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Training and Re-training Technical and Vocational Education (TVE) Personnel: Measures for effective Transfer of Technological Knowledge.

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Abstract
This study was carried out to find out if TVE Personnel are Re-trained for better service delivery in Delta-State. Two research questions and one hypothesis tested at 0.05 level of significance guided the study. The study adopted survey research design. The population comprises 145 TVE Personnel drawn from three Technical Institutions in Delta State. Eighteen items questionnaire were developed to elicit information from the respondents. Mean Statistic was used to answer the research questions, while t-test was used to test the hypothesis. The result of the analysis revealed that TVE Personnel have not been re-trained in consonance with technological changes, but were re-trained to develop better work habits. The study further revealed that the Workshop Technologists/Technicians have not also been re-trained to improve on old skills. Recommendations were made: Educational agencies such as the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE) should work together with Industrial Research Unit to ensure that new innovations in the industry is reflected in technical institutions curriculum at the appropriate level and adequate training and re-training given to TVE Personnel for improving services and knowledge; Federal, State and Local Governments should equip technical laboratories and workshops with modern equipment to reflect technological changes.

Key words: Training and Re – Training, Vocational Education Personnel, Transfer of Technological Knowledge

Introduction

Training and re-training is one of the tools which management uses in optimizing the utilization of human and material resources in any organization in order to achieve organisational goals. Olaniya and Ojo (2008) opined that the benefits of re-training employees can no longer be over-emphasized, as it is based on the premise that improved skills are required for organizatial growth. It entails a systematic development of knowledge, skills and attitude required for employees to perform on a given task. Though new entrants into organization have some skills, but not all are relevant to

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February 2016

organizational needs. Therefore training and re-training is important.

The development of human resources through training and re- training is one key factor which management uses to motivate and retain employees to contribute to the growth and development of any organization. Iseghohi-Edwards (2010), asserted that the more employers invest in training of their employees, the more secure and successful their own business would be. With the right training, workers will feel more confident, satisfied, self-relevant and better poised to face challenges of their jobs. The benefit derivable from re-training can not be quantified as it inculcates in the employees a sense of team work, loyalty, better attitude to work in addition to improvement in job and skills acquisition. It expands the horizon of human intellect and the overall personality of the employee.

Nwachukwu (2006), asserted that many employees have failed in many organization in the discharge of their duties because their need for re-training was not identified and provided for as an indispensable part of management functions. Re-training as an organizational effort is aimed at helping an employee to acquire additional basic skills and techniques required for the effective execution of the job for which he or she is employed.

An organization may have employee of good ability and determination with appropriate equipment and management support, yet productivity falls below expected. The factor responsible for such a situation is lack of adequate knowledge and skills that are acquired through re-training.

According to Grimaldi and Simonds (2004), the objective of training and re-training is to develop proper working habits. No matter how excellent the initial training of an employ may be, as time passes, new ideas, and new services emerge requiring specific skills and new work habits. The recognition of this may come when it is observed, the personnel in such a department may have been on the job for years without updating their knowledge and skills and evaluation records will show their output is on the decline. When a symptom of such nature occurs, it is an indication that efficiency has dropped, therefore training and re-training is required.

The need for re-training does not only arise from deterioration of work habit alone, occasionally product design changes, different materials come in through research and development, high record of accidental cases and new machines that necessitate changes in work procedures are introduced, e.t.c. employees in this regard will also make their adaptation through training and re-training.

ISSN: 2455-3220
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February 2016

In technical skills occupation, technological changes render an employee's skills obsolete and dramatically depreciate the value attached to previously accumulated work experiences. Hence re-training is essential for older technical workers to update their skills and knowledge so as to make meaningful contributions to organizational goals in the event of technological changes.

However, building a vibrant and effective Technical and Vocational Education (TVE) workforce requires not only the proper selection during recruitment, but also training and re-training of old and new hands on the current trend of technological changes that compelled the industrial sector to adapt to new techniques of operations.

Technical training and re-training is one of the most challenging careers in our modern society because knowledge is expanding rapidly with modern technology that demands Technical and Vocational Education Personnel to learn how to use these technologies in teaching and learning situations. Stiffens (2009), asserted that the dynamic nature of technology has much influence on the educational system to necessitate the need for the re-training of TVE Personnel in order to up-date skills and knowledge acquired in the past, because the development of technology has entirely changed the techniques of work procedures in the industrial sector. For now, the rapid growth in technology has influenced the mode of industrial operation especially with the era of computer application, process automation and changes in maintenance procedures. These innovations has placed more emphasis on the training and re-training of TVE Personnel ever than before because the changing nature of work procedures in the industry demand that learning should be a continuous effort on the part of the TVE Personnel so as to act as a facilitator to students on the transfer of this knowledge.

Omokhudu (2000), asserted that a teacher who is trained only once in his life career is bound to be static after sometimes. Education of which teaching and learning are integral aspect is a dynamic field, and to engage a static being in a dynamic process is like putting an old wine in a new bottle or vice-versa.

Regular training and re-training of the TVE Personnel should be a right and not privilege, because continuous learning present new challenges that brings innovation and ideas. One of the greatest problems that limit the growth of technology in this nation is lack of effective relationship between the educational sector and the industrial sector. Both seem not to be working together as partners in the wheel of

ISSN: 2455-3220
Volume 02 Issue 02
February 2016

technological development of this nation. For example, the recent curriculum review by National Commission for Colleges of Education (NCCE) minimum Standard (2008), revealed that certain technical courses has been reviewed to include topics such as computer assisted machining, numerical controlled programming, computer hardware configuration, computer aided design e.t.c. without training for the personnel to operate these equipment. Moreover, these equipment has not been provided to most colleges; and adequate training and hands-on procedures has not been given to teachers and workshop technologist to effectively transfer this knowledge to students. Meanwhile the influence and application of these new topics has taken operational processes and maintenance procedures to the next level of technology in our industries. Hence Corney as cited in Nneji, (2000) asserted that TVE Personnel should be aligned with the industry from time to time, so that their skills and knowledge will keep pace with technological development, or else they will continue to teach with obsolete out dated techniques and ideas, up to the point of confusing students who might have little exposure to the current trend of technology in the industry.

Omokhudu (2000) further asserted that from time to time, every TVE Personnel should be exposed to new ideas, methods and techniques as it is applicable in the industry. This will bring about the latest knowledge; enhance professional growth and practice of international standard that will enable TVE Personnel to compete in any part of the world. The trainer should be constantly trained so as to produce effective and capable manpower for the upward technological mobility of our great nation. To this end, this study is designed to find out the extent TVE Personnel are Re-trained for effective transfer of knowledge.

Statement of the Problem

The dynamic nature of technology has much influence on Technological Education that requires the Training and re-training of TVE Personnel to update skills and knowledge acquired in the past. The rapid growth of technology has much influence on the mode of industrial operation as computer application, process automation and changes in maintenance procedures has been effected in the industrial sector. These innovations necessitate the re-training of TVE Personnel to sharpen or improve on old skills for effective transfer of knowledge with the current trend of Technology. There seems to be worry that employers are not showing much concern in the training and re-training of their personnel. This may have

ISSN: 2455-3220
Volume 02 Issue 02
February 2016

adverse effect on new and growing technological innovations.

Based upon this, the problem of this study, therefore, is that TVE Personnel seems not to update their skills in order to align with the changes in technology.

Purpose of the Study

The major purpose of this study is to investigate the extent Technical and Vocational Education Personnel are re-trained for the effectiveness of transfer of knowledge. Therefore the study seeks to find out:

1. if Technical and Vocational Education Personnel are re-trained in consonance with changes in technology in their subject areas; and
2. if Technical and Vocational Education Personnel are Re-trained to improve and up-date old skills.

Research Questions

The following research questions were raised to guide the study:

1. To what extent are TVE Personnel re-trained in consonance with technological changes in their subject areas.
2. To what extent are TVE Personnel re-trained to improve on old skills they acquired.

Hypothesis

The following null hypothesis was formulated and tested at 0.05 level of significance.

Ho: There is no significant difference between the mean ratings of technical teachers and workshop Technologists/Technicians on the extent of re-training given to TVE personnel to improve on their old skills.

Significance of the Study

The findings of this study will be of immense benefit to educational agencies such as the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE) that are responsible for the monitoring, regulating and accrediting of courses in Technical Colleges, Polytechnics and Colleges of Education (Technical) to ensure that services render by TVE Personnel are of quality and in consonance with current trend of Technology.

Scope of the Study

The study was designed to cover TVE Personnel in Technical Colleges, Polytechnics and Colleges of Education (Technical). However only TVE Personnel from Agbor Technical College, Delta-State Polytechnic, Ogwashi-Uku and Federal College of Education (Technical) Asaba were used for the study.

ISSN: 2455-3220
Volume 02 Issue 02
February 2016

Design of the Study

The research design for this study is a descriptive survey. The study involved the collection of data from a sample of the entire population of TVE Personnel in Technical Institutions.

Population of the Study

The population of this study consisted of 145 TVE Personnel that is made up of 109 Technical Teachers and 36 Technologist/Technicians.

Sample and Sampling Techniques.

Due to relatively small size of the population, there was no sampling. Therefore the population was used as sample.

Instrument for Data Collection.

The instrument for data collection is a questionnaire. The research instrument was developed by the researchers and it is called "Training and Re-Training of Technical and Vocational Education Personnel" (TRTTVEP).The questionnaire for the study contain 18 item statements structure to elicit information from the respondents and it is structured to have a 4- point rating scale of: Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1

Validation of the Instrument

The instrument for this study was subjected to both face and content validity by two Technical and Vocational Education Experts.

Reliability of the Instrument

The reliability of the instrument was determined by collating the responses from 20 respondents who were not part of the sample for the study.

A test re-test method was used at two different occasions of two weeks interval on the same group. The researchers correlated the first test against the second test using a Spearman Rank Order Correlation Coefficient that yielded a Coefficient (r) of 0.91, which was adjudged adequate for the study.

Method of Data Collection

The instrument was administered to the respondents through personal contacts by the researchers. A total of 145 copies of the questionnaires were distributed to the respondents in the three schools used for the study. The entire questionnaires distributed were retrieved, thereby representing a 100% return rate.

Method of Data Analysis

Data collected was analyzed using mean statistical tool for the two research questions and the null hypothesis was tested with a t-test at an alpha level of 0.05 of

significance. The questionnaire was arranged in a four point scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE) with nominal values of 4, 3, 2 and 1 assigned to the response categories respectively. Based on this, the researchers arrived at a decision rule of 2.50. Any item statement on the questionnaire with a Mean score of 2.50 and above is accepted as a factor, while any item statement with 2.49 and below will be rejected as a factor.

PRESENTATION AND ANALYSIS OF DATA

Research Question 1

To what extent are TVE personnel re- trained in consonance with technological changes in their subject area?

Table 1
The Mean and Standard deviation of respondent's mean ratings on the extent TVE Personnel are re-trained in consonance with Technological changes in subject area.

S/N	FACTORS/ITEMS	$\bar{X}$	SD	REMARK
1	I was not re-trained on computer application in my subject area.	2.63	0.53	Accept
2	I was not re-trained on computer assisted maintenance.	2.72	0.75	Accept
3	I have not been Re-trained in process automation in my subject area.	2.55	0.89	Accept
4	I was not re-trained on computer numerically controlled (CNC) machines.	2.78	0.83	Accept
5	I was not re-trained in safety measures associated with changes brought by new designs of machines in my subject area.	2.57	0.66	Accept
6	I was not re-trained in new innovations in my subject area.	2.53	0.56	Accept
7	I was not re-trained on computer aided drawing.	2.60	0.80	Accept
8	I was not re-trained in the use of digital measuring instrument in workshop processes	2.82	0.80	Accept
9	I was not re-trained on computer hardware configuration of machines in my subject area.	2.52	0.85	Accept
	Grand Mean and grand standard deviation	**2.63**	**0.74**	**Accept**

Table 1 show that respondents agreed with all the items statements that TVE Personnel are not Re-trained in consonance with technological changes in their subject areas. The calculated grand mean for all the item statements was 2.63 while the grand standard deviation for all the item statements was 0.74.This however shows a consensus of opinion by the respondents.

Research Question 2

To what extent are TVE Personnel re-trained to improve on old skills they acquired.

Table 2

The Mean and Standard deviation of respondent's mean ratings on the extent TVE Personnel are re-trained to improve on the old skill they acquired.

S/N	FACTORS/ITEMS	$\bar{X}$	S.D	REMARK
1	I was not re-trained to update my knowledge and skills in my subject area.	2.54	0.54	Accept
2	I was not re-trained due to poor evaluation records about my skills.	2.72	1.01	Accept
3	I was not re-trained because of a near-miss accident.	2.58	1.16	Accept
4	I was not re-trained to develop a better work habit.	2.43	0.53	Reject
5	I was not re-trained because of new processing material or machine.	2.65	0.61	Accept
6	I was not re-trained due to drop in efficiency and output.	2.73	0.82	Accept
7	I was not re-trained so as to be very vibrant in my subject area.	2.81	0.54	Accept
8	I was not re-trained as a result of new product design.	2.92	0.61	Accept
9	I was not seconded to the industry for re-training in my subject area.	2.52	0.91	Accept
	Grand Mean and grand standard deviation	**2.76**	**0.75**	**Accept**

Table 2 shows that respondents agreed on items 1, 2, 3, 5,6,7,8 and 9 are factors that they are not re-trained to improve on old skills. Item 4 was below 2.50 this indicate that respondents were re-trained to develop better work habit . The calculated grand Mean for all the items was 2.76, while the grand Standard deviation for all the items was 0.75. This was an indication that majority of the respondents agreed that TVE are not re-trained to improve on their old skills.

Hypothesis

There is no significant difference in the mean responses of Technical Teachers and Technologist/Technicians on the extent of Re-training to improve on old skills.

Table 3
The t-test of mean responses of Technical Teachers and Technologist/Technicians on the extent of Re-training to improve on old skills.

S/N	Variables	N	$\bar{X}$	SD	df	t-cal	t-crit	Decision
1	Technical Teachers	109	36.4	0.32				
2	Technologists/Technicians	36	12.00	0.61	143	4.20	1.96	Rejected

Table 3 present the t-test of data generated from the comparison of the mean responses of Technical Teachers and Workshop Technologists/Technicians on the extent of re-training to improve on old skills. Result in the table shows that the calculated value (t-cal) of 4.20 is greater than the table value (t-critical) of 1.96 with a degree of freedom of 143 and at an alpha level of 0.05. The null hypothesis is rejected and the alternative is therefore retained.

Discussion of Findings

The findings of this study revealed that in research question one all the questionnaire items were accepted that TVE Personnel are not re-trained in consonance with Technological changes in their subject areas. This indicate that with the new innovations in Technologies such as computer assisted maintenance, process automation etc TVE personnel are still lack behind, these are the set of people who are suppose to be well informed about changes or new innovations in technology. Research question two indicate that TVE personnel are re-retrained to develop better work habbit,but they are not re-trained to improved on their old skills. This indicates that with the dynamic nature of technology, these set of personnel are not carried along and this may render their old skills obsolete and dramatically depreciate the value attached to their previously accumulated experience.

However, the result of the hypothesis revealed that there is significance difference in the mean responses of technical teachers and technologists/technician who are re-trained to improve upon old skills. This implies that workshop technologists/technicians are not re-trained

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Volume 02 Issue 02
February 2016

to improve on their old skills. Technical teachers and Workshop technologist are partners in progress in the training of TVE Students; therefore their rate of training to improve upon their skills should be commensurate.

Conclusion

In this paper, attempt has been made to highlight the importance of re-training TVE personnel, constant re-training TVE personnel will accelerate the wheel of technological progress of this nation, TVE Personnel should be constantly re-trained to sharpen their old skills and knowledge and at the same time, be able to adapt to technological changes in the industry.

They can be no good craftsmen, technicians and technologist without sound Technical Teachers and Technologist that is current with new technological trend.

Recommendations

Based on the findings highlighted in this paper, the following recommendations were made to address the need for training of TVE Personnel.

1. Educational agencies such as the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE), should work together with Industrial Research Units to ensure that new innovations in the industry is reflected in technical institutions curriculum at the appropriate level and adequate training given to TVE Personnel for effective transfer of such new knowledge.
2. For every three years, during in service, TVE Personnel should be send to work in the industry for at least six months in areas of specialization so as to improve on old skills and knowledge and at the same time to acquire new once.
3. Federal, State and Local Governments should equip technical laboratories and workshops with modern equipment to reflect technological changes.
4. Educational Institutions and Agencies responsible for the re-training of TVE Personnel should ensure that technical teachers and workshop technologist/technicians rate of training should be commensurate.

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ISSN: 2455-3220
Volume 02 Issue 02
February 2016

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