

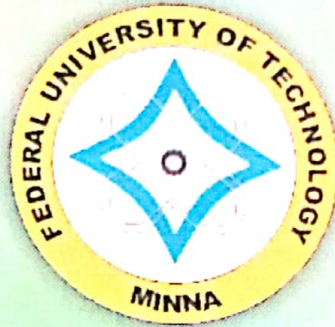
# JOURNAL OF SCIENCE, EDUCATION AND TECHNOLOGY

(MAIDEN EDITION)

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.

Vol. 1, No. 1

November, 2007



*A Publication of*  
**SCHOOL OF SCIENCE  
AND SCIENCE EDUCATION**

ISSN 1596-9770



## Improving the Teaching of Vocational Technical Education to Achieve Industrial and Technological Development.

S. M Tswana

Department of Industrial and Technology Education Federal University of Technology, Minna, Niger state.

**Abstract** The study is designed to determine strategies for improve the teaching of vocational technical education in Niger State, because it is believe throughout the country and worldwide today that, technology education is the solution to present under industrialization of Africa and hope for millions of unemployed Nigerians. A 20 item questionnaire was used to collect data from 60 technical teachers and 200 students of technical colleges in Niger State. Mean, standard deviation and t-test analysis of independent samples were used to analyze the data. Some of the findings includes: Inadequate provision of modern facilities for teaching to meet changing needs of industries, teachers should be well motivated, and inadequate professionally qualified teachers in technical colleges. It was recommended among others, that: quality technical teachers should be employed, they should be well motivated and modern equipment should be supplied to schools in line with technological change.

### Introduction

For a nation to attain the level of Industrial and technological development, such a nation must make it a habit to train her citizenry for a job skills in other to contribute effectively to the economic and technological development. To achieve this interest must be shifted to vocational technical education. The history of vocational and technical education according to Ojo (1985), is the history of man's effort to improve his competence in order to upgrade his economic position in the society. Vocational technical education is education for living and insurance against poverty, as it ensures gainful employment and satisfies manpower needs of the country. The Federal Government of Nigeria through the National policy of Education (FGN), 2004, sees vocational technical education as an aspect of educational process involving in addition to general education, the study of technology and related science and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. This education is clearly understood to be:

- an integral part of general education
- a means of preparing for occupational fields and for effective participation in the

world of work.

- an aspect of life long learning and a preparation for responsible citizenship.
- an instrument for promotion environmentally sound sustainable development; and
- a method of alleviation poverty.

Most developed nations used vocational technical Education to make their countries great. Esene and Agbobu, (1997), opined that a country like United States of America for instance, invested wisely in this type of education and now has become one of the most developed countries in the world, they earmarked a substantial amount of money for vocational technical education, because they believed that skills and competencies in such a career is indispensable for acceleration of productive industrialization. Countries such as Cuba, Brazil, China and Japan through their faithful and dogged pursuit of vocational technical education programme have achieved industrialization and self reliance nation. Oranu (1990), stated that it is believed throughout the country and the world wide today that technology education is the solution to the present under industrialization of Africa and hope for million of unemployed Nigerians.



The growth of industries depends largely on the strength and productivity of technical labour force which ensures optimal industrialization of any society. This labour force originated from technical education, when vocational technical institutions are effectively equipped and managed they will produce competent technical manpower. A society with strong technical labour force would be able to exploit and utilize the abundance natural resources to satisfied human needs. The actual growth in the number of professionally qualified manpower has always fallen short of the needed supply in technical occupations. The deficiency in quantity and quality of technical manpower can be checked by providing more places for a qualitative technical training across the country. A quality technical training in schools should produce graduates that can perform competently in their chosen vocation at the time of graduation without need of retraining.

This study has the unique responsibility to equip the teaching of vocational and technology education thereby making the learners to effectively participate in the world of work. Esomunu, (1998), stressed that the quality of technology of any country may not be significantly different from the quality of the technology manpower of such a country or nation. A technology teacher is thus a prime instrument for any measure of their technology growth of any nation. And development programme cannot be executed without skilled manpower. Esene, and Agbobu (1997) says that the technological changes which are occurring in all occupations call for a review and evaluation of our training efforts. There is need for upgrading our present skills and develop new one's. However the amount of skilled manpower required depends on the current

levels of development. Nigeria currently needs more skilled manpower.

Olaitan, (1996), opined that many teachers are ill-equipped to the teaching of vocational and technology education subjects and evaluation of students learning outcome through performance based test. This weakness might be as a result of students learning outcome to real work situation which could lead to unemployment. Even few of the graduate employed have to be retrained before they are allowed to function or handle specialized jobs. These and other related problems form the bases of this study.

### Research Questions

The following research questions were raised to guide to restudy:-

1. What are the problems encountered in the teaching of vocational technical education in technical colleges?
2. What are the ways of improving the teaching of vocational technical education in technical colleges?

### Hypotheses.

Two hypothesis were formulated from the research questions and tested at the  $p < 0.05$  significant level. They are:

Hoi: There is no significant difference between the mean responses of the teachers and students of vocational technical education regarding problems encountered in teaching vocational technical education subjects.

Ho<sub>2</sub>: There is no significant difference between the mean responses of the teachers and students of vocational technical education regarding ways of improving the teaching of vocational technical education.

### Population and Sample

The population of the study consisted of all technical teachers and all the students in seven (7) technical colleges in Niger State.

The sample for the study was composed of 60 randomly selected technical teachers and 200 students from four (4) randomly selected technical colleges in Niger State.

### The Research Instrument.

The instrument used for data collection was a structured 20 item questionnaire. Teachers and students constituted the respondents. Each set of the questionnaire contained four sections. Section A contained general information. Section B and C contained question items on problems, and ways of improving the teaching of vocational technical education. All the 20 items in section B, and C were

structured in four point rating scale. Strongly Agreed (SA) 4 points, Agreed (A) 3 points, Disagreed (D) 2 points and strongly disagreed (S.D) 1 point. The instrument was subjected to face validation, by three lecturers in industrial and technology education department, federal university of technology, Minna before administration of instrument.

### Decision rule

The cut - off point was fixed at 2.50. therefore any item that received a mean of 2.50 and above was regarded as agreed while any mean below 2.50 was regarded disagree. For the hypotheses the value of the table t is 1.96 at 258 degree of freedom at  $p < 0.05$  significant level, so any item that is either equal to the value of the t or below was accepted, while the values above 1.96 was rejected.



**Table 1** The mean, standard deviation and t – test of teachers and student on problems encountered in the teaching of vocational technical education subjects.

$N_1 = 60; N_2 = 200$

s/no	Items	$\bar{X}_1$	$\bar{X}_2$	S.D <sub>1</sub>	S.D <sub>2</sub>	T	Remark
1	Inadequate provision of modern facilities for teaching to meet changing needs of industry	3.64	3.78	3.70	3.80	-0.22	Accepted
2	Lack of constant review of programme curricular	2.61	2.72	2.65	2.74	-0.24	Accepted
3	Poor in-service training for technology teachers in institutions and industries.	2.80	2.61	2.82	2.61	-0.47	Accepted
4	Inadequate professionally qualified teachers in technical colleges	3.06	3.14	3.09	3.15	-0.17	Accepted
5	Most teachers do not improvised materials when needs arises.	2.94	2.70	2.97	2.71	-0.55	Accepted
6	Methods of teaching employed by most teachers are in adequate for teaching technology subjects.	2.64	2.80	2.66	2.81	-0.40	Accepted
7	Libraries are stock with obsolete text books.	3.34	3.64	3.39	3.62	-0.54	Accepted
8	Teachers are poorly remunerated.	3.84	3.26	3.87	3.27	1.05	Accepted
9	Erratic power supply to schools.	3.65	3.32	3.68	3.33	0.61	Accepted
10	No cordial relationship between administrators and personnel.	2.57	2.61	2.59	2.63	0.11	Accepted

**Keys:-**

$N_1$  = Number of teachers;  $N_2$  = Number of students

$\bar{X}_1$  = Mean responses of teachers;  $\bar{X}_2$  = Mean responses of students

s.D<sub>1</sub> = Standard deviation of teachers; SD<sub>2</sub> = Standard deviation students

t = t – test analysis of both teachers and students.

Table 1. revealed that all the problems affecting vocational technical education were agreed upon, with mean scores ranging from 2.57 – 3.84 and there is no significant difference in their responses.

**Table 11.** The mean, standard deviation and t – test analysis of teachers and students on ways of improving the teaching of vocational technical education subjects in technical colleges.

$N_1 = 60; N_2 = 200$

s/no	Items	$\bar{X}_1$	$\bar{X}_2$	SD <sub>1</sub>	S.D <sub>2</sub>	t	Remark
11	Provision of adequate modern facilities for teaching to meet changing needs of industry	3.84	3.67	3.87	3.68	0.30	Accepted
12	Constant staff development programme in schools and industries.	3.56	3.44	3.60	3.45	0.28	Accepted
13	Regular review of vocational technical education curricular inline with new technological development.	3.04	3.20	3.07	3.21	-0.35	Accepted
14	Provision of qualified and adequate teaching staff.	3.74	3.82	3.77	3.83	-0.43	Accepted
15	Ensuring cordial relationship between Administrators and personnel.	3.42	3.30	3.45	3.31	0.24	Accepted
16	Stocking libraries with modern and relevant text books.	3.81	3.74	3.84	3.75	0.12	Accepted
17	Teachers should employ good teaching methods.	3.50	3.1	3.53	3.12	0.76	Accepted
18	Teachers should improvised at the shortage of materials.	3.05	3.08	3.08	3.09	-0.07	Accepted
19	Staff should be properly remunerated.	3.84	3.86	3.87	3.87	-0.35	Accepted
20	There should be constant power supply to schools.	3.78	3.89	3.81	3.90	-0.19	Accepted

Table 11. All the items generated in table 11. Were all agreed with mean ranging from 3.04 – 3.89. And there is no significant difference in the mean responses of respondents.

### Findings

Problems encountered in teaching vocational technical education subjects in technical colleges.

- i. Inadequate provision of modern facilities for teaching to meet changing needs of industries.
- ii. Inadequate professional qualified teachers in technical colleges.
- iii. Teachers are poorly remunerated

- iv. Erratic power supply to schools.
  - v. Libraries were stock with obsolete text books
- Ways of improving teaching of vocational technical education subjects in technical colleges.
- i. Provision of adequate modern facilities to schools.
  - ii. Provision of qualified and adequate teaching staff.
  - iii. Teachers should be well motivated



- iv. Libraries should be well stocked with modern and relevant textbooks.
- v. Constant power supply to schools.

### Discussion

Analysis on table 1 revealed that the respondents agreed with all items as the problems encountered in the teaching of vocational technical education subjects in technical colleges. The results is not coming as a surprise because Olawepo, (1997), and Aleburu, (2001), highlighted the followings as problems of teaching vocational technical education courses, which are:-

- poor remuneration and lack of incentives for technical teachers
- Inadequate professionally qualified technical teachers
- Inadequate staff development.
- ill – equipped workshops with modern equipment.

There is general dearth of qualified science and technology teachers in the schools. Which is also inline with the view of usman, (1994), who said that unavailability of qualified teachers in the schools have been identified as the most constrains hindering the development of technical education in Nigeria. Despite the production of technical teachers from universities, polytechnics and colleges of educations the nation still cry for shortage of qualified technical teachers, this may be as a result of exodus of technical teachers to industries, business sectors and politics where their services will be acknowledged. Atsumbe, (2001), and Umoh and Nkuma, (2003), emphasized that, the teachers are not motivated to stay in the profession. They decided to cross-over to where their services are needed and be well paid. The trend of loosing the technical teachers will be worsen as nothing is done to check the continuous drift of technical teachers from teaching profession to the industries. The reasons attributed to this continuous drift may be low incentives for

their skills; frustration due to lack of tools and equipment for work and available alternative jobs that are more lucrative. Okala, (2003), lamented on the inadequacy of teaching /learning resources which eventually produced graduates that are inadequately prepared to face the world of employment. In his study it was discovered that there is inadequate training resources in the schools and the shortage cut across tools and equipment, books, infrastructures, consumable e.t.c some schools in rural area lack electricity supply which is necessary for the functioning and utilization of some equipment. Even in the Urban areas where there is supply of electricity, it is so erratic and doesn't allowed proper utilization of the equipment.

The analysis in table 2, agreed with the items posited as a strategies for improving the teaching of vocational technical education subjects. Okala, (2003), opined that the success of any educational programme depends on the availability of adequate number of professionally trained, committed, motivated, conscientious and efficient classroom teacher. Since it is believed that no educational system can rise above the quality of its teachers. There should be bold and courageous review of technical teachers salaries to forestall further drift of the best to industries, business sector and politics, such review should be reasonable such that it can forestall constant search of greener pastures by technical teachers. Umoh (2002) declared that the aphoristic adage "Teachers reward is in heaven". Is not enhancing in Nigeria context. Nigeria teachers need their reward in advance to service life while on earth, especially as not all of them may eventually reach heaven. Vocational technical education cannot be well taught in the environment where workshops are not equipped with modern equipment. Olawepo, (1997), observed that, to acquire

competence in skill training, practice is essential. Well equipped workshops with modern equipment must be provided. As we experience the growth in technology. Schools must not rely on old equipment supplied two decades ago but opt for modern equipment inline with the changes in technology. The issue of electricity supply to schools must be revisited. There should be constant supplied of electricity to schools, most especially during the lesson periods to enable them operate the equipment and machineries. Satisfactory performance of any personnel, sufficient opportunities for professional growth must be put in place, since no society is static and society is constantly changing in terms of needs, values and goal. Training through regular attendance to workshops, seminars, conferences, industrial attachment are among useful strategies that can be adopted by the teachers to acquire necessary skills they require to function effectively.

### Conclusion

According to Atsumbe, (2006), one of the major trusts of the National policy of Education (NPE) is to increase the quality and quantity of the nation's stock of trained personnel at all levels at the same time prepare individual students for gainful employment and useful living within the society. While vocational technical education is an instrument of industrialization and technological development in any given society. The strength and growth of industries largely depends on productivity of technical labour force, which ensures optimal industrialization of any society. This labour force originated from vocational technical education. when technical colleges are effectively equipped and managed they will produce competent technical manpower. A society with strong manpower should be able to exploit and utilize the available

nature resources to satisfied human needs. In Nigeria today many school graduates had turned to armed robbers, commercial sex workers and other vices because they didn't acquired any suitable skills while in school to make them function positively in the society. The products of quality vocational technical education programme which were not employed by Government usually become employers of labour by setting up their own workshops to produce goods and services. Quality technical training produce graduates that can perform competently in their chosen vocations and thereby make the nation to be industrialized and technological developed.

### Recommendations

Based on the findings, the following recommendations are made.

- (1) Since it is believed that no any educational system can raised above the quality of its teachers. Quality technical teachers should be employed to teach in technical institutions.
- (2) There should be upward review of teachers salaries and wages to curtail the mass drifting of technical teachers to politics, Business sectors and industries where their services is well acknowledged.
- (3) Base on the fact that technology is not static but dynamic, the school workshops should be adequately equipped with modern tools and equipment in line with the technology change.
- (4) The technical teachers should be encouraged to attend training, such as workshops, seminars, conferences, industrial observation and actual work in industries at frequency bases to enable them acquired relevant skills needed in industries and latter transfer it to students.



- (5) There should be constant power supply to schools that is, provision of stand-by generator, due to erratic power supply from Power Holding Company of Nigeria, to enable the staff and students operate the equipment effectively.

#### REFERENCES

- Aleburu, J. O. (2001) Vocational and Technical Education. A tools for sustainable poverty alleviation. In T.A.G. Oladimeyi, O.T. Ibeneme, O.M. Ofrdopr, M.A Ogunyemi, H.M Tukura (Eds). *Technology education and poverty Alleviation in Nigeria* 14<sup>th</sup> Nigeria Association of teachers of Technology NATT annual conference.
- Atsumbe, B.N (2001). Foundation of Technology Education Lecture note on I.T.E 211, unpublished. Department of Industrial and Technology Education, Federal University of technology Minna.
- Atsumbe, B.N (2006) school – industry partnership; A veritable tools For quality Technology Education programmes. *Journal of Research in curriculum and teaching* 1(1) 39 – 47.
- Esene R.A and Aghabu D.A (1997). *Introduction to vocational and Technical Education*. Agbor, Krisbee publishers.
- Esomunu, M.N (1998) A review of Technology education in Nigeria *Journal of National Association of Teachers of Technology* 12 (1): 1
- Federal Government of Nigeria, (2004) *National Policy on Education*. Lagos, Federal Government press.
- Ojo, A (1985) the place of vocational Education in the Economic Development of Nigeria. *The vocation Education Journal* 15 (1):4
- Okala, O.F (2003) Vocational Technical education in national Development. Umoh. M. (Ed) *An introduction to vocational and Technical Education in Nigeria* Calabar Franedoh Publisher.
- Olaitan .S. O. (1996) *Vocational and Technical Education in Nigeria Issues and Analysis*. Onitsha Noble graphic press
- Olawepo. A.A (1997) Problems and prospects of technical teachers in Nigeria. *Journal of National Association of Teacher of Technology* 2 (1) 99-104
- Oranu, R.N (1990) Vocational Education and manpower Development. *Nigeria Vocational Journal* 3.55-62
- Umoh, E.A (2002) Teachers of Technology: shortage and implication For Teaching of pre Vocational subjects in post-primary schools In Zanfara State *Journal of National Association of Teachers of Technology* 4 (1) 131-137.
- Umoh. M. and Nkuma O. U (2003) problems of vocational and Technical Education in Nigeria, in Umoh – m (Ed) *An Introduction to vocational and technical Education in Nigeria*. Calabar Franedoh Publishers.
- Usman, B (1994) Implication of Technical Teacher shortage on the Implementation of the National Policy on Education. *Spectrum Journal* 1 (1) 71 – 78.