STRATEGIES FOR IMPROVING CARPENTRY AND JOINERY PRACTICAL PROJECTS IN GOVERNMENT TECHNICAL COLLEGES IN NIGER STATE

BY

BESSE CYNTHIA

2015/1/55250TI

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

MARCH, 2023

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL TECHNICAL AND EDUCATION (ITE) SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF TECHNOLOGY DEGREE (B. TECH) IN INDUSTRIAL AND TECHNOLOGY EDUCATION (WOODWORK TECHNOLOGY)

MARCH, 2023

DECLARATION

I, BESSE CYNTHIA, with the matriculation number **2015/1/55250TI,** an undergraduate student of the Department of Industrial and Technology Education, certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree for this or any other university.

BESSE CYNTHIA **..……..**

2015/1/55250TI Signature & Date

CERTIFICATION

The project has been read and approved as meeting the requirements for the award of Bachelor of Technology (B.Tech) degree in Industrial and Technology Education from the Department of Industrial and Technology Education, School of Science and Technology Education, Federal University of Technology, Minna, Niger State.

Dr. A. M. Hassan **……**
Supervisor **Signature & Date**

Dr. T. M. Saba **……**
Head of Department **Signature & Date**

…….
External Examiner **Signature & Date**

DEDICATION

This project is dedicated to Almighty God for sustaining my life despite all odds and also endowed me with His divine grace, guidance, protection, provision, wisdom, knowledge, understanding and success in my course. And to my family, friends and well wishers.

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ABSTRACT

The study determined the Strategies for Improving Carpentry and Joinery Practical Projects in Government Technical Colleges in Niger State. A survey research design was used for the study. The population for study was 299 comprising of 27 instructors and 272 students. Due to the manageable population, there was no sampling done. A structured questionnaire was used for collecting data from the respondents. Four research questions developed guided the study and hypothesis formulated were tested at 0.5 level of significance. Data collected were analyzed using mean and standard deviation. The findings of the study revealed that the instructors of carpentry and joinery of Government Technical Colleges in Niger State adopted most of the teaching methods and most of the tools were available in the except circular saw, nail set and palm sander. All the skills listed are required by them, the need to improve quality of instructors were also needed. Base on the forgoing, therefore, the Niger State Government should among other things employ quality staff and provide adequate machines and staff should involve the students during practical lessons and maintenance work in the colleges.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

Technical colleges are one of the principal technical and vocational institutions saddled with the responsibility for training craftsmen in Nigeria. These institutions play vital roles in technological development in Nigeria. They are designed to offer theoretical and practical education for acquisition of skills as well as basic scientific knowledge at the secondary school level (National Board for Technical Education, 2001). Technical colleges are established to train craftsmen for industries as well as making individuals to be self-reliant and create jobs in the struggle towards technological advancement.

The curricula of technical colleges are centered on production of craftsmen in the following areas which includes, Motor Vehicle Mechanic, and Bricklaying, Block laying and Concreting, Electrical Installation and Maintenance work, Welding and Fabrication, Radio and Television Electronic Work, Plumbing, Carpentry and Joinery among others.

Strategy is planned series of actions for achieving something. According to Egbita [2006], instructional strategies are decisions about organizing people, materials and ideas to provide learning. Operationally, strategy is the total pattern of decision, which shapes the long-term capabilities to the overall strategy.

Carpentry and joinery are one of the trades in technical colleges in Nigeria in which students acquire skills and basic knowledge for construction of furniture, cabinet making etc. Carpentry

and joinery involve carrying out advanced skilled work, primarily using timber products, either on a construction site, or in a workshop, creating and installing building components.

The concept of practical project can be viewed as a piece of research work or an enterprise by a college where student carefully planned to achieve a particular aim (Osuala, 2004). it is an activity done to construct or produce something or an object of importance for other people; it is both physical and mental effort to accomplish a specific purpose. Practical project is a way of developing students to be able to handle tools and machines to achieve a particular work. Therefore, industries reject many applicants because of lack of practical experience. It is important to train students to the point of acquisition of productive, saleable or employable skills in both private and public services and also meet the current technological needs of the society.

The performance of graduates of technical college students in terms of practical projects in carpentry and joinery in Niger State is faced with numerous problems such as lack of basic practical skills, inappropriate teaching methods; shortage of qualified teachers, lack of facilities as well as inadequate funding seems to have contributed to poor performance of students.

Method of teaching especially in technical colleges requires that the teachers should have the basic requirements in the methodology. Methods of teaching is defined as strategies or ways in which a teacher passes knowledge to the students, it is also define as ways used by a teacher to enable the student learn. The teacher's ability to use a variety of instructional materials and a combination of the ways and ability to manage group learning is at the core of practical projects

Facilities can be defined as anything use to fulfill a function. Facilities in the workshop are the materials, tools and equipment, machines etc needed for construction purposes in the workshop such as hammer, workbench, saw, woods etc.

Basic skills are very important in order to be employable whether it is self or paid employment. However, Bukar [1994] noted that process of skills acquisition and development, as it cuts across the three domains of educational objectives is cumbersome, tedious, and time consuming. This calls for enormous skills from teacher of practical based course like carpentry and joinery especially in technical colleges. The fundamental ingredient of carpentry and joinery practical project is skill development and subsequently, the need to improve upon it

Quality means efficiency or strength. Offorma [2010] stressed that the success of an educational programme is largely dependent on the quality of its teacher. Some of these qualities include his qualification in the particular trade he teaches. He should have the ability to be able to choose the most appropriate instructional material to use at the right time for a particular topic.

1.2 Statement of the Research Problem

Carpentry and joinery students of Government Technical college should be capable of independent work, they should know and understand the materials to work with. Umar and Ma'aji (2011) stated that technical colleges in Nigeria train students to acquire a particular skill in order to earn a living. The Government technical college students should be able to acquire practical knowledge in the construction and production training by using modern equipment and last working methods to help them secure jobs in private and public sector after the end of the programmes.

The performance of carpentry and joinery students in government technical colleges in Niger State is not encouraging. Many carpentry and joinery students are unemployed after school because they lack the practical skills and which will enable them to be self-reliant or employed, which means that they are not competent enough to take up available employment. Abdullahi (2010) attributed students' lack of practical skills necessary to develop and manage their career lives to the growing gap that exists between students school experience and the world of work.

Based on the above study therefore, this study is to determine the strategies for improving carpentry and joinery practical project in government technical colleges in Niger State.

1.3 Purpose of the study

The purpose of the study is to determine the strategies for improving carpentry and joinery practical project in Government Technical Colleges in Niger state. Specifically, the study will determine:

1. The methods of teaching used by the instructors of carpentry and joinery in government technical colleges in Niger State

2. The facilities available in the carpentry and joinery workshop in government technical colleges in Niger State

3. The basic skills required by the carpentry and joinery students in government technical colleges in Niger State.

4. The quality of instructors for the carpentry and joinery in government technical colleges in Niger State.

1.4 Significance of the study

The study on strategies for improving carpentry and joinery practical project in Government Technical College in Niger State will benefit carpentry and joinery teachers and students, Ministry of Education, woodwork industries, curriculum planners.

The findings of this study will be beneficial to carpentry and joinery teachers and students, in improving the quality of the teacher skills needed for practical education providing employment for vocational programme and the students will be instilled in the proper knowledge and therefore learn better and be able to work more effectively due to improved skill acquisition. If this is achieved, parents will also be happy because they will see value in their efforts.

The findings of this study will be beneficial to Ministry of Education. They can use the result of the study to organize training workshop and seminar for carpentry and joinery teachers in order to update their skills and knowledge.

The findings of the study will be beneficial to woodwork industries where technical colleges' graduates seek for employment upon graduation. Carpentry and joinery graduates will be better equipped with practical skills to perform more effectively in tier various jobs and assignment in the industries. This will also help the industries minimize the huge financial expenditure on retraining of technical colleges graduates upon employment.

The findings of the study will be beneficial to curriculum planners for suitable information that will aid at objective planning and successful curriculum will be provided, In that this institution will be able to incorporate the aspect of teacher competency required, as identified practical project skill in the curriculum. The findings will help the curriculum planner aimed at persuading carpentry and joinery teachers, technicians to improve practical project practice as well as

develop practical skills, knowledge and attitude favourable to change in carpentry and joinery today.

The society will also benefit from the findings of the study because when students graduate with expected skills, they will reduce unemployment in the society and making themselves useful by offering good services to the society. This will go a long way in achieving the much-needed technological development in Nigeria.

1.5 Scope of the study

This study focus on strategies for improving woodwork practical project in Government Technical Colleges in Niger State. The study is determined to the followings, method of teaching, skills required, facilities and teachers' qualification.

The study will not cover In-service training, motivation, because they are termed as secondary, the strength of the teachers is first determined.

1.6 Research Questions

This study is guided by the following research questions:

1. What are the methods of teaching adopted by carpentry and joinery instructors of government technical colleges in Niger State?

2. What are the facilities available in carpentry and joinery workshop in government technical colleges in Niger State?

3. What are the basic skills required by the carpentry and joinery students of government technical colleges in Niger State?

4. What are the quality of instructors for carpentry and joinery in government technical colleges in Niger State?

1.7 Hypothesis

The following null hypothesis is tested at 0.05 level of significance:

Ho_1: There is no significance difference in the mean responses between carpentry and joinery instructors and students on the method of teaching

Ho_2: There is no significance difference in the mean responses between carpentry and joinery instructors and students on the facilities available in the workshop

3. There is no significance difference in the mean responses between carpentry and joinery instructors and students on the basic skills required

4. There is no significance difference in the mean responses between carpentry and joinery instructors and students in the qualifications of teachers.

CHAPTER TWO

2.0 REVIEW OF RELATED LITERATURE

The review of related literature was carried out under the following sub-headings

2.1 Theoretical framework

2.1.1 Theory of skill development

2.1.2 Need assessment theory

2.2 Conceptual framework

2.2.1 Workshop organization, management and maintenance

2.2.2 Concept of practical in technical college workshop

2.2.3 Technical college curriculum

2.2.4 Methods of teaching practical projects in technical college

2.2.5 Facilities available in technical college workshop

2.2.6 Basic skills required by technical college carpentry and joinery students

2.2.7 Quality of teachers of carpentry and joinery in government technical colleges

2.3 Review of Related empirical studies

Summary of related literature conceptual framework

2.1 Theoretical framework

2.1.1 Theory of Skill Development

Theory of Skill Development by Hubert and Stuart Dreyfus, 1980. In the fields of education and operations research, the Dreyfus model of skill acquisition is a major of how students acquire skills through formal instruction and practicing. One of the major aspects of traditional epistemology and its manifestation in artificial intelligence research and the philosophy of mind is its emphasis on the formal system of deduction and premises and propositional knowledge.

Hubert and Stuart Dreyfus argue that this formal system of deduction is one of the problems with traditional epistemology, since much of our sense of judgment and the process which we go through to form beliefs is not a matter of starting with premises and by plugging them into a formula in order to deduct conclusions. But rather it is a gradual process that involves being embodied in different ways and developing skills that would make it possible for us to deal with the world. By explaining the five stages that an individual goes through in order to become an expert, Dreyfus justifies their point of view on the topic of learning process and skill development. Skills determine your ability to execute plans and achieve your goals. Skill development is a process of identifying or recognizing the skill gap and ensuring you develop it. Skill is the capability of accomplishing a job with precision of certainty, practical knowledge in combination with ability, cleverness and expertness (Abdullahi, 2010). To increase the chances for self-reliance and employability, carpentry and joinery teachers must help students to acquire skills that are flexible and relevant to the demand of the day.

2.1.2 Needs Assessment Theory

The need assessment theory was propounded by Good and Brophy (1997). The theory stated that "A need develops and motivated behaviours only if an individual is expose to a certain pressure which is need to be assessed; the desire to satisfy or gratify these needs directs or dictates human behavior". Some individual theories have made greater inputs with their conceptual scheme motivation which have implication for classroom teachers.

Need assessment is the process of identifying and determining what needs to be accomplished to reach your project goals.

Kaufman (1998) said that needs assessment is the formal process of identifying needs as gaps between current and desired results planning those needs in priority order based on the cost to meet each need versus the cost of ignoring it, and selecting the most important needs (problems or opportunities for reduction or elimination). This definition emphasizes that needs are gaps in result rather than gap of deficiencies in process or resources. It asks the user to assess the discrepancy between what is and what should be in terms of results, and to compare the magnitude of these gaps in results against the cost to close or ignore them. This definition and related approach to need assessment couples with productivity and effectiveness. Therefore, nearly all the approaches see the usefulness of need assessment for obtaining and allocating resources for projects.

2.2 Conceptual framework

2.2.1 Workshop Organization, Management and Maintenance

According to Olaitan (2002) arrangement of the workshop, good safety precautionary measures and nice aesthetic outlook are principles that could aid the technical department in planning, organizing and managing facility and equipment. Workshops are buildings or rooms for teaching, manufacturing, instructing or facilitating group interaction between some numbers of people. They are traditionally interactive events that encourage participants' involvement in the construction of practical projects.

Workshop organization is a structure with laid down rules and regulation governing the members. It is the conception of organizations as arrangements of parts and individuals with defined task, roles and technical structures. Through organization as an administrative term have different interpretations, its meaning pays attention to the following

Determination of function to be performed to achieve stated goals.

Selection of the machines and the fixed assets and personnel necessary to carry out the work.

Division of work /business into functional departments or sections.

Communication system and methods.

Centralize and decentralized planning and control.

Management according to Adesina (1990) is the organization and mobilization of both human and material resources in a particular system for the achievement of identified objectives. Educational management concentrates on how to achieve the most effective recruitment placement and utilization of the school personnel to attain the educational objectives or goal. Management of student and materials in order to achieve any set objectives involves making decisions through planning or forecasting, commending, coordinating, controlling, allocating, evaluation and developing.

Maintenance is the process of checking, servicing, repairing or replacing of necessary tools, equipment, machines and workshop in a planned manner (continuously) or after a breakdown. It is also to ensure that all facilities are 100% efficiency to be use.

2.2.2 Concept of practical in technical college workshop

Practical skills are self-help and lifesaving skills that you can learn, teach to others. Practical improves understanding in a better way than hearing, learning by doing things help in retaining information for a longer period of time. It helps students to easily get comfortable with equipment, and to understand theory in a much better way. It also gives the student a better learning environment, which encourages student for self-learning. The skills developed during the schools are always embedded in their minds which help them to choose the career of their choice and excel in it. Practical project offers students the opportunity to choose what problems to tackle and brings practical orientation to student, evoke or stimulate their creative potentials and thus improve the teaching-learning process (Omeje, 2004). The construction of a project requires the student to apply the knowledge and skills learnt in the course (Okoro,1999). Onwuka in Omeje (2004) stressed that practical project makes school work real, uses students experiences, motivates natural interest, carries the students forward in clearly defined terms, minimized the chances of waste of time, and emphasizes creativeness.

2.2.3 Technical College Curriculum

The word curriculum originated from the latin word Currus which originally means “a run way” or “a race”. Running a course here means undergoing a study through which one passes to intended destination. It is the generally defined as “ all the intended learning goals, experinces, teaching materials, evaluation techniques (both curricular and extra-curricular), in which students are engaged under the direction of the school”. The student learning activities are formulated, competencies standards and sub-competencies, develop syllabus, develop lesson plan, prepare teaching materials, prepare teaching aids, and design student evaluation.

2.2.4 Methods of teaching practical projects in technical college

The method of teaching is a recurrent pattern of teacher behaviour applicable to various subject matters, characteristics of more than one teacher and relevant to learning. Olaoye (2000) pointed out that teaching is a process to facilitate learning. For effective teaching of carpentry and joinery to take place, it is considered quite appropriate that prospective teachers should interact with the teaching environment. The application of skills and knowledge learned should be the focus of teaching and learning activities in government technical colleges. In other to achieve this, instruction strategies used should be directed to all requirement needed in the work place. It involves the engagement of both teachers and students in the theory and practical (Agbo, 2000). The student should learn the knowledge, skills, attitudes and values which are important in doing a certain job in such a way they apply them in the real work setting. Below are the method of teaching:

Project method: In this method learning takes place through direct contact with materials. And its sub divided into practical project (it deals with construction), experiment project, problem solving and skill project. The project method of teaching avail students the opportunity to acquire whole-handed purposes and to pursue them to a satisfactory end. The students work cooperatively on a given plan and clearly see the purpose of the task and the end result and the teacher only supervise and advise the student.

Discussion method: It involves communication of ideas, facts and opinions by student. This method deals with the exchange of ideas among a teacher and student or among students for the purpose of furthering students thinking, learning, problem solving and understanding.

Demonstration method: This method, the teacher can explain steps in an operation, techniques of handling a piece of apparatus, machine or hand tools, procedure in carrying out an experiment while performing them. The method is executed by examples and activity by the teacher while the students observe and listen. Demonstration method task the students sense of hearing (listening) it also requires careful planning and skillful execution.

Lecture method: It involves a formal discourse or exposition on a subject matter to attain a stated instructional objectives. In this method the teacher does the talking while the students listen and occasionally takes down notes.

2.2.5 Facilities available in technical college workshop

Larson [2007] emphasized that the school building could be referred to as physical facility because of its function of housing and protecting other physical workshop building and effectiveness in technical college. Wang [2003] submitted that the physical facilities are instructional materials like charts, chalkboard, sample objects and specimen, tools, equipment and machines which are used in making teaching meaningful. He added that physical facilities help the teacher convey intended messages effectively so that the learner receive, understand, retails and applied experience gained to reach overall educational goals. The physical facilities such as, Okoro [2004] have the following essential tools and equipment of the school workshop, work bench , engineers vice, hacksaw fames and blades, various grades of hand files, drill bits, engineers pilers, jack planes, smooth planes, chisel, try square, center punches, scribers, scrapers, metric tape, stack and dies screwdrivers and more. Monsuru (2015) referred to instructional materials as human and non-human materials and facilities that can be used to achieve effective instruction. It is use to improve students knowledge, abilities and skills, to monitor their

assimilation of information and to contribute to their overall development. Hainsaw (2012) expressed that instructional materials are kind of tools or equipments that can help effectively the instructor in theory teaching classroom or in practical assessment. Olurunyomi (2002) pointed out that to ensure effective teaching and learning of manipulative skills, principals of government technical colleges should endeavor to make sure that teacher teach by making use of relevant facilities.

2.2.6 Basic skills required by technical college carpentry and joinery students

Carpentry and joinery is a skilled base trade in which the primary work is performed is the cutting, shaping and installation of building materials during the construction of buildings, ships, timber bridges, concrete form-work. According to Mohammed (2011) Carpenters traditionally work with natural wood and did the rougher work such as framing, but today many other materials are also used and sometimes the finer trades of cabinet making and furniture building are considered carpentry. A carpentry and joinery students should be able to install or fix such as fixing of frames of doors and window, installation of building walls, floors, stairs, etc and fitting of wardropes, cupboards, bookshelves etc.

2.2.7 Quality of teachers of carpentry and joinery in government technical colleges

Fafunwa (1995) remarked that the qualities of all other professions are influenced by the caliber of teachers because adequate training cannot take place without competent teachers.The future of educational and technological development of Nigeria depends on the quality of teachers, because they teach the students who are expected to be productive workers and leaders of

tomorrow (Tayo, Ajibade and Ojedokun, 2009).Success in developing a good lesson depends upon obtaining the services of well qualified teacher.

A good teacher will have initiative, the ability to lead students and maintain good discipline.

The teacher should be neat and clean and should present a pleasing appearance. A good teacher uses illustration and examples.

A good teacher establishes fluency in technical content.

A good teacher builds on existing knowledge.

A good teacher employs a variety of approaches.

A good teacher should address a single theme.

A good teacher should not be too long as to exceed the trainees attention span (up to 25 minutes).

2.3 Review of Related empirical studies

Samuel (2020) conducted a study to determining the skill improvement needs of carpentry and joinery graduates in technical colleges in Kaduna state of Nigeria. Specifically, the study sought to find skill improvement need of carpentry and joinery graduates in framed construction, formwork, stairs and roofing? Four research questions were developed to guide the study. Four hypotheses were formulated to test the research questions at 0.5 levels of significance. A population of 62 respondents was used which consisted of 47 carpentry and joinery teachers and 15 instructors in the six technical colleges in Kaduna state. There was no sample for the entire population was used. The instrument for the collection of data for the study was a structured questionnaire called “skill improvement needs of carpentry and joinery graduates in technical

colleges (SINCJGTC) with 82 items. The questionnaire was face validated by three experts, two of them from the Department of Industrial Technical Education, university of Nigeria, Nsukka and one from the Department of Education Technical, Kaduna polytechnic. The data collected Was analyzed using Cronbach's alpha (a) method to establish the internal consistency of the questionnaire. The data were collected by the researcher with the aid of three research assistants. The data gathered from the respondents were analyzed using mean to answer the research questions while the four null hypotheses were tested at 0.05 levels of significance with the use of Statistical Package for Social Sciences (SPSS) version 20. The findings of the study choose the right saw for the job. Make one complete cabinet at a time Mark the stock Select the stock with cutting list. Check the machine set-up

This study is related to the present study base on the course carpentry and joinery. However the two research are different in terms of the design, area of study and the population.

Inuwa,(2014) conducted a study using descriptive survey research to determine the skills required by woodwork technology teachers for improving practical projects in technical colleges in Kano and Jigawa States in North-western Nigeria. Four research questions were developed and answered in line with the purpose of the study. Four null hypotheses were formulated and tested at the probability of 0.05 level of significance. A structural questionnaire was developed from the related literature reviewed for the study. The questionnaire was faced validated by three experts. The questionnaire was tested for reliability using test-retest method and the result showed a coefficient of 0.88. Copies of the questionnaire were administered on 112 respondents

to obtain data and same were returned. The data were analysed using the mean and standard deviation to answer the research questions and t-test statistics to test the null hypotheses. The findings of the study showed that woodwork technology teachers required skills for improving practical project in technical colleges in Kano and Jigawa States. Recommendations made include need for Kano and Jigawa States governments to package the identified competency items in skills required by woodwork technology teachers for improving practical projects in technical colleges into workshop materials and organize workshop on them for the benefit of wood work technology teachers, training and retraining of woodwork technology teachers and provision of instructional resources. The study reviewed is related to the present study base on the course woodwork practice, but differs in the design, areas of study and also population.

Mohammed, Yahaya, and Hassan (2019). Carried out a study on "skills improvement need of woodwork teachers in Technical Colleges of Yobe state" was influenced by the great concern about the future and continuity of woodwork as a skill oriented course which equip learners with relevant life skills. Three research questions guided the study. Descriptive survey research design was adopted and the population was 36 woodwork teachers. A structured questionnaire consisting of 71 items was developed and used for data collection. Mean and standard deviation were used to answer research question one and two while z-test analysis was used to establish the skills improvement need for research question three. The findings revealed that the teachers need re-training in construction of wooden articles. It was recommended that teachers should regularly be sent on professional courses and engages in commercial activities to update and boost their competencies in skills for teaching attractive in schools' workshop.

Their study is related to the present study base on the course woodwork practice, the statistics use for the analysis. Nevertheless, the two studies differ in the population, area of study and design.

Suleiman (2014) identified strategies for improving woodwork practical skills in technical colleges of Niger State. Four research questions were answered and two hypotheses tested at 0.5 level of significance. A survey research design was adopted for the study. A structured questionnaire was used to gather data from one hundred and eighteen respondent and random sampling was applied to identify the study sample. Mean ranging was used to answer research questions, t-test statistics was used to test the hypothesis. The findings of the showed that woodwork students and woodwork teachers of technical colleges in Niger State used all the woodworking machines listed except surface planner, band saw, crosscut saw machine, jigsaw machine, mallet, and scaper. The findings of the study also indicated that the techniques and the strategies adopted by the teachers of technical colleges in Niger State include: demonstration, projects, experiment and assignments. It was evident from the study that constantly focusing on activity to make learning fun can actually hamper those students who make good progress without it. Based on the findings the researcher therefore concluded that good vocational and technical education teachers require the right attitude; have years of professional and practical skills and entrepreneurial experience at the workshop floor of the industry and good background knowledge of the engineering design.

This study is related to the present study base on the course woodwork practice, design, area of study. However this study is specifically on carpentry and joinery and also differs in population.

Aliyu (2014) carried out a study on strategies for improving practical projects in woodwork in Colleges of Education (Technical) in north-western states of Nigeria which was motivated by a great concern about the future and continuity of woodwork practical projects in all tiers of society and our education system particularly in Colleges of education (Technical). The concern stemmed from poor performance, low and declining skill practice in performance. Pertinent questions and doubts were raised on the strategies employed by teachers currently teaching woodwork in Colleges of Education (Technical). The study therefore focused on the in-service training, motivation, instructional materials and teaching technique in woodwork practical project as a frame of reference. Four research questions guided the study and hypotheses formulated were tested at 0.05 level of significance. The study adopted a survey research design. The area of the study was the seven Northwestern states. The population and sample for the study was made up of 15 woodwork lecturers and 28 instructors in the seven Colleges of Education (Technical). A questionnaire titled "Strategies for improving practical projects in woodwork in Colleges of Education (Technical) in Northwestern states of Nigeria" consisting of 70 items was structured, based on the woodwork practical projects, administered to 43 teachers. Data collected were analyzed using eh means and test statistics. The study recommended re-training, motivation and in-service training for woodwork teachers not once but on regular basis through workshops and seminars.

The study is related to the present study in the area of design, and also the statistical tools used but differs in the area of study, population and it was carried out in colleges of education (technical) while the present study is on technical colleges.

2.4. Summary of Review of Related Literature

Teaching is a profession in educating students using curricula that is specific to change a behavior of the learner. The change can only occur with a well-planned and strategized instructional materials.

The review of literature related to this study revealed that facilities for effective teaching and learning are very important because it is practical oriented. The literature reviewed also revealed that the condition in our technical college workshop is poor, and that students learn by doing, they understand the skills and knowledge they are developing in accomplishing meaningful task. The literature showed that there is need to train teachers in the use of modern facilities in our technical colleges and to be creative to enable them overcome some of the short falls in facilities.

The review shows that good technical education teachers require the right attitude, also have years of professional and practical skills and entrepreneurial experience at the workshop, and good background knowledge of engineering design.

The review also indicated that providing students with work experience is not enough, there must be a bridge between school and work by which students are provide with work place experiences that are structured to promote and reinforce the skills acquired in the workshops. This will give students opportunities to use the skills acquired in the classroom/workshop in the world of work. This shows that skill and performance are in separable. Performance is a configuration of skill which is the sequence of responses required for a specific task. Skill acquisition and development are learning activities involving cognitive, affective and psychomotor domain. All the literature reviewed none of the research carried out a study to find out the strategies for

improving carpentry and joinery practical project in government technical colleges in Niger State. This creates a gap which the present study tends to fill.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter is organized under the following sub-headings: Design of the study; Area of the study; Population of the study; Sample and sampling Technique; Instrument for data collection; Validation of the instrument; Reliability of the instrument, Administration of the instrument, Method of data collection and Method of data analysis.

3.1 Design of the Study

This study adopted survey design. According to Gall, Gall, and Borg (2017) a survey is a method of data collection using questionnaire to collect data from a population or a sample that has been selected to represent a population to which the findings of the data analysis can be generalized. It is suitable for this study because relevant information on an investigation into strategies for improving carpentry and joinery practical project in Government Technical College in Niger State will be collected from the population for analyses.

3.2 Area of the Study

The area of the study was Niger State and all the six Technical Colleges in the state will be covered, which included: Government Technical College Eyagi Bida, Government Technical College Chanchaga Minna, Suleiman Barau Technical College Suleja, Government Technical College Kontagora, Government Technical College New Bussa and Mamman T. Kontagora Technical College Pandogari.

3.3 Population for the Study

The population for the study will include all 272 students and 27 instructors of carpentry and joinery program in all the Government Technical Colleges in Niger State as shown on the table below.

Table 3.1 Population of teachers and students of carpentry and joinery in government technical colleges

S/N	Name of College	No of Instructors	No of Students
	Govt Tech College, Minna	7	72
	Govt Tech College, Eyagi-Bida	10	122
	Govt Tech College, K/Gora	4	16
	SBTC Suleja	4	47

Govt Tech College, N/Bussa	2	15
MKTC Pandogari	Nil	Nil
Total	27	272

Source: Niger State Science and Technical Schools Board (STSB, 2022)

3.4. Sample and Sampling Technique

Due to the manageable population, no sampling was be done.

3.5 Instrument for Data Collection

The instrument that was used for data collection was a structured questionnaire developed in consonance with the research questions and review of available literature on the study under investigation. The questionnaire has five sections. Section 'A' elicited information on personal data of the respondents. Section 'B' sought the methods of teaching adopted by carpentry and joinery teachers, Section 'C' The facilities available in carpentry and joinery workshop, Section 'D' The basic skills required by the carpentry and joinery students and Section 'E' The quality of teachers for carpentry and joinery. The instrument is structured in using a four point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with number values of 4, 3, 2, and 1 respectively assigned.

3.6 Validation of the Instrument

The questionnaire was face validated by experts, from the department of Industrial and Technology Education, School of Science and Technology Education, Federal University of Technology Minna. The corrections and suggestions observed by the validates were considered and the items were revised accordingly.

3.7 Reliability of the Instrument

The instrument was administered to 10 respondents at Federal Science and Technical College Shiroro for the reliability study. The College is not part of the study area. The internal consistency of the instrument was determined using Cronbach Alpha reliability coefficient. The calculated Cronbach Alpha for section B, C, D and E are 0.82, 0.78, 0.91 and 0.69 respectively. Indicating that the instrument have high consistency.

3.8 Administration of the instrument

The instrument was administered by the researcher with the help of 2 research assistants to the respondents at the Government Technical Colleges. Each copy of the instrument was accompanied by a letter of introduction which briefly explained the aim of the instrument to the respondents.

3.9 Method of Data Collection

Data was collected using structured questionnaire administered to the respondents by the R.A and myself. A week grace was given to them before retrieval of the questionnaire with the help of two research assistants. The completed questionnaires will be collected not later than one week through the research assistants.

3.10 Method of Data Analysis

The data collected from the study was analyzed using mean, Standard Deviation and T-test. Questionnaire items with mean of 3.50 and above will be regarded as agreed while those with

mean below 3.50 are considered disagree. Mean and SD was used to analyse the research questions while T-test was adopted to test the hypotheses at 0.05 level of significance.

3.11 Decision Rule

Any item with a mean score of 2.5 and above was termed as agreed, where as any item with 2.49 and below would be considered as disagree. Using (4+3+2+1)=10/4=2.5

The null hypotheses will be tested using if the T-value in equal to or greater than 0.05 the hypotheses will be accepted, while if the T-value is less than 0.05, it would be rejected.

CHAPTER FOUR

RESEARCH QUESTIONS ONE

What are the methods of teaching adopted by carpentry and joinery instructors of government technical colleges in Niger State?

Table 4.1 Methods of teaching adopted by carpentry and joinery instructors of government technical colleges in Niger State.

S/N	ITEMS	X_1	X_2	SD_1	SD_2	X_A	SD_A	REMARKS
1	Lecture	3.86	3.87	0.69	0.43	3.87	0.56	**AGREED**
2	Demonstration	2.12	2.37	0.85	0.89	2.25	0.87	**DISAGREED**
3	Collaboration	3.04	3.00	1.06	0.98	3.02	1.02	**AGREED**
4	Classroom Discussion	3.68	3.63	0.72	0.67	3.66	0.70	**AGREED**
5	Debriefing	3.83	3.90	0.68	0.55	3.87	0.62	**AGREED**
6	Classroom Action Research	3.31	3.53	0.81	0.73	3.42	0.77	**AGREED**
7	Experiential	3.86	3.90	0.69	0.40	3.88	0.55	**AGREED**
8	Field work	3.75	3.73	0.71	0.58	3.74	0.65	**AGREED**
9	Project	2.75	3.10	1.20	1.03	2.93	1.12	**AGREED**
10	Experimental	2.36	2.60	1.14	1.16	2.48	1.15	**DISAGREED**

Key: X_1 = Mean of Instructors X_2 = Mean of Students SD_1 = Standard Deviation of the Instructors SD_2 = Standard Deviation of Students

$$X_1 = \frac{X_1+X_2}{2} \qquad SD_A = \frac{SD_1 + SD_2}{2}$$

Table 4.1 above revealed that the respondents agreed with eight items as agreed with the methods adopted by instructors. While disagreed with 2 items i.e demonstration and Experimental.

RESEARCH QUESTIONS TWO

What are the facilities available in carpentry and joinery workshop in government technical colleges in Niger State?

Table 4.2 Facilities available in carpentry and joinery workshop in government technical colleges in Niger State

S/N	**Items**	X_1	X_2	SD_1	SD_2	X_A	SD_A	REMARKS
1	~~Hand saw~~	~~3.57~~	~~3.50~~	~~0.88~~	~~0.89~~	~~3.54~~	~~0.89~~	~~**AGREED**~~
2	Hammer	3.09	3.60	1.14	0.81	3.35	0.98	**AGREED**
3	Work benches	3.59	3.50	0.73	0.82	3.55	0.78	**AGREED**
4	Screwdriver	2.19	3.73	0.97	0.69	2.96	0.83	**AGREED**
5	Jigsaw	3.75	3.30	0.45	1.06	3.53	0.76	**AGREED**
6	Carpenter Pencil or marker	3.44	3.23	0.93	0.94	3.34	0.94	**AGREED**
7	Tape	2.81	3.80	1.03	0.48	3.31	0.76	**AGREED**
8	Chisel	3.50	3.93	0.94	0.37	3.72	0.66	**AGREED**
9	Scissor	3.50	3.73	0.97	0.69	3.62	0.83	**AGREED**
10	Power drill	2.81	2.40	0.98	0.50	2.61	0.74	**AGREED**
11	Circular saw	2.81	2.07	1.23	0.98	2.44	1.11	**DISAGREED**
12	Utility knife	2.16	3.37	0.81	0.89	2.77	0.85	**AGREED**
13	Mallet	3.00	3.60	1.01	0.81	3.30	0.91	**AGREED**
14	Claw hammer	3.88	3.50	0.35	0.82	3.69	0.59	**AGREED**
15	Nail set	1.97	1.93	0.81	0.74	1.95	0.78	**DISAGREED**
16	Hand plane	3.47	2.80	0.73	1.24	3.14	0.99	**AGREED**
17	Palm sander	2.09	2.17	0.81	0.79	2.13	0.8	**DISAGREED**
18	Sliding bevel	2.16	3.73	0.79	0.58	2.95	0.69	**AGREED**
19	Layout square	3.09	3.10	1.06	1.03	3.10	1.05	**AGREED**
20	Ruler	2.78	2.60	0.94	1.16	2.69	1.05	**AGREED**

Key: X_1 = Mean of Instructors X_2 = Mean of Students SD_1 = Standard Deviation of the Instructors SD_2 = Standard Deviation of Students

$X_1 = \frac{X_1+X_2}{}$ $SD_A = \frac{SD_1 + SD_2}{}$

2 2

Table 4.2 above revealed that the respondents agreed on all the facilities available is carpentry and Joinery workshop except power drill, Nail set and palm sander.

RESEARCH QUESTIONS THREE

What are the basic skills required by the carpentry and joinery students of Government Technical Colleges in Niger State?

Table 4.3 Basic skills required by the carpentry and joinery students of Government Technical Colleges in Niger State

S/N	Items	X_1	X_2	SD_1	SD_2	X_A	SD_A	REMARKS
1	Ability for accurate measurement on materials	2.95	2.33	1.02	0.91	2.64	0.97	**AGREED**
2	Proper use of tools and equipments	3.62	1.95	0.50	0.80	2.79	0.65	**AGREED**
3	Ability to file and shape accurately	3.19	3.05	0.98	1.02	3.12	1	**AGREED**
4	Ability to for proper finishing	3.33	3.71	0.48	0.46	3.52	0.47	**AGREED**
6	Proper arrangement of materials In processes	3.19	2.57	0.98	0.68	2.88	0.83	**AGREED**
7	Ability to observe safety rules during practical projects	2.14	3.38	1.15	0.50	2.76	0.83	**AGREED**
8	Ability to evaluate materials in	2.14	2.43	1.15	1.21			

	carpentry and joinery practical project					2.29	1.18	**DISAGREED**
9	Ability to cut materials effectively	1.71	2.58	0.85	0.98	2.15	0.92	**DISAGREED**
10	Ability to nail and join woods properly	3.90	2.21	0.30	0.68	3.06	0.49	**AGREED**

Key: X_1 = Mean of Instructors X_2 = Mean of Students SD_1 = Standard Deviation of the Instructors SD_2 = Standard Deviation of Students

$X_1 = \frac{X_1+X_2}{2}$ $SD_A = \frac{SD_1 + SD_2}{2}$

Table 4.3 above revealed that the respondents agreed on all the basic skills required by the carpentry and Joinery students except ability to evaluate materials in carpentry and joinery practical projects and ability to cut material effectively.

RESEARCH QUESTIONS FOUR

How can the qualities of instructors improve carpentry and joinery in Government Technical Colleges in Niger State?

Table 4.4 Qualities of instructors improve carpentry and joinery in Government Technical Colleges in Niger State.

S/N	Items	X_1	X_2	SD_1	SD_2	X_A	SD_A	REMARKS
1	Instructors should be able to observe safety rules and regulations during practical works	2.81	3.86	1.21	0.65	3.34	0.93	**AGREED**
2	Instructors should be able to direct and guide the students on the practical project	2.24	2.43	1.18	0.93	2.34	1.06	**DISAGREED**

3	They should be able to transfer technical knowledge and practical skills to real job situation	3.19	3.90	1.03	0.44	3.55	0.74	**AGREED**
4	They should be expose to dynamic nature of technological education	3.38	3.71	1.07	0.64	3.55	0.86	**AGREED**
5	The instructors should be able to have Practical experience in prefabricated timber components	3.57	3.10	0.75	1.04	3.34	0.90	**AGREED**
6	Able to design and make cutting list to guide the details of carpentry and joinery practical	3.14	2.43	1.24	1.12	2.79	1.18	**DISAGREED**
7	They should be able to use appropriate tools and equipment, driving tools during practical project	3.67	3.33	0.58	0.97	3.5	0.78	**AGREED**
8	Instructors should be able to interpret job design and drawings	3.24	3.33	1.04	1.06	3.29	1.05	**AGREED**
9	They should be able to observe and use correct operation procedures appropriately to specific job tasks	3.81	3.38	0.51	0.86	3.60	0.69	**AGREED**
10	They should ensure proficiency in the use of tools and equipment's	3.62	3.67	0.80	0.80	3.65	0.8	**AGREED**
11	Instructors should be able to teach and perform practical properly	3.48	3.76	0.93	0.54	3.62	0.74	**AGREED**

12	The instructors be able to adopt correct and standard marks for a given project work	3.71	3.81	0.56	0.51	3.76	0.54	**AGREED**

Key: X_1 = Mean of Instructors X_2 = Mean of Students SD_1 = Standard Deviation of the Instructors SD_2 = Standard Deviation of Students

$$X_1 = \frac{X_1+X_2}{2} \qquad SD_A = \frac{SD_1 + SD_2}{2}$$

Table 4.4 above revealed that the respondents agreed on all the qualities of instructors to improve the carpentry and joinery except No. 2. (*Instructors should be able to direct and guide the students on the practical project***)**

HYPOTHESES TESTING

Hypotheses One

Ho_1: There is no significance difference in the mean responses between carpentry and joinery instructors and students on the method of teaching

Table 4.5 T-Test Analysis difference in the mean responses between carpentry and joinery instructors and students on the method of teaching

Item	N	Mean	Std. Deviation	t	P	Remark

INSTRUCTORS RESPONSES	27	56.71	3.783	2.185	0.034	Significant
STUDENTS RESPONSES	272	59.27	4.315			

Hypotheses Two

Ho_2: There is no significance difference in the mean responses between carpentry and joinery instructors and students on the facilities available in the workshop

Table 4.6 T-Test Analysis difference in the mean responses between carpentry and joinery instructors and students on the facilities available in the workshop

Item	N	Mean	Std. Deviation	t	P	Remark
INSTRUCTORS RESPONSES	27	74.52	4.457	0.164	0.878	Not Significant
STUDENTS RESPONSES	272	74.73	4.495			

Hypotheses Three

Ho_3: There is no significance difference in the mean responses between carpentry and joinery instructors and students on the basic skills required

Table 4.7 T-Test Analysis difference in the mean responses between carpentry and joinery instructors and students on the basic skills required

Item	N	Mean	Std. Deviation	t	P	Remark
INSTRUCTORS RESPONSES	27	55.90	4.614	0.705	0.484	Not Significant
STUDENTS RESPONSES	272	56.87	4.911			

Hypotheses Four

Ho_4: There is no significance difference in the mean responses between carpentry and joinery instructors and students in the qualifications of teachers

Table 4.8 T-Test Analysis difference in the mean responses between carpentry and joinery instructors and students in the qualifications of teachers

Item	N	Mean	Std. Deviation	t	P	Remark
INSTRUCTORS RESPONSES	27	29.24	17.061			
				9.014	0.000	Significant
STUDENTS RESPONSES	272	58.93	5.078			

Findings

The findings of the study are stated as follows

1. The instructors of carpentry and joinery of government technical colleges in Niger State adopt most of the teaching methods listed except demonstration and experimental method

2. The facilities listed such as handsaw, hammer, workbench,screw driver, ruler, tape etc are available in carpentry and joinery workshop in government technical colleges in Niger State except circular saw, nail set and palm sander.

3. All the basic skills listed are required by the carpentry and joinery students of government technical colleges in Niger State except the ability to evaluate materials in carpentry and joinery practical project and ability to cut materials effectively.

4. The qualities of instructors listed are needed to improve carpentry and joinery in government technical colleges in Niger State expect Instructors should be able to direct and guide the students on the practical project that was disagreed.

Discussion of the findings

The findings of the study revealed that the methods of teaching adopted by the instructors in government technical colleges in Niger State include; collaboration, classroom discussion, field work, project etc which will help to improve the students knowledge and also help them during practicals

The findings of the study indicated that all the facilities listed are available in the carpentry and joinery workshop in government technical colleges in Niger State except power drill, nail set, palm sander, sliding bevel and layout square. This means that there is no facilities such as the power drill, nail set, palm sander, sliding bevel and layout square in the government technical colleges of Niger State. Hainsaw (2012) expressed that instructional materials are kind of tools or equipments that can help effectively the instructor in theory teaching classroom or in practical assessment and Olurunyomi (2002) also pointed out that to ensure effective teaching and learning of manipulative skills, principals of government technical colleges should endeavor to make sure that teacher teach by making use of relevant facilities.

3. The findings also revealed that all the basic skills listed are all excepted by the carpentry and joinery students of government technical colleges in Niger State to help them in their practical both in school and the outside world. Skills determine your ability to execute plans and achieve your goals. Skill is the capability of accomplishing a job with precision of certainty, practical knowledge in combination with ability, cleverness and expertness (Abdullahi, 2010)

4. The findings of this study shows that all the qualities listed are all need in an instructor to help in lesson delivery, observation of students during practicals for proper corrections and also help in the interpretation of job designs and drawings. Fafunwa (1995) remarked that the qualities of

all other professions are influenced by the caliber of teachers because adequate training cannot take place without competent teachers. Also Tayo el at (2009) stated that, the future of educational and technological development of Nigeria depends on the quality of teachers, because they teach the students who are expected to be productive workers and leaders of tomorrow.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of the study

The purpose of the study was conducted to improve the carpentry and joinery students produced by the Government Technical Colleges in Niger State. To determine the methods of teaching used by the instructors of carpentry and joinery in government technical colleges in Niger State, the facilities available in the carpentry and joinery workshop in government technical colleges in Niger State, the basic skills required by the carpentry and joinery students in government technical colleges in Niger State, the quality of instructors for the carpentry and joinery in government technical colleges in Niger State.

Related literature were reviewed in the study. The mean, standard deviation, t-test were used as statistical tools to analyze the data collected from the respondent (carpentry and joinery instructors and students). A questionnaire was used as instrument for data collection which was analyzed according to the research question for this study, four research questions were formulated and tested at 0.05 level of significance.

Conclusion

The introduction of carpentry and joinery in Government Technical Colleges is to encourage the acquisition of practical skills by the students so that they can use their hands in making and repairing of items that are made of wood.

Government Technical Colleges requires right teachers with right attitudes because it is a practical oriented programme. They should have practical skills and entrepreneurial experience at workshop floor of industry and good background in engineering design, such teachers should be in a better position to transfer practical skills know-how and techniques of production and services to their students. However, highly skilled technicians and Craftsmen in various industries could be engaged on part time teaching to adequately impact practical experience to the students. Also, capable skilled or retired person can be hired to teach the activity-based practical skills and transfer their wealth of knowledge to the students.

Recommendations

The following recommendations are made base on the findings

1. Niger State Government should employ quality and skilled technical instructors with the right attitude in the school to improve carpentry and joinery practical project in the schools

2. Government technical colleges instructors should involve students in practical project continuously in order to improve their practical skills so that they can function well after graduation

3. Machines, tools and equipment, training materials should be provided to enable the student to learn and also be familiar with them

4. Capable retired skilled persons can be hired to teach on part time to impact their knowledge to the students.

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APPENDIX A

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENT

Department of Industrial and Technology Education

Federal University of Technology,

Minna,

Niger State.

Date…….

Sir,

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENT

I am a B.Tech. student of the Department of Industrial and Technology Education of the Federal University of Technology, Minna. I am carrying out a study on the topic: "**STRATEGIES FOR IMPROVING CARPENTRY AND JOINERY PRACTICAL PROJECT IN GOVERNMENT TECHNICAL COLLEGES IN NIGER STATE."**

I sincerely solicit your assistance in validating the instrument in line with the aim and objectives of the study. Please feel free to correct, reframe, cancel, add or subtract from the items in order to maximize the validity of the instrument.

The objectives and the instrument are provided for you to aid the process of validation.

I will be grateful for your kind assistance.

Yours Faithfully,

(Signed)

BESSE CYNTHIA
2015/1/55250TI

VALIDATION CERTIFICATE

This is to certify that I validated the instrument titled: **STRATEGIES FOR IMPROVING CARPENTRY AND JOINERY PRACTICAL PROJECT IN GOVERNMENT TECHNICAL COLLEGES IN NIGER STATE."**

Validate's Name……..

Department/Institution…….

Signature/Date……

Validate's Name……..

Department/Institution……..……..

Signature/Date…….…..

Validate's Name……

Department/Institution……..

Signature/Date……