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Utilization of Material Resources for the Teaching of Metalwork Technology in Technical Colleges in Rivers State

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Abstract
This study investigated the Utilization of Material Resources for the Teaching of Metalwork Technology in Technical Colleges in Rivers State. Two objectives, Two research questions, Two hypotheses guided the study. The study adopted survey research design, and was carried out in Rivers State. The population of the study comprised of 320 respondents. There was no sampling since the entire population was of manageable size. A structured questionnaire was used to collect data for the study titled "Utilization of Material Resources Questionnaire(UMRQ). The instrument was structured on a 4 –point response options of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE) on weighted values of 4, 3, 2, 1 respectively for each one. The instrument was validated by three experts. Pearson Product Moment Correlation statistical tool was used to determine the reliability of the instrument using SPSS. This gave a reliability co-efficient of the instrument were computed to be 0.82 using Crombach Alpha formula for determining internal consistency. The data collected were analyzed using arithmetic mean, standard deviation, and t-test to test the hypotheses. The study found out that, to a low extent was the Instructional Materials utilized for the teaching of Metalwork technology in Technical Colleges in Rivers State. The study further revealed that, to a low extent was the Metalwork Workshop Materials utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State. It was recommended, among others, that all broken down machines, equipment, and obsolete ones should be repaired and or replaced to promote the skill acquisition and training in all the colleges, modern Instructional Technology materials, which are computer aided should be provided in all Technical Colleges for efficient delivery of instructional content to Mechanical Technology students.

Keywords: Utilization, Material, Resources, Teaching, Metalwork Technology, Technical Colleges.

I. INTRODUCTION

Technical and Vocational Education is needed for technological development and wealth creation in any nation. It is a type of education that is meant to produce skilled and technical manpower necessary to restore, revitalize, energize, operate and sustain the national economy and substantially reduce unemployment (Obed, 2015). According to Federal Government of Nigeria (2013), Technical and Vocational Education is a form of education involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Technical and Vocational Education, therefore, is a special type of education meant to equip its recipients with requisite skills and attitudes in specific trade areas, aside the acquisition of general education. Hence, it is offered in specialized institutions referred to as technical institutions which include technical colleges.

Technical Colleges in Nigeria were established to produce craftsmen at craft level, and master craftsmen at advanced craft level (Federal Ministry of Education, 2013). The courses offered in technical colleges lead to the award of National Technical Certificate (NTC) and Advance National Technical Certificate (ANTC) respectively. The curriculum of technical colleges, according to Federal Ministry of Education (2013), are grouped into related trades. These include; the computer trades, electrical/electronic trades, building trade, wood trades and mechanical trades. Mechanical trade is a general name used in describing trades that have direct bearing with metal welding/forming and servicing/repairs of machines or machine related equipment and appliances. The trades in this group include Agricultural Implement and Equipment, Automobile Electrical Work, Automobile Body Building, Automobile Parts Merchandising, Air-Conditioning and Refrigeration Works, Mechanical Engineering Craft Practice, Welding and Fabrication Craft Practice, Foundry Craft Practice, Instruments Mechanics Work, and Metalwork Technology. Metalwork Technology, therefore, is one of the trades under the class of mechanical trades.

Metalwork is any work done on metals. Metalwork comprises a blend of both theory and practical that leads to manufacture and production of goods and services, by the use of machine tools and equipment on metal materials. Metalwork Technology, as an education programme, is aimed at training students on the general properties and use of metal in order to help them in materials

selection for particular job, on how to select various techniques and approaches to carrying out specific works, and teach them how to utilize the safety rules and regulations in the workshops.

As stipulated in the National Board for Technical Education (NBTE, 2003) minimum standards, the NTC curriculum in metalwork technology is designed in modules which include: General Fittings, Turning/ Lathe Machining, Milling, Shaping/Planning, Drilling and Grinding, General Metalwork 1, and General Metalwork 2. In teaching this NTC curriculum, emphasis is placed on the process of carrying out the act of metalwork. This process is called metalworking.

Metalworking is the process of working with metals to create individual metal parts, assemblies, or large-scale structures. The term covers a wide range of work; from large ships and bridges to precise engine parts and delicate jewelry (Darwin, 2011). It therefore, includes a correspondingly wide range of skills, processes, and tools. Metalworking, generally, is divided into the following categories: Forming, Cutting, and Joining. Each of these categories contains various processes. Forming processes entails modifying metal work-pieces by deforming the object into a particular shape, without removing materials. Forming is done with a system of mechanical forces, and especially for bulk metal, forming is done with heat. Milling which is under the cutting categories is a complex process of shaping metals or other materials by removing materials to form the final shape (Donkor,2010). It is done on a milling machine, a power-driven machine, that in its basic form, consists of a milling cutter that rotates about the spindle axis (like a drill), and a worktable that can move in multiple directions (usually two dimension) (x and y axis relative to the work-piece). Joining, on the other hand, is part of Assembly process in which marked joints of material parts are fixed together to form a whole body. Joining processes include: Use of Mechanical Fasteners, Soldering, Brazing, and Welding.

From the forgoing, it can be seen that metalworking, as a process, require utilization of materials resources such as machines, tools and equipment in the various categories to produces metal parts, components, large scale structures and assemblies. Effective teaching therefore, of metalwork technology, would depend, among other factors, on the utilization of relevant machines, tools and equipment in the process. This is in line with Umunadi, (2004), who asserted that the realization of the objectives of Technical Colleges in Metalwork Technology depends on the availability of

equipment, tools and materials, adequate supply of qualified teachers, and the proper implementation and usage of technical equipment, tools and materials. Furthermore, Awobodu (2000), noted that teacher utilization of relevant equipment, materials, and tools in teaching metalwork technology facilitates learning and enhances students' achievement. The utilization of available materials resources and instructional facilities depends on what the teacher makes out of it, as they do not achieve any attributed values on the own.

Utilization of is the process of using procured and assessable facilities, tools, components equipment and appliances to make teaching and learning process easier, interesting, and rewarding.

Utilization, according to marketbusinessnews.com(2021), is the action of using something i.e. making practical and effective use of it. Put simply, it refers to the use of something or the process of using it effectively. Therefore, the action(s) of using material resources such as Instructional Materials, Workshop Materials for metalwork teaching implies their utilization. That is, utilization is making practical and effective use of the resource materials.

The resource materials in focus, here, are classed into two broad groups, namely; Instructional materials, and metalwork Workshop materials (machine tools, hand tools, equipment). Instructional materials, according to Wikipadia (2021), are any collection of materials including animate and inanimate objects, human and non-human resources that a teacher may use in teaching and learning situations, to help active desired learning objectives. They may aid students in concretizing learning experiences, so as to make learning more exciting. It is in this light that Mba (2010) referred to instructional materials as interesting and interactive. They are tools used as teaching aids or resources which teachers utilize for the purpose of making teaching and learning more effective. There are tools used instructional activities which include active learning and assessment. The term encompasses all materials and physical means an instructor might use to implement instruction and facilitate student achievement of instructional objectives. Instructional materials can be classified into the following types:

Print: (Textbooks, Pamphlets, Handout, Study guides, Manuals)

Audio: (Cassettes, Microphones, Podcast)

Visual: (Charts, Real objects, Photographs, Transparencies)

Audiovisual: (Slides, Tapes, Films, Filmstrips, Television, Video, Multinational, Projector/Power Point presentation arrangement)

Electronic interactive: (Computers, Graphing, Calculators, Tablets)

Metalwork Workshop materials are a large range of both manual equipment and tools, and power-driven equipment, and tools that are used to work on metals from the stages of measurement and marking-out, to that of a finished article, part, or piece, that are housed in a sizeable space. This is in line with Wikpedia, (2021) which states that Metalwork workshop is a space equipped with a large range of equipment for work with sheet metal, wire, and metal tube. This will allow precision bending of metal tubing up to 2.5" diameter.

The manual equipment and tools are, generally, classed as basic metalwork hand tools and equipment because they are generally portable and manually operated. Examples include: Measuring tools like a rules, protractors, calipers, and micrometer; marking-out tools like punches, scribers and dividers; driving tools like hammers, and screw drivers; cutting tools such as snips, and saws, joining tools / equipment such as soldering iron, and welding machines. Most of these tools and equipment are used on the benches, hence they are often referred to as metalwork bench tools. On the other hand, the power-driven tools, and equipment, are generally classed as machine tools because they are heavy, and driven by electricity. Examples include: Lathe machine, Milling machine, Grinder machine, Shaping machine, Drilling machine, Welding equipment and Sawing machine.

These resource materials could be available and functional and yet not utilized. They can be said to be utilized if they are employed in teaching metalwork topics/ areas that require their uses, both as teaching aids and skills acquisition promoters/ facilitators. The key metalwork topics that require use of metalwork workshop materials include: Design Technology in Metals and plastics, Heat treatment of metals, Forging, Foundry work, Metal cutting machine tools, Sheet metalwork, Machine tools and processes, Workshop processes and materials, Workshop technology and Welding technology. This way, they would have been made practical and effective use of, in line with the definition of utilization by marketbusinessnews.com(2021).

Statement of The Problem

The practical nature of Metalwork Technology requires that the students are trained in hands-on-practical skills acquisition through the utilization of both the Instructional Materials and Workshop Materials to complement theoretical teaching, with a view to making them perform excellently in the various achievement tests/examinations, and post-graduation jobs requiring Metalwork skills competencies. Also, it is expedient for materials resource to be optimally utilized for teaching of metalwork technology in technical colleges, in order to meet the standard set by NBTC. According to NBTC,(2002) availability and adequate utilization of both human, and material resources are standard requirements for teaching, and administration of Technical courses.

However, these lofty goals are not being achieved because students' performance in the various achievement tests, most of which are hands-on-practical skills based, such as National Technical Certificate(NTC) and National Business Certificate(NBC) examinations, have continually be declining. This was put succinctly by Mba, (2001) who asserted that students' performance in NCT and NBC examinations taken in 2015 revealed a disturbing statistics attributable utter neglect, and inadequacy of human and material resources. Furthermore, it is believed that majority of graduates of Metalwork Technology are unemployable, hence they roam the streets doing nothing or found themselves in other unskilled means of surviving, such as Motorcycle transporter and Tricycle "keke" transporters. Meanwhile, foreign artisans and technicians are, more often than not, providing metalwork services such as plumbing jobs, fitting jobs, steel erector jobs, and welding jobs.

One can safely say, therefore, that Metalwork technology students and graduates lack the required skills that would prepare them adequately for achievement tests, and post-graduation jobs. One of the factors attributable for this is under-utilization of Instructional materials and Metalwork workshop materials. It was, therefore expedient, that a study be carried out to investigate the utilization of material resources for the teaching of Metalwork technology in Technical Colleges in Rivers State.

Purpose of the Study

The purpose of the study was to investigate the Utilization of Material Resources for the Teaching of Metalwork Technology in Technical Colleges in Rivers State. Specifically, the study explored the following:

1. Instructional Materials utilization for the teaching of Metalwork Technology in Technical Colleges in Rivers State.
2. Workshop Materials utilization for the teaching of Metalwork technology in Technical Colleges in Rivers State.

Research Questions:

Two research questions were formulated to guide the study:

1. To what extent are Instructional Materials utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State?
2. To what extent are Workshop Materials utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State?

Hypotheses

Two hypotheses were formulated to guide the study and were tested at 0.05% level of significance:

$H0_1$: There is no significant difference in the mean responses of teachers and students on the extent to which Instructional Materials are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State.

$H0_2$: There is no significant difference in the mean responses of teachers and students on the extent to which Workshop Materials are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers Stale.

II. METHODOLOGY

Design of the Study: The study adopted descriptive survey research design and was carried out in Rivers State. The state, being the oil and gas hub of Nigeria, is home to many companies where graduates of Metalwork Technology could be employed and/or render technical services, by operating self-owned technical outfits. More also, the area has technical colleges that offer Metalwork Technology.

Population of the Study: The population of the study was 320 respondents, comprising 46 Metalwork Technology teachers, and 274 Metalwork Technology students in Technical Colleges in Rivers State. The population was not sampled because it was of manageable size. This implies that the entire population was used for the study.

Instrument for Data Collection: A structured questionnaire titled: Utilization of Material Resources Questionnaire '(UMRQ)' was used to collect data for the study. The instrument was structured on a four-point response options of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE), with values of 4, 3, 2, 1 respectively for each one.

Validation of the Instrument: The instrument was validated by three experts. The validates were requested to read through the questionnaire items for clarity and appropriateness based on the research questions for the study. Pearson Product Moment Correlation formula was used to determine the reliability of the instrument with the aid of SPSS. This gave a reliability coefficient of 0.82. Data collected from the respondents was analyzed on four-point scale using mean and standard deviation to answer the research questions. t-test was used to test the null hypotheses at 0.05 level of significance. Decision rule for the research questions was taken as follows: Very High Extent (VHE) 3.50-4.00, High Extent (HE) 2.50-3.49, Low Extent (LE) 1.50-2.49 and Very Low Extent (VLE) 0.50-1.49. Decision rule for the hypotheses was taken as follows: if the calculated value was greater or equal to the table value, the null hypothesis was rejected. On the other hand, if the calculated value was less than the table value, the null hypothesis was accepted.

III. RESULTS

Research Question 1: To what extent are Instructional Materials utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State?

Table 1: Mean and Standard Deviation of the Responses of Teachers and Students on the extent to which Instructional Materials are utilized for the Teaching of Metalwork Technology.

		Teachers			Students		
S/N	**Instructional Materials utilized for the teaching of Metalwork Technology**	**X**	**SD**	**RMK**	**X**	**SD**	**RMK**
1.	Textbooks	3.24	0.87	HE	2.90	0.95	HE
2.	Audio materials	2.13	1.03	LE	1.93	0.76	LE
3.	Visual materials	2.07	0.92	LE	1.97	1.07	LE
4.	Slide/Audio tapes	1.70	0.96	LE	1.20	1.10	LE
5.	Transparences magazines	1.05	0.93	LE	1.82	1.11	LE
6.	Journals	2.88	0.92	LE	3.01	1.10	LE
7.	Periodicals	1.14	0.91	LE	1.87	1.08	LE
8.	Chalk board	2.93	0.94	LE	1.95	1.03	LE
9.	Display board	1.28	0.87	LE	2.04	1.04	LE
10.	Projectors	2.25	0.89	LE	2.12	0.96	LE
	Grand Mean	**2.04**	**0.66**	**LE**	**1.01**	**0.62**	**LE**

Field Survey, 2021

Table I revealed that the teachers had a grand mean of 2.04 and standard deviation of 0.66 while the students had a grand mean of 1.01 and standard deviation of 0.62. However, both agreed, to a high extent, on item 1 and 6. The closeness of the standard deviation shows the homogeneity of the respondents. Overall, both respondents agreed that, to a low extent, are the Instructional Materials utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State.

Research Question 2: To what extent are the Workshop Materials are utilized for the teaching of Metalwork Technology in Technical Colleges in River State?

TabIe2: Mean and Standard Deviation of the Responses of Teachers and Students on the extent to which Workshop Materials are Utilized for the Teaching of Metalwork Technology.

		Teachers			Students		
S/N	**The Workshop Materials (Machines, Tools, and Equipment) are utilized in the teaching of:**	**Mean**	**SD**	**RMK**	**Mean**	**SD**	**RMK**
1.	Design Technology in Metal and Plastics	1.21	0.99	HE	1.94	0.91	HE
2.	Heat treatment of metals	1.90	1.10	LE	2.00	0.96	LE
3.	Forging	2.09	0.92	LE	1.94	1.05	LE
4.	Foundry work	2.02	0.89	LE	1.98	1.00	LE
5.	Metal cutting machine tools	2.00	0.98	LE	1.98	1.02	LE
6.	Sheet Metal work	1.92	1.01	LE	1.97	1.01	LE
7.	Machine tools and processes	1.76	1.11	LE	1.91	1.11	LE
8.	Workshop processes and materials	1.83	1.99	LE	2.12	1.03	LE
9.	Workshop technology	1.90	1.15	LE	1.16	0.91	LE
10.	Welding technology	2.07	1.04	LE	1.95	0.93	LE
	Grand Mean	**1.87**	**0.73**		**1.90**	**0.74**	

Field Survey, 2021

Table 2: revealed that the teachers had a grand mean of 1.87 and standard deviation of 0.73 while the students had a ground mean of 1.90 and standard deviation of 0.74. The closeness of the standard deviation shows the homogeneity of the respondents. They all agreed that, to a low extent, Workshop Materials (machines, tools and equipment) are utilized for the teaching of Metalwork technology in Technical Colleges in Rivers State.

Hypotheses:

$H0_1$: There is no significant difference in the mean responses of teachers and students on the extent to which Instructional Material are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State.

Table 3: The t-test Analysis of Significant Difference in the Mean Responses of Teachers and Students on the Extent to which Instructional Materials are Utilized for the Teaching of Metalwork Technology.

Respondents	N	X	SD	Sig. lev	DF	t-Cal	t-Crit	RMK
Teachers	46	2.03	0.64	0.05	318	3.32	1.96	Sig
Students	274	1.01	0.61					

Result on table 3 revealed that t-cal (3.32) is greater than t-crit (1.96), hence the hypothesis was rejected. Therefore, there is a significant difference in the mean responses of teachers and students on the extent to which Instructional Materials are utilized for the teaching of Metalwork Technology in technical Colleges in Rivers State.

$H0_2$: There is no significant difference in the mean responses of teachers and students on the extent to which machines, tools and equipment are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State.

Table 4: t-test Analysis of the Significant Difference in the Mean Responses of Teachers and Students on the Extent to which Machines, Tools, and Equipment are Utilized for the Teaching of Metalwork Technology in Technical Colleges in Rivers State.

Respondents	N	X	SD	Sig.lev	DF	t-Cal	t-Crit	RMK
Teachers	46	283	0.72	0.05	318	3.42	1.96	Sig
Students	274	2.47	0.73					

Result on table 4 revealed that t-cal (3.42) is greater than t-crit (1.96). Thus, the hypothesis was rejected. Therefore, there is a significant difference in the mean responses of teachers and students on the extent to which Workshop Materials (machines, tools, and equipment) are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State.

Discussion of Findings

The findings on Research Question 1 showed that, to a low extent, the Instructional Materials are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State. Thus, there is a significant difference in the mean responses of teachers and students on the extent to which Instructional Materials are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State. This finding is in line with lyamu & Ogiegbaen, (2010), and Ama, (2000) who admitted that there is poor utilization of the available facilities and instructional materials as a result of inadequate qualified technical teachers-at almost all levels and types of education in Nigeria. The findings of the study also agree with the views of Umar & Ma'aji, (2010), who explained that the realization of the objectives of Technical Colleges in Metalwork Technology, and their ability to improve student achievement depends on a number of factors that include availability of equipment, tools and materials, an adequate supply of Technical Education teachers, and the proper implementation and usage of technical equipment tools and materials.

The finding on Research Question 2 showed that, to a low extent, are Workshop Materials (machines, tools and equipment) utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State. There is a significant difference in the mean responses of teachers and students on the extent to which Workshop Materials (machines, tools and equipment) are utilized for the teaching of Metalwork Technology in Technical Colleges in Rivers State. The findings of the study agree with Basey, (2011) who noted that lack of materials, and equipment had been significant problems in the Nigerian education system. Also, there is a significant difference in the mean responses of teachers and students on the extent to which Workshop Materials (machines, tools and equipment) are utilized in the teaching of Metalwork Technology in Technical Colleges in Rivers State.

IV. CONCLUSION

The study assessed the Utilization of Material Resources for the teaching of Metalwork technology in Technical Colleges in Rivers State. The study revealed that there is a low level utilization of instructional materials and workshop materials.

V. RECOMMENDATIONS

1. All broken down machines, equipment, and obsolete ones should be repaired and or replaced to promote the skill acquisition and training in all the colleges.

2. Modern Instructional Technology materials, which are computer aided should be provided in all Technical Colleges for efficient delivery of instructional content to Mechanical Technology students.

3. Special orientation and training on the operation and maintenance of workshop facilities and instructional materials should be organized periodically, as at when due, to continually refresh and update the instructors and workshop technicians.

4. Companies operating in areas where technical colleges are located should be encouraged to partner with government and schools' managements in the provision of workshop and instructional materials, and training of personnel in the use of these materials.

References

Adebesin, S. B. (2006). An In-depth Review of the Present State and Focus on Technical and Vocational Education in Nigeria *Paper in the proceedings of the conference of the Nigeria Association of Teachers of Technology (NATT),* Lagos: Fembis International.

Afeti, G. (2007). Strategy to Revitalize Technical and Vocational Education and Training (WET) in Africa. Meeting of the Bureau of the Conference of Ministers of Education of the African Union (COMEDAF II+). Addis Ababa Ethiopia.

Atsumbe, B. N., Emmanuel, R., Igwe, C. O. & Atsumbe, 1. A. (2012). Repositioning vocational and technical education for effective manpower production in Nigeria. *International Organization of Scientific Research Journal of Mechanical and Civil Engineering* 1(4), 1-6

Awobodu, V. V. (2000). Materials resources utilization for teaching primary science in the Era of universal bask education. In A. W. Ajetunmobi, F. 0. Ezeudu, 0. M. Adesope;

Bature, L L (2006). The role of technical school personnel in the maintenance of school facilities. *Dougirei Journal of Education*, 7, 103-110.

Darwin, C. (2011). Teaching for Learning: A Resource for Academic Staff Darwin University:

Donkor, F. (2010). The Comparative Instructional Effectiveness of Print-Based and Video-Based Instructional Materials for Teaching Practical Skills at a Distance. Online:

Droste, B. (2005). Why re-invent the wheel? VHS is already rolling the concord consortium. Online magazine http://concord.orgJlibrary/2000spring/reinvent.html.

Federal Republic of Nigeria (2013). *National Policy on education 4 Edition*. Abuja: Nigerian Education Research and Development Co-operation Press.

Federal Republic of Nigeria (2014). National Policy on Education. Lagos: Federal Government Press.

Federal Republic of Nigeria, (FME, 2009), *Roadmap for the Nigerian education sector consultation draft Access and equity technical and vocational*. Abuja: Federal Government Press.

Haruna, J.O. (2010). Availability and Utilization of instructional materials and equipment for teaching and learning in Kaduna polytechnic. J*ournal of Nigeria Association of Teachers of Technology* 7 (1) 25-34.

Ibe-Eassey, G. S. (2011). Human capacity building for information and communication technology (ICT) integration in teacher education in Nigeria. A Lead Paper presented at the 3M international conference of Nigeria Association Educational Media and technology (NAEMT).

Iroriteraye-Adjekpove, J.L (2013). Quality Information and Communication Technology (QICT) in the Classroom: Implication for Virtual Classroom for National Values and Development. Delsu *Journal of Educational Research and Development -Special Edition* 12(1), 108-115.

Iyamu, E.O.S. and Ogiegbaen, E. (2010). Assessment of the Use of Educational Technology by Social Studies Teachers in Secondary Schools in Western Nigeria. httpllwww.oscilite. org.au/ajetlejistl

Kazaure, M.A. (2009). Revitalizing TVET in Nigeria, UNESCO's Section for Technical Vocational Education, in Cooperation with the National Board for Technical Education NBTE-UNESCO-Nigeria TVET Revitalization Project. Online at: www.unescoNigeriatve.orWyhase ll.html.

Marketbusinessnews,(2021). What is Utilization? Definition and example

Mornoh, G.D.(Eds) *Technology Education and the Universal Basic Education in Nigeria*, Lagos: Alographiks Kommunikations Company 204-207 PVC Academic, OLT. Retrieved from www. irrodi. org/index. phn'irridl/article/view/792/1 486.

Umunadi,E.(2004). Utilization of Equipment and Facilities for Teaching and Learning in Technical Colleges in Nigeria. *Journal of Educational Research and Development* (JERD)3(1), 100-108

Umunadi,E.K. (2011). Provision of Equipment and Facilities in Vocational and Technical Education for Improving Carrying Capacity of Nigeria's Tertiary Institutions. In the proceedings of the 1st International Technology, Education and Environment Conference,Held at Omoku-Nigeria

Awobodu,V.Y.,(2000). Materials Resources Utilization for Teaching Primary Science in the Era of Universal Basic Education in A.W.Ajetunmobi,F.O. Ezeudu,O.M.Adesope; G.D. Momoh(Eds) *Technology Education and the universal basic education in Nigeria*, Lagos: ALographiks Kommunikations Company.204-207.

Federal Republic of Nigeria (2013). *National Policy on Education 4th Edition*. Abuja: Nigerian Education Research and Development Cooperation Press.

Ibe-Bassey,G.S.(2011). Human Capacity Building for Information and Communication Technology (ICT) Integration in Teacher Education in Nigeria. A Lead Paper presented at the 3rd International Conference of Nigeria Association of Educational Media Technology (NAEMT)

Umar,I.Y.& Ma'aji, A.S.(2010). Repositioning the facilities in Technical Colleges Workshops for Efficiency; A Case Study of North Central Nigeria. *Journal of STEM Teacher Education*: 47(3),1-9

National Board for Technical Education (2003). *Electrical Installation and Maintenance Works Curriculum and Course Specifications*, Kaduna: NBTE Publication

National Board for Technical Education (2004). *National mode specification in general Metalwor*k. Kaduna: Published by National Board for Technical Education.

Mba,T.N.(2010). Adult Education and Development. Portharcourt pearl publisher. www.researchgate.net>publication