

16.2 - CONFERENCE PROCEEDINGS
INTERNATIONAL 5 \$ 6



1st International *Conference*

SCHOOL OF TECHNOLOGY EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY
P.M.B. 65, MINNA,

**CONFERENCE
PROCEEDING**

THEME:

**SCIENCE AND TECHNOLOGY
EDUCATION IN THE TRANSFORMATION
OF DEVELOPING NATIONS**

Date: Sunday 6th - Thursday 9th October, 2013

Venue: Gado Nasko Auditorium Niger State College of Education
Minna - Nigeria.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

**1ST International Conference of School of
Technology Education (STE)**

ISBN: 978-978-52341-0-7

Conference Proceeding

**THEME: Science and Technology Education in the
Transformation of developing Nations**

Date 6th – 9th October, 2013

**Edited by: Dr. D. I. Wushishi, Dr. I. Y. Umar,
Dr. H. Shehu and Mr. C. O. Igwe**

TABLE OF CONTENTS

Cover page	i
Title Page	ii
Acknowledgements	iii
Preface	iv
Brief History of School of Technology Education	vi
Address by the Dean, School of Technology Education, Federal University of Technology, Minna.	viii
Address by the Vice- Chancellor, Professor Musbau Adewumi Akanji Vice – Chancellor, Federal University of Technology, Minna, Niger State, Nigeria.	xi
KEYNOTE ADDRESS	
Science, Mathematics and Technology Education in the Context of Africa by Professor Akwasi Asabere-Ameyaw <i>B.Sc (HONS), Dip Ed, M.Sc, PhD</i>	xiii
LEAD PAPERS	
Science and Technology Education as a Catalyst in the Transformation of Developing Nations. By Prof. Mamman Audu Wasagu <i>FSTAN, DSSE</i>	xx
Roles of Technical Vocational Education and Training (TVET) in the Transformation of Developing Countries: The Nigerian Experience by Prof. Ogo. T. Ibeneme FNIM, FNATT, FCIS	xxxix
Table of Contents	xliv
1. ICT Training, Skills and Use by Librarians in Special Libraries in FCT Abuja, Nigeria By Momoh, R.L (Mrs.) and Saka, K, A.	1
2. Entrepreneurship Studies as a Potent Tool for Poverty Reduction among Graduates of Tertiary Institutions in Nigeria: Time We Move From Theories to Practicability by Dawood, O.E.	8
3. Achebe's <i>Arrow of God</i> as a Pragmatic Demonstration of God's Case, No Appeal by N. H. Onyemelukwe, C. O. Ogbechie and W. E. Ibeana	22
4. The Need For Adequate Workshop Facilities For A Transformed Learning Environment In Nigerian Polytechnics by M. S. Nuhu and I. Y. Umar	30
5. Prospects of Good Agricultural Practices (GAP) through Evaluation of Farmers' Knowledge-depth of Recommended Fadama Technologies on Agricultural Transformation in Bida Agricultural Zone, Niger state, Nigeria by Sadiq, M. S and Maude, A. M	38
6. Information and Communication Technology (ICT) and National Security by A. E. Umeh, C. C Nsofor, and C. S. Tukura	44

7. Chemistry Entrepreneurial Education: A Tool for Poverty Alleviation and National Development by Muhammad B. B. (Mrs) 50
8. Entrepreneurial Potential of Science Education Curriculum: A Panacea For Graduate Self-Employment in Nigeria by Bello, M. R., Yaki, A. A. & Wushishi, D. I. 54
9. ICT Employment Generation and Entrepreneurship Education: An Assessment of Students' Perception of Entrepreneurship Course at Federal University of Technology, Minna by Abdulhameed Kayode Agboola 61
10. Comparative Effects of Two Modes of Computer Assisted Instructional Package on Solid Geometry Achievement Amongst Senior Secondary School Students in Minna. By Anyanwu, C. R, Ezenwa, V. I and Gambari, I. A. 71
11. Lingo-Literary Perspectives of Man-Woman Interspersion in Nigeria By N.H. Onyemelukwe, A. O. Ogunnaike and J. O. Ekechi 80
12. The Role of Educational Technology in Promoting Scientific Development in Tertiary Education for Transforming developing Nations for Global Competitiveness by Aniah, A and Wushishi, D. I. 89
13. Determination of Teachers Competencies and Knowledge in Teaching Through Interactive White Board by Alabi T. O and Alfa A. S 94
14. Acetylation of Wood Flour From Four Wood Species Grown in Nigeria Using Vinegar and Acetic Anhydride by Yakubu. Azeh, Gabriel Ademola Olatunji, & Cheku Mohammed 103
15. Library and Information Technology for National Transformation: Curriculum Building Perspectives in Nigeria by A. O. Ahmed, G. U. Oyedun, & G. A. Babalola 111
16. Creative Thinking and Innovation for Improved Human Resource Performance for Entrepreneurship Growth and Development by Adaeze Chike-Okoli (Ezeanolue) 118
17. Enrolment Pattern and Students' Retention Rates in Technical Colleges in the North East, Nigeria by J. D. Medugu 127
18. Transforming the Nation Through Chemistry and Technology Education by Muhammad, B. A. (Mrs.) 134
19. Assessing the Level of Pre Service Science Teachers Involvement in Conflict and Conflict Resolution for Sustainable Peace and Security in Nigeria by Duguryil, Z. P. and Denji, K. B. 139
20. An Investigation of the Level of Improvisation and Management of Local resources Materials for Teaching and Learning Primary Science in Lapai Local Government Area of Niger State by Adamu Z. E., Ajayi D. W(Mrs) & Nma, I. 145

21. An Overview of the Economic Potential of Water Hyacinth [*Elchhornia crassipes* (Martius) Solms-Laubach] Plant for National Development: The need for adequate Information and Enlightenment in Nigeria by Malik, A. A., Aremu, A., Ayanwale, B. A. and Ijaiya, A. T. 152
22. Gender Enrolment and Graduation Year Academic Achievement in Chemistry: Good News of Gender Equity for National Transformation? By Joseph, O. A. 160
23. Surveying and Geoinformatics Education for National Security by Onuigbo, I. C. 165
24. Library and Information Resources for Effective Scientific Research In Nigerian Universities by A.M. Bitagi & S.J. Udoudoh 171
25. Transforming Nigerian Nation through Strengthening Mathematics and Science Education (SMASE) at the Basic Education Level by *Shuaibu, Zainab Muhammad & I.M Danjuma 176
26. Sero-Evidence Of Hepatitis B Surface Antigen Among Expectant Mothers In Nguru, Yobe State, Nigeria by *Oyinloye, S.O., Mohd-Taki, B., and Lawan, M.A 183
27. Bacteria Contamination of Automated Teller Machine Keypads in University of Maiduguri, Borno State, Nigeria by Oyinloye, S.O and Momoh, R. 188
28. Community Environmental Education and Awareness: A Panacea for Transformation in Nigeria by Yaki, Akawo Angwal, Shehu Umar & Babagana Mohammed 193
29. Enhancing Secondary School Chemistry Education for National Transformation by A. G. Kassim 199
30. Analysis of Personal Entrepreneurial Competencies Possessed by Students for Establishing Small and Medium Scale Enterprises in FCT, Abuja. By Owodunni Ayanda Samuel, Igwe Christopher O & Sanni Tunde Abdulraman 204
31. Technical Teachers' Perception and Readiness for E-Learning Instructional Delivery by Idris, A. M.; Hassan, A. M.; Abdulkadir, M. and Glory, O. 211
32. Technology and Entrepreneurship Education in Woodworking for the Transformation of Developing Nations: Bala Maik Mohammed 216
33. Effect of Interactive Multimedia Instruction on Students' Cognitive Achievement and Retention in Auto-Mechanics Trades: Towards Adaptive and Interactive Learning Environment. By Abd-El-Aziz, A. A. 221
34. Curriculum Review in Technology Education: The Role of Technology Education Teachers for a Transformed Economic by Abdul Bello Kagara & Ibrahim Dauda 229

35. Information and Communication Technology (ICT) in Nigerian University Libraries in the Transformation of Developing Nations: Problems and Prospects by Muhammad Ndagi Saba 234
36. Technical and Vocational Education: A Vital Tool for Youth Empowerment and Transformation in Nigeria by Machunga, I. S.; Iliya Udu; Mohammed Kudu Abubakar and Umar, I. Y 239
37. Impact of Indigenous Knowledge on the Development of Rural Dwellers by Julie Udensi & P. U. Akor 246
38. Technology and Entrepreneurship Education as Key Potent Factors of Transformation in Nigeria and Other Developing Nations by Usman M.G. I. 250
39. Repositioning Biology Education in Nigeria: A Factor in National Development by Maikano Amos 259
40. Technical Vocational Education and Training (TVET): A Tool for Self Reliance in Nigeria by Alhassan Ibrahim Haleed 266
41. Effects of Peer Assessment on Academic Achievement and Interest of Students in Geometry by Bashir Ahmad Usman 272
42. Technical Vocational Education and Training (TVET): A Veritable Tool for National and Industrial Development in Nigeria. By Gazali, S. A., Kareem, W. B. and Mannir, I. 282

The Need for Adequate Workshop Facilities For A Transformed Learning Environment In Nigerian Polytechnics

M. S. Nuhu¹ and I. Y. Umar²

¹Department of Industrial and Vocational Education, Waziri Umaru Federal Polytechnic, Birnin Kebbi, Kebbi State, Nigeria

²Department of Industrial and Technology Education, Federal University of Technology, Minna, Niger State, Nigeria

e-mail: saninuhumak@yahoo.com

Abstract

Educational facilities have been repeatedly found to have a positive relationship with quality of education. Yet the prevailing situation of the incompetence of polytechnics product is an alarming rate, therefore, it has become pertinent to investigate the adequacy of training Facilities, Tools and Equipment in the workshop. A survey research design was adopted for the study. A total of 257 teaching personnel and 833 students were used for the study. A structured questionnaire consisting of 30 items was used for data collection. The reliability coefficient of the instrument was 0.97 using Pearson product correlation coefficient, while four experts validated the instrument. The study was guided by 2 research questions and 2 hypotheses tested at 0.05 level of significant. The data collected was analyzed using mean, Standard Deviation and t- test. The findings revealed that there were shortages of facilities, Tools and Equipment. Respondents agreed with the suggested ways of providing workshop facilities. It was recommended that Government should make adequate budgetary allocation for provision of the required facilities; Polytechnic consult should be used to provide the needed facilities in the workshops, Public Private Partnership like Built Operate and Transfer (BOT) and Built Own Operate and Transfer (BOOT) among others.

Keyword: Facilities, workshop, Polytechnics, Learning environment, Quality education

Introduction

Teaching Facilities are defined as material which makes learning simple and explicit. Specifically it referred to aids or device or workshop building or laboratory. Workshop facilities are to provide an effective support service to the schools teaching and research activities at based level of programmes. Tasks include the design, modification or repair of equipment, ranging from simple to specialized, or unique. This range of work requires various trade disciplines such as milling, turning, drilling, welding, forming, carpentry and sheet metal work. Work is also performed using various materials including timber, different ferrous or non-ferrous metals, polymers and machine able ceramics. From 1942 to date many attempt of tentative plan for Technical and Vocational Education were made, yet not fully successful. Moja (2000) stated the reasons that "One of the major obstacles for the development of vocational technical education as far back as 1942 was that the system of education was extremely expensive to run; secondly, it requires equipment and competent staff (Men, Money and Material) which were scarce by then".

In Nigeria vocational and technical education started as traditional Education. Trades such as Forging, Agricultural implements, bronze, glass and building of houses were carried out in traditional format. After the advent of colonial authority, the system of the education was developed through establishment of trade centers in some regions throughout Nigeria. These trade centre, were upgraded to Polytechnic status (Yakubu and Mumah, 2006). The upgrading were done both on personnel and physical facilities.

An effective school facility is responsive to the changing programs of educational delivery, and at a minimum should provide a physical environment that is comfortable, safe,

secure, accessible, well illuminated, well ventilated, and aesthetically pleasing. The school facility consists of not only the physical structure and the variety of building systems, such as mechanical, plumbing, electrical and power, telecommunications, security, and fire suppression systems. The facility also includes furnishings, materials and supplies, equipment and information technology, as well as various aspects of the building grounds, namely, athletic fields, playgrounds, areas for outdoor learning, and vehicular access and parking.

The school facility is much more than a passive container of the educational process: it is, rather, an integral component of the conditions of learning. The layout and design of a facility contributes to the *place experience* of students, educators, and community members. Depending on the quality of its design and management, the facility can contribute to a sense of ownership, safety and security, personalization and control, privacy as well as sociality, and spaciousness or crowdedness. When planning, designing, or managing the school facility, these facets of place experience should, when possible, be taken into consideration (Jeffery & Lawrence, 2013)

Statement of the Problem

The Primary Objectives of Polytechnic Education is to provide the middle level Manpower who can be competent in Technical knowledge and to acquire skills necessary for agricultural, Industries, commercial, and economic development of Nigeria. The role of these Institutions include given training and imparting the necessary skills for the production of technicians, technologists and other skilled Personnel who can be enterprising and self-reliant. (FRN, 2004) Acquisition of appropriate technological skills is necessary to cope with the challenges presented by the evolving needs of available working places in our industries and the ever-growing non-formal sector. Education and training systems that respond adequately to these demands will therefore, contribute to the efforts to over-come the growing unemployment and marginalization of young people and adults in the country (Yakubu, 2005).

Upon all these researchers had not objectively stated the real problems. Therefore, this study is set to evaluate adequacy of training facilities in the Polytechnics of North-western Nigeria. The question of inadequacy of teaching facilities needs to be addressed with regards to effective learning environment in the polytechnics of the North-western Nigeria.

Research Questions

This study was guided by the following research questions in order to ascertain the state of facilities in the Polytechnic workshops:

1. How adequate are the teaching Facilities in the Polytechnic Workshops?
2. What are the possible ways of providing the required workshop facilities?

Hypothesis

The following hypothesis was formulated to guide the study and tested at 0.05 level of significance.

- Ho₁: There is no significant difference between the mean scores of teaching Personnel and Students on the adequacy of Teaching Facilities in the Polytechnic Workshops.
- Ho₂: There is no significant difference between the mean scores of teaching personnel and students on the possible ways of providing the required workshop facilities

Review of Related Literature

In a review made by Jeffery and Lawrence (2013) they emphasized that during strategic long-range educational planning, unmet facility space needs often emerge. The goal of educational planning is to develop, clarify, or review the educational mission, vision, philosophy, curriculum, and instructional delivery. Educational planning may involve a

variety of school and community workshops and surveys to identify and clarify needs and sharpen the vision of the district. Long-range planning activities, such as demographic studies, financing options, site acquisitions, and community partnering opportunities are often initiated by the district administration as a response to the results of educational planning.

It cost a great of money to build and equip a School with adequate and correct facilities. School Facilities include the grounds, building, furniture and all other physical structures that can facilitate learning. There is nothing that can be done about the shape, size or orientation of a School once it has been build, but there is much that can be done about how its accommodation is used and its appearance is cared for (Farrant, 1984)

Abdullahi (2003) agreed that facilities are building (structures) pieces of equipment or services that are provided for a particular purpose. The Classroom, Lecture Halls, workshop spaces, Seats, Benches, Desks, dining environment and the recreation areas and their design are factors that are put in front for describing accessible School facilities as well as its availability of technology. The condition of restroom and furnishings including the general safety of campus and weather these item are accessible, are regarded as favourable situation for any school to be regarded with facilities (British Council for School Environment, 2008).

Many communities recognize that in addition to school facilities being cost effective, they should be more learner-centered, developmentally and age appropriate, safe, comfortable, accessible, flexible, diverse, and equitable. By location of new facilities in residential neighborhoods and partnering with other community-based organizations, schools are becoming true community centers. In addition, schools are taking advantage of educational resources in the community, as well as partnering with museums, zoos, libraries, and other public institutions and local businesses.

As enshrined in NBTE guide lines (1993) as requirement for the approval of any institution, Physical facilities for teaching all courses listed in the curriculum of the programme shall be available before approval is granted to the institution to admit students into the programme. These facilities may include Laboratories, Workshops, Farms, Studios, Classrooms and Staff offices. The type of teaching facility will however depend on the programme. Anadequate number of Workshops accommodations to sustain an initial intake of 30 students in each of the two years of the programme should be available for the proposed programme. All the tools machines and equipment necessary for the programme should also be provided installed and commissioned before the approval inspection visit and the first intake. A fist of minimum equipment required and the number and type of workshop studio etc as appropriate are contained in the appropriate NBTE curriculum and course specifications

Moreover, Laboratoriesshould have been completed fully equipped and commissioned before the approval inspection is made by the Board and before the first set of students are admitted. Where the new students are to use existing laboratories with other programme, adequate arrangements should be made to accommodate the new programme. For a new Higher National Diploma programme laboratories befitting the status of the programme should be provided and if possible exceeded. The full complement of the tools instruments and equipment in the NBTE minimum list of equipment for the programme should be provided.

Methodology

A survey research design was adopted for this study and A 30 item questionnaire was used to collect data from the respondent on the need for effective facility management in North-western Polytechnics of Nigeria. A total of 257 teaching personnel and 833 students of Mechanical, Metal/Metallurgy, Electrical/Electronic and civil engineering courses were used for the study.

A four point rating scale of Strongly Agree (SA=4), Agree (A=3), Disagree (DA=2), strongly disagree (SD=1) was used on the questionnaire. The instrument was face validated and trial tested for reliability using twenty (20) teaching personnel and forty (40) students who were not among those that participated in the study. The reliability coefficient of 0.97 was obtained using Pearson Product correlation coefficient and the instrument was therefore adopted for the study. The researchers administered the questionnaire personally to all the respondents that were used for the study. The data collected was analyzed using mean and standard deviation for answering the research questions and t-test for testing the hypotheses at 0.05 level of significance. The decision point was based on mean score of 2.50; this implies that items with mean values of 2.50 and above were considered as agreed, while items with mean values of 2.49 and below were considered as disagreed. The null hypothesis was accepted where the value of t-calculated was less than t-critical table value and were rejected where the value of t-calculated is greater than t-critical (which is 1.96 in this case).

Result

Research question 1

How adequate are the teaching facilities in the polytechnic workshops?

To determine the adequacy of teaching facilities in workshops; 20 items were presented to the teaching personnel and students. Their mean responses, standard deviations and t-test analysis were computed as indicated in table 1.

Table 1
Mean scores, Standard Deviation and t-Test Analysis of Mean scores of the Respondents on the Adequacy of Teaching Facilities in the Polytechnic Workshops

S/N	ITEMS	M ₁	M ₂	SD ₁	SD ₂	t-cal
1	Demonstration areas are not less than 30 student	3.56	2.99	1.26	1.49	0.65
2	Seats are adequate and comfortable for learning purpose	1.74	2.82	0.94	1.48	- 1.77
3	Workshop demonstration area are adequate with new computer simulators	1.77	2.76	0.94	1.18	- 1.45
4	Student are provided with tool kits for their immediate demonstration	1.77	2.16	0.95	1.24	- 0.56
5	Student bring along their drawing instrument for every lesson	3.63	3.67	1.25	1.25	- 0.05
6	Consumable materials are adequate for practical lesson	3.26	3.19	0.94	1.23	1.55
7	Student usually purchases consumable materials for the purpose of their project work.	3.45	3.58	1.49	1.17	- 0.15
8	Workshops are properly furnished with workbenches	3.72	3.53	1.33	1.48	0.21
9	Laboratory/ workshops are properly provided with storage facilities	3.78	3.48	1.29	1.46	0.34
10	Tools can be provided one per each student during practical lessons	1.81	2.48	1.06	1.49	- 0.83
11	Maintenance of equipment is done regularly as expected.	2.28	3.84	1.47	1.24	- 1.81
12	All machines are functional	2.29	3.85	1.46	1.50	- 1.65
13	Few of the machines/ equipment are functional	3.35	3.91	1.36	1.13	- 0.71
14	Utility rooms are adequately available in the	3.49	2.45	1.37	1.46	1.17

	workshops					
15	Measuring instrument are adequately available	2.74	2.47	1.33	1.48	0.30
16	Machines shops are available	3.61	3.81	1.33	1.22	-
						0.25
17	Facilities available are not in use due to insufficient teachers/instructors	3.23	2.54	1.18	1.24	0.90
18	Foundry shop and pattern making shop are adequate	3.25	3.44	1.59	1.23	-
						0.21
19	Welding and fabrication workshop are adequate and functional.	3.05	3.43	1.52	1.25	-
						0.43
20	Equipment in the workshop meets the professional level of training requirement.	2.49	3.39	1.34	1.32	-
						1.07

KEY: M_1 = Mean score for teaching personnel, M_2 = mean score for students
 SD_1 = standard deviation for teaching personnel, SD_2 = standard deviation for students, t-critical table value = ± 1.96

Table 1 revealed that teaching personnel agreed with majority of items listed except 2-4, 11-12 and 20 while students disagreed with items 4, 10, 14 and 15. Standard deviation of the respondents indicated a minimal deviation from the mean and all the hypotheses were less than the t-critical value of 1.96 indicating that there were no significance differences between teachers and students on adequacy of teaching facilities in the Polytechnic workshops.

Research question 2

What are the possible ways of providing the required workshop facilities?

To provide answer to the research question, 10 items were suggested to respondents as possible ways of providing the needed facilities. Their mean responses, standard deviation and t-test are presented in table 2.

Table 2

Mean scores, Standard Deviation and t-test Analysis of Mean scores of the Respondents on the possible ways of providing the Required Workshop Facilities

S/N	ITEMS	M_1	M_2	SD_1	SD_2	t-cal
21	Government should make adequate budgetary allocation to Polytechnics	3.5	3.0	0.9	0.8	1.12
		6	5	7	7	
22	Non Governmental Organizations (NGOs) should support provision of workshop facilities in the Polytechnics	2.8	3.0	1.0	0.8	-1.78
		7	0	2	5	
23	Public and Private companies should use certain percentage of their profit to support polytechnic workshops	3.5	3.7	1.2	1.0	-0.96
		5	8	0	4	
24	Public Private Partnership in form of Built Operate Transfer (BOT) and Built Own Operate Transfer (BOOT) should be used	2.9	2.5	0.9	0.6	1.45
		8	7	4	9	
25	Regular maintenance of already acquired facilities should be carryout	3.4	3.7	1.3	1.1	-0.87
		5	5	0	1	
26	Communities where Polytechnics are located should support in providing workshop facilities	2.7	2.5	0.9	1.0	0.40
		8	6	6	3	
27	Management should use Polytechnic Consultancy unit to provide the required facilities	3.2	3.0	1.0	0.9	1.02
		0	2	1	9	
28	Community Based Organizations (CBOs) should be	2.6	3.0	0.7	1.0	-0.72

	contacted for assistance	8	1	9	2	
29	5% of TETFUND should be used for provision of facilities	3.7	3.4	1.2	1.1	1.65
30	There should be contribution by Organized Private Sector (OPS) to provision of workshop facilities	5	5	3	2	
		350	3.2	0.9	0.8	0.97
			5	6	9	

Table 2 revealed that both respondents agreed with all the items with mean scores ranging between 3.75 and 2.68 for teaching personnel and between 3.78 and 2.56 for students. The standard deviation of the respondents indicated a minimal deviation from the mean and all the hypotheses were less than the t-critical value of 1.96 indicating that there were no significant differences between teachers and students on the possible ways of providing workshop facilities.

Discussion of Findings

The findings showed that there were no adequate facilities to promote an effective learning environment. The findings of the study indicate that new generation workshops and teaching facilities such as computer simulators, student's kit, hand tools, and other necessary equipment are not adequately available. The finding of the study is in consonance with Illiasu (1998) that there are many damaged equipment and most machines are not functioning, even at the polytechnic or university level. The number of students clearly out number available equipment or machines where there are more than four students on a machine or equipment performing experiments.

Rose (2006) included the aforementioned factors to be taken into account when making decision about investing in educational facilities, since they can provide administrations and facilities managers with an effective and useful decision frame work for evaluating facilities investment alternatives that can support their institutions mission and help achieve its long term goals. Edem (1982) maintains that maintenance and operation of schools facilities lies on the Head of schools, and those who used the facilities. Sometimes governments take upon themselves the planning, contracting and equipping of school buildings with little or no consultation with the school staff that use them. Whatever the government policies may be it is the duty of the head of School to maintain in good order, the Text Books, Records, Furniture, Workshop Equipment, Building, and grounds entrusted to his care. Therefore, the proper care of these facilities is a very important administrative task. Again, safety of the students and staff that used them may be affected by the amount of care that is taken. This should include those routine activities which ensure the daily smooth running of the school, like cleaning the building and ground, distributing tools and equipment.

On the other hand, Schools Records are another aspect of Facilities that should be given utmost protections. This is because their importance is so great that often a long period of time is prescribed by law for their preservation. Therefore, they must be protected from fire hazards and deterioration. Records tell the history of a school by serving a historical source of useful information to the Heads successors and to outside researchers. Moreover, they offer a basis for objective evaluation and appraisal by NBTE Inspectors (Edem, 1982). Therefore, the Manpower-base of any nation refers to the stock of trained, skilled and semi-skilled persons available for the production of goods and services, and providing the infrastructural Facilities needed for attaining and sustaining a high level of development.

All the suggested ways of providing facilities to polytechnic workshops were adjudged relevant by both the teaching personnel and students. They emphasised that government should make adequate budgetary allocation for provision of the required facilities, Public and Private Companies should use certain percentage of the profit to support Polytechnic workshops, Public Private Partnership like Built Operate and Transfer

(BOT) and Built Own Operate and Transfer (BOOT) should be embarked upon, 5 per cent of Tertiary Education Fund (TETFUND) should be used for provision of facilities. These findings are in agreement Adereje (2006), Umar, Audu and Idris (2010) who reported that arrangement such as above will enhance the coming together of several stake holder such as federal, state and local government; profit oriented businesses and not-for-profit organizations; community development associations; united nation (UN) and other transnational agencies; civil society groups and faith based organizations, to work towards sustainable development.

Conclusion

The findings of this study give room for the following conclusions that the required facilities, tools and equipment such as seats, computer simulators, and tool kits for demonstration for effective workshop practice by the Polytechnic students are short in supply resulting in acquiring little or no skills at all. The workshop environment needs a total transformation for the students to acquire the required skills that will keep Nigeria on the right track of technological development.

Several ways could be used to provide the required facilities to the Polytechnic workshops, this include making adequate budgetary allocation for provision of the required facilities to keep Polytechnic education in the right course, use of Polytechnic consultancy unit to provide the needed facilities in the workshops, Non Governmental organisations (NGOs) should support the provision of needed facilities in the workshop among others.

Recommendations

Based on the findings and conclusion drawn from this study, the following recommendations were adjudged important:

1. Government should make adequate budgetary allocation for provision of the required facilities to keep Polytechnic education in the right course.
2. Management of Polytechnic education in Nigeria should use Polytechnic consultancy unit to provide the needed facilities in the workshops.
3. Communities where Polytechnics are located should support the Polytechnic workshops with required tools at their disposal
4. Public and Private Companies should use certain percentage of the profit to support Polytechnic workshops as they are the consumers of products from Polytechnics.
5. Maintenance is key to the survival of facilities; management of Polytechnics should improve on the maintenance of already acquired facilities for a transformed Polytechnic education.
6. Non Governmental organisations (NGOs) should support the provision of needed facilities in the workshop.
7. Polytechnics should embark on Public Private Partnership like Built Operate and Transfer (BOT) and Built Own Operate and Transfer (BOOT) to have a transformed learning environment in Nigeria Polytechnics.
8. 5% of TETFUND should be used for provision of facilities in Polytechnic workshops.

References

- Abdullahi, S.M. (2003). *Evaluation of Vocational- Technical Training Programme in Northern Nigerian Prisons*. Unpublished PhD thesis, Submitted to the Department of Vocational Teacher Education, University of Nigeria, Nsukka.

- Aderije, U.A. (2006). The relevance of public private partnership in Nigeria's economy. Retrieved September, 5th, 2007 from <http://www.nges/partners.htm>.
- British Council for School Environments (2008). *Family Guide to School Environments*. Retrieved May 5th 2013 from <http://www.bcse.uk.net/downloads/476.London>
- Edem, D. A.(1982). *Introduction to Educational Administration in Nigeria*. Ibadan: Spectrum Books Limited.
- Farrant, J. S. (1984). *Principles and Practice of Education*: London: Longman Group limited.
- Federal Republic of Nigeria. (2004). *National Policy on Education 4th Edition*. Yaba, Lagos: NERDC, Publisher.
- Illiasu, I. M, (1998). *Vocational Technical and Technological Education and local Materials Utilization*: In K. Isyaku, M.A.G. Akale, A.A. Maiyanga, & Olukun (eds) Proceeding of the National Conference on Vision and Mission of Education in Nigeria. NCCE, Kaduna.
- Jeffery, A. L. & Lawrence, O. P. (2013). Overview, Maintenance, and Modernization of School Facilities. Retrieved 20th August, 2013 from <http://education.stateuniversity.com/pages/2394/School-Facilities.html>
- Moja, T. (2000). Nigeria education sector analysis: An analytical synthesis of performance and issues. Document produced for the World Bank.
- National Board for Technical Education (1993).Guidelines for Establishing New Programmes in the Polytechnics and similar Tertiary institutions in Nigeria. Programmes Department NBTE Kaduna - Nigeria.
- Rose, R. (2006).*Building...the Gift that keep on taking: A Framework for Integrated Decision making* <http://www.appa.org/file/pdfs/building%2000%20summary.pdf>. (APPA,Alexandria,VA)
- 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
- Yakubu, N. A & Mumah, S. N. (2006). *The Growth and Development of Polytechnics in Nigeria*. National Submit on Higher Education Federal Ministry of Education Abuja- Nigeria.
- Yakubu, N. A.(2005). NBTE Boss Wants Emergency on TVE Declared: Daily Triumph Publishing Company Limited. Retrieved 6th December, 2006 from <http://www.triumphnewspaper.com/nbte462005.htm>