TECHNIQUES FOR LINKING CONSTRUCTION INDUSTRIES AND BUILDING TECHNOLOGY PROGRAMME:

BY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION, SCHOOL OF SCIENCE AND SCIENCE EDUCATION.

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CERTIFICATION

I IGHOSOTU GLORIA ENI with Matric Number 2007/1/27259BT 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 university or any other.

Name Signature

APROVED PAGE

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

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Supervisor Sign/Date

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DEDICATION

This project is dedicated to the Almighty God who made it possible for me to complete project successfully. I also want to dedicate this project to my parent chief Mr. and Mrs. Ighosotu joseph eni and my siblings,

ACKNOWLEDGEMENT

Glory, honour and adoration be unto Almighty God for his benevolence, mercy and sustenance which has made this level of achievement a reality, May your name be exalted O' Lord (Amen). Special thanks go to my supervisor Mr James Maigida for his contribution and support in the course of this work despite his tight schedule. Your guidance and patience to the success of this work will remain in my evergreen memory. I also like to thank Mr Ibrahim Dauda for immense contribution and meaningful correction which has lead to the success of this work. My sincere gratitude goes to my parent chief Mr. And Mrs Ighosotu joseph eni for their parental and financial support during the course of this work. God bless you all for the love and courage i benefited from you and throughout my life as an undergraduate, I love you all.

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ABSTRACT

This study was design to investigate the techniques in linking Construction Industry and Building Technology Program. In carrying out this study, three research questions were formulated. A questionnaire was used to collected data from 50 technical teachers in Federal University of Technology Minna, Niger State and 60 industrial personnel within five industries in Niger State, summing up to 110 which represented the whole population of the study. Thirty items were generated from three research questions which form the instrument of data collection and were validated by three -lecturers in the department of Industrial and Technical Education, FUT Minna. The mean statistics were used to answer the research questions. The result reveals that there were no partnership bond between schools and industries. Therefore it was recommended that, the government should as a matter of urgency, pass edict compelling partnership between schools and industries. ITF, NBTE, in conjunction with the ministry of education should undertake massive campaign for awareness of the partnership programme. By these, school-Industry relationship should be improved.

CHAPTER I

INTRODUCTION

Background of the study

Every human on earth is faced with three major needs, that are par-amount and must be met for him or her to effectively and efficiently carry out his daily functions, (UNESCO, 1995). These needs are clothing, shelter and feeding. The need to provide shelter in the form of roof over's ones head has led to the need for building construction. Building can be defined as an enclosure structure bounded by walls made of different materials that have a roof over it. Building (housing) is very important as it helps to protect individuals from adverse conditions such as rain, sun, storm, and winds. It also serves as a means of providing security to life and properties as well as giving inhabitant certain level of privacy. The way buildings are been done differs from tribe, location, among others which is advancing day by day due to technology improvement. And the rate by which the change in technology is been effected in buildings is highly determine by the Building Technology Programme in school and the building industries.

Building Technology Program can be defined as the programme which enables students to prepare and qualify for more advanced position in residential and light commercial construction. Building Technology Programme is one of the most important vocational and technical educations because its occupational content offers the trainee the opportunity to acquire skills attitudes, interests, and knowledge to perform well in all aspect of building construction, which will be beneficiary to themselves, building industries and society at large. The building programme includes; introduction to construction industries, construction material and method, introduction to technical

drawings, construction planning and control, green building practices and much more (Water, 2008). While Building industries according to Vanua (2003) can be define as a sector of national economy engaged in the preparation of land and construction, alteration and repair of building structure and other real property.

However, Building Technology Programme and Building Industries has not best performed there potential role of economic and technology transformation in Nigeria, because of certain factors bedeviling it. Some of these factors include: lack of training facilities in the training institutions, absence of skills trained teachers that could teach practical aspect and lack of skill practical skills workers in many industries. Santo (1983) stated that it's necessary to continue to explore ways of developing creative linkage between industries and educational institutes in other to achieve better delivery of Building Technology Program me. The needs for developing relationship between schools and Industry is important especially in the area of vocational and technical college, institutions and universities as it is an area of education which will have a direct impact on the preparedness of industries futures employees.

Okorie (2006) attributed the present substandard training received by building technology students to mismatch between skills demand in labour market and those provided in the schools. He lamented that building industries are reluctant to engage graduates of building technology because such graduates are not employable in the building industries without further serious retraining. Ogunseye 1974 observed that training is not matched with recent development in technology and that Building Technology Programme has failed in planning, organizing and delivery of their programme, which he posited that it become apparent that the building industries sector needs to be involved in the daily

activities of the Building Technology Programme. Ojo (1986) stressed that as a result of the new trends in the development of modern industrial machines, the training institute alone can't cope with the demands of quality training in Building Technology Program me. He further observed that if Building Technology Programme are to keep abreast with the changes in the building industries that are the major employers of this graduates, then a stronger tie has to be established between the two. It is important that there should be much more institutionalized policy, liaisons and communication between building industries and Building Technology Programme in curriculum design.

In solving the problem of building industries and Building Technology Program me, government has made effort, among them are: constant curriculum conferences, provision of facilities to industries and schools, increment in salaries of teachers and industries employees among others, but with all this on ground the aim is still dwindling. This situation has brought into sharp focus the mismatch between the industries and schools. Critics argued that the lack of inputs from prospective employers (industrial sectors) into curriculum design and training delivery are partly responsible for the mismatch, (Au, 2007). In the quest of eliminating the forgoing problem of Building Technology Programme it become necessary that schools and industries should be awaken or reinforced in other to ascertain tight relationship among them. And the extent to which this relationship is facilitated will certainly makes the different in the effective delivery of Building Technology Program me, rapid improvement in building industries, and the growth of the nation as a whole.

Statement of the problem

Building Technology Programme in Nigeria is defective because it lacks practical orientation. In some cases, it's irrelevant to the needs of the employers and the level of training is sometimes lower than the level expected by the employers. Building Technology Programme in Nigeria is base on the pattern of Britain but compared with that of Britain, the Nigeria system has no industrial base. Hence the Building Technology Programme is mostly theoretical. Graduates trained in Nigeria building technology colleges are therefore deficient in the practical aspect of their training. Despite the best intention of Nigeria Government, Building Technology Programme are still fraught with problem such as deficiency educational monitoring and evaluation procedure, poor funding, lack of experience technical teachers, lack appropriate course content of curriculum, absent of training facilities and also inadequate technical textbooks in which all this problem are said to be generating from lack of adequate relationship between schools and industries.

Olaitan and Nwoke (1999) has recognized the undue emphasize on the theoretical aspect if Building Technology Programme in Nigeria and pointed out the danger in such a practice, stressing that acquisition of practical skills is not created by years of unbroken schooling and its training ground is not in the classroom but in the workshop. UNESCO (2007) mission to Nigeria has also observe that there was little or no effort to relate industries on the job training of Building Technology Program me, pointing out that the fault was due to the unwillingness of the employers (industries) to participate in the organization and management of Building Technology Programme which in turn cause inefficient delivery of Building Technology Program me.

If Building Technology Programme should be effective and meet up with the requirement of the building industries there must be optimum relationship/linkage between the school and industries.

Purpose of the study

The purpose of this study is to identify the techniques in linking Construction Industry and Building Technology Program. Specifically the study seeks to;

1. Determine the contribution made by the Construction Industry to the effective delivery of Building Technology Program me.
2. Identify the problems that hindered effective relationship between Construction Industry and Building Technology Programme.
3. Determine the strategies for linking the Construction Industry and Building Technology Program me.

Significance of the study

Like all study in education, this study aims at making impact in the satisfactory delivery of Building Technology Programme and effective working of building industries through adequate link/relationship between them. This study is significant to the teachers, students, Administrators and Society at large

Firstly, it's significant to the teachers because teachers will drastically improve in the delivery of their duties because good relationship between industries and school will help to bring new technology to teachers and it will help the teacher to be good both in theoretical and practical work, it will bring out the originality and competency in the teacher, not minding the hindrances or circumstances around them. This will in turn

increase their standard of living because they will not fully really on a paid job for living, but they can do something for themselves which will earn them a good standard of living

The students will also benefit from this study because effective relationship between industries and school makes learning real rather than being abstract. Therefore they will become productive to themselves since they will be train to personally create solution to their problem and that of their environment through practical and theoretical knowledge giving to them.

Furthermore, the Administrator/curriculum planers will benefit from this study. That is, by introducing effective relationship between industries and school in to the school curriculum as a concept, it will help to facilitate the achievement and the aim of Building Technology Program me.

Lastly the society will benefit by having an increasing number of quality and competent productive citizen in the aspect of building teachers, industrial workers among others, whom will put up a combine effort towards national development.

Scope of the study

This research work is limited to identify the techniques of linking Construction Industries and Building Technology Program in federal university of technology, Minna, Niger State. And five Industries in Minna, Niger State. this industries includes; Salini Construction company, suleja Construction and Commer-Venture Ltd, bosso road; Noobil Consult, Pakungu Road; Aliu De Mali, Pakungu Road; and Bolyn Construction Company Ltd, Pakungu Road.

Assumption of the study

(1) Based on the nature of the questionnaire administered, it is expected that respondent will give reliable information

(2) Our schools are not well equipped with facilities which will improve practical aspect of Building Technology Programme.

(3) Government and administrators did not fully know the effect of good relationship between Building Technology Programme and building industries over the student's performance which makes them not to encourage/enforce it.

Research questions

The following questions were formulated to guide the study

1. What are the contributions made by the Construction Industry for the effective delivery of Building Technology Program me?
2. What are the problems that hindered effective relationship between Construction Industry and Building Technology Program me?
3. What are the strategies for linking the Construction Industry and Building Technology Program me?

CHAPTER II

REVIEW OF RELATED LITERATURE

In this chapter, literatures related to this study were reviewed under the following sub-heading:

- Building construction industry
- Building Technology Programme in the school system
- Relationship between the building Industry and Building Technology Program me
- Techniques for linking/improving building Industry and Building Technology Programme relationship**.**
- Summary of the literature reviewed

Building construction industry

According to Alliance (2003), Building Construction Industry is made up two term which come together to form one, which is building construction and industry. Building construction is the process of adding structure to real property while Industry is any type of economic activity producing goods or services. Building Construction Industry is an economic activity that deals with adding structure to real property.

According to Vanua (2003) Industry is a sector of national economy engaged in the preparation of land and construction, alteration and repair of building structure and other real property.

According to UNIDO (2003), the building Construction Industry plays a vital role in the transformation of the physical terrain of any nation in its march towards greater civilisation and economic independence. It is also concerned with the assimilation and

utilisation of exogenous developments in technology, management sciences and related sciences to enhance building performance the world over. Apart from these factors the Industry continuously strives to enhance the performance of buildings to make them safe, healthier, more comfortable to the user; more durable; easier, faster and less expensive to construct; and to a greater extent easier to manage and maintain.

Challenges of building Construction Industry

The attainment of these factors underscores the basic philosophy of building education which is to develop and advance the science and practice of building technology and construction management by employing the knowledge gained from various construction and management techniques for the site, the contract, the finance, and other production resources for the development of a built environment. There is therefore no gainsay in the statement that the building graduate stands in the forefront of those professionals expected to face the peculiar challenges of the Nigerian building and Construction Industry to provide solutions to those issues which will make the nation truly technologically great.

Shelter is the third universally accepted basic need of all homo-sapiens, after food and clothing. It is, however, the most difficult to satisfy because of the intrinsic factors involved in the provision of human habitats. Several studies on the developmental programmes in the country have indicated the dire need for professionals in building research, planning and development sectors of the economy. Because the scope of activities in the building Industry is quite wide, the prime objectives of the Building Technology Programme in Nigeria University therefore, is to produce graduates who will not only be competent in the science, technology and management of the building process

but will also have specialized skills in at least one of four basic divisions of building namely: Construction Management, Building Structures, Building Services and Building Maintenance. He will also have sufficient generalized knowledge of other professions to be able to interact effectively in the coordination, the control, the channelization and the maintenance of the technological, human, economic and material resources involved in the building delivery process.

According to Clark (2003), the ultimate aim of this building Industry programme in school therefore, is to produce a graduate who can be put to work immediately upon engagement with little or no additional training of the employer as well as be acceptable for registration with CORBON (Council of Registered Builders of Nigeria) and other professional organizations involved in building process nationally and internationally. The prospective graduate is expected to be able to perform as a contract manager, premises manager, site agent/project manager, estimator, project management consultant, designer of building structures, building services experts, maintenance manager, facilities manager, and building officer/builder. He should also be able to function in the areas of building research, building finance, building economics, among others.

Building Technology Programme in the school system

Building Technology Programme in school system is governed by Technical Vocational Education. According to Moser (2004), Technical and vocational education (Building Technology) has been an integral part of national development strategies in many societies because of its impact on productivity and economic development. A necessary first step in the discussion of the development of technical and vocational

education in Nigeria is to attempt a definition. Technical education "is a planned program of courses and learning experiences that begins with exploration of career options, supports basic academic and life skills, and enables achievement of high academic standards, leadership, preparation for industry-defined work, and advanced and continuing education And vocational education and training "prepares learners for careers that are based in manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation. Vocational and technical education gives individuals the skills to "live, learn and work as a productive citizen in a global society. According to the National Policy on Education (NPE), it is defined as that aspect of education that leads to the acquisition of practical and applied skills as well as basic scientific knowledge. In this sense, it forms a practical segment of education that involves skill acquisition. Example of technical and vocational education programme are building technology, wood technology, metal technology, among others.

The provision of vocational and technical schools has a long history. Before the Industrial Revolution (between 1750 and 1830) the home and the "apprenticeship system" were the principal sources of vocational education. But societies were later forced by the decline of handwork and specialization of occupational functions to develop institutions of vocational education (Fafunwa, 1974). However, vocational education became popular in the elementary schools in the Nigeria and developed into courses in industrial training, bookkeeping, stenography, and allied commercial work in both public and private institutions. At the time of independence technical and vocational education take a new trend. In the early Independence Period, 1960 – 1966, there was rapid expansion in technical and vocational education. In 1966, there were about 73

institutions (Trade Centres, Craft Schools, and Technical Institutes) across the country, with pupil enrolment of 15,509 out of which 1,412 were females (Adesola, 2002) in each region. Like the secondary education sub-sector, shortage of technical instructors and high running costs were then as now the bane of technical education programmes. During this time there is also an introduction of 6-3-3-4 system of education, this means that 6 years for primary, 3 years for junior secondary, 3 years for senior secondary and 4 years for university education. Which was dated back to 8th September 1969 according to Adetoro (1985). The 6-3-3-4 was fashioned to produce graduates who would be able to make use of their hands, the head and the heart (the 3Hs of education).

And with the entire programme done since independent to improve technical and vocational education especially in the aspect of building technology, the programme is still dwindling due to the following factors: Regional imbalances in educational access and attainment; Inadequate high-level manpower; Low level capacity of secondary education; A school curriculum lacking in science and technology and regarded as bookish; Inadequate provision at tertiary level; Fragmented education management; Few specialized professional and support services; Shortage of qualified primary and secondary school teachers; Lack of qualified teachers in technical education; Lack of a truly national education policy, among others.

The major problem of Building Technology Programme in the school system is lack of competent teachers and inadequate facilities and learning environment. According to Adesola, 2002, building technology in school system is not qualified is purpose because the school system did not have enough facilities to teach the student, among the facilities require for effective teaching is a building site, block making machine, trowel

among others. Adesola stated that most school that has the facilities lack competent instructor to guide the student in acquiring building technology knowledge. In other to eliminate this inadequacy government and building Industry should come to Building Technology Programme aid.

Relationship between the Building Industry and Building Technology Program me

The building Industry and Building Technology Programme collaboration/relationship is an integrated system of education. The concept of this relationship emphasizes the learning continuity of the student by focusing on the alignment across building Industry sector, not separating within sectors (Himmelman, 1996). Ntoiden (2003) pointed out that, ideally building Industry and Building Technology Programme collaboration/relationship signifies a long term reciprocal relationship forged between the school and industry, and often interested others, such as local builders and communities groups. Roth 1987 noted that although partnership between school and Industry is a means of contributing to quality training programmes, which the building Industry have a survival stake in yet they neither show interest in partnership nor the schools initiating any strong move for collaboration. Therefore it has become pertinent to carryout, a research of this kind to investigate the possible method of promoting cooperation between schools and industries.

Clark 1991 observed that a partnership between Industry and school must be looked upon in terms of operation, concepts and practices not its title. School Industry partnership is about using collaboration to increase opportunities for all students to be successful in life. Himmelman 1996, stated that building Industry and Building Technology Programme collaboration/relationship is a way through which organization

exchange information, alter activities, share resources and give each other capacity to address problems too complex and too protracted to be resolved or unity or organization communicating together for a specific purpose.

Russell and Flynn 2000 explain further that linking building Industry and Building Technology Programme will be an ongoing partnership having a formal legal and contractual agreement with responsibilities specified and in essence with the partnership taking on life and purpose of its own.

Russel and Flynn 2000, argue that school Industry partnerships are particularly well suited to respond to the multi layered nature of the educational system. In a situation of diffuse authority, unclear boundary multiple decision makers and informal ties among partner. Path 1973 excellence in building vocational and technical education require not only institutional commitment but continued active support from business, industry, labour, community agencies and public. This kind of support lightens the tax payer Borden, enhance building graduate employment opportunities and broaden the programme offerings. Huxham 1996 typified that the collaboration helps to keep Building Technology Programme current and relevant ultimately, school Industry partnership through the achievement of outcomes that could not have been accomplished except through collaboration.

The problem of lack of cohesive partnership between schools and Industry has been prevailing in Nigeria for a very long time. According to the World Bank mission report, the UNESCO which studied the problem of the very limited role of schools in Industrial Training in Nigeria. Concluded that there weakness is attributed to the limited

participation of industries in the training of the students. This makes it difficult for training institution to design curriculum to meet more specific needs of employers.

Yilkangah 1998 posited that vocational and technical education exists to serve industries. It is necessary that a high degree of cooperation be maintain between training institution and industries. The cooperation between this two sectors will ensure the effective delivery of vocational and technical education programme in Nigeria. Clark 1991 lamented that there is needs for closer collaboration between educational institution and industries. By this he believes that the right calibre of building scientist, technologist and engineers would be produced. In this regards, he suggested that this goal can be achieved if co-operation between educational institute and industries to work out programme for the total education and training development of young Nigerians

Techniques for linking / improving building Industry and Building Technology Programme relationship

The socio-economic development of any nation demands a tripartite relationship among vocational technical colleges, industries and private sectors. None of these sectors can operate effectively in isolation. Much as we have agreed that vocational and technical education or its curriculum or an instrument for social and economical advancement of any society. We can as well agree that vocational and technical education can only serve other sectors only when they have made their problem known and how best they want them to be solve

1. Robert (1993), pointed that to improve on working relationship amongst building Industry and Building Technology Program me**,** calls for proper planning. It is pertinent that Industry and other related professional bodies should continue to be involved in

designed and managing job oriented programme (school programme). This opinion is in line with National Policy on education (2004), which stated that Industry and government will be consulted when designed course so that relevance and greater practical impetus would be given.

2. The building Industry and schools should have a collaboration offered in the Curriculum designs for Building Technology Program me, since they are in the position to know what should be included in the syllabus. Beside Industry should as well monitor the implementation of the curriculum by offering assistance is such area of problems as: poor financing, inadequate equipments, inadequate qualified technical teachers.

3. The school system should ensure that the student fully participate in the industrial Training programme (SIWES). By making sure all the student did there SIWES under the umbrella of the building industry.

4. According to Okoro, 1993, he observed that the vocational and technical education Programme curriculum could not fully produce a graduate that will meet-up the standard of the building industry. So he suggested that building Industry should organize a committee that will oversee the incorporation of all the need courses in the school curriculum.

5. One of the major problem facing building technology courses is lack/inadequate fund to obtain equipment and pay building technology teacher salary. Due to building technology teacher salary are not well paid the teachers tend to look for an alternative way to raise fund for them salve which indirectly makes them incompetent in the delivery of their duties. Secondly there are insufficient faculties/equipment in the school system. In other to eliminate this inadequacy in fund building Industry should give the school

system found and the Industry should setup a committee that will ensure that the fund is rationally spent.

Summary of the literature reviewed

This chapter discussed on Building Construction Industry as an economic activities that deals with adding structure to real property; Building Technology Programme in the school system; Relationship between the building Industry and Building Technology Programme which said to be important to increase opportunities for all students to be successful in life, increase the standard of building industry, among others; and Techniques for linking/improving building Industry and Building Technology Programme relationship.

The linking/collaboration of Building Industry and Building Technology Programme can also be describe as a tie between the two sectors that bring about mutual respect and trust which promote the achievement of share goals. It is therefore, very important for the building Industry and the school to engage actively in programme design, delivering instruction, seminars, workshops, conference, forming advisory committee, among others For the purpose of achieving their shear goals personal development. Alliance (2003), summarized that school Industry collaboration result in the elimination of duplicate services, barriers and mutual interaction that result in internal expending.

CHAPTER III

METHODOLOGY

This chapter deals with research design, area of the study, population of the study, instrument for data collection, validation of instrument, administration of the instrument, methods of data analysis and the decision rule.

Research Design

The research design that was used in carrying out this study is the descriptive survey method, where questionnaire are used to gather opinions of respondent on the issue under investigation.

Area of the study

The study was carried out in federal university of technology, Minna Niger state. Three departments were selected from the school which includes: Industrial Technology Education Department at Bosso Campus, Building Technology Department and Architectural Department at Gidan-Kwano Campus. Five Industries were also selected and used for this study, they include; Salini Construction company, suleija; Construction and Commer-Venture Ltd, bosso road; Noobil Consult, pakungu road; Aliu De Mali, Pakungu Road; and Bolyn Construction Company Ltd, Pakungu Road.

Population of the Study

The population targeted for this study includes 50 school teachers in the selected departments and 60 industrial personnel within the selected industries in Niger State. This totally sums up to 110 targeted populations. .

Table I:
Showing the relationship between building Lecturers in the three selected department in Federal University of Technology Minna , Niger State.

S/N	Departments in Federal University of Technology Minna , Niger State.	Number of lecturers
1	Industrial Technology Education Department at Bosso Campus	15
2	Building Technology Department at Gidan-Kwano Campus	20
3	Architectural Department at Gidan-Kwano Campus	15
	TOTAL	**50**

Table II:
Showing the relationship between the Industrial workers and the five industries selected in Niger State.

S/N	Industries in Niger State	Numbers of industrial workers
1	Salini Construction company, suleja	10
2	Construction and Commer-Venture Ltd, bosso road	15
3	Noobil Consult, pakungu road	15
4	Aliu De Mali, Pakungu Road	10
5	Bolyn Construction Company Ltd, Pakungu Road	10
	TOTAL	**60**

Instrument for Data Collection

The instrument for data collection was a structure questionnaire developed by the researcher through extensive review from the literatures. The questionnaire item were generated based on the research questions and were designed to elicit information from the teachers and experience industrial personnel.

The questionnaire contained thirty (30) items, which was divided into two parts (1&2). Part1 contained personnel respondents while Part2 was further sub-divided into 3 sections, with numbers of items allocated to each of the sections. Section A: comprises of

items which dealt with the contribution made by the Industry to the effective delivery of Building Technology Programme. Section B: was designed to identified problems that hindered effective relationship between school and industries. While Section C: comprises of items, dealing with techniques for linking the school and industry

Validation of Instrument

The instrument for the collection of data was validated by three lecturers in the Department of Industrial and Technology Education Department, Federal University of Technology Minna . Necessary corrections were made by the expert which led to the final production of the instrument before administration.

Administration of the Instrument

` The instrument was administered by the researcher personally and one research assisstant. The researcher visited the selected Department in Federal University of Technology and Industries in Niger State. A letter of the introductory letter was presented to both the Heads of Departments and Heads of the building option of the University and Industries respectively, for permission and co-operation to administer the questionnaire.

Method of data Analysis

The data collected was analyzed using Mean ($\bar{X}$), Standard Deviation (SD) was used to determine the degree of acceptance and rejection for the research questions.

Decision Rule

To determine the acceptance level, a mean score of 2.50 was used as deciding point between agreed and disagreed. Thus, responses with a mean of 2.50 and above were considered agreed while responses below 2.50 were considered disagreed. Also an inferential statistic t-test was used to test the hypothesis at 0.05 level of significant to compare the mean response of the two groups.

Therefore any item with t-calculated value less than t-critical (t-table value) was regarded as not significant. While any item with t-calculated value greater than t-critical was regarded as significant.

Strongly agree	(S.A)	=	4
Agree	(A.)	=	3
Disagree	(D.)	=	2
Strongly	(S.D.)	=	1

CHAPTER IV

PRESENTATION AND ANALYSES OF DATA

This chapter presents and analyses the result of this study. The data are present and organized according to research question.

Research Question 1

What are the contributions made by the Construction Industry for the effective delivery of Building Technology Program me?

In determining the contribution made by the Construction Industry for the effective delivery of Building Technology Program me, 16 items were presented to the respondents in other to express their opinion. The response of the respondents is presented in Table 4.1 below.

Table 4.1;

Mean responses of Building Industrial personnel and building teachers on the contributions made by the industries for the effective delivery of Building Technology Programmes.

S/No	ITEMS	$\overline{X}1$	$\overline{X}2$	$\overline{X}t$	Decision
1	Supervise the activities of colleges running Building Technology Program me.	2.13	2.11	2.12	Disagreed
2	Building of general workshop in colleges running Building Technology Program me.	1.67	1.55	1.61	Disagreed
3	Supervise the implementation of the curriculum.	2.16	2.20	2.18	Disagreed
4	Moderating and marking of student practical projects.	1.43	1.63	1.52	Disagreed
5	Award of scholarship to colleges running Building Technology Program me.	1.90	1.02	1.46	Disagreed
6	Involve in curriculum review of Building Technology Program me.	1.99	1.87	1.93	Disagreed
7	Maintenance of equipment and machine of colleges running Building Technology Program me.	2.06	2.04	2.05	Disagreed
8	Provide training opportunity for an in-depth development of practical skill for students of Building Technology Program me.	2.81	2.07	2.44	Disagreed
9	Contribution to annual budget for Building Technology Programme through Educational Tax Fund (ETF).	3.57	3.09	3.33	Agreed
10	Involve in the curriculum planning and designing of Building Technology Program me	2.72	2.12	2.42	Disagreed
11	Encourage technical teachers to participate in industrial attachment during long vacation.	2.84	2.18	2.48	Disagreed
12	Organize workshop, seminar and conference for students.	2.91	2.03	2.47	Disagreed
13	Placing student on part-time work during holidays.	2.56	2.42	2.49	Disagreed
14	Donate machine or equipment to Building Technology Program me.	1.83	1.11	1.47	Disagreed
15	Financial and material contribution for specific research development in colleges running Building Technology Program me.	2.76	2.14	2.45	Disagreed
16	Involve in the team-teaching of practical to students.	2.12	2.04	2.08	Disagreed

Key $\overline{X}1$ = mean score of industrial personnel

$\overline{X}2$ = mean score if building technology teachers

$\overline{X}t$ = average of $\overline{X}1 + \overline{X}2$

The result of data analysis in section "A" table 4.1 shows that the industrial personnel and building teachers disagree with items 1,2,3,4,5,6,7,8,10,11,12,13,14,15,16 with average mean of above 2.5 while they disagree with item 9 with mean score of 3.33. This shows that there are no much contribution made by the Construction Industry for the effective delivery of Building Technology Programme

Research Question 2

What are the problems that hindered effective relationship between Construction Industry and Building Technology Program me?

In determining the problems that hindered the effective relationship between construction industries and Building Technology Program . 7 items were administered to the respondent to express there opinion. The response of the respondents is presented in table 4.2 below

Table 4.2;
Mean response if Industrial Personnel and building technology teachers on the problems that hindered effective relationship between Construction Industry and Building Technology Program me

S/No	ITEMS	$\overline{X}1$	$\overline{X}2$	$\overline{X}t$	Decision
1	Lack of appropriate laws and addicts.	3.84	3.76	3.80	Agreed
2	Lack of orientation to the staff of the school and industries.	3.02	3.16	3.09	Agreed
3	Mismatch between the curriculum and world of work.	3.89	3.11	3.50	Agreed
4	Lack of coordinating body ministry to handle school and industries relationship.	3.67	3.73	3.70	Agreed
5	Industries have not shown interest in cohesive relationship with schools.	2.67	2.99	2.83	Agreed
6	Schools have not called for collaboration with industries	2.87	2.15	2.56	Agreed
7	Federal Government did not encourage partnership between schools and industries.	3.91	3.61	3.76	Agreed

Table 4.2 reveal that the industrial personnel and building technology teachers agree with all the items because those items have average mean score of 2.5 and above. This implies that there are lot of problems hindering effective relationship between Construction Industry and Building Technology Program me

Research Question 3

What are the strategies for linking the Construction Industry and Building Technology Program me?

In determining the strategies for linking the Construction Industry and Building Technology Programme 7 items were administered to the respondent to express their opinion. The response of the respondents is presented in table 4.3 below

Table 4.3;
Mean response on the strategies for linking the Construction Industry and Building Technology Program me.

S/No	ITEMS	$\overline{X}1$	$\overline{X}2$	$\overline{X}t$	**Decision**
1	School and industries should by bill be encouraged to keep a joint training fund.	3.94	3.72	3.83	Agree
2	Invite experience industrial personnel to come and review the curriculum to suit the world of work.	2.53	2.97	2.75	Agree
3	Invite experience industrial personnel to take part-time lectures in relevant courses in Building Technology Program me.	3.03	3.77	3.40	Agree
4	Invite experience industrial personnel to come and speak in career days.	2.65	2.87	2.76	Agree
5	Invite Industry to contribute to the planning and designing of school curriculum.	3.68	3.84	3.76	Agree
6	Federal Government should pass a bill mandating all Industry to be involved in partnership with schools.	3.02	3.64	3.33	Agree
7	There should be frequent Joint organizing seminal, conference, and workshop between the school and industries.	3.76	3.58	3.67	Agree

Table 4.3 shows that the industries personnel and building technology teachers agreed with all the items because those items have average mean score of both industrial personnel and the building technology teachers to be above 2.5 and above. This implies that are lot of strategies that can be used to improve the link/relationship of building industries and Building Technology Program me

Findings

Base on the data collected and analyzed, the following findings were made. According to the research question

1. What are the contributions made by the Building Industries to the effective delivery of Building Technology Program mes? The industries never contributed through the following ways:
    a. Building Industries doesn't organized workshop, seminars and conference for building students.
    b. Building Industries doesn't not donate machine or equipment for colleges running Building Technology Program me.
    c. Building Industries never provide training opportunity for an indebt development of practical skills for students of building technology grogram.
    d. Building Industries doesn't involve in learn-teaching of practical to students.
    e. Building Industries does not involve in the curriculum planning and designing of building technology programme.
2. What are the problems that hindered effective relationship between Construction Industry and Building Technology Program me?
    a. Mismatch between the curriculum and the world of work
    b. Lacks of appropriate law and addicts

c. An Industry doesn't believe in the important relationship with school which makes them not to show interest.
d. Lack of coordination body or ministry to handle the relationship between building Industry and Building Technology Program me.

3. What are the strategies for linking the Construction Industry and Building Technology Program me?
    a. Building Technology Programme designer should invite industries to contribute to the planning and designing of their curriculum.
    b. Federal Government should pass a bill mandating all Industry to be involved in partnership with schools.
    c. Invite experience industrial personnel to take part-time lectures in relevant courses in Building Technology Program me.
    d. There should be frequent Joint organizing seminal, conference, and workshop between the School and Industries.

Discussion of finding

This study was designed to bring about techniques for linking Building Technology Programme and building industries. This leads to the formation of three research question which the study is seeking to find answer to. The finding of this study showed that there had not been an effective partnership between school and industries. This is responsible for the lack of effective delivery of Building Technology

Programmes. The research question raised by the study and its finding are discussed below:

What are the contributions made by the building Industry for the effective delivery of Building Technology Program me? These research questions were formed to outline the contribution of Industry for the effective delivery Building Technology Program me. The rejection of almost all the items on table 1 revealed that no relationship is existing between the two sectors. The view of the respondent according to Moser 2004, confirm the fact that there is no serious relationship between building industries and Building Technology Programme is like an existing cold war. Moser further explained that this non-relationship between school and industries has long manifested in the annual supply of unskilled technical personnel turned out from the school and lack/inadequate growth and development of industries in Nigeria are clear testimonies. This study blames this disparity on the two sectors.

What are the problems that hindered effective relationship between Building Industry and Building Technology Program me? Research question two on which the finding are tabulated in table 2 revealed how the problems that hindered effective relationship between both sectors can be tacked. Both the industrial personnel and the Building Technology educators have agreed with all items to be the problem militating the effective relationship. Clark 1991, advanced several advantages that can be derived from Building Technology Programme and Building Industries.

What are the strategies for linking the Building Industry and Building Technology Program me? This implies that successful partnership can generate mutual respect and

trust among leaders of Building Technology Programme and Building Industry and all mutual problems to be solved and shared goals to be reached. Section C table 3 contained the finding of research question three, which was drown to edict response from industrial personnel and building teachers to suggest ways of improving the relationship between Schools and Industries. Out of the items, three items were suggested as the major finding as strategies for improving the relationship between both parties. The result revealed that the industrial personnel and building teachers have full support for school Industry relationship to be improved.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of the study

This study was carried out with the aim of finding out techniques in which Building Industries can be involved in collaboration or link with Building Technology Programme in school. The objective of this study was to figure out adequate techniques involved in the linking of Building Technology Programme and Building Industries.

The statement of problems, purpose, significance, scope, assumption of the study and the research question were all stated and discussed in line with the research topic. The review of related literature looked into the current trends of Building Technology Programme and Building Industries relationship in Nigeria. The major problem of Building Technology Programme is lack of relationship between the Industries and the Schools.

The instrument used for data collection was a questionnaire; the questionnaire was designed by the researcher to a total population of 80 industrial personnel in Niger State and building teachers in Federal University of Technology Minna , Niger State. In analyzing the data's collected, the researcher made use of mean statistics. Grand mean method was used to determine the degree of agreement or disagreement.

The research questions were discussed based on the finding from the responses. Implication of the study and conclusion were drawn from the findings and discussed. Recommendation and suggestion for further study was made based on the findings of this study.

Implication of the study

The data analyses interpretation and discussion, some important implication of the study have been pointed out. The studies conducted by expects notably Roth 1987; Anthony 1992; Levy 1997 have point out very essential measure in which the Building Industries and Building Technology Programme must be jointly committed to bring about the effective delivery of Building Technology Program me. This action on the part of Building Industries and Building Technology Programme could only be ascertained if there is edict compelling partnership between schools and industries. To bring about this revolution the colleges running Building Technology Programme must set up an advisory committee similar to academic committee. This committee will discuss the matter regarding the contribution of Building Industries to perfect delivery of Building Technology Program me. By so doing the training institution will keep space with rapid advancement in technology and the changing needs of the industries. A more cordial relationship will this improve between the Building Industries and Building Technology Program me. Another implication is that there must be enough planning and consideration on the part of policy maker, industrialist and government executive in term of finance, curriculum, and location of Industries and Vocational Technical Education colleges, constitution of committee members to coordinate, implement and finally formulate the policy; decree to take care of partnership training between Building Industry and Building Technology Program me. Those involve in linking up the relationship between Building Industry and building colleges should consider the relationship between the location of training institutions and industries.

Conclusions

Linking Building Industry and Building Technology Programme has not long been given adequate attention. This study has revealed some measures through which collaboration can be achieved to enhance as effective delivery of Building Technology Program mes. The major findings in this study suggested that, to link or make the relationship between Building Industry and Building Technology Programme strong and effective, various methods or strategies must be utilized.

Recommendations

Base on the findings the following recommendations are made:

- Building Technology Programme school should initiate team-teaching with industries in area of practical.
- Industrial official should be actively involved in the planning and reviewing school curriculum to ensure that they are in line with realities on ground
- The government should, as a matter of urgency, pass edict compelling relationship between Building Technology Programme and Building Industries.
- There should be an urgent establishment if industrial relation officers based in training institution and schools relation officers based in Industry to improve the effectiveness of the partnership.
- Building Industries should encourage Building Technology Programme teachers to participate in industrial attachment during long vacation, so that they can impact the knowledge they might gain to the students.

- Training institution being an expensive venture, the government alone would not be able to overcome the responsibilities involve therefore; Building Industries should support government effort by donating some relevant equipment and machinery to schools.
- Industrial advisory board should be constituted. The member of this board should comprise extort from government, private industries and school organizations. This board should understudy the activity of the Industries and Schools, and be able to advice appropriately the collaboration pattern that will be effective.
- The industrial trust fund (ITF), National Board of Technical Education (NBTE), in conjunction with the ministry of education should undertake a massive campaign for awareness of partner programme. They will give more information to the populace that need to support the programme to National Conference on School-Industry collaboration should be organized by these three bodies to bring out ideas from export both at home and in abroad.

Suggestion for further research

Further research work should be carried out in the following areas

1. The area of involving staff/lecturers in undergoing industrial refreshers course.
2. The area of delivering of vocational and technical education at all level of education.
3. The area of school-Industry partnership for efficient funding and deliver of vocational and technical education in Nigeria.

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APPENDIX I

APPENDIX II

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

BUILDING TECHNLOGY OPTION

QUESTIONAIRE FOR BUILDING TECHNOLGY TEACHERS AND INDUSTRIAL WORKERS

Dear respondent

This questionnaire is designed to elicit information from the respondents on the matter regarding to the techniques for linking construction industry and building technology programmes in Niger state.

Please, kindly give respond on the questions in the questionnaire to provide a data base for this study. Any information provided would be treated with confidentiality.

PART 1

PERSONAL DATA

Name of school or industry ……

Status: Building teacher ( ). Industrial worker ( )

Please read this questionnaire items carefully and tick the response appropriate to each item. The response categories are:

SA	=	Strongly Agreed
A	=	Agreed
D	=	Disagreed
SD	=	Strongly Disagreed

PART II

SECTION A

Research Question 1

What are the contributions made by the construction industry for the effective delivery of building technology programme?

S/No	ITEMS	SA	A	D	SD
1	Supervise the activities of colleges running Building Technology Program me.				
2	Building of general workshop in colleges running Building Technology Program me.				
3	Supervise the implementation of the curriculum.				
4	Moderating and marking of student practical projects.				
5	Award of scholarship to colleges running Building Technology Program me.				
6	Involve in curriculum review of Building Technology Program me.				
7	Maintenance of equipment and machine of colleges running Building Technology Program me.				
8	Provide training opportunity for an in-depth development of practical skill for students of Building Technology Program me.				
9	Contribution to annual budget for Building Technology Programme through Educational Tax Fund (ETF).				
10	Involve in the curriculum planning and designing of Building Technology Program me				
11	Encourage technical teachers to participate in industrial attachment during long vacation.				
12	Organize workshop, seminar and conference for students.				
13	Placing student on part-time work during holidays.				
14	Donate machine or equipment to Building Technology Program me.				
15	Financial and material contribution for specific research development in colleges running Building Technology Program me.				
16	Involve in the team-teaching of practical to students.				

Research Question 2

What are the problems hindering the effective relationship between construction industry and building technology programme?

S/No	ITEMS	SA	A	D	SD
17	Lack of appropriate laws and addicts.				
18	Lack of orientation to the staff of the school and industries.				
19	Mismatch between the curriculum and world of work.				
20	Lack of coordinating body ministry to handle school and industries relationship.				
21	Industries have not shown interest in cohesive relationship with schools.				
22	Schools have not called for collaboration with industries				
23	Federal Government did not encourage partnership between schools and industries.				

Research Question 3

What are the strategies for linking the construction industry and building technology programme?

S/No	ITEMS	SA	A	D	SD
24	School and industries should by bill be encouraged to keep a joint training fund.				
25	Invite experience industrial personnel to come and review the curriculum to suit the world of work.				
26	Invite experience industrial personnel to take part-time lectures in relevant courses in Building Technology Program me.				
27	Invite experience industrial personnel to come and speak in career days.				
28	Invite Industry to contribute to the planning and designing of school curriculum.				
29	Federal Government should pass a bill mandating all Industry to be involved in partnership with schools.				
30	There should be frequent Joint organizing seminal, conference, and workshop between the school and industries.				

APPENDIX III

FORMULA USED FOR DATA ANALYSIS

Mean($\bar{X}$)

$$\bar{X} = \sum \frac{fx}{n}$$

Where $\bar{X}$ = mean response of each item

F = frequency of respondents

$\sum$ = sum of

X = Rating scale/Nominal value of options

N = total number of respondents

Standard deviation

$S.D = \sqrt{\sum f(X - \bar{X})^2 / N}$

Where: N = Total respondents sum

F = frequency

$\bar{\square}$ = scores squad

X = Nominal value of options

S.D = Standard deviation

$\sum$ = sum of