

## **IMPACT OF TECHNICAL EDUCATION IN THE DEVELOPMENT OF METAL AND WOODWORK TECHNOLOGY IN KATSINA STATE**

Adamu Gambo Saulawa  
Hassan Usman Katsina Polytechnic, Katsina.

[gambosaulawaadamu@gmail.com](mailto:gambosaulawaadamu@gmail.com)

### **ABSTRACT**

*The research intends to explore the impact of technical education in the development of metal, and woodwork technology in Katsina State. Also, to investigate why metalwork and woodworking are in the hands of roadside workers not in hand of qualified and well- skilled technicians which result In poor or inability in fabricating innovating or transfer of Technology. The study adopted descriptive survey research design in which Stratified random sampling was used to select a sample size of metal and wood workers consisting educated workers-experienced and less experienced and less educated workers –experienced and less experienced. Purposive sampling is used to select some companies and other specific areas for the study. The same purposive was used to select an equal number of respondents from each stratum to form the subjects for the study.*

### **INTRODUCTION**

Technical education is a kind of education which has the primary purpose of preparing one for employment in a recognized occupation. To Odu o.k. (2011) the foundation of vocational and Technical education is based on a philosophy which was mainly established for self-employment and self-reliance of the individuals who partake in it these systems of education, To Uwaifo (2010) Technical education deals with the training of Technical personnel to create awareness of technological literacy.

Given above, the research is aim at finding out the impact of technical education in the development of metal, and woodwork technology in the state with special consideration of Katsina metropolis.

### **LITERATURE REVIEW**

Empowering and transforming the young ones with skills attitude and knowledge is one of the impacts of technical education on a productive society. Technical education is defined by different authors in different ways-Odu o.k. (2011) Sees Technical education as any education which has the primary purpose of preparing one for employment in recognized occupations. Dokubo I.N and Dokubo C (2014) noted that impact of vocational and Technical education program as a positive instrument for the empowerment of rural dwellers, and predicated on the assumption that vocational and technical education acquisition is closely related to economic empowerment.

Ojunba in Okolachance and Baba EI (2016) see Technical education as a form of education that's primary aim is to prepare person for employment in recognized occupation and has encompassed field of study



The importance of Technical education as a veritable instrument for the empowerment of youth, Technical education is aimed at developing skills and capabilities which are impacted by the institution of learning such as apprenticeship services, ministries or by enterprises. The evolution evolves a shift from manual skill to technical knowledge and competencies at all level. Awareness of technical advance and their impact on metal and woodwork technology and the Qualifications of the human resources requirement are of great importance.

Technical education is a profession which has a direct impact on National welfare and serves as a changing agent. Adebayo in Dukubo (2014) noted that vocational and technical education could assist in Nigeria to acquire the necessary skills and competence for occupation. He also observed that from time immemorial, Technical skills and abilities were passed from one generation to the next. He also listed such skills to include, fishing, hunting, wearing, and carving e.t.c. He also said that the outcome of training people vocational could be rewarded and satisfying. Since it could improve the living conditions of the citizens through the vocational education received there fare this means that Technical and vocational education is a powerful tool that liberates, transform people into self-reliant human and empowers them economically.

### **Major Challenges in Technical Education**

According to Oguntuyi A.N (2013), the curriculum of Technical education system plays a crucial role in the social and economic development of a nation. Due to its nature, they are continuously subject to the force driving changes in the schools, industries, and society. One of the most critical features of vocational and Technical in education, as stated in his work, is Orientation towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. It is important to note that Technical education does not only about knowing how to do things but also understanding why things are done in a particular way. Technical education is undoubtedly a significant aspect of the educational system. Among the challenges faced by the system according to Uwaifo (2011) include the follows inadequate facilities, brain drain, and staff training and retention which should be continuous exercise to ensure consistent improvement in the quality of their outputs reference to this effect a comprehensive reform toward technical education and a deliberate attempt to uplift the programme.

### **STATEMENT OF THE PROBLEM**

Vocational and technical education enables individuals to develop cognitive, manipulative, and adequate competence for self-reliance. For this reason, both the aspects have been recognized in the National policy on education (2004) as that aspect of knowledge which leads to the acquisition of practical skill as well as manipulative skills which will make the individual self-reliant.

The study intends to explore and understand the impact of Technical education in the development of metal and woodwork technology in the state. Also to investigate why metalwork and woodwork are in the hands of roadside metal and woodworkers not in the hands of qualified and well-skilled technicians which result in inability in fabrication, innovating, or transfer of

technology in renovation, rehabilitation, revitalization, construction, replacement of parts rather than importing from other countries.

### **PURPOSE OF THE STUDY**

A study of this nature is conducted purposely to stimulate and initiate the establishment of metal and woodwork industries, cottage industries as a means of fabrication, innovating, transfer of technology for making and designing parts rather than importing for sustainable development. The study will also seek to address the pros and cons involving the use of wood and metalwork in the state.

### **RESEARCH QUESTIONS**

1. What impact does technical education have on metalwork and woodworking?
2. Does the curriculum of technical education have a negative impact on the development of innovation and creativity?
3. What are the factors that left metal and woodworking in hand of roadside carpenters and metalworkers?
4. Why do metal and woodwork has not attained the desired standard of technological literacy in the state?

### **RESEARCH HYPOTHESIS**

1. There is no significant difference in the mean of literate and less literate metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.
2. There is no significant difference in the mean opinion of experienced and less experienced metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.

### **SIGNIFICANCE OF THE STUDY**

- The study will expand the scope of my knowledge in the area of discipline.
- The study will reveal what impact technical education has on metal and woodworking skills.
- It complements the effort of providing enough literature about the impact, the curriculum, and ways to attain the desired standard technological literacy.

### **SCOPE AND LIMITATION**

In conducting this research work, the researcher's focus is on the impact of Technical Education on the development of Metal and Woodwork Technology in Katsina state particularly in the metropolis. The researcher is to visit Sequential Furniture Industry, Rabe Kafintas Workshop; Timbershed the Polytechnic workshop and other related workshops in the metropolis. The researcher is delimited outside metropolis because it is more difficult to have genuine data collection.

## **DESIGN OF THE STUDY**

The study adopted descriptive survey research design. A survey research is the one in which a group of people or items is studied by collecting and analyzing data from few people considered to be representative of the entire group. The study investigates the impact of technical education in the development of metalwork and woodwork technology in the state.

### **Area of the Study**

The study area is katsina; located in the North West geopolitical zone of Nigeria. The State on the North by the Niger Republic, on the East by Kano and the Jigawa States, on the South by Kaduna State and West by Zamfara State.

### **Population of the Study**

The study comprises the entire technical workers in the areas of metalwork and woodwork from five main areas where metal and woodwork are carried out. The population of workers within the understudy is four hundred (400) workforces. The table below shows the distribution of the population in the metropolis.

**Distribution of metal and woodworkers**

<b>S/N</b>	<b>WORKSHOP/TIMBER SHED</b>	<b>DISTRIBUTION</b>
1	Sequential Furniture	60
2	Rabe Kafintas workshop	36
3	Timber shade	52
4	Polytechnic workshop	55
5	Others	197

### **Sample and Sampling Procedure**

The stratified random sampling was used to select a sample size of 80 metal and woodworkers consisting 40 educated workers experienced and less experienced, 40 less educated workers experienced and less experienced. Purposive sampling was used to select five (5) companies and other specific areas of the study. The same purposive was used an equal number of respondents from each stratum. 16 respondents from each formed the subjects for the study. Below are the randomly selected respondents.



S/N	Workshop/Timbershed	Educated		Less educated		Total
		Expert	Less- Expert.	Expert	Less- Expert.	
1	Sequential Furniture	20 (4)	10 (4)	23 (4)	7 (4)	16
2	Rabe Kafintas workshop	5 (4)	9 (4)	12 (4)	10 (4)	16
3	Timber shade	8 (4)	11 (4)	25 (4)	8 (4)	16
4	Polytechnic workshop	23 (4)	13 (4)	10 (4)	9 (4)	16
5	Others	31 (4)	52 (4)	75 (4)	39 (4)	16
	Total					80

The figures in parentheses represent the purposive sample size from each stratum.

### **Instrument for Data Collection**

The researcher developed twenty points questionnaire. The design is to seek the responses of respondents on the impact of technical education in the development of metal and woodwork technology in the state. The questionnaire is on the respondent's data that is educational qualifications, the name of a place of work, and years of experience. The instrument was structured using modified Likert's 4-point scale and weighted 4-1 point. Thus:

<b>Strongly agree</b>	-	<b>4</b>
<b>Agree</b>	-	<b>3</b>
<b>Disagree</b>	-	<b>2</b>
<b>Strongly Disagree</b>	-	<b>1</b>

### **Validation of Instrument**

The study is subjected to face validation. Face validation tests the appropriateness of the questionnaire items. It is used to indicate whether the face measure. In subjecting face validations, the initial draft of the questionnaires was given to two (2) lecturers from the Department of Vocational and technical teacher education and an expert in measurement and evaluation. Their inputs are taken into account before the final production of the questionnaire.

### **Reliability of the Instrument**

To ensure the instrument of the questionnaire was initially administered to 20 metal and woodwork workers who are not part of the study sample. Moreover, after two weeks the questionnaire was re-administered to the same respondents. A reliability coefficient of 0.78 was obtained. The instrument was assumed to be reliable enough for use since Maduabum (2003) maintained that an instrument with a coefficient of above 0.5 is reliable.



### **Method of Data Collection**

For efficient data collection, Questionnaire was administered by the researcher personally to technical teachers, technicians, and workers. The researcher also collected their responses.

### **Method of Data Analysis**

The mean and standard deviation are used to answer the research questions 1, 2, 3, and 4. The t-test statistic was used to test the hypothesis. The researcher adopted a level of significance of (0.05). As suggested by Anastasia (1968) in educational research 5 percent (0.05) alpha level of significance is often used as a standard for rejection or acceptance of the null hypothesis. For the research questions, a mean of 2.50 and above was used as a parameter for any item. While a mean of less than 2.5 will disagree.

**Research question 1:** What impact does technical education have on metal and working practice?

The table below shows the summary of the mean and standard deviation on the opinion of metal and woodworkers on the impact technical education has on metal and woodworking practice.

S/N	Items	Mean	SD	Decision
1	Does technical education transformed the economic and social life of individuals	3.34	0.78	Agree
2	Has the right culture and attitudes been inculcated in metalwork and woodwork to enhances technological advancement?	3.12	0.45	Agree
3	Does the programme produce qualified technical personnel for woodwork and metalwork technology	3.20	0.60	Agree
4	Motivate individuals for the desired revolution in technological development	2.96	0.39	Agree
5	Does technical education provide training of teachers capable of teaching woodwork and metalwork technology?	3.12	0.81	Agree

The analysis of the of table shows that the question of whether technical education transformed the economic and social life of individuals has mean of 3.34 and standard deviation of 0.78; on whether the right culture and attitudes have been inculcated in metalwork and woodwork to enhance technological advancement has mean 3.12 and standard deviation of 0.45; on the question Does the programme produce qualified technical personnel for woodwork and metalwork technology has a mean of 3.20 with standard deviation 0.60; The item on Motivate individuals for the desired revolution in technological development has mean of 2.96 and standard deviation of 0.39; while on does Technical Education provide training of teachers capable of teaching woodwork and metalwork technology has mean 3.12 and standard deviation of 0.81. The corporate analysis of the mean of 3.15 and standard deviation of 0.61 is an indication of general agreement of the respondents on the statements in the items, and there is a convergence of the individual opinions since the standard deviation is less than 1.



**Research question 2:** Does the curriculum of technical education have an impact on the development of innovation and creativity?

The table shows the summary of the mean and standard deviation on the opinion of metal and woodworkers if the curriculum of technical education has an impact on the development of innovation and creativity.

S/N	Items	Mean	SD	Decision
1	Does practical nature of technical education makes it unique in content and approach	2.95	0.93	Agree
2	Metal and woodwork technology curriculum is expensive to implement.	3.18	0.54	Agree
3	The integration of so many subject areas affects the curriculum	3.32	0.42	Agree
4	Nonavailability of functional workshop has effects on the curriculum implementation and development	3.26	0.55	Agree
5	Lack of instructional materials is one of the challenges facing curriculum implementation in providing innovation and creativity	2.81	0.40	Agree

The analysis on the table shows that does practical nature of technical education makes it unique in content and approach has a mean of 2.95 and standard deviation of 0.93. The question that Metal and woodwork technology curriculum is expensive to implement has to mean 3.18 and standard deviation of 0.54. The question that the integration of so many subject areas affects the curriculum has a mean of 3.32 with standard deviation 0.42; The item on that Nonavailability of the functional workshop has effects on the curriculum implementation and development has 3.26 and standard deviation of 0.55. Lack of instructional materials is one of the challenges facing curriculum implementation in providing innovation and creativity has mean 2.81 and standard deviation of 0.40. The analysis of the corporate gives a mean of 3.10, and standard deviation of 0.57 is an indication of general agreement of the respondents on the statements in the high convergence of the individual opinions since the standard deviation is less than 1.

**Research question 3:** What are the factors that are responsible for metal and woodworking being in the hand of roadside carpenters and metalworkers?

The table shows the summary of the mean and standard deviation on the opinion of metal and woodworkers on the factors that are responsible for metal and woodworking being in the hand of roadside carpenters and metalworkers?

S/N	Items	Mean	SD	Decision
1	Metal and woodworking skills are easily acquired	2.90	0.76	Agree
2	The trained skill workers relay on white color jobs.	3.15	0.83	Agree
3	Less capital is required	3.31	0.45	Agree
4	Production of half barked, unqualified individuals	2.89	0.61	Agree
5	Machine tools are readily available and less expensive	2.96	0.87	Agree





The table above shows that the question on that Metal and woodworking skills are easily acquired has mean of 2.90 and standard deviation of 0.76; on question that The trained skill workers relay on white color jobs has mean 3.15 and standard deviation of 0.83; also Less capital is required has a mean of 3.31 with standard deviation 0.45. The item on that it is Production of half barked, unqualified individuals have a mean of 2.89 and standard deviation of 0.61; while that Machine tools are available and less expensive has to mean 2.96 and standard deviation of 0.87. A corporate analysis of the opinion above gives a mean of 3.0 and standard deviation of 0.70 is an indication of general agreement of the respondents on the statements of the items, and there is a high convergence of the individual opinions since the standard deviation is less than 1.

**Research question 4:** Why metal and woodworkers have not attained the desired standard of technological literacy in the state?

The table below shows the summary of the mean and standard deviation on the opinion of metal and wood workers on why metal and woodworkers have not attained the desired standard of technological literacy in the state?

S/N	Items	Mean	SD	Decision
1	Lack of continuity from technical school to polytechnic or University	3.18	0.52	Agree
2	Poor training and ineffective institution workshops	3.06	0.69	Agree
3	Integration of so many subject areas affects the technological literacy of metal and woodworking.	3.05	0.90	Agree
4	Nonavailability of functional workshops and working materials	3.10	0.47	Agree
5	Is technical education not properly funded?	3.13	0.51	Agree

The analysis on table shows that the question that Lack of continuity from technical school to polytechnic or University is responsible has mean of 3.18 and standard deviation of 0.52; on the Poor training and ineffective institutional workshopshas mean 3.06 and standard deviation of 0.69; on the Integration of so many subject areas affects the technological literacy of metal and woodworking has a mean of 3.05 with standard deviation 0.90; The item on that Nonavailability of functional workshops and working materials has 3.10 and standard deviation of 0.47, While funding has a mean 3.13 and standard deviation of 0.51. The analysis of the corporate mean gives a mean of 3.10, and standard deviation of 0.62 is also an indication of convergence of the individual opinions since the standard deviation is less than 1.

### ***Hypothesis One***

There is no significant difference in the mean of literate and less literate metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.





The table shows the t-test analysis of the responses of literate and less literate metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.

Category	N	X	SD	Df	T <sub>-Cal</sub>	T <sub>-Critical</sub>	Decision
Literate	40	3.0	0.51	78	1.67	1.96	NS
Less Literate	40	2.98	0.65				

NS = not significant at  $\alpha = 0.05$  level of significance

The table shows that the t-calculated is 1.67 and the critical value of t is 1.96. Since the t calculated is less than t-critical, this, therefore, means that there is no significant difference in the opinion of literate and less literate metal and woodworkers on the impact of technical education on National development in Nigeria. Therefore we conclude that the opinion of literate and less literate metal and woodworkers are the same.

***Hypothesis Two***

There is no significant difference in the mean opinion of experienced and less experienced metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.

The table shows the t-test analysis of the responses of experienced and less experienced metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State.

Category	N	X	SD	Df	t <sub>Cal</sub>	T <sub>-Critical</sub>	decision
Experienced	40	2.6	0.72	78	1.07	1.96	NS
Less Experienced	40	2.8	0.69				

NS = not significant at  $\alpha = 0.05$  level of significance

The table shows that the t-calculated is 1.07 and the critical value of t is 1.96. Since the t calculated is less than t critical, this, therefore, means that there is no significant difference in the opinion of experienced and less experienced metal and woodworkers on the impact of Technical Education in the development of metal and wood Technology in the State. Therefore we conclude that the opinion of experienced and less experienced metal and woodworkers converges.

**DISCUSSION**

Metal and woodwork practicing is seen as a means of transforming the economic and social life of individuals direct the right culture and attitude inculcating Technical Education for enhancing



Technological advancement and provide qualified personnel for metal and woodwork technology.

Odoh (1991) asserted that Technical Education helps learners to acquire skills and competence necessary for a business job in both public and private sectors of the economy. The curriculums of Technical Education provide a quality impact on the development of innovation and creativity, due to the integration of many subject areas, functional workshops instructional material for the effective implementation of the programme. The Content is in the average of 60% for the theoretical classes and 40% for practicals. Oluloye (2002) noted that one of the issues confronting the design of appropriate curriculum for Technical Education is preparing students for the shift in Technology practice. The factors that resulted in wood and metalworking been widespread are because its skills are easily acquired involved less capital.

Ogbanjo (2012) pointed out that lack of equipment in schools make our students manipulate skills which could allow for acquisition of sufficient skills and development of Technical Competence. Metal and woodworkers have not attained required standard due to lack of training and ineffective workshop and lack of continuity from Technical schools to the polytechnic level or university, Nonavailability of functional working materials as a hindrance to this desired objective. Technical Education deals with the training of personnel to develop the nation and also creates awareness of technological literacy to our youth V.O. Uwaifo (2010). In Nigeria, the training of technical personnel has witnessed formidable challenges ranging from funding inadequate facilities both quantitatively, Nonavailability of adequate human capacity, brain drain and staff training and retention profiles. Other include weak university/industry partnership, defective curricular traditional approach to teaching poorly equipped laboratories monitoring standards for the training of prospective technologist and inadequate ICT environment to reflect the discussion based on the findings. The analysis of the research revealed that technical education has an impact in transforming the economic and social life of individuals.

## **CONCLUSION**

The study looked into the impact of Technical Education in the development of metal and woodwork Technology in Katsina State. This research critically explores metal and woodwork Technology, also to investigate why this field is in the hand of roadside workers not in qualified and well-skilled Technicians which result in inability in fabricating innovating or transfer of Technology. Another strategy is giving the employers the opportunity to participate in recommending training for job seekers and potential students.

## **REFERENCE**

- Adebayo .O. (1998). The future of continuing education programme in Nigeria with particular reference to vocational institution: a contribution to the national workshop on continuing education programme in Nigeria 1 (1) 1-6
- Anastasi (1968) psychological testing (study guide) Edition 6<sup>th</sup> Pearson press U.S.A



- Dokibo I.N. and Dokubo C. (2014). The impacts of Vocational and Technical Education programmes on the Empowerment of Rural Dwellers in South-South Nigeria journal of Education and Social Research Vol. 4 No. 3 May 2014. MCSER Publishing Rome-Italy DOI: 10 5901/jesr. 2014 v4n 3p 233.
- Moduabum P.C (2008) the Machine of Public Administration in Nigeria. Concept publication @ 2008 series concept management series.
- NPC (2004) Federal Republic of Nigeria. Lagos: NERDC Press.
- NPE (1998), National Policy on Education. Lagos, Nigeria. Federal Government press
- Odoh .A (1991) being a paper presented in the journal of technical education Research and development at FCE (Technical) Muze. Published by the Centre for Research and development Muze Anambra state.
- Odu Oji Kennady (2011) philosophical and sociological overview of Vocational and Technical Education in Nigeria- American Eurasian Journal of scientific research 6 (1); 52-57, 2011 ISSN 188-6785© IDOSI publication 2011.
- Ogbanje R.D (2012) an assessment of facilities used for teaching woodwork Technology at Federal College of Education Pankshin, Plateau State, Nigeria.
- Oguntuyi A.N. (2013). A viable vocational-technical education curriculum: a tool economic and technological development in Nigeria. Scholarly Journal of Education Vol, PP 22-26, February 2013. Available online at <http://www.scholarly.com/SJE> ISSN 2315-6155@2013 scholarly-journals.
- Okolocha C.C. and Baba E.J. (2016). The Role of Vocational and Technical Education (VTE) in Nigeria Democratic Dispensation. International journal of capacity Building in Education and Management (ITCBEM), Vol 2, No. 4 April 2016. Website <HTTP://www.rcmss.com> ISSN 2350-2312 (online) ISSN 2346-7231 (print). Okolocha C.C and Baba E.I. 2016, 242(4):-12-24
- Ojimba P.D (2012) Vocational and Technical Education in Nigeria: Issues problems and prospects. Dimension (IPP) journal of Education and Social Research, Rome, Italy, 2 (9), 23-30. [www.mcser.org](http://www.mcser.org).
- Olaoye (2002) the challenges of Globalization for Design of Technical curriculum in developing countries. First edition university of Logos pp.217-237 Ibadan.
- V. O. Uwaifo (2010) Technical education and its challenges in Nigeria in the 21<sup>st</sup> Century International NGO Journal Vol. 5(2), pp. 040-044, February 2010 Available online at <HTTP://www.academicjournals.org/ingoj> ISSN 1993-8225 © 2010 Academic Journals.

