TECHNIQUES FOR ENHANCING COLLABORATION BETWEEN WOODWORK INDUSTRIES AND TECHNICAL COLLEGES IN MINNA METROPOLIS NIGER STATE

BY

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2014/1/53918TI

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FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE.

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION, SCHOOL OF TECHNOLOGY EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF TECHNOLOGY (B. TECH) DEGREE IN INDUSTRIAL AND TECHNOLOGY EDUCATION.

July, 2021

DECLARATION

I, **BALA, Umar Saidu**, with matriculation number **2014/1/53918TI**, 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 of this or any other University.

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Sign and Date

2014/1/53918TI

CERTIFICATION

This project has been read and approved as meeting the requirement for the award of B. Tech degree in Industrial and Technology Education, School of Technology Education, Federal University of Technology, Minna.

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External Examiner Signature and Date

DEDICATION

With profound joy and gratitude in my heart, I dedicate this project to God Almighty for His Unshakable and Unbreakable Faithfulness. His Divine and constant guidance in my life has made this project a reality today. Thank God.

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ABSTRACT

This study examined the strategies and techniques for enhancing collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. Three research questions were developed to guide the study and three null hypotheses were tested at 0.05 level of significance. It employed a survey research design. The study used a four-point scale questionnaire, which contains a total of 30-items, as instrument. In all, 58 technical teachers and 22 supervisors made up the sample for the study, giving rise to a total sample size of 80. The result showed Provision of internship training and on –the- job training by industries, Involvement of industries in evaluating students relevant learning experiences acquired in the technical colleges can improve school-industry partnership. The study recommended among other things, Industry base job skill should be included in the curriculum of technical colleges for skill acquisition.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

A nation is made up of people whose individual contributions enhance national growth and development. An individual need to develop and acquire necessary skills to enable him meet his own and national aspirations. Vocational and Technical Education leads to the acquisition of skill and techniques in chosen occupation or profession to enable an individual earn a living. The Federal Government of Nigeria (FGN, 2004) viewed vocational and technical education as those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. The major aim of vocational and technical education is to provide education for self-reliance. Joshua (2002) viewed vocational and technical education as a type of education made up of theoretical and practical instruction given to those who wish to be employed in commerce and industry or any type of enterprise that requires the use of tools and machinery for the operation, production, preservation and distribution of goods and services. However, from the definitions above, it could be understood that vocational and technical education is that aspect of education that prepares individuals with necessary skills, knowledge and attitudes needed for a purposeful employment to earn a living. Vocational and technical education is the type of education offered in technical colleges.

Okoro (2001) stated that technical colleges are regarded as the principal vocational institutions in Nigeria which are established to prepare individuals to acquire practical skills, knowledge and attitudes for effective participation in the world of work. Okoro stated further that technical colleges give training intended to prepare students for entry into various

occupations. The national policy on education (FGN, 2004) outlined the aim of technical colleges which include preparation for useful living within the society and preparation for higher education. It means that the quality of instruction at technical colleges, must in addition to the development of thecognitive or intellectual abilities of the youth, be oriented towards the acquisition of appropriate work skills, abilities and competences for the individual to live and contribute to the development of the society. Orebanjo (2010) also recorded that good human resources particularly well trained, qualified and devoted teachers help students in various aspects of development in practical projects and skills acquisition in woodwork related services.

Technical college is a branch of vocational and technical education which train students with several skills in different crafts Okorie (2005). Woodwork technology is one of the programmes offered in technical colleges in Nigeria. Wagner and Kicklighter (1986) stated that woodwork technology requires technical skills from students for good performance in woodwork trades such as; frame construction, carcase construction, stool construction and the skills in the use of tools and equipment to effectively conduct in woodwork practical project. Hence students in woodwork technology need to acquire appropriate skills in order to be employable in woodwork industries.

An industry is a place where people are involved in producing a particular good or providing a particular service. Woodwork industry is a place where people are involved in producing a particular good or providing a particular service. Woodwork industry is define as an organization whereby activities such as woodworks take place and various operations of field take place. Jimoh, , Maigida, & Adebayo (2013) stated that the woodwork industry could be a manufacturing, producing and distributing house or an environment where goods and services are organized by technical experts who possess the technical and vocational competencies for work. Kaduhur (1997) stated that industries always allege that technical colleges teach skills

which are too remote from those required. Gofwen (2007) pointed that technical colleges and woodwork industries have different roles to play in technical man power production in Nigeria. In other for woodwork students to acquire adequate there must an effective collaboration between the technical college and the woodwork industries.

Collaboration is defined as an agreement between two or more bodies on achieving common goals between the partners Gofwen (2007). Collaboration can involve more than two people or body, Collaboration also occur between industries such as Woodwork industries and educational bodies such as technical colleges. Woodwork industries go into Collaboration with technical college in order to bridge theoretical knowledge and practical knowledge together Jimoh, Maigida & Adebayo (2013). As a result of training individual with different skills in crafts, woodwork industries and technical colleges come together in Collaboration in order to equip students with adequate practical skills needed in their field of learning. Improving Collaboration between Woodwork industries and technical colleges is a mutually accepted training Collaboration in which school learning experience (knowledge and practical skills) are complemented through on the-job training in an industry.

School based learning activities are those activities that are provided by the school for effective production of man power. Orikpe (1993) explained that the school based learning activities should involve provision of qualified technical teachers, provision of suitable class room facilities and instructional materials. Harmon (1997) stated that school based activities should focus on career exploration and counseling of students, providing program of study based on higher academic standard, integrating academic and vocational learning, and evaluation of students' academic strength and weakness. In addition, Dyankov (1996) pointed out the responsibilities of schools to include: – provision of necessary man power, allocation of training time table and the length of training, planning in cooperation with industries

where training should be carried out, evaluation of students to find out the extent to which they have acquired skills they are supposed to acquire, supervision of students during training and setting the procedure that facilitate students participation in additional training in industry based environment. The school – based activities should be naturally complemented with the industry-based activities.

Industrial- based or work-based learning is a planned work experience, work place mentoring and instructions in electrical industries. Woodwork industries in collaboration or cooperation with the technical colleges should provide work based learning activities such as internship, on-the-job training, mentoring and cooperation education (industrial attachment) to expose students to new technologies. Dyankov (1996) stated the function of woodwork industries to include: assessment of training resources of institution to find out if the institutions are capable of giving the students adequate training and background on those occupations required in the industries. If students from technical colleges are to be adequately skilled and not to remain jobless, it is obvious that there is need for industries to intensify efforts to train students. Scholars, organizations and concerned Nigerians have advocated for ways that could enhance collaboration between technical colleges and woodwork industries among which could also be done administratively by government and regulating body. Administration in the context of this work is the meeting point between the technical colleges and the woodwork industries, which is the SIWES, established by Industrial Training Fund (ITF), not how the technical colleges and woodwork industries administration are done.

Administrative strategies involved those activities set by the government as a meeting point for training the students, and other strategies set by the government to enhance technical colleges and woodwork industry relationship, to equip students with necessary skills needed for world of work. But not how the technical colleges and woodwork industries

administration is done respectively. Jimoh, Maigida, & Adebayo, (2013) noted that an encouraging step towards improving collaboration between woodwork industries and technical colleges in Nigeria was the establishment of Industrial Training Fund (ITF) in 1970. ITF is charged with promoting and encouraging the acquisition of skills in industry and commerce to meet the need of the economy. In an attempt to achieve this aim, ITF initiated Student's Work Experience Scheme (SIWES) in 1973 to provide avenue for students to have industrial exposure in their own disciplines during the course of study. However in the curriculum and course specification of general installation and maintenance work by National Board for Technical Education, NBTE (FRN 2001), supervised industrial Training/Work Experience (SIWES) is compulsory for Advance National Technical Certificate (ANTC). But only accounts for about 5% of the total hour required. This is not even enough for skill acquisition. Those at the National Technical Certificate (NTC), at year 1-3 now SS1-3 do not have such opportunity. Olaitan and Ali (1997) opined that the selection of contents in technical education curriculum involves job identification, task analysis, and job clustering. This is to ensure that the specific skills are learnt and acquired by the students to employ and to be self-employed.

Unfortunately, it appears that most graduates of technical colleges in Nigeria, especially Niger State lack adequate practical skills to work in the woodwork industries or become self-employed. But rather, they prefer to gain office work where no practical skill is required (Ogbuanya and Ohanu 2010).This may be attributed to their inability to learn the required skills in the course of their studies, to enable them enter the world of work. Consequently strategies should be created to enhance collaboration between woodwork industries and technical colleges for effective training of vocational personnel.

1.2 Statement of the Problem

Individuals trained in technical colleges are expected to acquire skills for manufacturing, servicing in woodwork industries, power generation and utilization. But it appears that the skill acquisition of technical college students in Niger state is inadequate, and below expectation (Ogbuanya and Ohanu 2010). This may be due to low level of exposure of students for training in practical skills in the school workshops and laboratories, students over population in the class, teacher's incompetence, unfavourable learning environment, inadequate equipped workshops and laboratories for training experience, inadequate tools and training materials, and classroom facilities (Ogbuanya and Ohanu 2010). This makes the realization of the goal for technical colleges in most states in the country including Niger state to be far below expectation. Therefore, to bridge such gap between theory and practice, collaboration between woodwork industries and technical colleges is necessary to assist the learner develops functional skills for the world of work.

Most countries have found an effective way to train their technical man power in new technologies through cooperation/collaboration between industries and technical institutions. On the contrary in Nigeria including Niger state inadequacy in collaboration between woodwork industries and technical colleges has resulted in dearth of skilled and technical man power. Even though students industrial works experience scheme (SIWES) which is intended to back up training of students with relevant job experience to expose them to latest technological advances in industries is not well implemented at the National Technical Certificate (NTC) year 1-3 now SS1-3. Hence there is a need to determine the administrative strategies, school-based and industry based activities that will enhance collaboration between woodwork industries and technical colleges to expose students to more practical and skills acquisition in Niger state with state of the art of technologies in woodwork industries.

1.3 Purpose of the Study

The purpose of this study was to identify techniques for enhancing collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. Specifically this study will determine:

1. Administrative activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

2. School-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

3. Industry-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

1.4 Significance of the Study

The study would be of benefit to the following:- Technical colleges and other vocational training centres, woodwork industries, students, Government and National Board for Technical Education (NBTE) and curriculum planners.

Technical colleges and vocational training centres will benefit since there have been no guidelines on how collaborative training will be carried out. If the guidelines are identified and included in their training program or curriculum it will be used in the training to equip the student's trainee with adequate skills to handle the equipment and machinery of woodwork industries in this global technological advancement. There will be staff development when woodwork industries are involved in training technical teachers through workshop and seminars. Sharing of ideas would increase as technical teachers will be well equipped to train and impart necessary skills to students. Technical colleges can organize conferences in conjunction with woodwork industries on areas related to woodwork industry

and technical colleges' collaboration, to come up with some guidelines on how to use and enhance collaboration between technical colleges and woodwork industries for skill acquisition among technical college students.

The findings from the study could be of benefit the woodwork industries and because collaboration between woodwork industries and technical colleges will enhance the exposure of students to real life experience during their training. Industrial equipment, machineries and tools would be properly handled, operated, managed and maintained by the students for effective performance and productivity. The efficiencies of many woodwork industries would be very high when equipments are functional and when skilled and capable craftsman handle them. Without collaboration, many woodwork industries and other sectors of the labour market encounter regrets due to poor performance of technical college products. Because training would be organized for them on skill training to meet the need of the woodwork industries before they work on and with machines. This may turn out to be waste of resources and time hence low productivity with high demands. Woodwork industries would also be encouraged to accept, employ technical college products after graduation because the student would have received training due. It would also reduce cost of retraining the craftsmen after employment, because the students had earlier received training from them during their course of studied through SIWES and cooperative education.

Students will benefit from the study, since collaboration between woodwork industries and technical colleges must have exposed the students to real life situation on industrial equipment, tools, machine to improve their technical skills in line with the present technological advancement. It will also help the students with step-by step training from the industries and to systematically expose them to the latest technological advancement in the woodwork industries and to enhance on-the-job school-industry experience. The students in

turn would acquire knowledge and skills in maintenance work that has latest technological devices and methods of operations, maintenance and troubleshooting. A skilled craftsman would effectively design, construct, installed, operate and maintain equipment, machinery, tools and other related appliances in this global technological advancement. This would enhance the entrepreneurial competencies of the craftsmen thereby improving the socio-economy standard of the society. Skilled craftsmen will confidently expand their services by being self-reliance. Skilled craftsman can also establish their own workshops at different areas in Niger state and the country. This can also serve as training centres for prospective craftsmen on apprenticeship training, because of their exposure in industrial experience during their training.

Government will also benefit from this study as it will help them in making policy that can serve the interest of the skilled personnel. The study will also help policy makers to improve on the policy on education that would strengthen the relationship of technical colleges and woodwork industries for human capital development.

National Board for Technical Education (NBTE) as a regulatory body for all technical programmed of technical colleges would find the information on the use of collaboration useful for enhance collaboration between technical colleges and woodwork industries for skills acquisition. And would use it to guide the technical colleges in the country on how to go about implementing collaboration in the colleges. The information could serve as a basis for recommending to the NBTE possible areas of adjustment in the curriculum of the technical colleges. This is to accommodate the demand arising from the use of collaboration for the enhancement of skills acquisition by students in technical colleges.

Curriculum planners will benefit, because it would help them to consider all the activities that are necessary to plan and develop technical education curriculum that will provide the kind of man power needed in the society.

1.5 Scope of the Study

The study will be carried out to determine the techniques for enhancing collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. The study will specifically cover the activities of woodwork industries and technical colleges in administrative strategies, school-based activities and industrial based activities for enhancing collaboration between woodwork industries and technical colleges and for skills acquisition in Minaa metropolis, Niger state. Administrative strategies, school-based activities, industries-based activities constitutes the activities need to enhance collaboration between woodwork industries and technical colleges therefore, the study will seek opinion of industrial supervisor and technical teachers as the respondents on the administrative strategies, school-based activities, industrial-based activities that could enhance collaboration between woodwork industries and technical colleges.

1.6 Research Questions

The following research questions will guide the study;

1. What are the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?
2. What are the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?
3. What are the industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?

1.7 Hypotheses

The following null hypotheses formulated will be tested to guide the study at 0.05 level of significance.

H_{01} There is no significant difference in the mean responses of industrial supervisors and technical teachers on the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

H_{02} There is no significant difference in the mean responses of industrial supervisors and technical teachers on the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

H_{03} There is no significant difference in the mean responses of industrial supervisors and technical teachers on those industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of related literature to this study is organized under the following subheadings:

2.1 Theoretical Framework

2.1.1 Theory of Skill Development

2.2 Conceptual Framework

2.2.7 Concept of collaboration

2.2.8 skill acquisition

2.2.9 School –industry collaboration for technology growth

2.2.10 Administrative strategies for improving school-industry collaboration

2.2.11 School-based activities that will improve school-industry collaboration.

2.2.12 Industry-based activities that can improve school-industry collaboration.

2.3 Related Empirical Studies

2.4 Summary of Review of Related Literature

2.1 Theoretical Framework

2.1.1 Theory of Skill Development

Theory of skill development was propounded by Cratty, (1973). The theory states that individuals have tendency of developing skills in an occupation as a result of continuous or repetitive practice. It is stated that practical skills are essential skills that could be acquired through repetitive means in all technical occupations or professions. It is on this premise that the major objective of all Technical Colleges' programmed should make provision for practical skills to its graduates for self-reliant. Therefore the teaching of vocational education at technical college level should mostly focus on practical skills so as to enable the students acquire marketable skills. Technical Colleges programmed therefore cannot be said to have accomplished without practical skills manifestation.

It is also stressed that skills acquisition cannot be expressed in word but only through demonstration. Theory of skill development is related to the present study in that graduates of and maintenance work technology need to develop skills for effective performance in their various industries or workplaces. Development of relevant skills makes them fit into various sit or positions in relevant industries. Without skills being develop there will be unemployment among graduates of general installation and maintenance work engineering craft students.

Skill development is a key factor in the employability of workers and the sustainability of enterprises, it is one of the objectives of skills development system to ensure that the skills acquired match the skills valued in the work place. Skills development systems must also help workers and enterprises adjust to changes and handle new conditions by constantly improving their skills to meet up with the climatic change, globalization, demographic trends, technological innovation and/or financial crisis. This is in line with the theory of technical

and vocational skill development (TTVSD) by Stevenson (2005). TTSD states that improvement needs in skill development under lie vocational choice development, employability, mobility and sustainability of socio-economy of energy progressive society. Hence this theory is relevant to this study because technological innovations and advancement in general installation and maintenance works is complex and each subsystem of the modern general equipment, machineries, and tools is indeed a challenge to industries in Nigeria if there is no workforce to man them for high productivity.

2.2 Conceptual Framework

2.2.1 Concept of collaboration

No country can give up on training young people; their technical skills are needed to increase productivity in both the formal and the non –formal sector and to contribute to the economic growth. In the early 1990's, a number of donors, particularly the World Bank began to emphasized the need to extend Private Technical Vocational Education for several reasons; to supplement government limited financing capacity to increase efficiency and innovation to broaden access to technical and vocational education, and to responds more rapidly to the training requirements of high –growth markets (FRN, 2005).

Public Private Collaboration and cooperation are critical to the development of high quality vocational education and Training (VET) because they allow for regular communication between employers (industries) and VET providers (technical institutions). This communication also allows employers to have input into the curriculum of VET and often gives them recruiting tool to attract skilled workers (Grubb, & Lazerson, 2004).

Cooperation between industry and technical institution require new ways of thinking. It requires a considerable formal flexible education system to share the needs, problems; issues, strength and weakness of vocational programmed. Cooperation between technical institution

and industry also require teachers and administrators to share the internal workings of technology education with representative from industry. Successful collaboration can generate mutual respect and trust among school and industry leaders and allow mutual problems to be solved and share goals reached. These outcomes may help educational leaders increased access to and improve the quality and efficiency of technical education for employment programmed.

Scholars in the field of vocational and technical education have continued to call for a better and improved relationship between technical institutions and the industries in which they serve. And there was a called for the need for interaction between the industry and technical colleges in order to produce the right type of engineers, technologists, technicians and craftsmen to serve the country. Since the main institution's training facilities are outdated and inadequate, making practical training difficult to meet the modern need trends in the industries (Audu, Abdulkadir and Abdul, 2013). Hence a change of direction is required to close up the widening gap between technical vocational education TVE (Technical colleges graduates and the industry in terms of the requisite skills required for employment in the industries. Therefore it is a matter of necessity that government should enact a law to compel cooperation between technical institutions and the industries to work out a programmed for the overall educational development of young Nigerians.

The experience of United State of America is pertinent with regard to industry and educational institution collaboration. Sherman (1983), recalled that the concept of educational institution and industry entering into collaboration is not new. He observed that industries of the united states of America have been cooperating with educational institutions to educate young and adults for more than a century and that the value of industries input into the

educational arena is reaching new heights. According to Sherman, this collaboration is viewed as one method of providing innovation and quality for schools of future.

Roth (1987) in his own contribution outlined four ways in which collaboration may benefit schools and industries as follows:

I. Providing other individuals and institution opportunities to perceive another organization's point of view and a chance to win and ally.

II. Expanding the capacities of participating institutions to deal with the challenges that each entity must meet in its line of operations and helping to build the kind of understanding that create support.

III. Serving as a means of contributing to quality education programmed.

IV. Bringing increased access to knowledge, time, human resources and financial assistance from other sectors in the community as well as reducing the cost and liability of doing business for each participant.

Clark (1984) reported that one of the education and training thrust of the 1980's has been the emergence of new collaboration and cooperation effort between industry and technical institution. According to him, "These collaboration and cooperation efforts can work to the benefit of both education and industry program". Similarly, the United States office of Technology Assessment (1984 as cited in Gofwen 2007) reported that as the rate of technological change accelerates, both industries and educational institutions are faced with increasing and changing demands for technological related instructions. But in Nigeria, the industries do not have much involvement in training, funding and curriculum development of our technological institutions which are the trademark of industrialization in the development nations. (Olorufemi and Ashaolu, 2008). Audu,(2013) stated that, there is no link and

interaction between the industries and the technological institutions in research activities and manufacturing. Hence, business and industry should become increasingly involved in education and training.

One of the ways by which students who involved in vocational technical programmed have gained work experience over the years is the supervised Work Experience (SIWES) being organized by Industrial Training Fund (ITF) in 1973. According to Obanor and Kwasi (2013), it was established to solve problem of lack of adequate practical skills preparatory for employment in industries by Nigeria graduates of tertiary institutions. The scheme exposes students to industry based skills necessary for a smooth transition from classroom to the world of work. It affords students of tertiary institutions the opportunity of being familiarized and exposed to the needed of experience in handling machinery and equipment which are usually not available in the educational institutions. But such opportunities were not made available to students of technical colleges.

However, no doubt, the SIWES programme has failed, especially for the purpose it was established (Obanor, 2013). Most students leave school in search of companies to undergo the industrial training program. Some get lucky and get a suitable place of their choice, while others are being frustrated to stay at home during this period, due to rejection by numerous companies applied as a consequence of funding or population limit in the specific industry. Some will say we are in a world where "connection" is needed to secure a suitable working place. Also, some students acquire an industrial training placement that is not related to their course of study, maybe they got frustrated of searching for a relevant placement or become of the enormous stipend they would receive. With regard to technical colleges in Nigeria, this scheme appears to have met with a lot of obstacle a stated above at the level of implementation. One of these obstacles was identified by Yabani (1992) as lack of industries

in the environment where most technical colleges locate. This perhaps, prompted the need for proper collaboration between industries and technical colleges as obtainable in other parts of the world for relevant skill acquisition.

2.2.2 Skill Acquisition

People working in the specialized fields required technical and knowledge in order to meet the requirements of continually changing environment of the various woodwork industries. The basic skills are needed to function effectively in the world of work. Technical competence or skills refers to both the theoretical knowledge and practical skills required by the students in the course of their education and training in the technical colleges. It also means to acquaint the graduates with all the basic knowledge and practices which they need to be able to function effectively in the world of work (0zioko, 2007).

Technical competence is also referred to, as the technical skills or industry based skills embedded in the school curriculum (Ominabo, 2005). According to Osuala (1998), technical skills refer to the ability to do or perform an activity in relation to some meaningful work. He further stressed that it presents challenges to the learner by integrating practical work, theoretical knowledge, common sense, observation ability and encouragement in an occupation. Okorie (2000) asserted that technical skill involve application of mental and physical activities. He also described it as ability to handle objects in a skillful manner. According to him it also enables an individual to develop physical, social, intellectual, economic and emotional capabilities. Okorie further pointed out that an individual who wants to acquire technical skills must possess qualities such as interest, ability, aptitude, practice, personality characteristics and physical qualities.

The acquisition of psychomotor skills is central in vocational technical education. Teachers of technology are therefore expected not only to possess relevant production skills but are

also required to know the process of developing psychomotor skills and to focus on them when they teach their own students. This will enable the teachers to set up appropriate training techniques that will guide them in teaching students most effectively and efficiently.

An understanding of the process by which psychomotor skills are acquired is a basic condition for effective vocational education training. This process has variously been described by several scientists (Gofwen, 2007). The studies of these authors in the theories of skills acquisition have culminated into what has been known today as the six levels of steps of psychomotor skills acquisition, namely: perceiving, motivating, performing, adapting and innovation.

Perceiving with respect to teaching psychomotor skills, in vocational education, Hammond and Lamar (1988) stressed that the teacher should develop in students a strong desire to possess the manipulative ability. He should be genuinely interested in their skillful performance. It may be desirable or even necessary to have the students see a product that has been produced by a skilled person or in some cases, see the skill performance while it is in progress. This may not only motivate the students, it could develop in them an ideal. The student must know why the skill is needed if they want to possess it and they must feel the need for that ability. Merely telling them (as it is often done in theory lessons) that one ought to know how to do this will not supply a vigorous motive. The authors then concluded that the teacher should see that the students have a clear and correct picture (or perception) of what is to be achieved for motivation; otherwise not much improvement can be achieved.

Motivation in describing psychomotor skills acquisition, Sentile (1972 as cited in Gofwen, 2007) indicated that setting goals and / or solving problem must be the first step in creating motivation in the learner or trainee. Motivation involves satisfaction, needs, rewards, and/or punishment. Initial arousal of an intention seems to be prerequisite which operates as a

trigger for further action. There are indications that engaging in an activity and practicing are meaningful only when the learner shows an appropriate indication of motivation. To this, Padelford (1984) states that motivation or incentive seems to be the activator and sustainer of action or thought when acquiring a psychomotor skill. Goals are an essential part of the process of acquiring psychomotor skills. They may be externally directed by another person or internally directed or both. It looks like many psychomotor skills are attained because the learner wants to, or because it feels good to the learner. It was pointed out that various kind of external stimulation and positive internal feedback make possible a high level of achievement in psychomotor skills. In teaching and learning process both internal and external sources of motivation should be employed. Without effective motivation or incentive which may lead to imitation, psychomotor skills would not be acquired or may be poorly attained at best.

Imitation is the stage where the learner is involved in mental manipulation of the form, pattern, or sequence and or mimicking a series of patterns or procedures. In psychomotor skill acquisition, therefore, the learner receives the necessary cues, mentally manipulates the cues and organizes them into a series of set before attempting to perform a function.

As a practical way of assisting students to imitate Gall (1981) advised that the teacher should ask the students to name the important steps in doing what they are now ready to learn to do. Furthermore, the teacher should demonstrate the procedure, if it is difficult for the students to understand. Usually in learning from a demonstration, the students watch being done, and then try their hands, at doing what was demonstrated. The teacher should show and explain how to perform each operation step by step. The students should be made to go through the process each trying his hand at it. Performing operation is necessary to acquiring the skill; knowledge and imitation alone cannot develop a manipulative skill.

Performing, by same authors point to the fact that practice is necessary pre-requisite for learning a task and learning process with an increase in the amount of practice. Students in vocational technical education need to be given enough opportunities to practice what they are being though in theory lessons. Usually, the students will need to develop considerable skill before using operation on a large scale or on a valuable piece of work. To develop this degree of skill, repeated practice exercise may be used which involves various operations and standard of workmanship, Olaitan, (1999) stated that work experience will be effective in proportion to the specific experience for training habits of doing and thinking through repetitive performance. When such is done students may be able to adopt well.

Adaption is the ability to perform expertly to the ultimate goal of most psychomotor skill training but ideally it should go beyond that. Padelford (1984) recommended that certain psychomotor skill should be adapted to new situations (a sort of transfer of learning). Adapting according to Padelford, involves diagnosing and problem solving and the added dimension of creativity. Automatic action may be easier to evaluate, but vocational technical teachers should equally emphasize adaptive learning. This stem from the fact that transfer of learning is often required in problem solving situation which is a typical characteristic of the productive or service world. Adoption may bring about innovation.

Innovation is the highest level of psychomotor skill acquisition, which emphasizes the ability to experiment and create new forms of the learned skill. Singer (1981) stressed that the opportunity to express feelings and to gain a feeling of self-actualization are inherent in the innovative act. Innovation presents a challenge and an opportunity for fulfillment and positive self-concept. Expressing and symbolizing need not be restricted to the other fields of Endeavour but equally applicable to the fields of industry. Indeed, in the words of Padelford (1984) “that uniqueness and variation from standard forms characterize creative activity.

Innovation requires all the domains of learning and creativity, and much feedback. The need to provide adequate exposure to students who are enrolled in vocational technical programmed in practical skill areas while in school has variously been emphasized by vocational and technical educators. Olaitan, (1999) for instance observed that vocational technical education is education for work, hence technical teachers should expose trainees to learning in job related models and in an environment that depicts real work situations.

Ndinechi (1994) stressed the need to strengthen the links between learning in school and the practice of work with the aim of facilitating the transition from school to employment. Ali, in Olaitan, (1999), remarked that while many subjects may be more theoretical than practical, vocational technical education is more practical than theoretical, hence every effort must be made to expose learners to practical situations where skills and knowledge could be learned concurrently. Indeed, it may be said that any instructional arrangement that is initiated to facilitate the process of skills acquisition in vocational technical institution is a commendable innovation and a giant step in the right direction. The only way to learn practical skill is by doing. Since the ultimate goal of vocational technical education is preparing on individual for work, any learning situation that promotes the accumulation of theoretical knowledge only at the expense of practical interaction with the objects and equipment is not only operating contrary to the principles of vocational technical education but runs the risk of operating an irrelevant curriculum (Gowon, 2004).

2.2.3 School –Industry Collaboration for Technology Growth

Technological advancement is on the increase daily in some developed countries such that a piece of equipment becomes obsolete within a given period. Since the world today is a world of technology, the industrial sector in developing countries like Nigeria, being profit oriented are on the lookout for technological advances that could increase their profit margin in less

time with greater efficiency. According Netherland Organization for International Cooperation in Higher Education (NICHE, 2010) there are various challenges that TVE graduates are facing in terms of practical skills acquisition, in most developing countries, especially in Nigeria, TVE is narrow in scale, scope, quality and relevance. The programs are not relevant to the requirements of the local labor market, the curricular and syllabi are outof-date and the institutions lack the tools and equipment essential for practical skills acquisition. Where present, the equipment in workshops and laboratories is often out-of-date, bearing little resemblance to the technologies presently used by industry (NICHE, 2010). Insufficient training equipment leads to trainee overcrowding during practical lessons, with most of the students only observing the demonstration and not having the chance to get some hands-on practice. Due to the fact that the institutions are poorly resourced, the education and training remain theoretical and the graduates are not considered more skilled than their academic counterparts by the labor market. The institutions thereby acquire a poor image, and produce graduates with lower employability (NICHE, 2010). Olaitan, Nwachukwu, Igbo, Onyemachi and Ekong (1999) remarked that, training institutions in Nigeria as is characteristic of depressed economics are hardly able to review their facilities to keep pace with technological progress like in the other developed countries, the resultant effect of this situation is that the trainees from those institutions enter the world of work only to discover that the equipment with which they were trained have been modified or have drastically deviated from those in which they were trained with. This may be one of the reasons why private employers often contented that University and technical institutions have little or no practical work content (Okorie, 2000). In proffering solution to this problem, Okorie pointed that there should be a better cooperation between training institutions and private employers in order to improve the practical work content in training institutions. Commenting on the same subject, Olaitan (1996) remarked that solution to poor quality of graduates rest with forging closer links and

cooperation between industries and training institutions. He further stressed that employers of technical manpower, if they have a stake in the quality of manpower produced, would display greater commitment through job training and financial contribution to promote the quality of training in technical institutions. Such employer according to him having contributed materially; would be more forth coming in exposing trainees on industrial attachment to worthwhile work experiences that would enable them to acquire skills and knowledge in latest technologies and would help to evaluate their job performances.

In the same vein, Okolie (1991), observed that school- industry relation has not been given adequate attention in Nigeria, this he confirmed when he said that "in spite of efforts so far made, the level of cooperation between industries and technical institutions still fall short of what is envisaged in the policy". However, the interaction between technical institutions of higher learning and industries represents a means of contributing quality technical education programmed. Such high interaction is also needed in technical college's education. The more fact that vocational technical education exists to service the industry is enough reason for industry to forge a closed working relationship with the vocational education system. The challenge for industry to succeed in an increasingly competitive world market is contingent upon skilled personnel who learn, grow and adapt to the changing markets and technologies. Clearly, industry has a survival stake in quality of technical education programmed.

There are many different types of collaborative ventures between industries and technical institutions. Greenberg (1984) identifies the following six patterns of collaborations as follows.

- Cross training
- Cooperative work study
- Traditional pattern

- Adult and continuing education
- Share facility
- The consultant patterns.

According to Greenberg, most of these patterns overlap: for example, a community college may use share facilities while providing training for both industry and educational institutions school trainees. He defined the traditional pattern as a model where an educational institution typically a community college, delivers some or all the training needed by a particular business or industry, this often overlaps with the adult and continue education pattern where a student may receive a degree or certificate while receiving specific jobrelated training.

The oldest and most common collaborative efforts between industry and educational institutions in the united states according to Greenberg is the cooperative work study programmed that made it possible for students to received part of their education on the job where they can gain skill that are best learned within all the problems and constraints that are part of a private sector operation. This according to Greenberg is a collaborative programmed that utilizes a combination of industry and educational institution personnel, facilities and curriculum. Cross training efforts permits both educational institution and industry to pool their resources together for the training of students. Greenberg emphasized that college and university are well suited for the consultant pattern of collaboration.

The united states of America's experience shows that relationship between colleges and industries is very cordial and students can acquire the necessary skills. In recent study conducted by UNESCO (2002), it was reported that most of the countries' technical and vocational system have either formed effective links with industries and commerce or are more moving towards this direction. UNESCO (2002) further stressed that in most of the industrialized countries, training in new technologies is provided within workplace (in some

large – scale enterprises) or at the premises of technical and vocational education institutions, which are well equipped with necessary tools to deliver such training.

In cases where technical and vocational education institutions lack sufficient equipment, machinery, hard and software to provide such training, in order to introduce new technologies, some large enterprises and corporations provide the necessary funds or equipment and facilities that are needed for cooperative industry/institutional training in the use of new technologies. In Germany the "Dual System Qualification" in vocational training was introduced (Rainer, 1992). In the Dual System qualification, vocational schools and industry training start at secondary II level. The large part of the learning takes place in the production sector than in school. China too was not left out in skill acquisition; such education is given to her students at factories, farms and mines before proceeding to higher institutions (Aina, 2002).

In view of what is obtained in these developed countries there is need for collaboration between institutions and industries in the training of our work force for the nation Nigeria particularly in Niger state.

2.2.4 Administrative Strategies for Improving School-Industry Collaboration

Scholars, organizations and concerned Nigerians have advocated for a number of ways that could improve collaboration between technical institutions and industries. Dikko (1994) observed that an encouraging step towards establishing relationship between technical institutions and industries is the introduction of the Students Industrial Work Experience Scheme (SIWES) which was initiated by Industrial Training Fund (ITF). ITF was established in 1977 by Federal Government of Nigeria under the enabling decree No. 47, to effective – coordinate all activities of SIWES and to run some short time courses for industries and other related organization.

The scheme is a cooperative skill development-programmed or a leading step to collaboration between technical institutions and industries, designed to expose and prepare students for the real work situations they are likely to meet in the field of specialization after graduation from school (Bala, 2007). The students who acquired work experience are more readily to transit from school to the world of work and fit into it. Bala (2007) summarized benefits commonly gain from SIWES as follows:

- It provides an opportunity development of activities needed for proficiency in technical programmed.
- It provides a desirable type of motivation and develops students interest in technical programmed
- It develops originality, initiative, self-confidence and managerial ability in students.
- It develops desirable relationship with employers and ability in cooperation with others
- It helps the students to develop right attitude to work.

SIWES provides students with opportunity to acquire job skills under actual working condition Bala further stressed that SIWES programmed also served as a laboratory where students put in practice the knowledge and skills acquired while in school. Dikko (1994), however, expressed disappointment on the scheme when he remarked that the programmed is not adequately meeting the needs of industries personnel as a result of improper coordination due to lack of cooperation between institutions and industries. As a result of that, most industries in the country do embark on retraining the products of the nation's technical institutions.

Olaitan, (1996) noted that the cause of poor placement is partly the inability of technical programmed to secure the respect of employers. He added that, constraints suffered by SIWES programmed in technical education in the country include poor planning, inadequate fund, poor attitude of students toward the programmed, failure to recognize SIWES as a course and failure to evaluate the programmed. Furthermore, in the Curriculum and Course Specifications of General Installation and Maintenance Work by National Board for Technical Education (NBTE) Federal Republic of Nigeria (FRN, 2001). Supervised Industrial Training/Work Experience (SIWES) is only account for about 5% of the total hours required for the programmed for only advance craft programmed, Advance National Technical Certificate (ANTC) in Technical Colleges.

This component of the course which may be taken in industry or in college production unit is compulsory for the full time students. But those at the National Technical Certificate (NTC) year1-3 now SSI-3 do not have such opportunity. Their own SIWES exercise is not compulsory and takes place mostly at the second year of their study during long vocation of one month and without any supervision and marks or score attached to it. It can be noted that it is not in the curriculum at the level of technical college education, which is the level of craftsmen production to industries. Udo, (1988), in Bala (2007) emphasized on the need of compatibility between the programmed and the structure of the school curriculum and changing technologies.

The author also said SIWES should be regarded as an integral part of the entire school curriculum and as an extension of the classroom/laboratory instruction. Suggesting ways of proffering solution to this problem, Dikko (1994) noted that since the acquisition of the skills expected from a particular training programmed depends on the relevance of the course contents to the skills required in industries, the academic curricular of the educational

institutions therefore are important area that required cooperation between industries and these institutions. The curricular most be relevant to the peculiarities of our situation must address most essentially the current industrial demands with the aim of making our technological institutions graduates relevant to the needs of the industry (Ayofe, Ajetola and Oyewole, 2009). Reddan and Harrison (2010) argue that Technical and Vocational Education (TVE) institutions need to restructure their programs to be responsive to the needs of the job market, especially the industry. To achieve this goal, the TVE curricula must focus on outcomes in terms of the skills, knowledge and attitudes required by industry. To bring out this revolution, Dikko (1994) stated that the institutions must set up industrial committee, similar to Academic Advisory committee. Where the industrial Advisory Committee, exist, the role of this committee should go beyond giving mere approval for courses run by the institution but should monitor the implementation of the approved courses. It is essential that various curriculum and syllabus of the institution be discussed with as many employers as possible. This exercise should be on a continuing basis if the teaching in the institution is to keep pace with rapid advancement in technology and the changing needs of the industries. A more cordial relation will thus develop between woodwork industry and technical colleges. Ighedo (1994) supported the setting up of Advisory committee when he pointed out that it is evident that career programmed is bound to the defective if there is no input from appropriate personnel in the relevant occupational fields. Practitioners in career option for which training programmes are conceived and designed properly constituted into programmed Advisory Boards have been recognized to be of vital importance as they provide information useful for improving programmed performance and consequently public support. Writing about structure of the Advisory committee, Ighedo noted that, the number and structure of such committee are determined by the areas in which the school is offering training, and that this

view is supported by the Oregon guide which prescribed that each curriculum must be served by a separate committee or sub-committee composed as follows:

- Employees and/or employers association
- Experienced qualified workers in the occupation concerned.
- Existing post-secondary programmed involving the same or similar occupational education area. Labour organization where appropriate.

He further outlines the function of the Advisory committee by saying that it is evident that one of its principal function is to provide input relating to the manpower situation in occupational field. Manpower supply and demand, labour mobility, rate of attrition and potential students interest all of which are vital for projecting effective demand. The importance of correctly assessing potential students' interest was found to be vital for success of the curriculum. Another function of the committee according to him is that the committee will continue to be of immense benefit to curriculum planners. They will also help to determine and establish for a programmed trainee entry behaviour, training facilities, equipment, identify access community resources and conduct follow-up study of graduates.

In addition, Dikko (1994) recommended that the industrial coordinating units should be well established. These units could be utilized in fostering closer link between institution of learning and the industries. They should be developed and utilized to collect information on problem facing industries, with a view to referring these to relevant departments. Through the activities of these units real-life case study should be readily available to teacher and students as well. The coordinating units should be able to carry out surveys of skills needed by industries around the institutions and be able to advise the appropriate arms of the institutions of learning on areas where updating skills courses should be ran. The units by virtue of their position are industrial liaison office and should be appropriately channeled for

guiding students in career/ job placement opportunities. Although, this industrial liaison office has been established in technical institutions and universities, this unit has not been well coordinated to foster effective link and cooperation between institutions and industries. There is need to properly constitute and coordinate the various industrial liaison offices in the technical institutions to facilitate cooperation between industries, and institutions in Nigeria.

In a study conducted by UNEVOC in 1996, various forms of administrative links have been considered effective all over the world to facilitate school and industry cooperation. The report of the study pointed out that in Bostwana, permanent joint consultation exists through advisory committee of government and local levels. In Benin Technical Commissions are responsible for the development of training programmed. Mexico according to the report, has established within the Technical Vocational Education a Directorate a sub-directorate responsible for liaison within industry and employers. There is an Advisory Council for Vocational Education in Norway according to the report. This Advisory council consists of 13 members 10 out of whom represent work organizations and industries. In each of these countries, there is Vocational Training Committee, the majority of whose members also come from working life.

Mark (2004) described technical educational curriculum as a product curriculum and recommended model of curriculum planning in technical education development as follows:

- Step 1: Diagnosis of need
- Step 2: formation of objectives
- Step 3: selection of content
- Step 4: Organization of content
- Step 5: Selection of learning experiences

- Step 6: Organization of learning experiences
- Step 7: Determination of what to evaluate and the ways and means of doing it (Evaluation).

He reported the view of Finch and Crunkitton (1999) who pointed out that curriculum must be responsive to community needs. They maintained that employers in the community are likewise, obligated to indicate what their needs are and to assist the school in meeting these needs. This assistance according to them might consist of employers serving on curriculum advisory committees. In conclusion, the emphasized that school industry collaboration is often equated with curriculum quality and success. King (1994) in his own opinion noted that drawing a course content of any vocational subject is not prerogatory of the school only, but a joint effort of all sectors who directly or indirectly benefit from the products of vocational education since the vocation oriented curriculum serves the needs of the society. According to him, this implies that industry and private sector should be able to contribute to the curriculum development for vocational technical education programme since they are in a position to know exactly what should be included in the syllabus.

2.2.5 School-Based Activities that will Improve School-Industry Collaboration.

UNESCO (2002), in its study conducted on school industry relation discovered that some countries have found an effective way of training their man-power in new technologies through cooperation between industries and technical institutions Orikpe (1993) pointed out that industries and technical institutions have different roles to play in technical man power production in Nigeria. He explained that the school-based learning activities should involve provision of qualified teachers and suitable classroom facilities and instructional materials for school instruction. Dyankov (1996) pointed out that the responsibilities of schools to i nclude:-provision of necessary manpower, allocation of training time table and length of

training, selection of adequate and innovative learning content and activities for training, planning cooperation with industry where training should be carried out evaluation of the students to find out the extent to which they have acquire skills they are supposed to acquire and supervision of students during training. Harperin (1994) posits that school-based learning focuses on career exploration and counseling of students; selection of a career major a program of study based on high academic and skills standard. Schools should also infuse the entire curriculum with career related activities which will prepare the young people for employment after successful completion of vocational training (Halperin, 1994).

Hudelson 1994 further pointed out that the school should assist the student in making transition to a good first job and a high skill. Ranner (1999) defines school-to-work transition as the training system in institutions and program that prepare young people for employment after successful completion of vocational education.

Halperin (1994) pointed out that school-to-work transition is a locally based education initiatives that brings educators, students, business and industry together to help young people move smoothly from classroom to careers. In essence school-to-work transition infuses the entire curriculum with career related activities, rather than offer vocational education as a separate component of the school program. It includes cooperative and youth apprenticeship. According to Hudelson (1994) school-to-work transition program assist students in making the transitions from school to a good first job and a high skill. Hudeleson further maintained that school –to –work collaboration established between schools and employer assist students in preparing for a high quality jobs requiring technical skills, or further education and training. School –to – work transition provides each student with worksite orientation to build a direct relationship between the student and the employers. School to- work transition

referred to as on-the-job training apprenticeship, cooperative education agreement or other programs designed to prepare students to enter the job market (Lueking 1999).

In addition, the school should be able to provides each student with worksite orientation, to emphasize that the students have a role and function in the workplace. Egbita (2006) posits that this orientation should include how to listen and take decision, observe safety precautions, ask question, and seek help, act in a professional manner and handle interpersonal conflicts.

This preparation can be provided by the school in the classroom instruction, workshops and should be supplement by visits to the workplace to address the connection between the students, upcoming work-based experience and their educational career plans. Various enterprises benefited from the training facilities offered by the vocational and technical training institutions which provided education and upgrading of their employee through full-time, short courses and part time evening courses or weekend classes, as well as correspondence courses, instructional television programmes or other instructional materials development by teaching personnel at technical and vocational institutions.

2.2.6 Industry-Based Activities that can Improve School-Industry Collaboration.

Work-based or industry-based activities or learning is a planned programmed of job training or experience, paid work experiment, workplace mentoring and instructing in general workplace competencies and all aspect of industries. Orikpe (1993) opined that industries should provide work-based learning activities such as internship, on-he-job training, mentoring and cooperative education (industrial attachment) to expose students to the latest technological up-date. According to Dyankov (2002), cooperation between technical and vocational institution and various industrial, agricultural, business and other enterprises has a feature of collaborative work. According to him, educational and training institutions should

benefit from the industries on physical facilities, machinery and equipment. Industries should offer “on the job” training at their premises or assisted to equip educational institutions with valuable equipment and machinery. In addition, providing the expertise of their specialists for technical advice on curriculum content or for the design of training programmed, development of software and other instructional materials. Some specialists should be involved in part-time teaching and assist in vocational guidance, counseling, testing and evaluation. Industries should also offer opportunity for some technical teachers and instructors to participate in the research work of industrial enterprises using their high-tech laboratories, or to work on industrial machinery in the production process so as to upgrade their knowledge and skills and keep abreast with new technological development.

In Mauritius, personnel from industries are actively involved in training programmed and also serve on the examination board. According to UNEVOC (1996), India and Republic of Korea, Cooperative education has been initiated by the Government. For example, in India, some automobile repairs/maintenance workshops in the state Andra Pradesh offered their facilities for some hands on experience to the students in automotive technicians’ courses provided in three Government/private junior colleges during the course of training. In Poland, practical training of technical and vocational students takes place in school workshops and in the industries. In Portugal share facilities involved vocational establishments enter into contracted agreement with enterprises determining the rights and the obligations of the two parties and specifying also the entitlement and obligation of each trainee. According to the report in most countries, industries and technical institution cooperate to organize seminar, workshops and conferences for introducing new technologies to students, teachers and industrial employees.

In a like manner UNESCO (2002) pointed out that some countries have found an effective way to train technical manpower in new technologies through cooperation between advanced industries and training establishment which involves.

- Use of industrial equipment by trainers and educators on company premises.
- Implementation of joint, cooperative programmed of research and training management system as new and existing technologies converge; and
- Donation of specific equipment to the training institutions by industrial and commercial enterprises.

Other countries like Thailand and Zimbabwe offered technical and financial assistance to vocational institutions. The project incorporated one day a week training in the college, followed by four days weekly in the industry. The trainees are accepted after the course of study.

2.3 Related Empirical Studies

Ehizogie (1993) carried out a study on industry-college Relationship. A tool for functional technology. The study investigated the relationship between industries and technical colleges and the effect of such relationship on practical ability of students in Edo state technical colleges. To carry out the study four research questions were formulated. The researcher adopted a survey research method with total population of 810. Foremen, supervisors and managers in 70 industries constituted the targeted sample of one group while the principals and teaching staff of all the technical colleges in Edo State constitutes the target sample of the second group of 360. A questionnaire was used to collect data from foremen, supervisors and managers in 70 industries and all the principals and teaching staff of all technical colleges in Edo State. Mean statistics was used to analyzed the data collected while the t-test was

employed to test the null hypothesis at 0.05 level of significance. The findings of the study revealed that the factors responsible for non functionality of technical college students were ranked in the order that technical colleges products are not able to match theory and practical, no equipped workshop for adequate practical work, must instructors have no practical knowledge and experience, technical college curriculum is not well relevant to the training need of industries, among others. The study recommended that industrial training attachment be extended to students in technical colleges and should be provided with well equipped workshop as well as providing instructors who are practically well groomed with a wealth of industrial experience. The previous study is related to the present study which seeks to determine ways that could be adopted for improving school industry collaboration for skill acquisition in general installation and maintenance. For the simple fact that many industries are coming up and the increase in technological advancement demands skilled personnel. It is also similar to the present study in its methodology, research design, population, and instrument for data collection and method of data analysis.

Rumbarge (2002) conducted a study on the potential impact of technology on skills requirement for the future jobs. The study adopted the survey method with a population of 1018 with no sampling in Tokyo Japan. A structure questionnaire was used to collect data. The data was analyzed using frequency and percentage scores. The result revealed that new technological innovations are yielding an increased array of new components which are incorporated into modern machineries including the automobile.

Another study was conducted by Amasa (2002) on strategies for improving partnership between industries and technical institutions for effective vocational training in Kaduna – State. The research design was a survey research. The study was design to investigate the current training practices carried out between industries and vocational training schools with

a view to evolving strategies that will help in promoting the effectiveness of the partnership. To carry out the study, three research questions and one null hypothesis were formulated. A questionnaire was used to collect data from 198 industrial personnel from 42 industries and 221 technical instructors from 8 vocational training centres and 2 technical schools in Kaduna state representing the whole population of the study. Mean statistics was used to analysed the data collected while the t-test was employed to test the null hypothesis at 0.05 level of significance. The results were analyzed and presented in table and recommendations were made. The findings of the study revealed that collaboration strategies were not being utilized and coordination of the existing strategies was poor.

In a similar vein, Bala (2007) conducted a study on strategies for improving school industry relations in North –Western Nigeria. The study was designed to identify strategies for improving school-industry relations in North-Western Nigeria. The research design used for the study was descriptive survey design. To achieve the objective of the study, five research questions and two null hypotheses were formulated and questionnaire was used to collect data from 38 wood work technology lecturers/instructors who were currently teaching in 8 tertiary technical institutions and 59 production managers/supervisors who were directly involved in production in the modern woodworking industries. The data collected was analyzed using mean, standard deviation and frequency table. The questionnaire items were analyzed in relation to the research questions using five-point liker scale. The t- test was used to test the null hypothesis at 0.05 level of significance. Some of the findings revealed that National Board for Technical Education (NBTE) and Industrial Training fund (ITF) should set up school industry advisory committee, industries should be involved in the screening and recommendation of courses or trades for students in technical institutions among others. Although the study was on tertiary institutions in Northwestern part of Nigeria comprises of six States (Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zanfara and in

woodwork technology but the present study is on collaboration between technical colleges and woodwork industries. Odigiri (2010) conducted a study integration of new technological innovation into the curriculum for Nigerian technical college programs. The study adopted a descriptive survey design. Population of the study was made up of 82. Mean standard deviation and t-test were used to answer the research questions. While the hypotheses were tested at 0.05 level of significant. The findings revealed that industries do not rely on training giving to the graduates of the technical colleges. The study is related to the present because it appears that integration of new technological innovation into curriculum of Nigerian technical colleges will be effective when they have good relationship with industries where new innovations are always found. The study is also similar in methodology. However, it was on automobile. The major conclusion derived from these studies was that technical college programs where not well relevant to the training need of industries and that the present collaboration strategies were ineffective; hence, there is need for a closer cooperation between industry and technical institutions. However, it is pertinent to note that none of the studies was on improving school-industry collaboration between technical colleges and industries for skill acquisition with reference to administrative strategies that can improve collaboration, school-based activities that can improve collaboration and industry-based activities that can improve school-industry collaboration.

2.4 Summary of Review of Related Literature

The literature was reviewed under the following: conceptual frame work, theoretical framework, reviewed of related studies and related empirical studies. The literature review for this study revealed that technological advancement is on the increase daily in some developed countries such that a piece of equipment becomes obsolete within a given period. Several studies have been conducted on schools industry relation or collaboration for skill

acquisition but none of them has delved into improving collaboration between technical colleges and industries for skill acquisition with reference to administrative strategies that could be used to improve school-industry collaboration, school-based and industry-based activities that could improve school-industry collaboration especially in Niger State. This study, therefore, seeks to find out the ways that could be adopted to improve collaboration between technical colleges and woodwork industries in Niger State.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Design of the Study

The study adopt the descriptive survey research design used to determine techniques for enhancing collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. Survey design according Nworgu (1991) is aimed at collecting data on and describing in a systematic manner, the characteristics features or facts about a given population. Osuala (2005) said that it is a design which studies the characteristics of people, the vital facts about people and their beliefs, opinions, attitude, motivation and behavior. The design is suitable for the study because it solicit information from teachers of technical colleges and supervisors of woodwork industries in Niger State.

3.2 Area of the Study

The study will be carried out in all technical colleges in Niger state and selected woodwork industries. Niger state falls on the land mass area of about 76,363km2 and with the population of about 3,950,349 (NPC, 2006) and the study was carried in out Niger state in order to improve collaboration between the technical colleges and woodwork industries in order to help students get acquainted with relevant skills needed.

3.3 Population for the Study

The population for the study consists of 80 respondents comprising 58 technical teachers in six technical colleges and 22 supervisors in woodwork industries. The tables below show the list of technical colleges:

List of technical colleges in Niger state	No. of technical teachers(respondents)
Government Technical college Eyagi Bida	10
Government technical Minna.	10
Suleiman technical college Suleja	10
Federal Science and technical college Shiroro	10
Government technical college Kontongora	10
Government technical college New-Bussa	8
Total	58

3.4 Sample and Sampling Technique

There will be no sampling since the population was small and manageable.

3.5 Instrument for Data Collection

The researcher designed a structured questionnaire as an instrument that was used in collecting data for the study. The questionnaire was made up of four sections (A, B, C, and D). Section 'A' contains items on personal information of the respondents. Section 'B' seeks Administrative activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. Section 'C' find out School-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. While Section 'D' find out Industry-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. The questionnaire items were based on four points scale types. Items for section 'B', 'C' and 'D' contain four responses category each. The response

categories for section ‘B’, ‘C’ and ‘D’ are strongly Agree (SA), Agree (A), and Disagree (D) and strongly disagree (SD). These response categories will be assign numerical values of 4, 3, 2 and 1 respectively. Respondents were require checking (√) against the response category that best satisfies their opinion.

3.6 Validation of Instrument

The instrument was validated by three lecturers in the department of Industrial and Technology Education, Federal University of Technology, Minna and contributions on the appropriateness of the instrument will be considered in the production of the final copy of the research instrument.

3.7 Reliability of Instrument

In order to determine the reliability of the research instrument, a pilot test was be conducted using fifteen in other locations. During the test, the questionnaires were distributed by the researcher. The questionnaire was filled by the respondents and then returned to the researcher. The data collected was analyzed using Crombach Alpha and reliability coefficient of 0.78 was obtained. This value obtained indicates that the instrument is reliable and can be used for the study.

3.8 Administration of Instrument

The instrument that was used for the data collection was administered to the respondents by the researcher and three research assistant in the study area.

3.9 Method of Data Analysis

Data collected was analyzed using mean and standard deviation for the research questions while t-test was used to test the hypothesis at the 0.05 level of significant. A four (4) point rating scale was to analyze the data as shown below.

Strongly Agree	(SA)	=	4points (3.5 – 4.0)
Agree	(A)	=	3points (2.5 - 3.49)
Disagree	(D)	=	2points (1.5 – 2.49)
Strongly Disagree	(SD)	=	1point (1.0 – 1.49)

Therefore, the mean value of the 4 points scale is:

$$\bar{X} = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

3.10 Decision Rule

The cutoff point of the mean score of 2.50 was chosen as the agreed or disagreed point. This will be interpreted relatively according to the rating point scale adopt for this study. Therefore, an item with response below 2.49 and below was regard or consider as disagreed while an item with response at 2.5 and above was regarded or considered as agreed.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1 Research Question 1

What are the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?

Table 4.1: Mean Response of supervisors and technical teachers on administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

N_1= 58 N_2=22

S/N	ITEMS	$\bar{X}$	SD	Remark
1	NBTE, ITF and Industries should set up school industry advisory committee to monitor implementation of approved courses in technical colleges	3.24	0.889	Agreed
2	Government should set up coordinating units/boards to carry out survey of skills needed by industries and giving feedback to relevant departments	3.31	0.773	Agreed
3	Government should establish industrial liaison offices/coordinating units in technical colleges	3.40	0.722	Agreed
4		3.32	0.725	
5	Government should establish laws that will encourage industries and technical colleges to develop training programmes that can meet their internal needs	3.35	0.677	Agreed
	Industries should be encouraged to develop training programmes in technical colleges in relation to their internal needs			Agreed

6	Industrial based job skills should be included in the curriculum of technical colleges for skill acquisition	3.35	0.677	Agreed
7	Industries should be involved in screening and recommending courses or trades in technical colleges	3.41	0.706	Agreed
8	Government should encourage industries to establish vocational and apprentice training centres in their area of operations	3.41	0.758	Agreed
9	ITF, on regular basis should organize training programmes aimed at upgrading the knowledge of technical personnel	3.44	0.726	Agreed
10	Government should involve industry in recruitment of technical teachers in technical colleges	3.50	0.729	Agreed

N=80

$\bar{X}$= mean of the respondents

N_1 = Technical teachers

N_2= industrial supervisors

SD = standard deviation of the respondents

Table 1 showed that both the industrial supervisors and technical teachers agreed on all items from 1 to 10. This is because none of the mean response was below 2.50 which was the beach mark of agreed on the 4-points response options. The standard deviation score ranged between 0.677 and 0.889. This showed that the responses of the industrial supervisors and the technical teachers on the items were not divergent.

4.2 Research Question 2

What are the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?

Table 4.2: Mean Response of supervisors and technical teachers on school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

		N_1= 58		N_2=22
S/N	ITEMS	$\bar{X}$	**SD**	Remark
1	Jointly organizing seminars, workshops by technical colleges and industries can enhance school-industry collaboration	3.56	0.726	Agreed
2	Industries and Technical Colleges sharing of facilities can enhance school-industry collaboration	3.54	0.728	Agreed
3	Provision of programme of studies based on high academic standard can enhance school industry collaboration	3.58	0.652	Agreed
4	Involvement of industries in evaluating students	3.45	0.614	Agreed
5	relevant learning experiences acquired in the technical colleges can enhance school-industry collaboration Organizing cross training between industries and technical institutions personnel can enhance school industry collaboration	3.31	0.608	Agreed

6	Counseling of students for career exploration in specific vocation relevant to industries can enhance school industry collaboration	3.29	0.599	Agreed
7	Involving industries in setting and marking of practical examinations in technical colleges can enhance school-industry collaboration	3.35	0.713	Agreed
8	Industrial training attachment for students in industries can enhance school industry collaboration	3.50	0.656	Agreed
9	Engaging engineering professionals in industry in part time teaching in technical colleges can enhance school industry collaboration	3.49	0.729	Agreed
10	Inviting guest speakers from industry to deliver lectures in technical colleges can enhance school industry collaboration	3.56	0.760	Agreed

N=80

$\bar{X}$= mean of the respondents

N_1 = Technical teachers

N_2= industrial supervisors

SD = standard deviation of the respondents

Table 4.2 showed that both the industrial supervisors and technical teachers agreed on all items. This was because none of the mean response was below 2.50 which was the bench mark of agreed on the 4-point response options. The standard deviation score ranged between

0.599 and 0.760. This showed that the responses of the industrial supervisors and the technical teachers on the items were not divergent.

4.3 Research Question 3

What are the industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state?

Table 4.3: Mean Response of supervisors and technical teachers on industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

		N_1= 58		N_2=22
S/N	ITEMS	$\bar{X}$	**SD**	Remark
1	Provision of internship training and on –the- job training by industries	3.57	.742	Agreed
2	Assessment of training facilities of technical colleges	3.57	.776	Agreed
3	to find out if they are capable of giving the students adequate background in those occupations required in the industry Examination of craft curriculum of the training programme of technical colleges to ensure that their occupational interest is covered	3.68	.612	Agreed

4	Provision of funds for the execution of technical	3.51	.595	Agreed
5	colleges programmes Involving technical teachers/instructors working on industrial machinery in the production process so as to upgrade their knowledge and skills to keep abreast with new technological advancement	3.30	.624	Agreed
6	Provision of occupational placement for graduates of technical college programme by the industries	3.30	.582	Agreed
7	Provision of instructional materials to technical colleges by the industries	3.36	.716	Agreed
8	Donating information and communication technology equipment and tools to technical colleges	3.54	.594	Agreed
9	Purchasing consumable material for students' practicals by the industries	3.56	.613	Agreed
10	Organizing regional trade fair and exhibition of technical colleges' inventions by the industries	3.61	.684	Agreed

N=80

$\bar{X}$= mean of respondents

N_1 = Technical teachers

N_2= industrial supervisors

SD = standard deviation of the respondents

Table 4.3 showed that both the industrial supervisors and technical teachers agreed on all items from 1 to 10. This was because none of the mean response was below 2.50 which was

the bench mark of agreed on the 4-point response options. The standard deviation score ranged between 0.582 and 0.776. This showed that the responses of the industrial supervisors and the technical teachers on the items were not divergent.

4.4 Hypothesis I

There is no significant difference in the mean responses of industrial supervisors and technical teachers on the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

Table 4.4 T-test on the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

$N_1 = 58$ AND $N_2 = 22$

Respondents	N	X	SD	Df	Tcal	P-value	Remark
Supervisors	22	3.39	0.50	78	0.489	0.06	NS
Technical teachers	58	3.47	0.52				

N=80

$\bar{X}_1$= mean of technical teachers

$\bar{X}_2$ = mean of industrial supervisors

N_1 = Technical teachers

N_2= industrial supervisors

SD_1 = standard deviation of technical teachers

SD_2 = standard deviation of industrial supervisors

NS=Not Significant

Table 4.4 showed that there was no significant difference in the responses of industrial supervisors and technical teachers on all the items as administrative activities in enhance the collaboration between the school and the industry; therefore the null hypothesis of no significant difference was upheld at 0.05 level of significance.

4.5 Hypothesis 2

There is no significant difference in the mean responses of industrial supervisors and technical teachers on the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

Table 4.5 T-test on the the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

$N_1 = 58$ AND $N_2 = 22$

Respondents	N	X	SD	Df	Tcal	P-value	Remark
Supervisors	22	3.28	0.53	78	0.539	0.10	NS
Technical teachers	58	3.35	0.56				

N=80

$\bar{X}_1$= mean of technical teachers

$\bar{X}_2$ = mean of industrial supervisors

N_1 = Technical teachers

N_2= industrial supervisors

SD_1 = standard deviation of technical teachers

SD_2 = standard deviation of industrial supervisors

NS=Not Significant

Table 4.5 showed that there was no significant difference in the responses of industrial supervisors and technical teachers on all the items as school based activities that could enhance the collaboration between the school and the industry; therefore the null hypothesis of no significant difference was upheld at 0.05 level of significance.

4.6 Hypothesis 3

There is no significant difference in the mean responses of industrial supervisors and technical teachers on those industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

Table 4.6 T-test on the industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

N_1 = 58 AND N_2 = 22

Respondents	N	X	SD	Df	Tcal	P-value	Remark
Supervisors	22	3.40	0.52	78	0.328	0.09	NS
Technical teachers	58	3.33	0.51				

N=80

$\bar{X}_1$**=** mean of technical teachers

$\bar{X}_2$ = mean of industrial supervisors

N_1 = Technical teachers

N_2= industrial supervisors

SD_1 = standard deviation of technical teachers

SD_2 = standard deviation of industrial supervisors

NS=Not Significant

Table 4.6 showed that there was no significant difference in the responses of industrial supervisors and technical teachers on all the items as industry based activities that could enhance the collaboration between the school and the industry; therefore the null hypothesis of no significant difference was upheld at 0.05 level of significance.

4.7 Findings of the Study

The following are the main findings of the study; they are prepared based on the research questions and hypothesis tested.

1. The finding on administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state showed that all the respondents agree on all the items, among all is Government should set up coordinating units/boards to carry out survey of skills needed by industries and giving feedback to relevant departments.
2. The finding on school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state shows that showed that all the respondents agree on all the items, among all is Provision of programme of studies based on high academic standard can enhance school industry collaboration.
3. The findings on industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state shows that showed that all the respondents agree on all the items, among all is Assessment of

training facilities of technical colleges to find out if they are capable of giving the students adequate background in those occupations required in the industry.

4. There was no significant difference in the responses of industrial supervisors and technical teachers on all the items as administrative activities in enhance the collaboration between the school and the industry.
5. There was no significant difference in the responses of industrial supervisors and technical teachers on all the items as school based activities that could enhance the collaboration between the school and the industry
6. There was no significant difference in the responses of industrial supervisors and technical teachers on all the items as industry based activities that could enhance the collaboration between the school and the industry.

4.8 Discussion of Findings.

The findings from table 4.1 showed the administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state. From the findings it revealed that showed that all the respondents agree on all the items, among all is Government should set up coordinating units/boards to carry out survey of skills needed by industries and giving feedback to relevant departments, Government should involve industry in recruitment of technical teachers in technical colleges. These finding were in agreement with the opinion of Gofwen (2007), that institutions should set up industrial/institutional advisory committee similar to academic advisory committee to approve courses as well as monitor the implementation of approved courses, and that it is essential that various curriculum and syllabus of technical institutions be discussed with as many employers as possible. Ighedo (1994) also supported that career programmed is bound to be defective if there is no input from appropriate personnel with relevant occupational fields. In another, development Nwachukwu (2001) as cited in (Umunadi 2013) stated that

certain factors are crucial for the functionality of vocational technical education curriculum in Nigeria as humanized vocational and technical education curriculum. It should not be something foreign to technical college students and should not be chosen as a tradition. Also making the curriculum responsive to the present situation of Nigeria; training the youths for sustainable and self-reliant empowerment in Nigeria. Others are readiness of the trainees to learn, taking note of the learning environment such as family background, age among others which student exhibit in the classroom. Teacher should always take not of that creating and learning environment that the students can think and exploit opportunities.

Findings of the hypothesis revealed that there was no significant difference between the mean responses of industrial supervisors and technical teachers on administrative activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state for skill acquisition in technical colleges. The implication of the findings is that technical colleges should enhance on collation with industries on administrative matters for skill acquisition among the students to be able to fit into the industries/ labour market after graduation.

The finding from table 4.2 show the school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state: Jointly organizing seminars, workshops by technical colleges and industries can enhance school-industry collaboration, Industries and Technical Colleges sharing of facilities can enhance school-industry collaboration, Provision of programme of studies based on high academic standard can enhance school industry collaboration, Involvement of industries in evaluating students relevant learning experiences acquired in the technical colleges can enhance school-industry collaboration, Organizing cross training between industries and technical institutions personnel can enhance school industry collaboration.

Counseling of students for career exploration in specific vocation relevant to industries can enhance school industry collaboration, Involving industries in setting and marking of practical examinations in technical colleges can enhance school-industry collaboration, Industrial training attachment for students in industries can enhance school industry collaboration, Engaging engineering professionals in industry in part time teaching in technical colleges can enhance school industry collaboration, Inviting guest speakers from industry to deliver lectures in technical colleges can enhance school industry collaboration. These findings were in line with the opinion of UNESCO (2002) that some countries have found an effective way of training their manpower in new technologies through cooperation between industries and technical institutions. Also, these findings were in agreement with the opinion of Orikpe (1993) that industries and technical institutions have different roles to play in technical man power production in Nigeria. The researcher explained that school- based activities should involved provision of qualified teachers, classroom facilities, and instructional materials for instruction. Also the findings were in agreement with the opinion of Dyankor (1996) that the responsibilities of the school include:- provision of necessary manpower, allocation of training timetable and length of training, selection of adequate and innovative learning content and activities for training, planning in cooperative with industry where training should be carried out, evaluation of students to find out the extent to which they have acquired skills they are supposed to acquire and supervision of students during training. Also, to Anyakoha (1992 as cited by Umar and Ma'aji 2010) noted that the development of useful skills can be reinforced by the appropriate selection and use of learning facilities and resources. These facilities comprise of workshop structures, working materials, teaching materials, workshop tools and equipment.

According Netherland Organization for International Cooperation in Higher Education (NICHE, 2010) there are various challenges that TVE graduates are facing in terms of

practical skills acquisition, in most developing countries, especially in Nigeria, TVE is narrow in scale, scope, quality and relevance. The programs are not relevant to the requirements of the local labor market, the curricular and syllabi are out-of-date and the institutions lack the tools and equipment essential for practical skills acquisition. Where present, the equipment in workshops and laboratories is often out-of-date, bearing little resemblance to the technologies presently used by industry (NICHE, 2010). Insufficient training equipment leads to trainee overcrowding during practical lessons, with most of the students only observing the demonstration and not having the chance to get some hands-on practice. Due to the fact that the institutions are poorly resourced, the education and training remain theoretical and the graduates are not considered more skilled than their academic counterparts by the labor market. The institutions thereby acquire a poor image, and produce graduates with lower employability (NICHE, 2010).

Findings of the hypothesis revealed that there was no significant difference between the mean responses of industrial supervisors and technical teachers school-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state for skill acquisition in technical college. The implication of the findings is that there should be collaboration between industries and technical colleges on school- based activities for skill acquisition so that students should be able to fit into the industries and labour market after graduation.

The findings from table 4.3 shows the industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state: Assessment of training facilities of technical colleges to find out if they are capable of giving the students adequate background in those occupations required in the industry, Examination of craft curriculum of the training programme of technical colleges to

ensure that their occupational interest is covered, Provision of funds for the execution of technical colleges programmes, Involving technical teachers/instructors working on industrial machinery in the production process so as to upgrade their knowledge and skills to keep abreast with new technological advancement, Provision of occupational placement for graduates of technical college programme by the industries, Provision of instructional materials to technical colleges by the industries, Donating information and communication technology equipment and tools to technical colleges, Purchasing consumable material for students' practicals by the industries, Organizing regional trade fair and exhibition of technical colleges' inventions by the industries, Payment of allowances to students on industrial attachment by the industries, Organizing seminars, workshops for exchange of ideas and information for industrial and technical college staff of technology on new innovative programmes.

These findings were in line with the opinion of Orkpe (1993) and Dyankov (1996) that industries in collaboration or cooperation with schools should provide worked based learning activities such as internship, on- the job training mentoring and cooperative education to expose students to new technologies. Also that the functions of industries to include:- assessment of training resources of institutions to find out if the institutions are capable of giving the students adequate training and background on those occupations required in the industries. Furthermore, industries should examine the curriculum of training programmes to ensure that their occupational interests are covered and provide funds to assist institutions. Also, that industry should assist teachers/ instructors in research work by allowing them to use their high-tech laboratories and to work on industries machineries to upgrade their knowledge and skill as well as to keep abreast with new technologies, also that industries are expected to make special provision of occupational placement for the graduates of technical colleges.

Also, Umar and Ma'aji (2010) stated that private sector should be encouraged to initiate and participate in the provision of facilities, linkages between schools and the private sector should be strengthened and that there should be alliance between schools and interest groups. The study conducted in South African by Prew (2009) revealed that the community should be involved in determining that development priorities in the schools, supplying voluntary and paid services to the school, help the school raise and manage funds and sitting on and running some committees. In the same vein Umar, (2009) suggested that Non Government Organization (NGOs), Community Based Organization (CBOs) and Parent Teacher Association (PTA) should be made to play a vibrant role in moving technical education forward.

Findings of the hypothesis revealed that there was no significant difference between the mean responses of industrial supervisors and technical those industry-based activities that would enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state for skill acquisition in for the students to be able to fit into the industries and labour market on graduation.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary of the Study

The main focus of this research study was to find out the techniques for enhancing collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

Chapter One of the study discussed the background of the study, which examines collaboration, woodwork industries, Technical colleges, activities that could enhance collaboration between woodwork industries and Technical colleges which are administrative strategies, school-based activities and industry base activities. The statement of problem, purpose, significance, scope and the research questions were all stated and discussed for the conduct of this research.

The review of related literature looked into concept of collaboration, concept of skill acquisition, school-industry collaboration for technology, administrative strategies for enhancing school-industry collaboration, school-base activities that will enhance school-industry collaboration, industry base activities that can enhance school-industry collaboration and theory of skill development. Various views of different authors concerning the topic were harmonized in a comprehensive literature review and empirical studies.

A survey approach was used to developed instrument for the study; the respondents identified as the population of the study were the technical teachers of technical colleges in Niger state and supervisors from various woodwork industries in Niger state. The entire respondents were used. A number of 80 questionnaires were administered. The instrument used was analysed using frequency count, and mean scores. The research questions were discussed base on the findings from the responses and results of the instrument used.

Implication of the study and conclusions were also drawn from the findings discussed. Recommendations and suggestions for further study were formulated and stated according to the findings of the study.

5.1 Implication of the Study

The findings of the study had implications for government, industries, technical colleges and students of technical colleges of Niger state. From the outcome of the study, it implies that:

1. If the identified areas where collaboration between technical colleges and industries is enhance technical teachers and students would have become acquainted with industrial facilities for training thereby making learning effective both theoretical and practical
2. If the technical college teachers are well trained and use to industrial equipment, tools and machineries, such knowledge will be transfer to the students. This will make the students more skillful to perform in the industries and labour market and to be self reliance/employ hence reducing rate of unemployment. On the other hand, the nation will be well develop because of the increase in the labour force.

5.2 Conclusion

Based on the findings of the study, the following conclusions were drawn: students of technical colleges can only acquire skills for employment and to be self-employed after graduation when there is collaboration between woodwork industries and technical colleges. Because these woodwork industries possessed the necessary technological skills, tools, equipment and machineries, that these students can be expose to during their course of training. Therefore, the rate of unemployment could be reduced when these technical colleges' students are expose to modern technologies in woodwork industries through the administrative activities, school-based activities and industry based activities to be able to serve the woodwork industries, the society and to be self employed after graduation.

5.3 Recommendations

Based on the findings of the study, the following recommendations were made:

1. Industry base job skill should be included in the curriculum of technical colleges for skill acquisition.
2. Technical teachers/instructors should visit industrial enterprises to familiarize themselves with the current technologies, sharing of facilities between technical colleges should be encouraged. Curriculum and syllabus of technical colleges be discussed with many employers as possible on the formation of curriculum objective, selection of curriculum content, organization of the content, selection of learning experience and the organization.
3. Training equipment, machines, laboratories workshops, ICT library and classrooms should be provided to technical colleges by government and philanthropies in the society for effective training.

5.4 Suggestion for Further Study

The following are suggested for further studies:

1. Mechanism for improving quality of management of Technical colleges for skill acquisitions.
2. Professional capacity building needs of technical teachers for effective teaching of Students of technical colleges in Niger State.

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Appendix A

QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

A QUESTIONNAIRE ON TECHNIQUES FOR ENHANCING COLLABORATION BETWEEN WOODWORK INDUSTRIES AND TECHNICAL COLLEGES IN MINNA METROPOLIS, NIGER STATE.

INTRODUCTION: Please kindly complete this questionnaire by ticking the column that best present your perception about the topic. The questionnaire is for research purpose and your view will be confidentially and strictly treated in response to the purpose of the research work.

SECTION A

PERSONAL DATA

Supervisor: ☐

Technical teachers: ☐

Note: A four (4) point scale is used to indicate your opinion, tick the options which best describe your agreement as shown below:

Strongly Agree	(SA)	=	4points
Agree	(A)	=	3points
Disagree	(D)	=	2points
Strongly Disagree	(SD)	=	1points

Section B: Administrative activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

S/N	Items	Scales			
		SA	A	D	SD
1	NBTE, ITF and Industries should set up school industry advisory committee to monitor implementation of approved courses in technical colleges				
2	Government should set up coordinating units/boards to carry out survey of skills needed by industries and giving feed back to relevant departments				
3	Government should establish industrial liaison offices/coordinating units in technical colleges				
4	Government should establish laws that will encourage industries and technical colleges to develop training programmes that can meet their internal needs				
5	Industries should be encouraged to develop training programmes in technical colleges in relation to their internal needs				
6	Industrial based job skills should be included				

	in the curriculum of technical colleges for skill acquisition				
7	Industries should be involved in screening and recommending courses or trades in technical colleges				
8	Government should encourage industries to establish vocational and apprentice training centres in their area of operations				
9	ITF, on regular basis should organize training programmes aimed at upgrading the knowledge of technical personnel				
10	Government should involve industry in recruitment of technical teachers in technical colleges				

Section C: School-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state

S/N	Skill Items	Scales			
		SA	A	D	SD
1	Jointly organizing seminars, workshops by technical colleges and industries can improve school-industry partnership				
2	Industries and Technical Colleges sharing of facilities can improve school-industry partnership				
3	Provision of programme of studies based on high academic standard can improve school industry partnership				
4	Involvement of industries in evaluating students relevant learning experiences acquired in the technical colleges can improve school-industry partnership				
5	Organizing cross training between industries and technical institutions personnel can improve school industry partnership				
6	Counseling of students for career exploration in specific vocation relevant to industries can				

	improve school industry partnership				
7	Involving industries in setting and marking of practical examinations in technical colleges can improve school-industry partnership				
8	Industrial training attachment for students in industries can improve school industry partnership				
9	Engaging engineering professionals in industry in part time teaching in technical colleges can improve school industry partnership				
10	Inviting guest speakers from industry to deliver lectures in technical colleges can improve school industry partnership				

Section D: Industry-based activities that enhance collaboration between woodwork industries and technical colleges in Minna metropolis, Niger state.

S/N	Skill Items	Scale			
		SA	A	D	SD
1	Provision of internship training and on –the-job training by industries				
2	Assessment of training facilities of technical colleges to find out if they are capable of giving the students adequate background in those occupations required in the industry				
3	Examination of craft curriculum of the training programme of technical colleges to ensure that their occupational interest is covered				
4	Provision of funds for the execution of technical colleges programmes				
5	Involving technical teachers/instructors working on industrial machinery in the production process so as to upgrade their knowledge and skills to keep abreast with new technological advancement				
6	Provision of occupational placement for				

	graduates of technical college programme by the industries				
7	Provision of instructional materials to technical colleges by the industries				
8	Donating information and communication technology equipment and tools to technical colleges				
9	Purchasing consumable material for students' practicals by the industries				
10	Organizing regional trade fair and exhibition of technical colleges' inventions by the industries				