Repositioning the Facilities in Technical College Workshops for Efficiency: A Case Study of North Central Nigeria

Ibrahim Y. Umar
Southwest University, Chongqing-China.

Abdullahi S. Ma'aji
Federal University of Technology, Minna-Nigeria

Abstract

This article focuses on assessing the facilities in Government Technical College workshops in the context of a developing country. A descriptive survey design was adopted. Two research questions and a hypothesis were formulated to guide the study. A 35-item questionnaire was developed based on the National Board for Technical Education (NBTE) standards on Technical College workshops, and was validated by three experts. Data was collected from 101 administrators, 140 teachers, and 24 workshop personnel randomly sampled and stratified along trades in 19 Government Technical Colleges in North Central Nigeria. Mean was employed to answer the research questions while one-way analysis of variance (ANOVA) was employed to test the hypothesis using Statistical Package for Social Sciences (SPSS) for analysis. Results revealed that administrators, teachers, and workshop

Ibrahim Y. Umar is a Doctoral Student in the Vocational Education Programme, Southwest University, Chongqing. He can be reached at iyumar36@gmail.com. Abdullahi S. Ma'aji is in the Industrial and Technology Education Department, Federal University of Technology, Minna-Nigeria. He can be reached at drasmaaji@yahoo.com.

personnel shared similar views on inadequacy of facilities in Technical College workshops. It was therefore recommended that: The private sector should be encouraged to initiate and participate in the provision of facilities using such methods as build operate-and-transfer (BOT), build own-operate and transfer (BOOT) and rehabilitate-operate and transfer (ROT); special intervention funds should be set aside by Government for procurement of workshop facilities to technical colleges, such channels may include Education Tax Fund (ETF) as practiced in Nigeria; Non Governmental Organizations (NGOs), Parent Teacher Association (PTA), and Community Based Organizations (CBOs) should be asked for support in supplying relevant facilities to the workshops as obtained in some nations; and that a specific percentage of income tax generated annually by the Government should be utilized for provision of workshop facilities in technical colleges.

Introduction

Technical colleges in Nigeria have been training people to become craftsmen and technicians. Training qualifies them for jobs in both public and private sectors of the economy. Both sectors, according to Ndomi (2005), require well-trained and competent technicians who can operate and maintain the available technical equipment. Therefore, there is a need for qualitative technical colleges for education and training to produce graduates that can perform competently in their chosen vocation without a need for pre-employment training. The major goal of vocational institutions is to prepare students for successful employment in the labor market (Finch & Crunkilton, 1999). This condition can be met through a curriculum that is relevant and comprehensive and a well equipped workshop with relevant training facilities. School workshops offer opportunities for practical training of students

in skill acquisition in their technical trade areas for future development of the key sectors of the economy in order to meet the basic needs of electricity, roads and machinery, among others. Student's practical projects are an important part of the curriculum in technical colleges, but a supportive school environment is a fundamental requirement for the successful implementation of curriculum (Bybee & Loucks-Horsely, 2000; Penney & Fox, 1997). This aspect of the curriculum can only be implemented where facilities in the workshop are adequate and relevant. Availability of appropriate facilities enhances student learning by allowing them to be involved in demonstrations, and practice will continue to build their skills. However most of the technical colleges in Nigeria have been forced to perform below standard due to purported non availability, poor management or utter neglect of the required facilities in the workshops for effective training.

According to Aina (2000), performance at the National Technical Certificate (NTC)/National Business Certificate (NBC) examinations taken in technical colleges in 1999 revealed very disturbing statistics attributable to utter neglect, poor funding, and inadequacy of resources. Poor management of facilities resulted in failure rates from 14 percent - 48 percent in Electrical and Mechanical trades, 12 percent - 50 percent in Construction trades and 18 percent - 94 percent in Business trades. Atsumbe (2002) observed that due to inadequate funding, normal workshop practice, which forms 60 percent [standard set by National Board for Technical Education (NBTE)] of the technical college curriculum, is fast disappearing on vocational/technical colleges' time tables. Ideally in the workshop there is equipment for acquiring skills, consumable materials purchased and distributed for practice; physical facilities arranged and given occupational direction so that acceptable work habits and procedures are successfully executed. Towe (2000) and Asilokun (2004) maintained that

these workshops were originally designed and built for small populations of students. However in recent times the student population, especially in urban schools, has increased tremendously, thereby over-stressing the available space and facilities. To worsen the situation, Puyate (2002) maintained that the present state of vocational education facilities is very poor, there is no planned means of maintenance of the already broken down equipment or means of purchasing new ones, there is little or no concern on the part of government, teachers and students for the improvement of the present state of facilities. This pathetic situation needs to be reverted in order to meet the goals of technical and vocational education as enshrined in the National Policy on Education of Nigeria (Federal Government of Nigeria, 2004). According to the policy, the goals shall be to provide trained manpower in the applied sciences, technology and business particularly at craft (equivalent of high schools), advanced craft and technical levels; provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development; to give training and impart the necessary skills to individuals who shall be self reliant economically.

At all levels of the nation's educational system and for all known and existing school types, instructional resources or teaching and learning materials are an indispensable factor in the attainment of goals (Mkpa, 2001). The study conducted by Onyejemezi (2001) on quality, quantity, production and distribution of teaching resources/facilities revealed that tertiary institutions are hardly supported with educational resources, even in the face of 'Accreditation fever'. Resource support from foreign countries is no longer available to Nigeria schools. Although modern teaching materials such as computers, flip charts, projectors, videos, etc. are to be found in the educational system, their distribution varies from school to school (Nnoli, 2001, p. 199). The extent of the deterioration

of educational structures such as physical plants, infrastructures and facilities, where these educational structures are available, is amazing. In many schools, the non-availability of these facilities is more striking than their condition (Nnoli, 2001, p. 207).

Given the scenario above, the situation at technical colleges might not be different. The researchers therefore took up the task to assess technical college workshops in North Central Nigeria in order to ascertain the state of affairs and meeting the goals of technical and vocational education which are synonymous to society needs. The intention was to provide feedback on the position of facilities meeting the policy objectives to educational planners and policy makers, particularly the National Board for Technical Education (NBTE). The study sought an answer to each of the following research questions and tested the null hypothesis that follow at 0.05 level of significance.

1. How adequate are the facilities in technical college workshops?
2. What are the strategies toward acquiring adequate facilities in technical college workshops?

Ho_1: There is no significant difference between the mean responses of the administrators, teachers and workshop personnel with respect to their perceptions on the adequacy of facilities in technical college workshops.

Methodology

A descriptive survey research design was adopted in this study. In a typical survey, the researcher selects a sample of respondents and administers a standardized questionnaire to them (Babbie, 1998). The study covered all Government

Technical Colleges located in the three states of Benue, Kwara, Niger, and the Federal capital territory-Abuja, all of which are in North Central Nigeria. A stratified random sampling technique was used in order to involve a variety of proportional participants in the management of technical college workshops. Stratified random sampling divides populations into strata, and then randomly selects samples from each stratum (Neill, 2006). There were three strata in the sample with 101-Administrators (Principals, Vice Principals & Heads of department), 140-Teachers, and 24-Workshop personnel (workshop Assistants & Attendants) represented. Therefore, the sample for the study comprised of 265-subjects from the clusters of engineering and construction trade programs in 19 Government Technical Colleges in the area of the study (NBTE, 2001).

A 35-item structured questionnaire was used for data collection. It was developed based on the existing NBTE standards on technical college workshops and literatures on the subject matter. Two different response categories were used based on a four point rating scale, they are: Very adequate (4); adequate (3); Inadequate (2); Very inadequate (1); used in research question one, and strongly agree (4); Agree (3); Disagree (2); strongly disagree (1); used in research question two. The instrument was subjected to face validation by three experts, comprising of a staff member from NBTE, a principal and a lecturer from the department of Industrial and Technology Education, Federal University of Technology, Minna. Their suggestions were used to refine the questionnaire to its present form. A pilot testing of the instrument was carried out with forty respondents selected from the three strata in two states not involved in the study. A Cronbach's alpha was used to measure the reliability of the instrument. The reliability co-efficient value of 0.80 allowed the researchers to launch the study on a large scale (Gay, 2002). The instrument was administered to the respondents by the researchers and the

research assistants. Data collected was analyzed using the Statistical Package for Social Sciences (SPSS), mean for answering the research questions and one way analysis of variance (ANOVA) for testing of hypothesis. Items with mean values of 2.50 and above were considered adequate/agreed while items with mean values of 2.49 and below were considered inadequate/disagreed. The hypothesis was accepted for f-ratio (calculated) less than f-ratio (table value), otherwise, it was rejected.

Results

The results of the data analysis are presented in the order of the research questions and hypothesis as follows:

Research Question One

How adequate are the facilities in Technical College workshops?

To answer this research question, facilities required in the workshops based on NBTE standards were presented to administrators, teachers and workshop personnel to indicate their adequacies; their responses are as presented in Table 1.

Table 1

Respondents mean scores on the adequacy of facilities in the Technical College Workshops.

$n_1 = 101$, $n_2 = 140$, $n_3 = 24$

S/ No	ITEM	M_1	M_2	M_3	M_t
1	Workshops for 20 students in trade areas	2.93	2.96	2.96	2.95
2	Electricity from national grid	2.55	2.69	2.54	2.59

3	A classroom or improvised space for teaching of 30 students	2.91	2.81	2.75	2.82
4	Library facilities for 1/3 of its readers	2.25	2.21	2.29	2.25
5	Office space for 2 staff located in the workshop	2.51	2.56	2.63	2.57
6	Location of at least one lavatories at one end of the workshop	2.07	1.88	2.17	2.04
7	Space (2.4m by 1.2m) for exhibits in the workshop	2.31	2.31	2.29	2.30
8	Space for planning and drawing for at least 10 students	2.23	2.38	2.33	2.31
9	Floor space available per student in activity areas for 20 students	2.50	2.54	2.54	2.53
10	Locker space for 20 students	2.21	2.26	2.17	2.21
11	A store with racks and boxes for storage of tools	2.32	2.32	2.42	2.35
12	Two quantities of first aid facilities	2.05	1.97	2.17	2.06
13	4 cylinders of fire extinguishers	1.88	1.99	2.38	2.08
14	16 quantities of standard work benches	2.50	2.45	2.29	2.41
15	Platforms (2.4m by 1.2m) for materials and finished projects	2.03	2.24	2.21	2.16
16	Standard outside entrance doors with double openings	2.64	2.76	2.79	2.73
17	Sizes and location of	3.0	2.8	2.8	2.93

	windows	3	9	8	
18	15 quantities of discharge lamps for artificial lighting	2.65	2.51	2.46	2.54
19	Special drive ways leading to doors providing access for deliveries.	2.50	2.41	2.21	2.37
20	One accessible bulletin board	2.19	2.29	2.13	2.20
21	Service connections and 15 units of electrical outlets.	2.37	2.57	2.00	2.31
22	A single pipe line gas outlet facilities.	1.81	1.17	2.04	1.67
23	Ceiling fans or A/Cs for ventilating systems in the workshop.	2.51	2.51	2.58	2.53

Key: M_1= Mean Responses of Administrators,
M_2 = Mean Responses of Teachers
M_3 = Mean Responses of Workshop Personnel,
M_t = Mean Responses of all Respondents
n_1, n_2 & n_3 = Number of Administrators, Teachers and Workshop Personnel respectively.

The mean responses of administrators, teachers and workshop personnel as shown in Table 1 indicated that out of 23 items, only 9 items, i.e. items 1, 2, 3, 5, 9, 16, 17, 18 and 23 were identified as adequate based on the criterion mean of 2.50. This indicated that only 39% of facilities are adequate, 61% are inadequate. Though there were no divergent opinions on the items mentioned above, individual respondents differed on items 19 and 21 where administrators agreed on the adequacy of item 19 while others disagreed. Likewise, teachers agreed on the adequacy of item 21 while administrators and workshop personnel on one side disagreed.

Research Question Two

What are the strategies toward acquiring adequate facilities in Technical College workshops?

To answer this research question, statements relating to strategies toward acquiring adequate facilities in technical college workshops were stated in the instrument based on the literatures. The data for the analysis based on the responses of administrators, teachers, and workshop personnel is presented in Table 2.

Table 2

Respondents mean scores on the strategies toward acquiring adequate facilities in Technical College workshops.

$n_1 = 101$, $n_2 = 140$, $n_3 = 24$

S/ No	**ITEM**	M_1	M_2	M_3	M_t
24	Private sector should be encouraged to initiate and participate in provision of facilities.	3.34	3.44	3.42	3.40
25	Linkages between schools and private sector should be strengthened.	3.47	3.52	3.67	3.55
26	There should be alliance between schools and interest groups.	3.56	3.39	3.38	3.44
27	Industries should be sought through cooperation to assist schools.	2.98	2.75	2.96	2.90
28	Government should solicit support from NGOs and PTAs for assistance.	3.45	3.36	3.29	3.37
29	Community based organizations (CBOs) should	3.10	2.56	2.44	2.70

	be sought for help.				
30	10% of Education Tax Fund (ETF) should be used for procurement of workshop facilities.	3.50	3.36	3.54	3.47
31	5% of money realized from value added tax (VAT) should be utilized for workshop facilities.	3.67	3.29	3.39	3.45
32	Principals should embark on protest writing to concerned authorities.	2.45	2.40	2.54	2.46
33	Workshop should be used profitably for private jobs during weekends and public holidays.	2.83	2.84	3.00	2.89
34	Improvisation should be embarked upon by the school authorities.	2.10	2.84	3.36	2.77
35	Parents should be taxed annually and money realized use to provide facilities to workshops.	2.16	2.35	2.46	2.32

The analysis on Table 2 reveals that ten items were agreed upon as relevant strategies toward acquiring adequate facilities in technical college workshops with mean of items ranging from 2.70 to 3.55. Items 32 and 35; however, disagreed with mean score of 2.46 and 2.32 respectively. The analysis revealed that 83% of the items suggested as strategies toward acquiring adequate facilities were seen by respondents as relevant, while 17% of the items were irrelevant. In items 29 and 34 there were divergent views among the respondents.

Administrators, for example, disagreed with the statement; improvisation should be embarked upon by school authorities as strategy, while teachers and workshop personnel see it as a relevant strategy.

Hypothesis

Ho_1: There is no significant difference between the mean responses of administrators, teachers and workshop personnel with respect to their perceptions on the adequacy of facilities in technical college workshops.

This hypothesis was tested and the result, as presented in Table 3 shows that there is no significant difference ($p<0.05$) in the mean responses of administrators, teachers and workshop personnel on the adequacy of facilities in technical college workshops. Thus, the null hypothesis was accepted at .05 level of significance.

Table 3
One way Analysis of Variance (ANOVA) of Respondents Perception on the Adequacy of Facilities in Technical College Workshops.

Sources of Variation	df	Sum of Squares	Mean Squares	F-cal	Critical Value of F
Between groups	2	0.0002	0.0001	0.0037	3.00
Within groups	262	7.0200	0.0268		
Total	264	7.0202			

Note: $p < 0.05$, $N = 265$

Discussion of Findings

The findings indicated that majority of the technical college workshops did not have adequate facilities. Table 1 revealed that library facilities, location of lavatories at one end of the workshop, locker space for each student, racks and boxes for storage of tools, first aid facilities and standard work benches were inadequate. This is in line with the work of Abdullahi (2003) that every training school faces the problem of providing and maintaining suitable workshop and appropriate facilities for technical and vocational training programs. These findings were also supported by Moja (2000) that the problems of Technical and Vocational Education (TVE) in Nigeria are made worse by the poor condition/inadequacy of training facilities. Adequate workshop facilities are necessary for any quality learning to take place. Facilities aid the instructors to communicate more effectively and the learners to learn more interestingly, meaningfully and permanently.

Inadequate supply of standard work benches, first aid facilities and other teaching aids meant to enhance greater understanding and appreciation of the learning experiences as revealed in Table 1 is likely to have a negative effect on skill acquisition by students passing through the program. Anyakoha (1992) in support of the findings noted that the development of useful skills can be reinforced by the appropriate selection and use of learning facilities and resources. These facilities comprises of workshop structures, working materials, teaching materials, workshop tools and equipment. In the same vein Uzoagulu (1992), warned that where equipment and tools are not functional or adequately provided, technical training programs will suffer and will lead to the production of highly unskilled personnel who are unemployable and unproductive. Therefore, inadequate

workshop facilities in technical college programs deterred skill acquisition. Only a few workshop facilities in the technical colleges are adequate according to the findings.

The analysis on Table 3 shows that null hypothesis was not rejected. This means that there is serious shortage of facilities in technical college workshops with the three categories of respondents attesting to it. This confirms the study conducted by Aina (1999) that some colleges lack not only workshops and laboratories, but also where such are provided; they are ill-equipped and lack the basic tools and equipment for instruction. This implies that facilities need to be provided in the technical college workshops for efficient response to society needs.

With reference to strategies toward acquiring adequate facilities in technical college workshops, findings on Table 2 revealed that the 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. This result is in consonance with observation made by Yakubu (2005) that financing of institutions in Nigeria is becoming prohibitive and a heavy burden for government to bear alone. Yakubu urged proprietors to explore other sources of funds to enable them to generate enough to adequately equip institutions for effective teaching and learning. Edache (2001) stressed the need for diversifying the sources of financing technical education and advised that foreign assistances should be sought by the federal, state and local governments where possible for rehabilitation of technical workshops in our schools. On the international perspective, various mechanisms to fund vocational education and training in South Africa are being developed, including the Medium Term Expenditure Frameworks (MTEFs), special purpose funding, program based funding and public-private partnership funding (Bester, 2004).

Some of these strategies are in line with findings of this study. Industries are supposed to be partners in progress to technical colleges as products from such institutions are employed by it, the findings shows that industries should be sought through cooperation to assist schools. This is very important because by so doing products (students) are fully prepared to take appointment in the industry. Emphasizing the same point, although using a university as a case study, Gore and Leonard (2007) maintained that training tomorrow's leaders requires a collaborative effort between industry and the university. Higher education must build collaborative partnerships, improve all forms of scholarship and provide opportunities for students to contribute to the common good (Boyer, 1990).

This study also revealed that government should solicit support from Non Government Organizations (NGOs), Parent Teacher Association (PTA) and Community Based Organizations (CBOs) for assistance. This strategy for acquiring adequate facilities is in agreement with the works of Prew (2009); Umar, Audu and Idris (2009). The study conducted in South Africa by Prew (2009) revealed that the community should be involved in determining the development priorities in the school, 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 et al. (2009) suggested that Non Government Organizations (NGOs), Community Based Organizations (CBOs) and Parent Teacher Associations (PTA) should be made to play a vibrant role in moving technical education forward. Farauta (1999) identified the projects undertaken by the Parent Teachers Association to include the provision of generating plants, laboratory equipment and water tanks. In his study, Uzokwe (2000) concluded that parents should try to give government moral and financial support toward technical

education programs to enable it to achieve its aims and objectives.

Respondents for this study attached great importance to the statement that ten percent of Education Tax Fund (ETF) should be used for the procurement of workshop facilities, five percent of Value Added Tax (VAT) should be utilized for workshop facilities and that workshops should be used profitably for private jobs during weekends and public holidays. This confirms the work of Abdullahi (1998), Bajah (2001) and Umar (2005). Abdullahi (1998) observed that where school workshops and laboratories are used profitably during evenings, weekends and public holidays, the skills of students are upgraded and the financial crunch of technical institutions is combated. Stressing the role of ETF in education Bajah (2001) averred that the ETF's real goal should be to support educational dogmas that will produce technically skilled, empowered generation of women and men for the 21st century. The objective of ETF is to identify areas of weaknesses in the educational sector and intervene with funding to enhance educational facilities and infrastructure development, and promote creative and innovative approaches to educational learning services, among others (Charles & Iheme, 2002). Writing on the funding of vocational centers and technical colleges in a democracy, Umar (2005) stressed that funds realized from VAT should be used for financing of vocational and technical colleges. Unless the shortages of facilities in technical college workshops are addressed by all or some of these strategies, the goals of technical and vocational education are under threat of not being realized.

Conclusion

The desire to produce competent graduates of technical colleges can be achieved when the facilities in the workshops are relevant and adequate for the programs as demanded by the curriculum. This study has shown that facilities in technical college workshops are inadequate and identified some relevant strategies toward acquiring adequate facilities in technical college workshops. Hence, the call for immediate implementation of these strategies in order to meet the goals of technical and vocational education as usually identified in the National Policy on Education of every Nation.

Recommendations

Based on the above revelations from the findings of this study, the following recommendations are necessary in order to reposition the facilities in technical college workshops for efficiency:

- The private sector should be encouraged to initiate and participate in the provision of facilities, using such methods as build operate-and-transfer (BOT), build own-operate and transfer (BOOT), and rehabilitate-operate-and-transfer (ROT).
- Linkages between schools and the private sector should be strengthened to ensure the appropriate interface with the world of work. This could be achieved through constant invitation of private sectors to participate in school programs leading to proper understanding and integration.
- Industries should be sought as partners in progress to assist in provision of facilities. This could be achieved through interactions as technical colleges

provide industry with a pool of potential employees.

- Non Governmental Organizations (NGOs), Parent Teacher Association (PTA), and Community Based Organizations (CBOs) should be sought for support in supplying relevant facilities to workshops as obtained in some nations.
- Special intervention funds should be set aside by government for procurement of workshop facilities to technical colleges, such channels may include Education Tax Fund (ETF) as practiced in Nigeria.
- A specific percentage of Income tax generated annually by Government should be utilized for the provision of workshop facilities to technical colleges.
- Government should provide adequate facilities to technical college workshops using current strategies identified to ensure acquisition of relevant skills, and knowledge and experience that are relevant to the growth of the country.

References

Abdullahi, S. M. (1998). Innovative Approaches for Funding Technology Education Programs in Nigeria Schools. In A. W. Ajetunmobi, T. A. G. Oladimeji & K. A. Salami (Eds), *Technology Education and the Realization of vision 2010*. Annual NATT conference-Minna. 14th – 17th October.

Abdullahi, S. M. (2003). Evaluation of Vocational Technical Training Programs in Northern Nigeria Prisons. *Journal of League of Researchers in Nigeria (JOLORN). 8 (1), 146-153.*

Aina, O. (1999). Technical Education in Nigeria – A Bridge to the future, fifth National Biennial Convention of the Auchi Polytechnic. 4th-7th, October.

Aina, O. (2000). Technical and Vocational Education in Nigeria: Vision and action; Blue print and master plan – Federal Ministry of Education (2001 – 2010).

Anyakoha, E. U. (1992). Development and utilization of facilities for home economic education program in Nigerian schools and colleges for manpower development, *Nigerian Vocational Journal* 2(1), 16 – 24.

Asilokun, B. A. (2004). Development and Managing Schools Workshop towards achieving Sustainable NEEDS. In G. N. Nneji, M. A. Ogunyemi, F. O. N. Onyeukwu, M. Ukponson, S. O. Agbato, E. A. Nnenji (Eds.), *Technology Education as an impetus for sustainable NEEDS*. 17th Annual NATT conference – Abuja. 94 – 97.

Atsumbe, B. N. (2002). Mechanisms for Improving Manpower Production in Vocational and Technical Education. *Akoka Journal of Education.* 1 (2) 165 – 178

Babbie, E. (1998). *The Practice of Social Research 8th Edition.* Belmont, C A: Wadsworth Publishing Company.

Bajah, S. T. (2001). Stakeholders at Home and Abroad. In O. Nnoli & I. Sulaiman (Eds). *Reassessing the Future of Education in Nigeria*. Abuja: ETF Publication.

Bester, G. (2004). Further Education and Training in South Africa. In L. Moran & G. Rumble (Eds). *Vocational Education and Training through Open and Distance Learning. Volume 5.* London: RoutledgeFalmer.

Boyer, E. (1990). *Scholarship Reconsidered: Priorities of the Professoriate, the Carnegie Foundation for the Advancement of Teaching.* New Jersey: Princeton University Press.

Bybee, R & Loucks-Horsely, S. (2000). Standard as Catalyst for Change in Technology Education. *The Technology Teacher,* 59 (5), 14-17.

Charles, H. J., & Iheme, E. (2002). *Nigeria Private Sector and Education for all: A Report on the Private Sector Round Table.* Ibadan: Spectrum Books Ltd.

Edache, E. (2001). Sources of Revenue for Technical Institutions in Nigeria. A Paper Presented at the National Conference organized by COEASU FCE Pankshin on 2nd -5TH May.

Farauta, K. G. (1999). A Survey of the Role of Parent Teachers Association in the Effective Implementation of Pre-vocational Courses Post Primary institutions of Numan Metropolis, Adamawa State. *Sabondale Journal of Technical Education,* 2(1), 31- 34.

Federal Government of Nigeria. (2004). *National policy on education 4th edition*. Lagos: NERDC press.

Finch, C. R. & Crunkilton, J. R. (1999). *Curriculum Development in Vocational and Technical Education: Planning, Content and Implementation,* 5th Edition. Boston: Allyn and Bacon.

Gay, L. R. (2002). *Educational Research Competencies for Analysis and Application.* Lahore: Combine Printers (PVT) Ltd.

Gore, D. W., & Leonard, J. (2007). Industry and University Collaboration for Training tomorrow's Leader. In *the past, the present, the future. 4*0th Annual Convention of National Association of Industrial Technology (NAIT). Held from 23rd – 27th October, at Panama City beach, Florida. Retrieved June 6th, 2009 from http://scholar.lib.vt.edu/ejournals/jte.

Mkpa, A. M. (2001). Optimization of Available Teaching and Learning Materials/Facilities. In O. Nnoli & I. Sulaiman (Eds). *Reassessing the Future of Education in Nigeria*. Abuja: ETF Publication.

Moja, T. (2000). Nigeria education sector analysis: An analytical synthesis of performance and issues. Document produced for the World Bank.

NBTE. (2001). *Digest of Statistics on Technical Colleges in Nigeria*. Kaduna: NBTE Publication Unit.

Ndomi, B. M. (2005). Revisiting the Learning Experience of Technical College Farm Machinery Curriculum for Empowerment of Recipients in Nigeria. *Journal of Nigerian Association of Teachers of Technology (JONATT).* 5 (1) 88 - 94.

Neill, J. (2006). Analysis of Professional Literature. Retrieved October, 10th 2009 from http://wilderdom.com/OEcourses/PROFIT/class6qualitative1.htm.

Nnoli, O. (2001). Prospect for the Future of Education in Nigeria. In O. Nnoli & I. Sulaiman (Eds). *Reassessing the Future of Education in Nigeria*. Abuja: ETF Publication.

Onyejemezi, D. A. (2001). Quantity, Quality, Production and Distribution of Teaching Resources/Facilities. In O. Nnoli & I. Sulaiman (Eds). *Reassessing the Future of Education in Nigeria*. Abuja: ETF Publication.

Penny, D. & Fox, B. (1997). 'At the Wheel or Back Seat Dinners?: The Role of Teachers in Contemporary Curriculum Reform. *Queens land Journal of Educational Research*, 13 (2), 14–27.

Prew, M. (2009). Community Involvement in School Development: Modifying School Improvement Concept to the needs of South African Township Schools. *Journal of Educational Management, Administration and Leadership.* 37 (6) 824 - 846. Retrieved October 23rd, 2009 from http://ema.sagepub.com.

Puyate, S. T. (2002). Survey of Vocational Education Facilities in Government Technical Colleges in Rivers State. *Journal of Nigerian Association of Teachers of Technology (JONATT).*4(1), 175 – 181.

Towe, P. E. O. (2000). An In-depth review and assessment of the present state and focus of Technical and Vocational Education in Nigeria. A paper presented at National Seminar on TVE in Nigeria; Vision and Action 31st October – 2nd November. National Center for Women Development, Abuja.

Umar, I. Y. (2005). Mechanism for Improving the Funding of Vocational Centers and Technical Colleges in a Democracy. *Journal of Nigerian Association of Teachers of Technology (JONATT).* 5 (1) 113 – 118.

Umar, I. Y., Audu, R. & Idris, A. M. (2009). Public Private Sector Participation in Education: A Panacea for Provision of facilities in Technical Colleges in Nigeria. *Journal of League of Researchers in Nigeria (JOLORN).* 10 (1) 27 – 32.

Uzoagulu, A. E. (1992). Towards an Effective Equipment Management (EEM) in Schools for Economic and Technological Self-reliance. A paper presented at the 7th annual conference of the NVA held at FCE (T), Umunze. November 25th – 28th.

Uzokwe, B. (2000). *Vocational and Technical Education in Nigeria: Problems and Prospects Crisis in Accomplishing Educational Objectives in Nigeria*. Jos: WAIS printing Press.

Yakubu, N. A. (2005). A Goodwill Message Presented at the National Workshop on Revamping Technical Education in Nigeria organized for Teachers of Technical Colleges and C. O. E. (Tech) by ETF at Chelsea Hotel Abuja. June 22nd – 23rd.