

MECHANISMS FOR IMPROVING MANPOWER PRODUCTION IN VOCATIONAL AND TECHNICAL EDUCATION

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Abstract

This study was designed to identify mechanisms for improving the quantity and quality of manpower production in vocational and technical education in Kogi state. Four research questions and hypotheses guided the study. The study was carried out in Kogi state of Nigeria and the areas of study specifically are technical colleges, secondary schools, polytechnics and industries. Population of the study comprised two hundred (200) technology education teachers and seventy-five industrial personnel drawn from the area of study. A 30-item questionnaire was used to collect the relevant data. The research questions and hypotheses were analyzed using mean standard deviation and t-test statistics. The hypotheses were tested at 0.05 level of significance. The results from the data showed that technology teachers and head of technical departments and units from the industries shared similar views with (30 or 73.4%) of the mechanisms proposed. Specifically it discovered that there is no strong tie between industries and training intuitions, students industrial work experience scheme is haphazardly organized, the training facilities and entrants into the training institutions are poor and the administration of these training institutions were left in the hands of non-vocational educators. Based on the findings, it was recommended, that government should immediately conduct a national survey on manpower needs in vocational and technical education, remunerations of technical teachers should be reviewed urgently; industries should go into partnership with training institutions in drawing up a training programmes and government should liaise with industries to ensure the remittance of 5% of their annual profit for the development of technical education.

Introduction

Vocational and technical education is the type of education received by learners towards self-reliance. Ekunke (2008) defined vocational and technical education as a type of training useful for employment in trade and industry, agriculture, business and home making among others. Vocational and technical education prepares manpower for the development of the society. Yaku (2007) stated that the goal of vocational and technical education is to equip youths with trainings that are psychomotor oriented so that they can live and at the same time contribute toward all round development of the society. To achieve this vocational and technical education programmes should be repositioned for self-employment. According to the Nigerian National Policy on Education (2004), technical education is that aspect of education which leads to the acquisition of practical skills, as well as basic scientific knowledge" It is against this background that most institutions including universities, polytechnics, technical colleges, secondary schools even at the primary schools now offer pre vocational, vocational and technical education courses.

In a broader perspective technical education aims at imparting to its recipients, skills and scientific knowledge or competences that can enable them work effectively in industrial and commercial ventures (Mbata, 2001). Again technical education is aimed at providing, among others, trained manpower in the fields of applied science, technology and commerce. One of the objectives of encouraging technical education in Nigeria by the Federal and state government is to enable youths become skilled craftsmen, technicians, auto mechanics, welders, stenographers, technologists and so on. All these are aimed at filling up the needed skilled personnel in the public and private sectors of the economy. For quite sometimes, since the formulation of the National Policy on Education, effective training and development of the right caliber of manpower in technical education has never been problem free. Olaitan (2001) lamented that the level of manpower production in vocational and technical education compared with the needs of the society for technological development has never been encouraging.

Olise (2012) observed that the central focus of vocational and technical education is to develop

manpower for social and economic transformation of the nation. Technological development in many of the developed nations has shown that their countries made achievement through skills possessed by people of that country. Manpower development has been designed as efforts to stimulate more employment opportunities, to upgrade the skills and adaptability of workforce. (Olaitan, 1988), made the following suggestions for improving manpower production through vocational and technical education. These include a closer cooperation between industries and schools, vocational schools should be organized outside the directives of general education, qualified teachers should be posted to vocational schools, there is a need for guidance services in vocational school and teachers should be properly remunerated in order to remain in the job.

Ekuneke (2008) attributed the problem of manpower production in Nigeria to ineffective organization of industrial attachment, attitudes of industries and poor state of training institutions. It is evident to say that many Engineers, technicians, and technologists are roaming the streets without job because according to Ozoro (1990), the training received in vocational and technical education in Nigeria is inadequate or irrelevant to societal needs. Okwori (2012) pointed out that many vocational and technical education teachers in Nigeria cannot operate modern equipment in industries because it is not found in their schools. Supporting this claim is a re-emphasis in the FRN (2004) that employers generally consider the products of technical institutions unusable without further training. Against this background, the Primary Objective of this research is to identify strategies for ameliorating this situation.

Statement of the problem

With the increase in the number of graduates of technical institutions that are unemployed and the persistent outcry from industries and employers of labour generally about the inability of the graduates of technical institutions to take up employment without retraining is a matter of concern to teachers of technology. The situation prevails because Ozoro (1990) noted with a serious concern that to great extent vocational and technical education in Nigeria has remained uncoordinated, unplanned, inadequate and to a large extent irrelevant to the needs of the society, paucity of data on manpower needs, non-commitment of industries to skill development, defective organization of students industrial attachment programme and the deplorable state of our training institutions. Technology education equips youths and adults with skills and knowledge necessary for employment and help workers to

Atsumbe, B. N., Robert, O., Raymond, E. & Igwe, C. O. update and upgrade their job skills, but in a situation where resources abound yet many technicians, craftsmen including university graduates roam the streets in search of jobs calls for a serious worry among concerned citizens. Therefore, there is a need to consolidate vocational and technical education in order to provide graduates with knowledge, skills and training needed in the world of work. Hence the need for this study.

Research Questions

The following research questions were formulated to guide the study.

1. What is the commitment of industries to manpower production through vocational and technical education?
2. How are the students industrial work experience scheme carried out towards manpower production?
3. What are the quality of entrants and facilities used for manpower production in vocational and technical training institutions?
4. How effective is the administration of vocational and technical education towards effective manpower production?

Hypothesis

- H0₁: There is no significant difference in the mean response of technology teachers and heads of units in industries on commitment of industries to manpower production.
- H0₂: There is no significant difference in the mean responses of technology teachers and heads of units in industries on how students industrial work experience is carried out towards quality manpower production.
- H0₃: There is no significant difference in the mean responses of technology teachers and heads of units in industries on the quality of entrants and facilities used for improved manpower production?
- H0₄: There is no significant difference in the mean responses of technology teachers and heads of units in industries on the administration of vocational and technical education towards quality manpower production.

Methodology

The study adopted survey research design this is because the study has to do with sampling of opinions of stakeholders in manpower production. The study was carried out in kogi state of Nigeria.

Relevant data were collected from technology education teachers teaching in the secondary schools, technical colleges, polytechnics and heads of units in relevant industries. The population of the study comprised of two hundred technology education teachers in Kogi State. They were drawn from technical colleges, secondary schools, polytechnics and engineering departments and units of industries in Kogi state. There was no sampling since the population isn't too large to be used for the study (Aloysius, 1998).

A structured questionnaire was used for data collection. It consisted of 30 items divided into sections. Section A sought information from respondents on the commitment of industries to manpower production. Section B. solicited for information from respondents on students industrial work experience scheme towards improve manpower production. Section C, addressed issues that boarder on the quality of entrants and facilities used in training institutions responsible for manpower production, section D, sought for information on the administration of vocational and technical education programmes in the training institutions. A four point rating scale of Strongly Agree (SA) 4, Agree (A) 3, Disagree (DA) 2, and Strongly Disagree (SD) 1 point was used. The instrument was subjected to face and content validation by three experts in vocational and technology education. The experts were drawn from the Department of industrial and Technology Education, Federal University of Technology, Minna, Nigeria. The questionnaire was administered by the

Atsumbe, B. N., Robert, O., Raymond, E. & Igwe, C. O. researcher with the help of two research assistants. The entire copies of the questionnaire distributed to the respondents, two hundred and seventy five (275) in number were completed and returned.

The analysis of the data for the four research questions and the hypotheses were accomplished using mean, standard deviation and t-test. Acceptance level for items was 2.5 and above. Any item that attracted up to 2.5 and above was considered agreed and below 2.5 was regarded as disagreed. The null hypotheses were tested at 0.05 level of significance ($P=0.05$). An item was considered significant and hypothesis rejected if the calculated t value exceeded the table t value of 1.96 and not significant when the calculated t is below or equal to the value of 1.96 at 0.05 level of significance.

Keys:

- N_1 = total population of technology teachers
- N_2 = total population of industrial personnel
- \bar{X}_1 = mean score of technology teachers
- \bar{X}_2 = mean score of industrial personnel
- SD_1 = standard deviation of technology teachers
- SD_2 = standard deviation of industrial personnel
- t_{cal} = calculated t value

Data presentation and Analysis

Research Question 1:

What are commitments of industries to manpower production through vocational and technical education? Data required for answering this research question is presented in table one below.

Table 1: Mean, Standard Deviation and t-test Analysis through Vocational and Technical Education.

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Analysis on Commitment of Industries to Manpower Production

S/NO.	ITEMS	\bar{X}	\bar{X}_2	N1 = 200, N2 = 75			
				SD ₁	SD ₂	t _{cal}	REMARK
1	There is no reliable statistics on manpower needs in technical education	3.70	3.75	0.53	0.50	1.60	Accept
2	The 3 rd and 4 th national development plans are mere projections rather than real manpower needs	2.82	2.27	0.72	0.66	2.1	Reject
3	NUC/NBTE should be commissioned immediately to conduct a National manpower survey in technical education.	3.84	3.65	0.36	0.47	1.16	Accept
4	Government should commit industries to remit 5% percentage of their annual profits for the funding of technical education.	3.66	2.27	0.53	0.66	-0.57	Accept
5	Industries should once in a while send expendable materials such as metal scraps, cut offs from wood, grounded Vehicles, generators for practical in the workshops.	2.66	2.90	0.86	1.05	1.85	Accept
6	Industries should be invited to participate/planning and revision of technical education curriculum.	3.42	3.40	0.72	0.67	0.18	Accept
7	Head of technical units or professional from the industries should serve as resource person in schools.	3.06	3.08	0.54	0.58	0.22	Accept
8	New technology "ALARM" raising committee should be set up to intimate schools on new innovations.	3.92	3.68	0.27	0.34	0.45	Accept
9	Industries should organize technology base refresher course for technology teachers.	3.66	2.27	0.53	0.66	-0.57	Accept

In table 1, items 1, 3, 4, 5, 6, 7, 8, 9 were accepted while item 2 was rejected.

Table 2: Mean, standard deviation and t-test analysis of students industrial work experience toward manpower production

S/NO.	ITEMS	\bar{X}_1	\bar{X}_2	SD_1	SD_2	t_{cal}	REMARK
10	ITF/School SWES co-coordinator should help students secure placement in industries relevant to their course before time.	3.05	2.46	0.87	1.05	1.36	Accept
11	The schools, ITF officials and industries training managers should ensure through supervision of students during SIWES.	3.05	2.36	0.54	1.03	1.07	Accept
12	Students should be paid 1/3 of graduate salary by the industries while on attachment to enhance their performance.	2.69	2.02	0.79	0.92	1.94	Accept
13	Funds needed for traveling and hotel accommodations should be released long before the exercise.	2.69	2.54	0.82	1.01	1.88	Accept
14	Students should be made to present comprehensive report of the exercise at end of the scheme.	3.03	2.02	0.77	0.96	1.45	Accept
15	Training institutions and industries should agree on appropriate coordination methods to avoid lapses.	2.86	2.96	0.79	0.92	1.94	Accept
16	Students without placement relevant to their course of study should not be allowed to proceed on SIWES.	3.05	2.36	0.54	1.03	1.07	Accept
17	Industries should in the interest of the nation expose students to relevant experiences in the course of attachment.	2.69	2.02	0.79	0.92	1.94	Accept
18	Schools in conjunction with ITF staff should hold an orientation programme for the students before the exercise	3.05	2.45	0.82	1.04	1.86	Accept

With reference to table 2, all the items were accepted.

Table 3: Mean, Standard deviation and t-test analysis on the quality of entrants and facilities used for manpower production.

S/NO.	Items	\bar{X}_1	\bar{X}_2	N1 = 200, N2 = 75			
				SD ₁	SD ₂	t-cal	Remark
19	Left over or mediocre who could not get fixed up in general education should not be pushed to technology based courses in the name of "remedial".	3.66	3.71	0.65	0.51	-0.57	Accept
20	There should be an aptitude exam to streamline students into commercial, secondary and technical colleges based on their potentials.	3.06	3.8	0.54	0.58	0.22	Accept
21	In most institutions, there are sufficient facilities and they are all in good conditions (tools, equipments, etc)	2.62	2.05	1.35	0.77	2.37	Reject
22	All the equipment and machines Supplied to schools are properly house In the workshops.	2.72	2.14	1.42	0.95	1.98	Reject
23	Most of the text books in our school libraries are out dated and carrying belated information.	2.36	2.31	0.55	0.66	1.47	Reject
24	Only qualified technology base teachers should be allowed to teach in such institution.	3.70	3.75	0.53	0.50	1.60	Accept
25	Technical teachers' remunerations should be reviewed to forestall future drift of the best teachers to industries and business sector	3.42	3.14	0.53	0.68	1.47	Accept
26	There should be provision for staff development by way of study leave (further studies)	3.92	3.68	0.33	0.50	1.07	Accept
27	Financial provisions should be put in place to enable teachers attend workshops, conferences and seminars to refresh their knowledge	3.52	3.79	0.31	0.49	1.75	Accept

The table 3 above shows that items 13, 14, 18, 19, 20, 21, were accepted while items 15, 16 and 17 were rejected.

Research Question IV

How effective is the administration of vocational and technical education programmes for effective manpower production

Table 4:

Standard deviation and t-test analysis on administration of vocational technical education towards manpower production

S/NO.	Items	\bar{X}_1	\bar{X}_2	SD_1	SD_2	t_{cal}	Remark
28	With the present level of Technological advancement, courses should be merged to have a broad base. For instance; Mechanical Technology Welding/Fabrication, Automobile, Agric Mechanization and Machining.	3.70	3.75	0.54	0.50	1.60	Accept
29	Construction Technology Furniture craft, building Technology, painting and Decorating and carpentry & joinery	3.42	3.14	0.53	0.68	1.47	Accept
30	Electrical/electronics Radio and television, Refrigeration And Air-conditioning, basic Telecommunication	3.70	3.75	0.54	0.50	1.60	Accept
31	Programme accreditation should be done at least every 5 years	3.60	3.42	0.52	0.55	1.07	Accept
32	Only administrators with Technical background Or qualification should be allowed to head technology Base institutions.	3.60	3.42	0.52	0.55	1.07	Accept
33	Technical institution should run or embark on consultancy Services as a means of fund generation.	3.28	3.10	0.53	0.64	01.80	Accept
34	With the support of government Schools should lunch Technology endowment fund.	3.42	3.14	0.53	0.68	1.47	Accept
35	A reasonable percentage of Ministry of education budget be committed to technical Education	3.70	3.75	0.54	0.50	1.60	Accept
36	Since technical education is a veritable vehicle to national development every taxable adult Should be made to pay N50 levy For the development of technical Education.	2.62	2.05	1.35	0.77	2.37	Accept

In table 4, all the items were accepted

Hypothesis

H0₁: There is no significance difference in the mean responses of technology teachers and heads of units in industries on commitment of industries to manpower production and data on manpower needs.

With reference to commitment of industries to manpower production, the result indicates that both group of respondents expressed positive response to all the items (1-6) and

showed no significant difference in their mean responses so the null hypothesis was accepted. The null hypothesis was accepted for all the items at 0.05 level of confidence.

H0₂: There is no significant difference in the mean responses of technology teachers and heads of units in industries on how students industrial work experience is carried out towards manpower production.

The information on how students industrial work experience is carried out towards manpower production revealed that technology teachers accepted items 10, 11, 12, while heads of units in industries accepted items 10, 11 and rejected 12 but do not show any significant difference in the t - test score, on this ground the null hypothesis was upheld.

H0₃: There is no significant difference in the mean responses of technology teachers and heads of units in industries on quality of entrants and facilities used for manpower production?

The result shows that both group of respondents accepted items 14, 15, 16, 17, 18, 19, 20, 21 except item 13. Consequently, item 13 was rejected.

H0₄: There is no significant difference in the mean responses of technology teachers and heads of units in industries on the role played by administrators of vocational and technical education towards manpower production

With references to the effectiveness of the administration of vocational and technical education towards manpower production, technology teachers and heads of units in industries showed positive response towards items 1, 2, 3, 4 and negative responses to item 5.

Discussion

The study showed that there are no sufficient statistical data on manpower needs in the area of vocational and technical education in Nigeria. This finding goes to support the assertion by Ekunke (2008) that there is no reliable statistics on manpower demands in Nigeria; data available were mere projections of output from training institutions. On the question of industries going into partnership with training institutions, this is because industries are the major beneficiaries of vocational and technical education graduates, it is only reasonable that they should bear part of the running cost of training institutions. When industries are made to contribute materially, they would be more interested in exposing trainees on industrial attachment to worthwhile work experience.

Evidence from the data analysis showed that student industrial work experience (SIWES) which was designed to familiarize trainees with the world of work is fast degeneration into a mere formality,

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buttressing this view, Mbata (2002) disclosed that the programme has fallen short of expectation as a result of poor coordination between industries and training institutions. The study revealed that left over students or mediocre were sent to vocational and technical education programmes. Since there is a need to improve on the quality and quantity of technical manpower in this country, the practice of admitting unqualified students in the name of pre-degree should be stopped and government should expand the needed facilities.

The finding of the study disclosed that only qualified technology teachers should be allowed to teach. The researchers observed that, apart from the limitation set by quality of entrants, qualified technical teachers are scarce in technical base institutions, the reason for this is not farfetched, remunerations in the private sectors have remained partially better than that of training institutions, hence the drift into private sectors for greener pasture

It has been recognized that accreditation of programmes is one of the quality control strategies in educational institutions. Finding of the study revealed that accreditation should be every five years and reports of accreditation exercise should be supported and worked with. Omiko (2011) postulated that the normal accreditation of programmes encourage quality control and assurance in education.

With reference to generating extra funds for the development of technical education, this study revealed that respondents support institutions rendering consultancy service and government liaising with industries to remit certain percentage of their annual profit for funding technical education programmes. In this aspect, there is a need for co-operate involvement of federal, state and the private sectors in the funding of vocational education. The acceptance of consultancy service could be attributed to the fact that government has encouraged educational institutions to embark on such service as a revenue base. Sholowale, Odo and Okwori (2011) disclosed that there should be adequate fund for technology education to carryout practical projects in order to improve on students' practical skill acquisition programme. Therefore, there is a need for financial support by federal, state and private agencies towards manpower production in Nigeria.

Conclusion

No matter the amount and quality of natural resources a nation is endowed with if there are no competent, qualified and trained technical manpower, that nation will perpetually wallow in poverty and will remain beggarly and consumer country. It is only with trained manpower that a nation can prosper and

develop technologically. That is when every citizen is given the appropriate technical skills. This can only be achieved when there is an organized system of vocational and technical education on ground whether formal or informal. In this paper an attempt has been made to discuss certain approaches for improving manpower production through vocational and technical education. Strategies such as strong ties between employers of technical manpower and training institutions, giving sufficient attention to proper organization of student's industrial attachment scheme, admitting quality students into vocational programmes and severing the administration of vocational and technical education from science and general education.

Recommendations

The following recommendations were made;

1. Governments should as a matter of urgency set up a committee to conduct a national manpower survey in the area of vocational and technical education.

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2. Industries are the employers of vocational and technical education graduates and should be given the opportunity to participate in recommending training for job seekers and potential students.
3. A bold and courageous review of technical teachers' remuneration should be undertaken urgently by federal and state government.
4. Government should once and for all come out with a blue print on the funding of technical education.
5. Any industry or organization chosen by a student for industrial experience should be adequate, functional and relevant to his/her area of study before acceptance by the school.
6. Left over students or mediocre should not be sent to technology based courses in the name of remedial because some of them find it difficult to cope with the programme.
7. Industries should go into partnership with training institutions in drawing up training programmes.

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