Ahmed, B. S.(2010).Effect of video Instruction and demonstration method on achievement and knowledge retention on wood finishing processes. Unpublished Masters Thesis Abubakar Tafawa Balewa University Bauchi.

Ajuonuma, J.O. (2006). Competences Possessed by Teachers in the Assessment of Students in the Universal Basic Education (UBE) Programme. A Paper Presented At the 2nd Annual National Conference of the Department of Educational Foundations, Enugu State University of Science and Technology.

Ameen, K.(2007).Issues of quality assurance in LIS higher education in Pakistan. Paper presented at the World Library and Information Congress, Durban ,South Africa

Barnes, C. A. and Cohen, D (2000).Pedagogy, policy and conclusion: a new pedagogy for policy? in D. K. Cohen, M. N. McLaughlin, and J. E. Talbert(Ed) Teaching for understanding: Challenges for policy and practice. 21-23 San Francisco: Jossey-Bass

Bottery, M. (2008). Uses and abuses of quality: The need for civic version. In Strategic leadership and educational improvement 60-63. London: Sage Publications

Bulger,S.M., Mohr,D.J., and Walls, R.T.(2002). Stack the deck in favour of your students by using the four aces of effective teaching. Journal of Effective Teaching 5(2). Retrieved on Line From http://www.uncw.edu/cte/et/articles.

Cardon, P. (2000). At risk students and technology education. The Journal of Technology Education, 26(1), 49-57

Darling-Hammond, L. (2009a). A good teacher in every classroom: Preparing highly qualified teachers our children deserve. New York, NY: Wiley.

Darling-Hammond Linda (2016). Research on Teaching and Teacher Education and Its Influences on Policy and Practice First Published 1 March, 2016 Research Article https://doi.org/10.3102/0013189X16639597

Darling-Hammond, L. (2000b). Teacher quality and student achievement. A review of state policy evidence. Education Policy Analysis Archive 8 http://epaa.asu.Edu/apaa/v8nl/.

Darling-Hammond, L. Wise, A. E. and Klein, S. P. (1995). A license to teach: building a profession for 21st century schools. Boulders, CO. West View Press.

Davies, T. (1999). Taking risks as a feature of creativity in the teaching and learning of design and technology. The Journal of Design and Technology Education, (4) 101-108 Downloaded 18 Dec 2008 from www.trentham.books.co.uk/

Dick, W., Carey, L., & Carey, J. O. (2005). The systematic design of instruction. (6th ed.). Boston: Allyn and Bacon.

Ezeji, S. C. O. A. (1993). An evaluation of relevance of technical education programmes to job market needs. International Journal of Education Research, 5(6), 10-15.

Fakomogbon,M ,A (2004).The laboratory in basic technology: some basic considerations and needs. Nigerian Journal of Education 3(1).6-7

Federal Republic of Nigeria (1977). National policy on education (reviewed 1981, 1998, 2004 2008). Lagos. Nigerian Educational Research and Development Council (NERDC).

Federal Ministry of Education (1985). National curriculum for junior secondary schools, (Pre-Vocational).Ibadan: Heinemann Educational Books (Nig.) Ltd.

Ferguson, R.F., & Womack, S.T. (1993). The impact of subject matter and education coursework on teaching performance. Journal of Teacher Education, 44(1), 55- 63.

Glatthorn, A. A. (1990). Supervisory leadership. New York: Harper Collins.

Goldhaber, D. D. and Brewer, D. T. (2000). Does teacher certificate matter? high schools teacher certification status and student achievement. Educational Evaluation and Policy Analysis (22),129-145.Downloaded 26 Jan 2008 from http://epa.sagepub.com/cgi/content

Grossman, P. L. (1990). Learning to teach without teacher education. Teachers College Record (9) 12, 191-208.

Grossman.L,and Richert, A.E.(1988).Unacknowledged knowledge growth. A re- examination of the effects of teacher education. Teaching and Teacher Education,(4): 53-62.

Joshua,M.T.(2004). An Assessment and Evaluation of Secondary Education in Nigeria. Paper presented at the National Workshop on Issues of Standards and Sustainability in Secondary Schools in Nigeria Held at CHIDA INTERNATIONAL HOTEL Abuja, on August on August 9-11

Kabiru, I . (2002). Teacher education for modern Nigeria in Anikweze, C.M Maiyanga, A. A., and Ojo, M. D. (Eds) Teacher education in Nigeria. Reflections of Dr. Kabiru Isyaku, Abuja: National Commission for Colleges of Education PRS Department (NCCE) . 142

Kannapel, P. J., and Clemens, S. K. (2005). Inside the black box of high performing high poverty schools. Lexington, K. Y: Prichard committee for academic excellence Retrieved On-line February, 28th 2008, from http://www.prichardcommittee.org/ford.

Koleoso, A. (2002). Planning an effective educational programme for Nigerian schools. In Educational administration for colleges of education and universities. Owerri: Tony Ben Publishers

Lawrence, G. A. and Palmer, D. H. (2003). Clever teachers, clever sciences. preparing teachers for the challenges of teaching science, mathematics and technology in the 21st century Australia. Commonwealth of Australia (On Line) http://www.dest.gov.au/sectors/higher-Education.

MacDiarmid, G. W, Ball, D. L, and Anderson, C. W. (2000). Why staying one chapter Ahead doesn't really work. Subject specific pedagogy In M. Reynolds (Ed) The knowledge base for beginning teachers, N.T. Perganon.

Mansel, J. C. (2000). General issues about assessment of competence. Assessment and Evaluation In Higher Education 19 (1), 3-16

Metzler, J and Woessmann, L, (2010).The impact of teacher subject knowledge on student achievement: evidence from within-teacher within-student variation. Iza discussion papers 4999, Institute for the Study of Labor (IZA).

Mitchell, K. J., Robinson, D. Z. (2001). Testing teacher candidates: the role of licensure tests in improving teacher quality. Washington, D. C. National Academy Press

National Assessment of Learning Achievement in Basic Education in Nigeria NALABE (2019) Published by Universal Basic Education Commission (UBEC) UBEC Building, 7, Gwani Street, Wuse Zone 4, P.M.B. 5089, Post Code 900284, Abuja, Nigeria. E-mail: ubecnigeria@yahoo.com Website: www.ubec.gov.ng www.ubeconline.com

Nwachukwu, O. E.(2001). Strategic influence of UBE on the education of migrant farmers In Imo state. The Nigerian UBE Journal 1(2) 144- 155

Ornstein, A. C., Thomas, J., & Lasley, I. (2000). Strategies for effective teaching. New York: McGraw-Hil

.Obi, J. D. B. (2006). Curriculum Reformation in Electrical/Electronic Technology Education for Programme Effectiveness. A Strategy for Consolidating the Gains of Technology Education in Nigeria. Paper presented at the 19th national association of teachers of Technology (NATT) Conference Held at Kwara State College of Education Ilorin from November, 6-9th 2006.

Ogbondah, L.(2008). An appraisal of instructional materials used to educate migrant fishermen's children in rivers state, Nigeria. International Journal of Scientific Research in Education,1(1) 13-25

Ogomaka, P.M.C (2006). Proper Evaluation of Students' Learning in Universities in Nigeria. Paper for the Orientation of Fresh Academic Staff of Imo State University.

.Okwuanaso, S. I. and Okeke, B. C. (2005).Assessment Challenges Facing Vocational Education in Nigeria School System. Abuja. Paper Presented at Third National Conference of Association for Educational Assessment at NICON NOGA HILTON HOTEL September, 4-9th.

Olaitain, S.O. (1996). Vocational and technical education in Nigeria. (issues and analysis)NOBLE GRAPHIC PRESS Onitsha.

Olaitan, S. O, and Onyemachi, G, Nwachukwu, C. E, and Igbo,C.A, and Ekong,A.O (1999). Curriculum development and management in vocational technical education. ONITSHA CAPE PUBLISHERS INTERNATIONAL LTD.

Olorundare, S.O (2011).Correlates of poor performance of secondary school students in the Sciences in Nigeria. A Paper Presented at the Virginia State University, Petersburg, Virginia: United States of America.

Opoola, A.O. (2006). Assessment and Placement Issues In Curriculum And Instruction. Paper presented at the 19th Annual Conference of Curriculum Organization of Nigeria.

Ornstein,A.C., Thomas, J., & Lasley, I. (2000). Strategies For Effective Teaching. New York McGraw Hill

Ornstein, A. C., Thomas, J., & Lasley, I. (2000). Strategies for effective teaching. New York: McGraw-Hil

Ornstein, A. C., Thomas, J., & Lasley, I. (2000). Strategies for effective teaching. New York: McGraw-Hil

Ornstein, A. C., Thomas, J., & Lasley, I. (2000). Strategies for effective teaching. New York: McGraw-Hil

Rodger, W. B, and Susane, L. H. (2000). Advancing technology education: The role of professional development. The Technology Teacher.3(6) 23-26

Sarkees D., and Scott, J. L. (1985). Vocational special needs. (2nd Edition). Alsip, Illinois.: American Technical Publishers

Shulman, L. S. (1988). A union of insufficiencies. strategies for teacher assessment in a period of educational reform. Educational Leadership, 46 (3) 36-41.

Shulman, L. S. (1997). Knowledge and teaching, foundations of the new reform. Harvard Educational Review 57, 1-22.

Yamane, Taro. (1967). Statistics: An Introductory Analysis, 2nd Edition, New York: Harper and Row.

Ugodulunwa, C.A. and Mastapha A.Y. (2005). Strategies for quality assurance in educational assessment at the university level.Nigerian Journal of Curriculum Studies .12(3)10-17

Ukeje, B. D. (1995). The education of teachers for a new social order: The Nigerian Teacher Today, 1 (2) National Commission For Colleges of Education (NCCE). 4-12

Uwameiye, R. Abimbola O.R .(2008).Effect of Team Teaching on the Academic Achievement of Students in Introductory Technology. Retrieved 6/5/2021 from www.itdl.org