Global Journal of Vocational and Technical Education

ISSN: XXXX-XXXX Vol. 2 (3), pp. 022-028, May, 2014. ©
Global Science Research Journals

Full Length Research Paper

Availability and adequacy of resources for skill acquisition in digital electronics repairs in the National Open Apprenticeship Scheme in Edo State, Nigeria

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Accepted 23 December, 2013

This study was carried out to assess the availability and adequacy of provision of resources for skills acquisition in maintenance and repairs of digital electronics for the National Open Apprenticeship Scheme in Edo State. The study was guided by four purposes, from which four research questions were raised. The descriptive survey research design was employed for the study. The population of the study was 312. A sample size of 220 was drawn, which consisted of trainees, trainers and supervisors of the scheme. All the trainers were selected while proportionate random and convenience sampling techniques were used in selecting the trainees and supervisors respectively. A close ended questionnaire, validated by three experts with an alpha value of 0.74, was used for data collection. Simple percentage, mean and standard deviation were employed for data analysis. The findings showed that there are human resources for the scheme but tools and equipment are not sufficient as required, and are not provided at all by government in some cases. Recommendations were made, one of which is that state and local governments should unanimously join the federal government to run the scheme.

Key words: Skills acquisition, digital electronics, Technical and vocational education, technical-vocational skills.

INTRODUCTION

Skills acquisition is as old as the existence of man. Its usefulness is so imperative that it is meant to be acquired through the informal, non-formal and formal sectors. In every human endeavour there are skills acquisitions but the emphasis on skills acquisition in Technical and Vocational Education and Training (TVET) cannot be overemphasized, since it aims at producing individuals who can be self-reliant or be employable in one industrial business sector or the other.

Technical and vocational education and training is the comprehensive term used to describe the integration of the formal and non-formal sector of vocational education. The non-formal, as well as the formal sectors has specific skills, competencies and attitudes that the learners should acquire in order to survive the occupational trend in our society. According to Ogwo and Oranu (2006), the general skill training given in the study of vocational subjects enhances occupational mobility. Thus training obtained from TVET qualifies one to change from one occupation to another in order to face and withstand the existing unemployment situation in our society.

The situation of unemployment is Nigeria is on the increase such that many youths remained unemployed after graduation (Industrial Training Fund, ITF, 2007). In order to curb this ugly situation, the Federal Government of Nigeria made several attempts, with the introduction of some intervention programmes to help youths, both graduates and non-graduates acquire necessary skills

for survival. One of such programmes established by the government is the National Directorate of Employment (NDE). The NDE is a federal government programme established to help curb or reduce the problem of unemployment. The NDE was established through a committee, which was under the auspices of the Federal Ministry of Employment, Labour and Productivity, appointed on 26th March, 1986 (Ekpenyong, 2011).

The recommendation of the committee led to the establishment of NDE on 22nd November, 1986. The scheme was officially launched on 30th January, 1987.

The objectives of the NDE, as identified in Adebisi and Oni (2012) are

1. To design and implement programmes to combat mass unemployment;
2. To articulate policies aimed at developing work programmes with labour intensive potentials;
3. To obtain and maintain a data bank on vacancies and employment agencies; and
4. To implement any other policy as may be laid down from time to time, by the Directorate.

As a federal government organization and agent toward the development of technical-vocational skills as a means to reducing youth unemployment, it has several schemes. Some of its core schemes and programmes include the National Youth Employment Programme, small scale industries and Graduate Programme, Agricultural Sector Employment Programme, Special Public Works Programme, Youth Employment and Vocational Skills Development Programme, and Rural Employment Programme (Akintoye, 2008; Ekpenyong, 2011, Adebisi & Oni, 2012).

The Vocational Skills Development Programme is meant to provide vocational and technical skills to unemployed graduates and non-graduates through the following schemes:

1. Resettlement Loan Scheme – meant to assist graduates with the necessary tools and equipment to start their own business
2. National Open Apprenticeship Scheme (NOAS)
3. Entrepreneurship Creation (Small Scale Enterprise)
4. School-on-Wheels – a rural version of NOAS meant to extend skills acquisition training programmes to unemployed youth in the rural areas through the use of well-equipped mobile training workshop
5. Trainer Capacity Upgrading – introduced to assist NOAS master trainers to equip their workshops with modern tools and equipment.

The NOAS aims at providing unemployed youths who could not transit into secondary and higher schools with basic skills that are needed in the economy. This is achieved by attaching them as apprentices (trainees) to professional craftsmen and women (trainers), under the supervision of NDE officials (supervisors/principals) (Youth Employment Inventory, YEI, n.d.). The YEI reported that the NOAS is a part of the National Youth Employment and Vocational Skills Development Programme and it provides vocational education and training to unemployed youth in over 100 occupations. According to YEI (n.d.) and Ekpenyong (2011) the NOAS is supposed to be based on 80 and 20 percent for practical learning and theory, respectively.

In order to provide the practical learning, the trainees are trained through the usual working days, while the theoretical learning is supposed to be taught in groups of allied trades centrally through Saturday Theory Classes (STC). The theoretical component of skills acquisition is provided in vocational training centres established by the various arms of the government. In line with that, the apprentices are also taught management, business and administrative skills to reinforce their understanding of the trades in which they are involved and to complement the practical training received.

The NOAS provides different trades, some of them include candle making, soap and detergent marking, foundry, metalwork fabrication, hair dressing, vulcanizing, carpentry, agricultural processing, printing and publishing, block and concrete making, butchering and cold storage, refrigeration and air conditioning, auto-engineering services, textile and garment making, entrepreneur training, welding, computer business, training/repairing and electrical and electronics repairs (Ekpenyong, 2011; Adebisi and Oni, 2012).

These skills are acquired from the non-formal sector where the trainees are attached to establishments belonging to government and private owners. The trainees are expected to be trained between the periods of six months to three years under a reputable master craftsman. The present growth in electrical/electronic technology necessitated the training needs for repairs in electronics products. Electronics are products and appliances which work on the principle of flow of electrons by the absorption or emission of electricity. Electronics can generally be classified into analogue, digital or photon. Most of the modern electronic products available in our country today are digital electronics which work on the principle of logic gates and make use of integrated circuits. According to Theraja and Sedha (2009), modern electronic products such as pocket personal computer (PC), personal digital assistant (PDA), MP3 players, digital cameras, digital camcorders, mobile phones, digital dictionaries and digital translators, compact disk (CD) players, digital versatile disk (DVD) player, Liquid crystal display(LCD) and Light emitting device (LED) televisions also make us of ICs extensively.

Statement of the problem

The functionality of electronic products is not eternal and

without breakdown. These circuits can breakdown through one or more of their components, hence the need for maintenance and repairs of these products when there is breakdown. This equally calls for manpower requirements for maintenance and repairs, and could be achieved through training and equipping students. Ogbuanya et al. (2009) and College Board (2008) explained that in electronics, students learn basic skills needed to operate, maintain, install and repair electrical and electronic equipment. It therefore means that the transfer of these knowledge, skills and attitudes requires resources for effective and efficient skill acquisition. This paper therefore focuses on resources available for digital electronics repairs such as mobile phone repairs, laptop/Desktop computer repair and LCD/DVD repairs, with emphasis on availability and provision of resources to acquire the skills needed to carryout repairs of the identified digital electronic appliances.

Table 1. Percentage distribution of the human resources available for repairs of laptop/desktop repairs, LCD television/DVD and mobile phones.

Variables	Frequency	Percentage
Respondents		
Trainees	147	66.8
Trainers	59	26.8
Supervisors	14	6.4
Total	220	100
Job type		
Mobile phone repairs	52	23.6
Laptop/desktop repairs	71	32.3
LCD television/DVD repairs	97	44.1
Total	220	100

Source: field work.

Purpose of the study

The main purpose of the study is to assess the level of availability of resources and how adequately the resources are provided in NOAS for skills acquisition in the repairs of mobile phones, LCD television/DVD and laptop/desktop computers. Specifically, the study intends to:

1. Determine the available resources for the repairs of digital electronics for the NOAS
2. Determine the extent to which tools and equipment are available at the training centres
3. Determine the extent to which tools and equipment are adequately provided at the training centres by NDE
4. Identify how often the scheme is supervised by NDE officials and supervisors

Research questions

The following research questions are raised to guide the study.

1. What are the available human resources in the area of repairs of mobile phones, laptop/desktop computer and LCD television/DVD?
2. To what extent are tools and equipment available at the training centres for the repairs of laptop/desktop computers, LCD television/DVD and mobile phones?
3. To what extent are tools and equipment adequately provided for the repairs of laptop/desktop computers, LCD television/DVD and mobile phones?
4. To what extent do NDE officials supervise the programme?

METHODS

This study employed descriptive survey design. This is suitable because it sought the opinion of the representative of the entire population with specific emphasis on NOAS of NDE in Edo State in order to describe the outcomes for generalization. The sample size of the study was 220 consisting of 147 trainees, 59 trainers and 14 supervisors drawn from a population of 312, consisting of 232 trainees (62 for mobile phone repairs, 74 for laptop/desktop computer repairs and 96 for LCD television/DVD repairs), 59 trainers and 21 supervisors. The proportionate random technique was adopted in selecting the trainees, while convenience sampling technique was adopted in selecting the supervisor. All the trainers were used as the sample. A closed ended questionnaire validated by three experts was used for data collection. The reliability of the instrument was determined using Cronbach alpha method and the alpha value obtained was 0.74.

The questionnaire used for this study was made up of two sections. Section one elicited demographic information, while section two was divided into three subsections, A, B and C. Subsection A was scaled Available More than Required (AMR), Available As Required (AAR), Available Lower than Required (ALR) andNot Available At-all (NAA). Subsection B was scaled Provided More than Required (PMR), Provided As Required (PAR), Not Aware if Provided (NAP), Provided Lower than Required (PLR) and Not Provided At-all (NPA). Subsection C was scaled Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).The instrument was administered and retrieved personally by the researchers. The responses were scored and the data obtained were analysed using mean and standard deviation for the research questions.

RESULTS

The results of the data analysed in this study are presented in Tables 1, 2, 3 and 4.

Research Question 1

What are the available human resources to run the NOAS in the area of repairs of mobile phones, laptop/desktop computer and LCD television/DVD?

The results of Table 1 show the available human

Table 2. Mean and standard deviation of extent of availability of tools and equipment for the NOAS in repairs of mobile phones, laptop and LCD TV.

S/N	Tools and equipment	Mean	SD	Decision
1	Screw Driver	2.02	.337	ALR
2	Pliers	2.04	.268	“
3	Cutter	2.00	.262	“
4	Hard and Flexible Boards	1.94	.280	“
5	Multi-metres	2.68	.522	AAR
6	Soldering Iron	2.66	.474	“
7	Soldering Lead	2.60	.490	“
8	Lead Sucker	1.95	.228	ALR
9	Soldering Paste	1.97	.293	“
10	Testing Lamp	1.93	.253	“
11	Hand Drilling Machine/Puncher	1.95	.228	“
12	Allen Key/Torxy Driver	2.17	.421	“
13	Blower	1.96	.329	“
14	Brushes	2.09	.406	“
15	Spirit	1.98	.514	“
16	Magnifying Lens	1.45	.499	NAA
17	Laptop/Desktop Computer	1.11	.312	“
18	Table Lamp	1.61	.609	ALR
19	Microscope	1.13	..339	NAA
20	Hand Glove	2.01	.523	ALR
21	Board Holder	1.91	.439	“
22	Adjustable DC Power Supply	1.79	.408	“
23	Lamp Magnifier	1.29	.455	NAA
24	Battery Booster/Converter	1.22	.414	“
25	Forceps	1.77	.622	ALR
26	Copper Wire	2.55	.614	AAR
27	Unlocking Kits	1.42	.625	NAA
28	Rework/Fire Station	1.40	.584	“
29	Software Drives	1.09	.282	“
30	Signal Generator	1.04	.188	“
31	AC Generator	1.57	.496	ALR
32	Oscilloscope	1.03	.163	NAA

Source: fieldwork. Key: NAA is Not Available At-all, ALR is Available Lower than Require, AAR is Available as Required.

resources in skill acquisition in the repair of selected digital electronics in the NOAS in Edo State. The percentage of the respondents ranged from 6.4 to 66.8, while that of the number of human resource available in each job type ranged from 23.6 to 44.1. The trainee is 66.8 percent, trainer is 26.8 percent and supervisor is 6.4 percent. The table shows that there are 23.6, 32.3 and 44.1 percent of human resources in mobile phone repairs, laptop/desktop repairs and LCD television/DVD repairs respectively

Research Question 2

To what extent are tools and equipment available at the training centres for the repairs of laptop/desktop computers, LCD television/DVD and mobile phone?

Table 2 shows the extent of availability of the required tools and equipment for skills acquisition in the repairs of mobile phones, laptop/desktop computers and LCD/DVD. The mean ranged from 1.03 to 2.68, while the standard deviation ranged from .163 to .625. The table shows that the trainees, trainers and supervisors perceived the availability of the tools and equipment at the training centres as lower than required for some of the tools and the equipment, while few are not available at all to carry out the training, with respect to the number of trainees available for the scheme at each training centre. Few tools/equipment are however available as required.

Table 3. Mean and standard deviation of the extent of provision of tools and equipment for the NOAS in repairs of mobile phones, laptop/desktop computer and LCD television/DVD.

S/N	Tools and equipment	Mean	SD	Decision
1	Screw Driver	1.62	.701	PLR
2	Pliers	1.55	.664	“
3	Cutter	1.54	.636	“
4	Hard and Flexible Boards	1.42	.633	NPA
5	Multimetres	1.47	.705	“
6	Soldering Iron	1.39	.575	“
7	Soldering Lead	1.59	.594	PLR
8	Lead Sucker	1.30	.541	NPA
9	Soldering Paste	1.42	.592	“
10	Testing Lamp	1.40	.658	“
11	Hand Drilling Machine/Puncher	1.42	.654	“
12	Allen Key/Torxy Driver	1.58	.701	PLR
13	Blower	1.40	.636	NPA
14	Brushes	1.36	.560	“
15	Spirit	1.47	.672	“
16	Magnifying Lens	1.31	.555	“
17	Laptop/Desktop Computer	1.16	.428	“
18	Table Lamp	1.35	.580	“
19	Microscope	1.26	.524	“
20	Hand Glove	1.35	.590	“
21	Board Holder	1.24	.513	“
22	Adjustable DC Power Supply	1.25	.564	“
23	Lamp Magnifier	1.19	.487	“
24	Battery Booster/Converter	1.18	.449	“
25	Forceps	1.50	.692	PLR
26	Copper Wire	1.74	.794	“
27	Unlocking Kits	1.68	.689	“
28	Rework/Fire Station	1.21	.516	NPA
29	Software Drives	1.23	.552	“
30	Signal Generator	1.10	.338	“
31	AC Generator	1.70	.754	PLR
32	Oscilloscope	I.03	.162	NPA

Source: fieldwork. Key: NPA is Not Provided At-all, PLR is Provided Lower than Required.

Research Question 3

To what extent are tools and equipment adequately provided for the repairs of laptop/desktop computers, LCD television/DVD and mobile phones?

The results of Table 3 show the extent at which government, through NDE, provides the tools and equipment for the scheme at the various training centres, as perceived by the trainees, trainers and supervisors. The table shows that majority of the available tools and equipment are not provided at all by government to the training centres, while few of the available tools and equipment are provided lower than required. The results show that there is negligence on the part of government in the provision of tools and equipment to the private owners of the various training centres.

Research Question 4

1. To what extent do NDE officials supervise the programme?

The results in Table 4 show the extent of agreement by the trainees and trainers of the various training centres on the extent at which NOAS is supervised by the NDE officials. The mean response of the respondents ranged

Table 4. Mean and standard deviation of the extent at which NOAS is supervised by NDE officials.

S/N	Item statement	Mean	SD	Decision
1	Daily	1.38	.620	Disagree
2	Weekly	1.87	.717	“
3	Interval of two weeks	2.19	.751	“
4	Monthly	2.81	.751	Agree
5	Interval of six months	3.34	.766	“
6	Yearly	3.71	.766	“
7	When there is difficulties at the training centre	3.10	.658	“
8	During trainees graduation	3.68	.508	“

Source: fieldwork. Key: SD is Strongly Disagree, D is Disagree, A is Agree, SA is Strongly Agree.

from 1.38 to 3.71, while the standard deviation ranged from .508 to .766. The table shows that the programme is not frequently supervised. The respondents are in consensus that it takes relatively long before the supervisors visit the various training centres. Thus it may be inferred that scheme is not properly supervised.

DISCUSSION

The findings of research one reveals that there are available human resources in skills acquisition for the repairs of mobile phones, laptop/desktop computers and LCD televisions/DVD players in the NOAS of the NDE in Edo State. This agrees with the result of Adebisi and Oni (2012) which revealed that there are various schemes with available trainees and trainers in the various schemes of the NDE in South western Nigeria. It is important to state here that Edo State government, in conjunction with the federal government, has tried to encourage trainees to engage in the NOAS by paying their training fees.

The results of research question two revealed that tools and equipment are available lower than required at the various training centres. This means that fewer tools and equipment are sheared among many trainees to perform a job or task in their related job areas. This finding is in agreement with that of Enuku and Mgbor (2005) which showed that NOAS is still storm with the problem of resources, and therefore describe it as new wine in old wineskin. This result is also in consensus with the findings of Ogbuanya et al. (2010) which found that tools and equipment were not enough for teaching and learning of motor vehicle mechanic works at the technical colleges in south western Nigeria.

The findings of research question three showed that some tools and equipment are provided lower than required while others are not provided at all. The finding is in agreement with that of Ofor (2001), which shows that government does not adequately provide tools and equipment to run the NDE schemes for effective skills acquisition. Finally the results of research question four showed that the NDE supervisory officials do not frequently checkmate the activities that are going on at the various training centres, thus leaving more burden to the owners of the training centres in terms of supervising the trainees’ activities.

CONCLUSION AND RECOMMENDATIONS

The need to reduce unemployment among youths has led to the establishment of NDE with NOAS as one of its schemes. This has made some individuals to find it relevant to serve as trainees and others trainers in this scheme to respectively acquire and transmit skills necessary for survival; however tools and equipment are not enough for the trainees and trainers to perform and achieve this beneficial task. The findings show that the available tools and equipment are usually provided by the trainers. This means that government on their own part has failed in ensuring that tools and equipment are made adequately available at the various training centres. Hence it can be concluded that the objective of NOAS is not being effectively attained since availability tools and equipment, where there are trainees, is the hallmark of the scheme to ensure effective skills acquisition in digital electronics maintenance and repairs.

As a result of that, the following recommendations are proffered in this study;

1. State and local government should support the federal governments to fund and finance the NDE schemes to provide adequate resources. This is because the benefactors of this schemes are closer to the state and local governments, and the federal government may not give better attention to the programme alone,

2. Federal government should involve competent non-governmental agencies in the NDE programmes to reduce negligence on the part of government as the NGOs’ commitment may add significantly to the growth of this scheme; and

3. The trainers, trainees and NDE officials should be financially encouraged so as to motivate them in carrying out their duties diligently. If any form of financial or material benefit is available, it should be given without delay, but if not, it should be provided.

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