

*CHALLENGES AND PROSPECTS OF TEACHING AND
LEARNING OF BLOCKLAYING AND CONCRETING IN
TECHNICAL COLLEGES IN BORNO STATE.*

BY

SULE KAMBASAYA GADZAMA

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SULE KAMBASAYA GADZAMA
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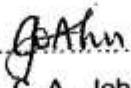
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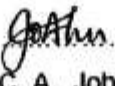
Sule Kambasaya Gadzama

Reg. No: PGDTE/07/0354


This research submitted to the Department of Technology Education, Federal University of
Technology, Yola was approved by:


.....
Dr. C. A. John
Project Supervisor

Date: 27.08.10


.....
Dr. C. A. John
H.O.D. Tech. Education

Date: 27.08.10


.....
External Examiner

Date: 24-06-2010

.....
Prof. A. Nur
Dean, School of Post Graduate Studies

Date:.....

CERTIFICATION

I, SULE KAMBASAYA GADZAMA, a Post Graduate Student in the Department of Technology Education, Federal University of Technology, Yola with Registration Number PGDTE/07/0354, has successfully completed all the requirements for research work for the award of Post Graduate Diploma in Technology Education. The work is the original and has not been submitted in any part or full for any other Diploma, Degree or Professional qualification of this University or any other Institution.

Sule Kambasaya Gadzama

Date

PGDTE/07/0354

DEDICATION

This research work is dedicated to Mrs. Falmata Saleh (Wife) and my children.

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The researcher expresses his profound sense of gratitude to Almighty Allah for giving him the ability to carry out this work from the beginning to the end. Nevertheless, he wishes to express the unquantifiable gratitude to his supervisor, Dr. Ademola C. John, who despite his tight schedules, tirelessly read through the manuscript, made the necessary corrections and where importantly undertook the task of supervising this project.

Thanks are due to Mr. Gayus R. N. for his assistance and guidance in putting me through this project work. The researcher also appreciates the sincere cooperation of the entire lecturers of the department of Technology Education, especially those who have helped in validating his research instruments.

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ABSTRACT

The study is on the challenges and prospects of teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno State. The study aimed at ascertaining the problems associated with the teaching and learning of the trade in Technical Colleges. Descriptive survey design was used for the study. A total of eight (8) Technical teachers/workshop assistants teaching building trade and 16 final year students offering building trade made up the population for the study. This represents the entire population of the technical teachers/workshop assistants and the final year students of the Technical Colleges. Consequently, there was no sampling in the study. A structured questionnaire was used for the collection of data. The reliability coefficient was 0.91 using Kuder Richardson ($K-R_{21}$) formulation correlation analysis. Three research questions and three hypotheses were tested at 0.05 level of significance was used for the study. Mean and standard deviation were used to answer the research questions, while t-test statistics was used to test the hypothesis. The result revealed that the Technical Colleges are not adequately funded; technical teachers/workshop assistants are not given hazard allowances and others. One of the three hypotheses was upheld while the remaining two were rejected. It was recommended that government should provide for technical colleges adequate funds and recruit adequate qualified Technical teachers/workshop assistants.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Building is one of the paramount necessities of human needs besides food and clothes. Building is said to be fixed structure for human occupation and use (Fazlue, 1987).

Men erected shelters to protect themselves and their domestic animals from the avarices of the weather and enemies, but today, the modern man's life is not complete without a building. Blocklaying and Concreting was incorporated into Technical school curricula around 1950's with the establishment of Federal Colleges, known as Government Trade Centres, which were located at Enugu (1950), Ilorin (1951), Kano (1953), Bukuru (1959) and Oshogbo (1959), (Fafunwa, 1974). These were established to provide professional skills and knowledge in various trades such as carpentry and joinery, Blocklaying and Concreting, painting and decoration, cabinet making and others.

Today the country can boast of over ninety one (91) Technical Colleges spread around the thirty six (36) states of the Federation (Digest of Statistics on Technical Education, 1987). But, unfortunately, most of these Technical Colleges got started on temporary sites, sites which have building infrastructure designed for different programmes in the first place. In most cases, these infrastructures are difficult to be converted into workshop suitable for Technical Colleges (Okoro, 2006). The Federal Government of Nigeria (2004) identified the following aims of

technical education.

- a. To provide trained manpower in applied sciences, technology and commerce particularly at sub-professional grades;
- b. To provide technical knowledge and vocational skills necessary for Agricultural, Industrial, Commercial and Economic development;
- c. To give an introduction to professional studies in engineering and their technologies;
- d. To provide people who can apply science knowledge to the improvement and solution of environmental problems for the use and convenience of man;
- e. To give training and impart the necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising; and
- f. To enable our young men and women to have an intelligent understanding of the increasing complexity of technology.

The policy statement also indicated government intention to give increase emphasis to technical and vocational education, since education forms the basis for the technological development of the country. The nation's unemployment problem is being compounded by the retrenchments and a saturated labour market which is as a result of lack of saleable skills acquired in technical colleges. This has led to anti-social activities such as armed robbery and drug pushing. Technical education becomes the avenue where our young school leavers after leaving colleges could become self-employed, Federal Government of Nigeria (2004). Hence, to meet this demand, the Federal Government has embarked on educational programmes such as:-

- i. Pre-vocational and pre-technical teachers programmes, which aimed at training teachers with broad technical knowledge in the area of technical

education and to teach Introductory Technology, Business Studies, Agriculture and Home Economics in Junior Secondary Schools;

- ii. Craftsmen vocational teacher education programmes, this programme trains teachers in various occupational areas in Technical Education, Agricultural Education, Business Education and others. Teacher training under this programme would teach vocational and technical courses in Senior Secondary Schools, Technical Colleges and Trade Centres;
- iii. Technical or technological Teachers Education Programme: This programme should train teachers for the technician courses usually offered in polytechnics, areas of specializations include: Mechanical Engineering, Electrical/Electronics Engineering, Civil Engineering, Building Technology, Food Technology, Agriculture, Food and Nutrition and Secretarial Studies. Graduates from these programmes produce Technicians, Technologist, whom, could be later further their studies in Universities or Technology (Okoro, 2006).

The essence of this programme is to produce skilled, knowledgeable manpower who could be self sustaining and competent to be employed in industries. Despite the efforts of the Federal Government towards Technical Education, according to Udo and Adeniyi (1996), Technology Education is not properly funded at Junior Secondary School (JSS) level.

This invariably has a direct bearing on Blocklaying and Concreting as it is one of the construction trades courses offered at Junior Secondary School.

1.2 Statement of the Problem

Technical Education is generally known as capital intensive, due to its pragmatic nature. Technical Education Programmes are generally more expensive than the general education (Grammar School).

According to Yalnams, Hassan and Anthony (2004), they emphasize that Technical Colleges are characterised by virtually empty workshops, no qualified teaching staff, very few teaching facilities, teachers not adequately paid, libraries are stocked with obsolete textbooks, no workshop assistants and overhead costs are not given to head of schools.

The National Board for Technical Education as cited in Kenneth (1992), explains that only eight (8) or (1.5%) courses out of five hundred and fifty one (551) listed for the Nations ninety one (91) Technical Colleges could be taught with adequate tools, only ninety (90) or 16.3% of the programme have available classrooms, while forty nine (49) or (8.9%) of the technical courses have qualified teachers, consequently, 70% failure of students in Blocklaying and Concreting and students of other Technical Trades inclusive, at West African Examination Council Technical (WAEC-TECH).

Technical Colleges are generally facing a lot of problems, amongst these are: lack of workshops and teaching facilities, lack of funds, attitudes of our leaders and the society needs overhauling (Tayo, 2000). Similarly, Leke (2005), lamented that Technical Colleges are lacking support from education policy makers absence of career education, funding and infrastructural facilities are inadequate. Therefore, if such problems are not properly addressed, there will be difficulties in teaching and learning of Blocklaying and Concreting.

1.3 Purpose of the study

The main purpose of this study is to find out the prospects and challenges of teaching and learning of blocklaying and concreting, specifically the purpose was to identify:-

- i. Problems confronting teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno state;
- ii. Strategies for improving teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno State;
- iii. Prospects of Blocklaying and Concreting for technical college graduates;

1.4 Research Questions

- i. What are the problems confronting teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno State?
- ii. What are the strategies for improving teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno State?
- iii. What are the prospects of Blocklaying and Concreting for Technical College graduates?

1.5 Hypotheses

HO₁: There is no significance difference in the mean opinion of Teachers/workshop assistants and students as regard to the challenges facing Technical Colleges in Borno State.

HO₂: There is no significance difference in the mean opinion of Teachers/workshop assistants and students on the improvement of strategies for the improvement of Technical Colleges in Borno State.

HO₃: There is no significance difference in the mean opinion of Teachers/workshop

assistants and students on the prospects of Blocklaying and Concreting in Technical Colleges in Borno State.

1.6 Significance of study

The finding of this research work could be of benefit to students, Technical Teachers, Workshop Assistants, State and Federal Ministry of Education and Policy Makers.

The Technical teachers, students and workshop assistant benefit from the study as its finding could be used to facilitate teaching and learning. The state and Federal Ministry of Education could derive benefit from the study by using its findings to plan the curriculum. It will also assist the policy makers to formulate policy that will improve the teaching and learning of Blocklaying and Concreting.

1.7 Scope of Study

This study covers two (2) Technical Colleges in Borno State of Nigeria. The schools are Technical College Bama and Girls' Technical College Damboa. The study covers teachers teaching Blocklaying and Concreting and final year students offering Blocklaying and Concreting trades at National Business and Technical Education Council Level. The schools are funded by Borno state. Most Technical Colleges owned by state in Nigeria have similar characteristics.

1.8 Operational Definition of Terms

1. Teacher: A person who has the knowledge of Blocklaying and Concreting and the application of methods of change.

2. Workshop Assistant: A person of lower carder, who has the practical skills in Blocklaying and concreting whose job is to guide students during workshop practice.
3. Student: A person who is studying at Technical College and in his/her final year.
4. Challenge: Refers to a constraint that is against the successful implementation of Technical College Programmes.
5. Teaching: This is the various methods used in imparting knowledge and skills to learners.
6. Learning: Is a process of change in behaviour.
7. Prospects: The chances of being successful in Blocklaying and Concreting.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

This chapter deals primarily with reviews of related literature on the following sub-themes.

- 2.1 Theoretical framework of the study;
- 2.2 Concept of challenges, teaching and learning.
- 2.3 Strategies for improving teaching and learning.
- 2.4 Prospect of Blocklaying and Concreting.
- 2.5 Review of related empirical works.
- 2.6 Summary of review of related literature.

2.1 Theoretical Framework of the Study

Basically this research work considers two theories (Blooms and Guthrie), who's theory were on psychomotor domain as the basis of skill acquisition. However, the theory of Blooms will be used for this particular research work.

Blooms psychomotor domain, (Revised, 1975), explained that, manipulation skill is the ability to perform certain actions by following instructions and practicing.

The development of motor skills, including manipulative, locomotor and non locomotor capabilities enhances children's skill development. Skill performance is necessary for successful participation in negotiating environments that requires highly refined movement such as construction, assembling and others, which forms a connection between the use and development abilities and academic capabilities.

Students who develop more skills grow in confidence which may lead to further participation in physical activities. Skill acquisition is a gradual process and developmentally appropriate practice and feedback. Manipulative skills can be improved by classroom teachers with substantial training (Dave, 1872).

According to Byfield (2005), manipulative skills is a logical, sequential fashion provide education the rational for skill and training, which provides the bases for acquiring skills step by step. For Guthrie (1959), while explaining his theory of psychomotor domain. According to Guthrie a person's intention to reach some goal could be explained or linked in terms of maintaining stimuli that keep the organism active and allow muscular readiness to respond and muscular readiness to accept the consequences of that response. His theory of learning is based on the principle that of simultaneous continuous conditioning. A combination of stimuli which has accompanied a movement will on its recurrence tend to be followed by that movement. Whether the response emerges as the result of an unconditional stimulus or in any other way is of no matter, according to Guthrie, provided that the conditioned stimulus and reaction occur together, learning will take place.

The molecular or small movement forms the genesis for skill performance. A student learns simply by doing, not by success or reinforcement. Learning is occurring continuously although much is replaced immediately it is leaned by the leaving of successive types of response.

2.2 Concept of Challenges, Teaching and Learning

Anonymous (2005) defines challenges as an action oriented methodology that utilizes elements of risks taking, problem solving and purposely reflection to enable individual to learn and grow from experiences. This purposes engaging learners in the educational process, promoting a hand on approach.

However, the learning of occupation are not being encouraged as identified by Bilkisu (2008, P. 45), according to her, some major problems which would affect running schools are:

- i. Lack of books and supplies;
- ii. Lack of power;
- iii. Lack of quality facilities;
- iv. Lack of AIDS (in terms of orphans);
- v. Poverty;
- vi. Lack of transportation (few paved roads, few people own vehicles);
- vii. Cultural issues (tribal disagreement, women are not equal, etc.).

In addition to the above enumerated challenges, Northwest Region Education Laboratory (NREL), (2005, P. 27) further enumerated the following as education challenges.

- i. Large class size (enrolling many students in a class);
- ii. Low family literacy;
- iii. Weak school-family relationship;
- iv. High student mobility;
- v. High poverty rates.

Despite the dramatic progress in education, there are some challenges facing the progress of education which are untouched, these are:

- i. The quality of learning and the capacity to define and monitor this quality is lacking;

- ii. Inequality in education opportunities, quality of education, services and level of learning achievement continue to persist;
- iii. The means and scope of education continue to be narrow and confined to historical models of delivery and use of other channels continues to be ad hoc and marginal;
- iv. The increase in quantitative and qualitative demand for education is not matched by increase in resources;
- v. Each country to varying degrees continues to struggle with issues of children out of school and illiterate youths and adults (Sonjara, 2007, P. 16).

Similarly, Aggarwal (2001) defines teaching as an interaction process involving four aspects: teacher, student learning process and learning situation. The teacher creates the learning situation while the process is the interaction between the students and the teacher. However, a teacher should be able to choose among the available teaching methods, example, Demonstration, Lecture, Student Centre, Method and others, to help him/her deliver his/her lesson appropriately.

Anonymous (2009, P. 8) stated that teaching is the act of imparting knowledge, yet these are being identified as same of the causes of challenge to teaching.

- i. Lack of good learning environment;
- ii. Developing 21st Century literacy among students and teachers;
- iii. Reaching and encouraging today learners;
- iv. Encouraging faculty adoption and innovation in teaching and learning;
- v. Advancing innovation in teaching and learning with technology in an era of budget cuts.

The word teaching and learning are being explained simultaneously as the sharing of knowledge, understanding and activity by providing broad range of high quality educational programmes (Anonymous, 2008). According to Anonymous (2005), learning is a process of acquiring skill or knowledge. Learning is a key process some would say the process in human behaviour. It reveals everything we do and think and plays a central role in our perception, goals and attitude.

Learning are categorised into three domains such as cognitive, affective and psychomotor domains (Blooms, 1959).

Furthermore, in the words of Atherton (2009), defines learning as all about change in behaviour. It may be in a “capacity for” behaviour which is never actually translated into action. There may be many behaviours count as evidence of having learned an underlying principle.

2.3 Strategies for Improving Teaching and Learning

Schmeck (1999), describes learning strategies as method that students use to learn. This ranges from techniques for improved memory to better studying or testing strategies. He further noted that: some learning strategies involve changes to the design of instruction. In support of the above, Rosamund (2003, P. 13) identifies the following strategies that could improve teaching and learning, such as:

- i. Organising materials: This involves grouping of information and ideas that are related and describing the underlying theme or connection between the ideas within each group of ideas into logical order;
- ii. Relating materials: This is to show how your material is connected to the question you are answering. Overview the connection in your answer is

relevant to the question and write conclusion that draws your material together and comes to a decision about the issue;

- iii. Selecting information, try to distinguish important ideas from examples and details that do not directly support the point you are making. Make sure that example intend to illustrate a point don't overwhelm it. Read over your work and make corrections where required. Keep your work concise and eliminate repetition;
- iv. From "good" to "outstanding", try exploring the ideas further. Aim to demonstrate that you have some perspective on the materials you have described. Understanding will be reflected in your ability to use your material appropriately. The important strategy is to consider importance, meaningfulness, relevance, validity and impact of ideas or sources of evidence. Provided thoughtful suggestions to explain your education and interpretation of the evidence.

Raj and Viera (2000, P. 35), according to them, active learning means involving students practicing important skills and in applying new knowledge. They enumerated some of the main strategies that work best such as:

- i. Feedback in their work from the teacher from themselves or from their peers;
- ii. Whole class interactive teaching-variety of teaching controlled methods involving a high level of student interactivity;
- iii. Visual representation and graphic organisers example, mind-mapping, classifying with Venn diagrams;
- iv. Cooperative learning, student lead group activities with little teacher talks;

- v. Reciprocal teaching, students become a teacher, to check their understanding by forming their own questions;
- vi. Discussions, games, matching and sequencing cards, drag and drop text boxes or diagram comparisons. He further added the following as methods employed as a strategy.

1. **Management and Leadership:** This involves adoption of a strategy evidence base not a custom and practice approach. Improving and effective schools do not stress systems as a priority but the students experience, especially teaching and learning;
2. **Effective Meeting:** Short and focused on teaching and learning and to sell the idea that the teaching team has a huge influence on student success rate;
3. **Active Scheme of Work:** This improves effectiveness in teachers work and help detect abnormality in teaching activities;
4. **Support Experiments:** This requires teachers to be involved in research projects to help them experiment with new methods.

2.4 Prospects of Blocklaying and Concreting

Raph (2005) according to him, the course was intended to train youths building skills to enable them sustain themselves and gradually improve on it. Amongst the opportunities in blocklaying and concreting trades are:

- i. **Plastering:** This is the use of mortar for dressing the irregular surface of the wall. One could specialise in this field and become an expert.
- ii. **Plumbing:** One could qualify as a plumber after obtaining the necessary training in plumbing work. A plumber's work include water supply pipes and

waste water (sewer pipes), joining and making threads on pipes and some repair works such as checking of blockages, leakages, and testing of the pipelines.

- iii. **Tiling:** Tiller is one who specializes in laying/fixing of tiles. Tiles are of different types varying in shape, colour, size and text.
- iv. **Blocklayer:** A blocklayer is one who has acquired training in blocklaying. He should be trained craftsman who masters his tools and equipments and he is able to interpret working drawings.

According to Umoh (2001), there are so many opportunities connected to blocklaying and concreting, among these are:

- i. **Provision of Employment:** Most blocklayers are either self-employed or employed by an organisation, parastatals, government, firms or companies. They are to serve in various capacities such as craftsman or technicians whose job is to take care of any work on existing or new building.
- ii. **Academic Opportunities:** Blocklaying and concreting is the foundation of building technology, Architecture and Engineering professions, hence, they have the opportunity to further their studies which will qualify them to work in different capacities such as technologist, engineer, or an academician.
- iii. **Professionalism:** Blocklaying and concreting is a stepping stone for one to become a professional in the field of Architecture, Civil Engineering or a Building Technologist.
- iv. **Research:** Research could be conducted on raw materials which are used in building of structures. Such raw materials are: mud, grasses, leaves and

others, so that improvement could be made on them for use as a building material.

2.5 Review of Related Empirical Works

Nwachuku (2000) conducted a research on how to improve teaching of technology subjects in technical colleges. A descriptive survey with a structured questionnaire was used for collecting data, simple percentage (%) was used for data analysis. The result revealed that there is acute shortage of qualified teachers. The researcher recommended for the employment of qualified teachers.

In a research to assess the production of technical teachers for Junior Secondary Schools, Nwafor (2000), used a survey research method and structured questionnaire to determine the responses, a simple percentage (%) was used. The result indicated lack of incentives and poor remuneration demoralised the teachers. Nwafor suggested that attractive salary and incentives should be given to technical teachers.

Similarly, in a study conducted to investigate the in-service needs of practising teachers, Thresa (1999), used structured questionnaire, mean and standard deviation for the data analysis. The result shows that lack of financial resources, lack of interest of the leaders and lack of reward are the major contributory factors. The researcher suggested that funds should be made available in Technical Colleges and the Administrators should have technical background.

Similarly, Kenneth (1992) in his research on the issue and challenges of technical education programme, a descriptive survey was used. Structured questionnaire was used. A population of 439 teachers were randomly sampled for the study. A reliability coefficient of 0.70 was obtained using Cromback coefficient Alpha (α) formula. A chi

square was used for data analysis. The result revealed that facilities and qualified teachers are inadequate in Technical Colleges. The researcher suggested that facilities should be provided by the government in all the Technical Colleges.

According to Arfo (2006) when conducting a research on causes of examination malpractice in Technical Colleges, Afro randomly sampled a population of 80 Technical teachers from two Technical Colleges. Structured questionnaire was developed for collecting data. Mean and standard deviation was used to determine the mean response and t-test for the test of the hypothesis. The result indicated that adequate classrooms and examination halls were lacking. The researcher suggested that adequate classroom and examination halls should be provided.

In a related work of Suleiman (2006) conducted a research on the appraisal of continuous assessment implementation in secondary schools. Survey research was used with a structured questionnaire. A population of 150 heads of departments using unstratified random sampling technique, a descriptive statistics (frequencies and percentages) was used for data analysis. The result revealed that government is not committed to organise workshops and seminars, the researcher recommended that regular workshops and seminars should be organised for teachers.

Similarly, Haruna (1999) conducted a research on library services in Kaduna and plateau state. Data for the research was obtained from primary and secondary sources. The primary sources include a sample survey through the use of structured and unstructured sources. The result reveals that there are inadequate teaching materials, Haruna recommended for adequate teaching materials.

In a research to assess practical work in Technical Colleges, Mustapha (2002) used a Likert Scale based on structured questionnaire. The statistical tool used was analysis of Covariant (ANOVA) statistics. The result revealed that learning facilities are inadequate and the researcher suggested that facilities should be made available for learning to take place.

Similarly, Ademola and Kundwal (2000) conducted a research on developing technical teachers for professional competency. Questionnaire was used which was administered to technical teachers who were randomly sampled from six secondary schools. The reliability coefficient obtained was 0.83. The statement items were rated on four point scale. Mean and standard deviation was adopted for the data analysis. the lower and upper boundary were 2.45 and 2.55 respectively. Spearman Rank other Correlation Coefficient was used to test the relationship the order of importance of programmes and the likelihood of professional development. The result revealed that there is need to update the teachers' knowledge. The researcher recommended in-service training with pay and attending of workshops, conferences and seminars for the teachers.

In a research conducted on the influence of audiovisual materials on teaching, Okoh (2006), a quasi-experimental design was used. The instrument used was questionnaire, using Likert Scale of rank observation on a four point. A population of 580 teachers were randomly sampled in Port Harcourt and Omuoku. A statistical technique involving the construction and analysis of frequency distribution tables and means scores and percentages were used. Okoh's result revealed that teaching materials are inadequate and suggested that educational stakeholders in the society, government, non

governmental organisations (NGO) should join hand to provide teaching materials in secondary schools.

In the same vein, Gizakuluka (2007) conducted a research on competency requirement of Agricultural Science teachers, Random Sampling techniques was used to select 100 teachers from eight schools in Katagum, Bauchi state. Questionnaire was administered for the data collection and mean was used for data analysis to determine the degree of agreement or disagreement with each item. The lower limit of 2.45 and 2.55 as upper limit was used. The result revealed that there is need for professional training of technical teachers in technical colleges. The researcher suggested that teachers should be trained to meet the technological demand of the 21st century. Also, infrastructural facilities and teaching materials should be made available.

Samuel (2000) conducted a study on the improvement of technology education. A survey research was used. A structured questionnaire was employed for the data collection and mean and standard deviation was used for the analysis of the data collected. The result indicated that workshops and in-service training with pay are not given to the teachers. The researcher suggested that workshops should be organised for teachers regularly and modern tools should be made available in technical colleges.

A research work was conducted by Yunusa (2006) on materials and students creativity. An experimental research method was used. A population of 90 students selected randomly. Performance tests and observational schedule were used as instrument for data generation. Single factor analysis of variance was used. The level of significance was 0.05 and the degree of freedom (df) = 9. The result of observational schedule was presented in percentages (%). The result revealed that teaching materials are inadequate.

The researcher suggested that facilities should be provided by government, concerned individuals or groups.

In a study conducted by Olaleye and Omotayo (2006) while investigating how to improve teaching and learning, questionnaire was used as an instrument for collecting data from randomly selected schools. A three point scale was used ranked high, average and low. Instrument validated yielded a rho (r) = 0.75. The completed questionnaire was collected coded and analysed using descriptive statistics of mean and percentages. The result revealed that physical facilities were grossly inadequate. The researchers suggested that the community should join hand with the government to provide facilities in secondary schools.

Similarly, in a research conducted by Ademola (2001) on attitudes towards teaching, a survey research was used through systematic sampling. Questionnaire was used as an instrument for collecting data for analysis. Four point scale was adopted using split-half method and a reliability coefficient was 0.85. Descriptive and inferential statistics was used. Mean and standard deviation and one way analysis of variance (ANOVA) was used to determine if significant difference exist among the groups. The result shows that there is significant difference in attitude towards teaching as a career. Ademola recommended in-service training and re-training of teachers must be done on a continuous basis.

2.6 Summary of Review of Related Literatures

The study of related literature was categorised into six sub-headings. Theoretical framework for the research was based on Blooms and Guthrie theory of taxonomy of learning psychomotor domain. However, this study was based on Bloom's Taxonomy of

learning Psychomotor domain, which is linked to manipulation of skill development. The literature review shows that several factors were responsible for the challenges of teaching and learning in technical colleges. Nwachuku (2000) discovered that there are shortages of qualified technical teachers in technical colleges. According to Nwafor (2000) and Ademola (2001), they revealed that technical teachers are not properly paid and they are not professionally trained to meet the challenges of the technological requirement of the 21st century. Similarly, Theresa (1999) commended that technical teachers are not encouraged by the administrators. In a research conducted by Kenneth (1992), Suleiman (2006), Mustapha (2002), Olaley and Omotayo (2006), they discovered that training facilities are grossly inadequate in technical colleges. According to Samuel (2001), Ademola and Kundwal (2001), Gizakuluka (2007), they commented that teachers are not properly trained to update their knowledge. In the same vein, Haruna (1999), Okoh (2006) and Yunusa (2006) lamented that there are no enough training materials in technical colleges.

Three related empirical research work were reviewed as a guide to this research work. The work of Samuel (2000) and Kwachuku (2000), their works were based on the improvement of technology education while Kenneth (1992) wrote on the issues and challenges of technical education. None of the researchers specifically wrote on the prospects and challenges of teaching and learning of Blocklaying and Concreting. Therefore, it is the intention of the researcher to bridge this gap.

CHAPTER THREE

METHODOLOGY

The content of this chapter which are to be described are: The Research Design, Area of Study, Population of the Study, Instrument for Data Collection, Validation of the Instrument, Reliability of the Instrument, Method of Data Collection and Method of Data Analysis.

3.1 Research Design

The design suitable for carrying out this study was the descriptive survey. In descriptive survey usually a questionnaire is used for collection of data, organised, analysed and then described without altering its natural form. A descriptive survey is also used for the study of people, their custom, attitude and behaviour (Nworgu, 1991). The study is centred on the challenges and prospects of teaching and learning of blocklaying

and concreting in Technical Colleges in Borno State. This seeks the opinion of teachers/workshop assistants and students which I believe descriptive survey would be suitable for the study.

3.2 Area of the Study

The area of the study was Borno State of Nigeria. Borno was the headquarter of the then North Eastern Region. It shares border with Yobe state in the west, Gombe state south west and Adamawa state in the south. It also shares international boundary with Niger Republic in the North, Chad Republic in the East and Cameroon in the South East. It has only two technical colleges namely: Government Girls Technical College Damboa and Government Technical College Bama.

3.3 Population of the Study

The study population will include technical teachers/workshop assistants and final year students offering blocklaying and concreting in the two technical colleges in Borno state of Nigeria. A total population of twenty four (24) expected respondents will be used. Due to the few number of respondents, the whole population will be used for the research work. The table below shows the categories of the respondents.

Table 1: Technical Teacher/workshop assistant and students

S/No.	Name of School	Teachers/workshop Assistant	Students	Total
1.	Government Technical college, Bama	3	9	12
2.	Government Girl's Tech.College, Dambo'a	3	3	12
	Total	8	16	24

3.4 Instrument for the Data Collection

The instrument to be applied in this study is the structured questionnaires consist of two (2) sections A and B. Section ‘A’ seeks the respondent’s personal data while section ‘B’ is made up of five points Likert scale represented as:

Strongly Agreed (SA) = 5

Agreed (A) = 4

Undecided (UD) = 3

Disagree (D) = 2

Strongly Disagree (SD) = 1

This instrument was designed by the researcher.

3.5 Validation of the Instrument

The questionnaires were given to three experts in the department of Technology Education, University of Yola to prove read and to make observations in terms of clarity and appropriateness of the instrument used. The observations made were:

- i. Statement items for problems should be in a negative form;
- ii. Questionnaire items in section ‘B’ should be labelled as Table (1), Table (2) and table (3).
- iii. Assign numerical values to Likert Scale;
- iv. And an advise to increase the statement items;

The observations made by the experts were effected before production of the final copies of the questionnaire items was made.

3.6 Reliability of the Instrument

The final draft of the instruments were tested for reliability by administering the questionnaire on four (4) teachers/workshop assistants and six (6) final year students in Blocklaying and concreting in two different Technical Colleges namely: Federal Science Technical College, Lassa and Federal Science Technical College Michika. The reliability was obtained using test-retest procedures to ascertain its consistency overtime by using Kuder Richardson formula r(K-R₂₁). The test were tabulated and ranked. The rho yielded a coefficient of 0.91.

$$\text{Kuder Richardson Formula } r(K-R_{21}) = \frac{n}{n-1} \left(1 - \frac{m - \frac{m^2}{n}}{\sigma} \right)$$

Where n = the number of items on the test

M = the mean score on the test

σ = variance or SD²

Source: Emaikwu (2007).

3.7 Method of Data Collection

The researcher administered the questionnaire to those technical teachers/workshop assistants teaching Blocklaying and Concreting and the final year students offering Blocklaying and Concreting. The respondents filled and return the questionnaire to the researcher.

3.8 Method of Data Analysis

The statistical tools used by the researcher for analysing questions and hypothesis were mean, standard deviation and t-test (t-test was used to compare two mean scores of responses of respondents). According to Nworgu (1991), the t-test is to determine

whether two means (X_1 and X_2) are significantly different at a chosen level of significance. The chosen level of significance was 0.05 level of significance.

Mean formula:

$$\text{Mean } (\bar{X}) = \frac{\sum f X}{N} = \frac{\sum X}{N}$$

Where \bar{X} = Mean

\sum = Summation

$\sum fx$ = Sum of the frequency of the scores

N = Number of samples

T-test formula:

$$t = \frac{(\bar{X}_1 - \bar{X}_2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where \bar{X}_1 = Mean of the first sample

\bar{X}_2 = Mean of the second sample

n_1 = Sample size of the first sample

n_2 = Samples size of the second sample

S_1^2 = Standard deviation of the second sample

S_2^2 = Standard deviation of the second sample

Source: Uzoagulu (1998).

3.9 Decision rule

The decision rule for answering the research question was based on real limit of numbers. The real mean is 3.0 while the lower and upper limit of 3.0 are 2.50 and 3.49

respectively. Any mean rating from 3.50 and above was agreed and where otherwise was disagreed.

The decision rule for hypothesis depends on calculated (t_c) and table value (t_t) when the calculated t_c is greater than the table value (t_t), the null hypothesis was rejected and where otherwise were upheld.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter focused on the analysis of the data collected for the research work.

Mean \bar{x} , standard deviation (SD) and t-test tables were used in the presentation.

The tables contain information on the responses to each question and hypothesis.

4.1 Presentation of Data

4.2 Research Question 1.

What are the problems confronting teaching and learning of Blocklaying and Concreting in technical colleges in Borno state.

Table 2: Mean responses of technical teachers/workshop assistants and students on the problems confronting teaching and learning of Blocklaying and Concreting in Technical Colleges in Borno State.
N = 24

S/No.	Item Statements	\bar{X}	SD	Remark
1.	The schools are not adequately funded	4.59	0.21	Agree
2.	There are no enough materials for practical	4.69	0.26	Agree
3.	The school administrators do not cooperate with the teachers teaching Blocklaying and Concreting	3.59	0.75	Agree
4.	New innovation for the teaching of Blocklaying and Concreting is not accepted by the school administrators	3.72	0.33	Agree
5.	Electricity is not adequate to run electrically powered machines	4.88	0.30	Agree
6.	The Principals in the Technical Colleges are not technically biased	3.63	0.73	Agree
7.	The students are over populated in a class	1.50	0.00	Disagree
8.	Technical teachers are not sent on in-service training regularly	4.13	0.30	Agree
9.	The workshops are not adequate to accommodate the students	3.47	0.86	Agree

10. Qualified teachers/workshop assistants are not adequate in the building trade	4.03	0.50	Agree
11. Hazard allowances are not given to Technical teachers/workshop assistants.	4.94	0.18	Agree
12. Workshops and seminars are not organized for the teachers/workshop assistants.	4.28	0.41	Agree
13. Libraries are not adequately equipped with modern books on blocklaying and Concreting	4.88	0.30	Agree
14. Teachers/workshop assistants do not have descent office accommodation	4.76	0.40	Agree
15. Facilities are not adequate in all the Technical Colleges	3.69	0.57	Agree

The results from the table indicate that the respondents agreed with fourteen out of the fifteen items statements and disagreed with item number seven. The mean scores for the agreed item statement ranged from 3.59 to 4.94 and with standard deviation (s) of 0.18 to 0.86 indicating the respondents responses are either learning towards agree or disagree, the disagree item statement had a mean score 1.5 to 0.00 and standard deviation of 0.00 indicating that the respondents had unanimously disagreed that students are not over populated in a class.

4.3 Research Questions 2

What are the prospects of Blocklaying and Concreting in Technical Colleges in Borno State?

Table 3: Mean responses of Technical teachers/workshop assistants and students on the prospects of blocklaying and Concreting in Borno State.

N = 24

S.No.	Items Statements	\bar{X}	SD	Remark
1.	There are greater opportunities for graduates to further their education	4.39	0.39	Agree
2.	There are employment opportunities for graduates in the Building industry	4.32	0.39	Agree
3.	Skill acquisition are available in the building industry	4.32	0.39	Agree
4.	Professional training are available in the building industry	4.60	0.21	Agree
5.	There are opportunities for graduates to become an academician	4.66	0.45	Agree
6.	Graduates could become self employed in building industry	4.82	0.26	Agree
7.	There are research opportunities in building industries	4.16	0.34	Agree
8.	There are opportunities for graduates to become a designer in the building industry	4.38	0.36	Agree
9.	There are opportunities for graduates to become a skilled operator in the building industry	4.41	0.40	Agree
10.	There are opportunities for graduates to become a skilled	4.38	0.36	Agree

operator			
11. There are opportunities for graduates to become a plumber	4.44	0.42	Agree
12. There are opportunities for graduates to become a block/ Bricklayer	4.66	0.40	Agree
13. Graduates could become a foreman in the building industry	4.07	0.35	Agree
14. Graduates could become a craftsman in the building industry	3.97	0.25	Agree
15. There are associations, clubs and professional organizations in the building industry	4.01	0.29	Agree

The table shows the means responses of technical teachers/workshop assistants and students on the prospects of Blocklaying and Concreting. The mean scores ranged from 3.97 to 4.82 and standard deviations of 0.21 to 0.45. All the fifteen item statements were agreed because their mean scores were above the cut off means of 3.50.

4.4 Research Question 3

What are the strategies for improving teaching and learning Blocklaying and Concreting in Technical Colleges in Borno State.

Table 4: Mean responses of technical teachers/workshop assistants and students on the strategies for improving teaching and learning.

N = 24

S/No.	Item Statement	\bar{X}	SD	Remark
1.	Teachers and workshop assistants should adopt different methods of teaching	4.63	0.39	Agree
2.	The students should be encouraged in practical works	4.88	0.23	Agree
3.	The school administrators should cooperate with teachers/ Workshop assistants in teaching Blocklaying and Concreting	4.44	0.42	Agree
4.	New innovations for the teaching of Blocklaying and Concreting should be adopted	4.85	0.25	Agree
5.	There should be adequate electric supply to run the Electrically powered machines in Blocklaying and Concreting	4.97	0.13	Agree
6.	Workshops and seminars should be organized for Technical teachers/workshop assistants	4.16	0.33	Agree
7.	Technical teachers/workshop assistants should be sent On in-service training	4.16	0.30	Agree
8.	Qualified technical teachers/workshop assistants Should be adequate in the technical colleges	4.44	0.45	Agree
9.	Cooperative learning should be encouraged	4.29	0.39	Agree
10.	Modern tools and equipments should be made available	4.66	0.40	Agree

For Blocklaying and Concreting			
11. Feedback or assessment of learning should be encouraged	4.28	0.41	Agree
12. Facilities should be adequate in all the technical colleges	3.72	0.51	Agree
13. Effective meeting for teachers/workshop assistants to discuss academic matters should be done regularly	4.60	0.21	Agree
14. Hazard allowance should be given to technical teachers/ Workshop assistants	5.00	0.00	Agree
15. Materials for practical should be made available in all The technical colleges	5.00	0.00	Agree

The table shows the mean responses of technical teachers/workshop assistants on the strategies for improving teaching and learning Blocklaying and Concreting. The mean scores ranged from 3.72 to 5.00. The respondents had agreed with the fifteen items because their mean scores were rated above the cut off mean of 3.5.

4.5 Hypothesis

The hypothesis below were tested at 0.05 level of significance

H₀₁: There is no significant difference in the mean opinion of teachers/workshop assistants and students on the challenges facing technical colleges in Borno state.

Table 5: T-test analysis of mean response of teachers/workshop assistants and students on the challenges facing teaching and learning of Blocklaying and Concreting in technical colleges.

Respondents	N	\bar{X}	SD	DF	Tc	Tt	Decision
Technical teachers/workshop assistance	8	4.18	0.25				
Students	16	3.92	0.02	22	2.89	1.72	Rejected

The t-calculated (t_c) in the table indicates that the value of t_c of 2.89 was greater than t-table (t_t) value of 1.72. Since the t_c value is greater than t_t value, the null hypothesis was rejected. This result reveals that there is difference in the mean opinion of teachers/workshop assistants and students on the challenges facing the teaching and learning of Blocklaying and Concreting.

Table 6: T-test analysis of mean response of teachers/workshop assistants and students on the prospects of Blocklaying and Concreting

Respondents	N	\bar{X}	SD	DF	Tc	Tt	Decision
Technical teachers/workshop assistance	8	4.61	0.20				
Students	16	4.46	0.36	22	1.27	1.72	uphold

The t_c calculated in the table shows the value of 1.27 which is less than the t_t -table value of 1.72. Therefore the null hypothesis was upheld. This suggests that there is no significance difference between the opinion of teachers/workshop assistants and that of the students on the prospects of Blocklaying and Concreting.

HO₃: There is no significance difference in the mean opinion of teachers/workshop assistants and students on the improvement of strategies for the improvement of technical colleges in Borno state.

Table 7: T-test analysis of mean response of teachers/workshop assistants and students on the strategies for improving teaching and learning in technical colleges.

\bar{X}

Respondents	N	SD	DF	T _c	T _t	Decision
Technical teachers/workshop assistance	8	4.39	0.26			
Students	16	4.34	0.44	22	2.43	1.72 Rejected

The table shows that t_c value of 2.43 which is greater than the t_c value of 1.72 at 0.05 level of significance. The t_c value is greater than t_T value, the null hypothesis was therefore rejected. From this result, the research find out that there is significant difference between the opinion of teachers/workshop assistants and that of students on the strategies for improving teaching and learning Blocklaying and Concreting.

4.6 Findings of the Study

The study arrived at the following findings:

1. All the item statements on table 3 had been unanimously agreed by the two categories of respondents as the problems confronting the teaching and learning Blocklaying and Concreting in the technical colleges in the state except item statement number 7.
2. Based on the result of respondents on table 4, the respondents agreed that there are prospects for Blocklaying and Concreting in the state.
3. The mean opinion and standard deviation of the respondents indicates that, the teachers/workshop assistants and students had unanimously agree with the item statement one (1) to fifteen (15) as a strategy for improving teaching and learning Blocklaying and Concreting.

4. There is significant difference in the mean opinion of teachers/workshop assistants and students on the challenges facing teaching and learning Blocklaying and Concreting.
5. There is significant difference between the opinion of teachers/workshop assistant and students on the strategies for improving teaching and learning Blocklaying and Concreting.
6. There is no significant difference between the opinion of the teachers/workshop assistants and students on the prospects of Blocklaying and Concreting.

4.7 Discussion of Findings

All the data collected by the research instruments were analyzed. The mean, \bar{x} was used for analyzing data from the instruments, while the standard deviation (SD) indicates the direction of mean scores and the t-test was used to test the hypothesis

Table 2 shows the mean responses of technical teachers/workshop assistants and students on the problems confronting teaching and learning Blocklaying and Concreting. Fourteen (14) out of fifteen (15) item statements were agreed with because the mean responses were rated above 3.50 while item seven (7) was disagreed since its mean is below 3.50 which is the cut off point. The null hypothesis one (H_{01}) was rejected because the t_c -value value is greater than the t_c value. This means there is significant difference between the mean opinion of teachers/workshop assistants and that of students on the problems confronting teaching and learning Blocklaying and Concreting. This result agrees with Nwachukwu (2000), Thresa (1999), Nwafor (2000), Ademola and Kundwal (2000) who suggested for qualified teachers, lack of reward (incentives) for

technical teachers, attractive salary for technical teachers and in-service training for teachers respectively.

Table 3 indicates the means responses of teachers/workshop assistants and students on the prospects of Blocklaying and Concreting. All of the fifteen (15) item statements were agreed with mean scores ranging from 3.97 to 4.82 and standard deviation of 0.21 to 0.45 respectively.

Null hypothesis two (H_{O_2}) was upheld because t_c value was less than the t_t value. Showing that there is no significant different in the mean opinion of teachers/workshop assistants and students on the prospects of Blocklaying and Concreting. This confirms with Umoh (2001) and Raph (2005) who states that, there are varieties of prospects of blocklaying and concreting.

Table 4 shows the mean response of teachers/workshop assistants and students on the strategies for improving teaching and learning Blocklaying and Concreting. All the item statements were agreed with mean scores, ranging from 3.72 to 5.00 and standard deviation of 0.00 to 0.51. This means that the respondents had unanimously agreed with the fifteen (15) item statements as a strategy for improving teaching and learning Blocklaying and Concreting

The null hypothesis (H_{O_3}) was rejected because the t_c value is greater than the t_c value. This implies that there is significant difference in the mean opinion of teachers/workshop assistance and students on the strategies for improving teaching and learning Bloccklaying and Concreting.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter primarily presents the summary of the research work, implication of the findings, conclusion, recommendations and suggestions for further research work.

5.1 Restatement of the Problem

Technical colleges are aimed at attaining the spell out goals and objectives guiding its establishment. Yet there are a lot of problems militating against its smooth implementation. Amongst these are lack of incentives for technical teachers/workshop assistants, lack of adequate funds, inadequate technical facilities, lack of qualified teachers/workshop assistants and others.

Although, government put more emphasis on technical education yet more problems still confronting teaching and learning of Blocklaying and Concreting in technical colleges.

Yalams et al (2004) confirmed that technical colleges are characterized by virtually empty workshops, very few teaching facilities. Confirming the problems

confronting teaching and learning in technical education as cited in Kenneth (1992), according to him, out of five hundred and ninety one (591) courses offered in technical colleges, only ninety one courses could be taught with adequate tools.

5.2 Summary of Procedure Used for the Study

A descriptive survey design was adopted for this research work. A total of eight technical teachers/workshop assistants and sixteen students made up the population for the study. The whole technical teachers teaching blocklaying and concreting and final year students offering blocklaying and concreting was used. Therefore there was no sampling in this study.

Three research questions and three null hypotheses were formulated and tested at 0.05 level of significance. Related literatures were reviewed and were based on the problems associated with teaching and learning of blocklaying and concreting. Structured questionnaire was used for the study. The instrument used was based on five point Likert scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD).

The instrument was validated by three experts in the departments of Technology Education. Pilot survey was conducted to determine the reliability of the instruments using test-retest method at two weeks interval. Ten (10) respondents from Federal Science Technical College Lassa and Federal Science Technical College Michika were used for the pilot study. Kuder Richardson r ($K-R_{21}$) formula correlation statistical tool was used to determine the reliability coefficient of the instrument. The data collected was analyzed using mean, standard deviation (S) and t-test was used to test the hypothesis.

The decision rule for mean, \bar{X} was adopted based on theory of upper and lower limits of numbers. The upper limit of 3.00 which is 3.50 was chosen, any mean scores from 3.50 and above was agreed and when otherwise disagreed. The decision rule for the t-test was based on the critical or table value at 0.05 level of significance. If the t_c -calculated value is below the t_t -table value the null hypothesis were uphold and where otherwise, were rejected. The respondents were very few as a result 100% of the questionnaires administered to 24 respondents were collected by the researcher.

5.3 Summary of the Major Findings of the Study

The following are the major findings of the study:

1. Technical Colleges are being faced with problems such as under-funding, inadequate materials for practical, unqualified teachers/workshop assistants, inadequate teaching facilities, lack of cooperation amongst administrators and teachers/workshop assistants, teachers/workshop assistants are not sent on in-service training, lack of incentives for technical teachers/workshop assistants and lack of electricity supply and others.
2. The result of the analysis on the prospect of Blocklaying and Concreting reveals that there are brighter prospects for graduates of Blocklaying and Concreting.
3. All the item statements on the strategies for improving teaching and learning of Blocklaying and Concreting were unanimously agreed as a modality for improving teaching and learning.

4. One out of the three hypotheses was upheld while the remaining two were rejected.

5.4 Conclusion

Based on the result of findings, the researcher draws the following conclusion:

1. The problems of teaching and learning of Blocklaying and Concreting could be prevented if the government paid a special attention to the problems associated with teaching and learning of Blocklaying and Concreting in Technical Colleges.
2. School administrators and technical teachers/workshop assistants should cooperate to create good atmosphere for teaching and learning of Blocklaying and Concreting in technical colleges.
3. Strategies for improving teaching and learning of Blocklaying and Concreting should be adopted in technical Colleges.
4. There is a significant difference in the means responses of teachers/Workshop assistants on the challenges facing teaching and learning Blocklaying and Concreting.

5.5 Implication of the Study

The result of this study proves useful in education. The findings reveals that the problems of teaching and learning of Blocklaying and Concreting in Technical Colleges are due to inadequate technical teachers/workshop assistants, inadequate funding, inadequate facilities, lack of cooperation amongst teachers/workshop assistant and

administrators, lack of in-service training for teachers/workshop assistants, and hazard allowances are not given to technical teachers/workshop assistants. The result of this study will serve as basis for government to address these problems in Nigerian Technical Colleges and will enhance teachers/workshop assistants efficiency in their work. The result also, if properly addressed, will encourage students to offer the course. It will as well assist policy makers to formulate policy that will improve the teaching and learning of Blocklaying and Concreting. Therefore stakeholders, ministry of education (federal of state), policy makers should see this as a challenge which need urgent attention for technical colleges to be productive.

5.6 Recommendations

1. Government should pay more attention to Technical Colleges, especially on the areas of funding, training of staff, provision of adequate and qualified staff, adequate facilities and provision of allowances for technical teachers/workshop assistants.
2. School administrators and teachers should cooperate to create conducive environment for teaching and learning.
3. Provision of electric supply in technical colleges by the government is necessary for running of electrically powered machines.
4. Practical materials should be provided by the government for the students to obtain saleable skills.

5.7 Suggestions for Further Study

The following topics have been suggested for further studies.

1. Assessment of facilities in Technical Colleges;
2. Assessment of the adequacy of technical teachers/workshop assistants in Technical Colleges.

REFERENCES

- Aggarwal, J. C. (2001): Teacher and Education in a Developing Society. Vikas publishing house PVT Ltd. 3rd edition.
- Anonymous (2005). What is learning. Retrieved Nov. 17th 2009. From [http://www.wordnetweb.princeton.edu/per/webwin? C=1 sub=change &02=&00=&1z&07=&05=](http://www.wordnetweb.princeton.edu/per/webwin?C=1sub=change&02=&00=&1z&07=&05=).
- Anonymous (2007). Challenges to Education Systems. Retrieved Nov.17 2009 from [http://www.ictinedtoolkit.org/icttool/user/p-ragephp? section_id= 12](http://www.ictinedtoolkit.org/icttool/user/p-ragephp?section_id=12).
- Anonymous (2008). The issues that challenge global education internationally. Retrieved July, 25th 2009, from <http://www.academic.com.edu/provost/teaching/index.html>
- Anonymous (2009). The educause top teaching and learning challenges. Retrieved June 24th 2009 from <http://www.educuse.ed/eli/challenges>
- Atherton, J. S. (2009). What is learning. Retrieved No. 17th 2009 from <http://www.learningandteaching.info/learning/whatlearn.htm>
- Arfo, E. B. (2006). Strategies for improving the funding of vocational and technical education programmes in Nigeria. Journal of League of Research in Nigeria. Vol. (6)(2)No.2.
- Bilikisu, I. (2008). The major problems of managing public primary school in Nigeria and suggest the way forward. Retrieved July 7th 2009, from <http://answers.Yahoo.com/ciuestion/index?gud=20080528042622AAYTBFC>
- Bloom, B. S. (1956). Taxonomy of Education Objective Handbook 1. Retrieved Dec.

- Curzon, L. B. (1982). Principles and Practice of Technical Education. Publisher Inc. New York.
- Dave, R. H. (1975). Developing and Writing Behavioural Objectives. Retrieved Dec. 17 2009 from <http://www.nwlink.com/donclarklhrd/ave.html>
- David, B. (2005). Manipulative Skills, 2nd edition U.S. Page 486. Retrieved on Dec. 12th 2009 from <http://www.u.s.elsevierhealth.com/product.jsp? ISBN 9780443100963>.
- Federal Republic of Nigeria (1987). Publisher National Board for Technical Education (NBTE). Abuja.
- Emaikwu, S. O. (2007). Fundamentals of Educational Research Methods and Statistics. Kaduna. Deray Prints Ltd.
- Fafunwa, A. B. (1974). History of Education in Nigeria. London. George Allen and Unwin Ltd.
- Faziur, R. K (1987). Encyclopedia of Science and Technology. Vol. 3 McGraw — Hill Book Company. New York.
- Federal Republic of Nigeria (FRN, 2004). National Policy on Education. Lagos; NERDC Press.
- Gizakuluka, J. (2007). Agricultural Science Teachers Competencies required for effective teaching of tropics on Small Ruminants in Secondary Schools. *Azare Journal of Education* 6(1)73. College of Education Azare Bauchi State.
- Haruna, S. D. (1999). Library Science and the disabled in Kaduna and Plateau. *Zaria Journal of Education*. Vol (3)(1) 119. Publication of the Federal College of Education. Zaria.

- John, A. and Moses, E. K. (2000). Developing Technical Teachers for Professional Competency in Adamawa State. *Maiduguri Journal of Education Studies*, vol. 4 pg 144-153. Publisher, Development of Education University of Maiduguri.
- John, A. (2001). A comparative study of attitude towards teaching as a career among students in tertiary institutions. *Maiduguri Journal of education* vol. 4 pg 135-143. Publisher, Department of Education, university of Maiduguri
- Kenneth, O. I. (1992). Vocational education programme in Nigeria: Issues and challenges. *Journal of Research fri Education* 4(4)11-13. Publisher; international Research and Development Institute.
- Leke, O. (2005). Education Millennium development goal and the challenges of gender equity in the 21st century in Nigeria. *International/ journal of gender and health studies*, 3(1&2) 169.
- Mustapha, M. T. (2002). Integrated Science Lectures perception of practical work assessment practice in colleges of education in Nigeria. *A Journal of Teacher Education* 10(1)1.
- Northwest Regional Education Laboratory (2005). Education Challenges. Retrieved July 16th 2009, from <http://www.netc.orci/focus/challenges>
- Nwachukwu, V. C. (2000). Towards improving the teaching technology subjects at secondary school levels through effective teacher production and utilization strategies. Pg 176. Teacher production utilization and turnover patterns in Nigeria.
- Nworgu, B. G. (1991). Educational Research; Basic Issue and Methodology. Wisdom

Okoro, O. M. (2006). Principles and Methods in Vocational and Technical Education.
Nsukka: University Trust Publishers.

Okoh, C. (2006). The influence of Audio-visual materials on the teaching of English language in Senior Secondary Schools in Rivers States. The Nigerian Academic Forum 11(2)125. National Association of Academics: Nnamdi Azikiwe University, Awka.

Olaleye, F. O. and Omotayo, K. A. (2006). Community Participation in Osun State's Secondary Schools in Improving Quality of teaching and learning education forum, *A Journal of education studies* 9(1)146. Faculty of Education University of Maiduguri.

Raj, P. and Viera F. (2008). Strategies for improving teaching and learning. Retrieved July 25th 2009, from strategies + for +improving + teaching + and + learning & spell=1.

Raph, P. (2005). Building skills. Retrieved July 24th 2009 from <http://www.prospect-training.org.UK/youthtraining/cours.PhD?course=1>

Rosamund, A. W. (2003). Strategies for improving learning. Retrieved July, 25 from <http://www.ualberca.ca/recuning/roswoodhouse.htm>.

Samuel, I. Akinsende (2000): Towards the improvement of Technology Teaches in Secondary Schools. *Nigerian Journal of Technical Education*. Review Vol. 7 (8) 95. Technology writers association of Nigeria.

Schmeck, R. R. (1986). Learning styles and learning strategies. NY: Plenum.
Retrieved, July 24th 2009 from <http://www./diana.edu/Nncal/challenge.htm>

Suleiman, A. (2006). Appraisal of continuous assessment implementation in Gombe

- Tayo, A. (2000). The Prospects of Vocational/Technical Education Development in Nigeria. *Journal of education development*, 1(2) Nigerian Association of Education for National Development.
- Thresa, T. I. (1999). Developing English for Academic Purpose Teacher Competence through Inservice Teacher Education. *A Journal of Teachers Education* 7(1)135.
- Udo, M. P. and Adeniyi (1996). The need for proper funding of Technology education at Junior secondary school level. *Journal of vocational education* 2(2) 20-23.
- Umoh, A. Afanquide (1995). Problems and prospects of Building Technology in Senior Secondary Schools in Yobe State. Technical Teacher's Certificate Project. Unpublished: Federal College of Education Technical Potiskum.
- Uzoagulu, A. B. (1998). Practical Guide for Writing Research Project Reports for Tertiary Institutions. Enugu: John Jacob's Class publisher Ltd.
- Yalams, S.M. & Mohammed, H. N. (2004). Problems and Challenges confronting Science, Vocational and Technology Education. *Gombe Technical Education Journal*. 5(1)14.
- Yunusa M. (2006). Materials and Children's Performance in Artistic Creative Development of Pupils in North East Arid Zone Development Programme Model Primary Schools in Yobe State. *A Journal of Education Studies*. 9(1) 57. Faculty of Education University of Maiduguri. Nigeria.

APPENDIX A

Federal University of Technology,
Department of Technology and Education,
Yola,
Date-----

Dear Sir,

VALIDATION OF QUESTIONNAIRE

I am a postgraduate student carrying out a research on “Challenges and Prospects of Teaching and Learning of Blocklaying and Concreting in Technical Colleges in Borno State”.

I solicit for your cooperation to kindly validate my instrument to enable me carry out my research work. Your criticisms, suggestions and corrections are highly appreciated.

Thank you.

Yours faithfully,

Kambasaya Sule Gadzama

PGDTE/07/0354

APPENDIX B

Federal University of Technology,

Department of Technology and Education,

Yola,

Date-----

Dear Respondent,

I am a postgraduate student carrying out a research on “Challenges and Prospects of Teaching and Learning of Blocklaying and Concreting in Technical Colleges in Borno State”.

I solicit for your sincere response to all items on the questionnaire, which will enable me realize the goals. Your responses shall be used purely for academic purposes and will be treated as confidential.

Thank you for your cooperation.

Yours faithfully,

Kambasaya Sule Gadzama

APPENDIX C

Research Instruments

SECTION A

Questionnaire on Personal Data

Please tick (√) the appropriate responses or fill in the blank spaces as the case may be.

1. Name of Technical College-----
2. Teacher/workshop assistant-----
3. Student-----

SECTION B

In this section, there are three subsections; each has fifteen items for each statement. There are five options or possible responses, please read each of the statement carefully and tick (√) the option that best suit the statement. The options are abbreviated as follows:

Strongly Agree (SA) = 5 points

Agree (A) = 4 points

Undecided (UD) = 3 points

Disagree (DA) = 2 points

Strongly Disagree (SD) = 1 point

SECTION B₁₁

The Prospects of Blocklaying and Concreting

Table 3.2

S/N	Questionnaire Items	SA	A	UD	D	SD
1	There are greater opportunities for graduates to further their education.					
2	There are employment opportunities for graduates in the building industries.					
3	Skill acquisitions are available in the building industry.					
4	Professional training is available in the building industry.					
5	There are opportunities for graduates to become an academician.					
6	Graduate could become self employed in building industry.					
7	There are research opportunities in building industries.					
8	There are opportunities for graduates to become a designer in building industry.					
9	There are opportunities to become manager in the building industry.					
10	There are opportunities for graduates to become skilled operator in the building industry.					
11	There are opportunities for graduates to become a plumber.					
12	There are opportunities for graduates to become a block/bricklayer.					
13	Graduates could become a foreman in the building industry.					

14	Graduates could become a craftsman in the building industry.					
15	There are associations, clubs and professional organizations in the building industry.					

SECTION B ₁₁₁

Strategies for Improving Teaching and Learning of Blocklaying and Concreting.

Table 3.3

S/N	Questionnaire Items	SA	A	UD	D	SD
1	Teachers/workshop assistants should adopt different methods of teaching.					
2	The students should be engaged in practical works.					
3	The school administrators should cooperate with teachers/workshop assistants in teaching blocklaying and concreting.					
4	New innovations for the teaching of blocklaying and concreting should be adopted.					
5	There should be adequate electrical supply to run the electrically powered machines in blocklaying and concreting.					
6	Workshops and seminars should be organized for teachers/workshop assistants.					
7	Teachers/workshop assistants should be sent on in service training.					
8	Qualified teachers/workshop assistants should be adequate in the technical college.					
9	Cooperative learning should be encouraged.					
10	Modern tools and equipment should be made available for blocklaying and concreting.					
11	Feedback or assessment of learning should be encouraged.					
12	Facilities should be adequate in all the technical					

	colleges.					
13	Effective meeting for teachers/workshop assistants to discuss academic matters should be done regularly.					
14	Hazard allowances should be given to technical teachers/ workshop assistants.					
15	Materials for practical should be made available in all the technical colleges.					

APPENDIX D

Reliability test using Kuder r (K — R₂₁) formula

$$\left[\frac{\eta}{m - \frac{\eta}{m_2}} \right]$$

56

APPENDIX E

f hypotheses using T-Test statistics at 0.05 level of significance
 There is no significance difference in the mean opinion of teachers/workshop
 its and students as regard to the challenges facing technical colleges in Borno

la of T-test.

$$= \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

t_c (t- calculated) = ?

$$\bar{x}_1 = 4.18$$

$$\bar{x}_2 = 3.93$$

$$S_1^2 = 0.25$$

$$S_2^2 = 0.02$$

$$n_1 = 8$$

$$\frac{4.18 - 3.93}{\sqrt{\frac{(0.25)^2}{8} + \frac{(0.02)^2}{16}}}$$

$$\frac{0.26}{\sqrt{0.1254}}$$

H_{02} : There is no significance difference in the mean opinion of teachers/workshop assistants and students on the improvement of strategies for the improvement of technical colleges in Borno State.

Solution

$$t_c = ?$$

$$\bar{x}_1 = 4.39$$

$$\bar{x}_2 = 4.34$$

$$S_1 = 0.26$$

$$S_2 = 0.44$$

$$n_1 = 8$$

$$n_2 = 16$$

$$\begin{aligned} t_c &= \frac{4.39 - 4.34}{\sqrt{\frac{(0.26)^2}{8} + \frac{(0.44)^2}{16}}} \\ &= \frac{4.39 - 4.34}{\sqrt{\frac{0.0676}{8} + \frac{0.1936}{16}}} \\ &= \frac{0.05}{\sqrt{\frac{0.1352 + 0.1936}{16}}} \\ &= \frac{0.5}{0.02055} \end{aligned}$$

H_{03} : There is no significance difference in the mean opinion of Teacher/Workshop Assistants and students on the prospects of Blocklaying and concreting in Technical Colleges in Borno State.

Solution

$$t_c = ?$$

$$\bar{x}_1 = 4.61$$

$$\bar{x}_2 = 4.46$$

$$S_1 = 0.20$$

$$S_2 = 0.38$$

$$n_1 = 8$$

$$n_2 = 16$$

$$t_c = \frac{4.61 - 4.46}{\sqrt{\frac{(0.20)^2}{8} + \frac{(0.38)^2}{16}}}$$

$$= \frac{0.15}{\sqrt{\frac{0.04}{8} + \frac{0.1444}{16}}}$$

$$= \frac{0.15}{\sqrt{\frac{0.2244}{16}}}$$

$$= \frac{0.15}{0.1184}$$

$$t_c = 1.27 \text{ upheld}$$

$$t_t = 1.72$$

