



Re-Training Needs of Refrigeration and Air Conditioning Artisans for Enhancing Performance in Makurdi Metropolis of Benue State

Lohodedoo Jotham Nomnor¹, Agu Peter A.²

¹ Intercontinental College of Technology, Makurdi

² Nasarawa State University, keffi

Abstract: *The study examines the Re-Training Needs of Refrigeration and Air Conditioning Artisans for Enhancing Performance in Makurdi Metropolis of Benue State. The objectives of the study is to look at the level to which artisans can carry out repairs in refrigeration and air conditioning, to find out the skills required by refrigeration and air conditioning work artisans to install Air Conditioning Systems in cars and buildings in Benue State. This was followed by the corresponding two hypotheses. The diffusion of innovation theory was adopted as the theoretical framework. This study used descriptive survey design. The sample size consists of 234 RAC artisans drawn from the four major towns in Benue State. Finally, the researcher adopted accidental sampling technique to select the first artisans which the researcher can reach. The questionnaire is structured on 4-point Likert Scale. Descriptive statistics of mean and standard deviation was used to answer research questions while Chi-Square was used to test the null hypothesis at 0.05 level of significance. The items with the mean response scores of 2.50 and above were considered that the artisans possess the skills and do not need retraining. the findings of the study revealed that the extent to which refrigeration and air conditioning artisans possess skills of using modern vacuum pump to evacuate RAC systems, using recovery machine to recover refrigerants, working on electronic panel of an air conditioner and repairing electronic panel of an air conditioner remote control with much difficulty. The findings of the study revealed that the extent to which refrigeration and air conditioning artisans possess skills of wiring solar air conditioner and refrigerators, mounting an art cool air conditioner on the wall and mounting solar panel of a solar powered air conditioner is: “not possessed”. The study recommended among others that Refrigeration and air conditioning artisans should go for retaining on wiring solar air conditioner and refrigerators, mounting an art cool air conditioner on the wall and mounting solar panel of a solar powered air conditioner.*

Keywords: *Re-Training Needs, Refrigeration, Air Conditioning, Artisan, and Performance.*

Introduction

Human beings are the pivot of work in the productive venture, due to the fact that organizations and nations take good steps to ensure the effectiveness of an individual. Human beings provide ideas, innovations, inventions and thereby wealth for the benefit of society. This cannot be achieved if workers are not properly trained. Hence, training has always been recognized as an important factor that contributes to improved performance of an employee (Maduabum, 1992). Training can be viewed as the acquisition of skills, knowledge and abilities to enable a person to function effectively in the performance of one's job. Training of personnel is very important to the development and growth of any country most especially in an organization. Therefore it is meant for increasing the usefulness of a worker at the work place. The need for training workers in any organization is to

develop and use their abilities for the achievement of organizational set goals and the fulfilment of individual job satisfaction.

The Federal Government of Nigeria in the National Policy on Education (FRN, 2013) states the goals of training and retraining people in vocational trades which include: to provide the technical knowledge and skills necessary for agriculture, commercial and economic development; to give training and impart the necessary skills to artisans who shall be self-reliant economically. The essence is to train people or individuals that will be able to create jobs for themselves in the absence of white collar job from the Government.

Further, the Nigerian government has established training centres to train skilled manpower to take care of the various sectors of the economy. The training is aimed at increasing workers efficiency so as to step up the productivity level of the organizations they work for. It is to accelerate economic development in general, be it educational, scientific or vocational.

Vocational training programmes have been realized as instruments for strengthening skills acquisition among the committee of nations. According to Olaiya (1998), developed nations have attained economic stability through their consistent abilities in reinforcing all human and material resources. Vocational education is further seen as an integral part of general education and as a means of preparing individuals' occupational fields and for effective participation in the world of work an aspect of life-long learning, a preparation for responsible citizens and a method of facilitating poverty alleviation. The goal of vocational education therefore, is to prepare an individual to be ready for work and future employment (Olaiya, 1998).

The need for trained workers has become extremely important to meet the ever changing technological demands of the society. Agbabu and Esene (2003) emphasized that no longer can persons hope to find employment in business and industries without some kind of education or training. Every worker depends on training, up grading of knowledge and personal skills. Upgrading of knowledge refers to some kind of retraining whether formal or informal.

Training refers to improving one's skills needed today or very soon in an organization or in a trade (Jackson & Schuler, 2003). Training is an attempt to improve current or future employee's ability to perform through learning. Jackson and Schuler (2003) in their study indicated that the purpose of training is to achieve a change in behaviour of those trained in a particular domain. Training is also a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules or changing of attitudes and behaviour to enhance the performance of employees. It is an activity leading to skilled behaviour. According to Nwachukwu (1992), training is an organizational effort aimed at helping an employee to acquire basic skills required for sufficient execution of the functions for which he was hired. Training generates expertise or skills needed to perform a particular job or series of jobs.

According to Obikoya (1996), re-training of workers involves the renewal or updating of worker's skills, knowledge, attitude, work habits and competencies to enable them perform their assigned responsibilities creditably. To Imhabekhai (2000) re-training is a function of observed training needs and the amount of changes which have taken place in the techniques of production. Re-training of workers is very vital to the productivity of any organization considering the technological changes taking place in the world of work. This means workers must be re-trained regularly to acquire the necessary skills and knowledge to be able to meet with these changes and perform their assigned roles in the organization towards the achievement of its goals. In this sense, the training must be narrow in scope involving the acquisition of skills, related knowledge and attitudes needed for productive living (Crunkilton & Fink, 2001).

The importance of retraining cannot be overemphasized, Sloane (2001) noted that retraining allows job holders reach the standard of performance called for by the job as quickly as possible; and it gives workers a sense of greater security and fulfillment, with the increased morale that stems from this condition they can be expected to have fewer complaints, less absenteeism, higher turnover and general greater loyalty to the organization. Workers are less supervised when adequately trained and

retrained. When personnel are regularly trained the organization presents a favourable image to the outside world by identifying it as the employer of people who are entirely on top of what they are doing.

The need to retrain workers is often thought to apply to older members of the workforce, many of whom saw their occupation disappearing and their skills losing value as emerging technology is gradually taking over the labour market (Crunkilton & Fink, 2001). Due to development in the global world, there might be need for moderate and continued retraining merely to keep the structure from becoming stagnant. This is in consonance with Jackson (2003) who emphasized that artisans in the production section should not bother to build any empire in the company but be assured to receive enough retraining programmes to enable them acquire modern skills.

Training need is the identification of the “gap” between performance required and current performance of the workers. Training need is the process of identifying the gap in employee training and related training needs. It involves a procedure to determine how retraining will indeed address the problem, which has been identified especially now that the world is technologically advanced. Therefore, Training need looks at each aspect of one’s operational domain that the initial skills, concept and attitude of human elements of a system can be effectively identified and appropriate training can be specified (Obikoya, 1996).

The purpose of the training is to identify performance requirements and the knowledge, skills and abilities needed by an agency’s workforce to achieve its desired goals. Effective training needs assessment in order to help direct resources to areas of greatest demand. The assessment should address resources needed to fulfill the organization’s mission, improve productivity and provide quality products and services. When a difference exists, it explores the causes and reasons for the gap. A complete need assessment should also consider the consequences for ignoring the gaps that might exist (Obikoya, 1996).

Retraining is for those who have already been trained and are employed in some specific jobs. Retraining becomes necessary when a number of circumstances develop such as labour shortages, the employer’s desire to extend into new ideals of frontiers, and most particularly when technological changes frequently leave organizations with no realistic course of action but to retain those on the pay roll for other duties, hardly would any organization not encounter this problem at one time or the other (Padelford, 2004)

Retraining after initial training becomes necessary when there are gaps in the expected level of performance or behavior of employees. Retraining as a process is required to fill the gap that technology creates through its continuous development. Therefore, re-training in Refrigeration and Air Conditioning (RAC) keep employees of an organization abreast with technological changes as well as managerial development required of them. For example, if a typist was used to a manual typewriter and an electronic typewriter is introduced, the typist needs to be retrained in order to cope with the change in technology. In the world of refrigeration and air conditioning, a lot has changed in terms of technological design. This implies that old artisans who repair refrigerators and air conditioners would definitely need retraining to keep abreast with the changes. Retraining will therefore promote greater efficiency and discourage ineffectiveness.

Statement of the Problem

In Nigeria, there is so much worry over the poor performance of artisans in technological fields generally; there is an outcry of poor performance of artisans in Air conditioning and Refrigeration. Rapid changes in technology globally brings along with it new frontiers of knowledge and better ways of doing things using modern equipment and practices. Questions could be asked as to whether artisans are in position to adapt to the technological changes in the field of refrigeration and air conditioning. Professional interaction between the researcher and technician in the field indicated that artisans have either not received enough initial training or retraining to cope with global technological changes in the field. Therefore, the researcher seeks to find out the present capacities

of artisans on the job and how they can perform with new equipment on the job using emerging technologies and facilities.

Purpose of the study

Specifically, the study sought to determine:

1. Troubleshooting skills required by refrigeration and air conditioning artisans in Benue State.
2. The extent to which artisans can carry out maintenance in refrigeration and air conditioning work in Benue State.

Hypotheses

The following null hypotheses were formulated and tested at 0.05 significance level

1. Refrigeration and air conditioning artisans do not significantly require troubleshooting skills in Benue State.
2. Refrigeration and air conditioning artisans do not significantly carry out maintenance in refrigeration and air conditioning work to any extent.

Theoretical Framework

This section describes the theory guiding the study; the used theory is Diffusion of Innovations theory.

Diffusion of innovations theory

Diffusion of innovation theory was propounded by Roggers (1876), which states that Innovations are new ideas, products or social practices. New ideas, products, and practices spread based on:

1. Relative Advantage: Improvement over what it replaces
2. Compatibility: Consistency with the values, habits, experiences, and needs of the potential users
3. Complexity: Difficulty to use
4. Trialability: Degree to which it can be experimented before a commitment to adopt is required
5. Observability: Extent to which it provides results
6. Impact on Social Relations: Effect on social environment
7. Reversibility: Ability to be reversed or discontinued
8. Communicability: Ease of being understood
9. Time Required: Time needed to adopt innovation
10. Risk and Uncertainty Level: Risk and uncertainty involved
11. Commitment: Effectiveness with modest commitment
12. Modifiability: Ability to be updated and modified over time

Training is about getting staff to accept a new idea or practice, considering how new ideas or practices spread can make the training process more smooth and result in a faster change to the new behavior. The theory aimed at evaluating the previous training and possible changes in technological trends which relates to the current study. It assesses the skills required by refrigeration and air conditioning artisans and how RAC artisans can adopt new changes in the discipline so as to carry out jobs that will no longer fail but give their client job satisfaction.

Research Methodology

The area of the study is Makurdi Metropolis Areas of Benue State. Makurdi the capital of Benue State experience warm temperatures most of the year and this make business activities for skilled men who are enterprising for refrigeration and Air conditioning lucrative. The population of the

study comprised of 620 Refrigeration and Air-conditioning Artisans in Makurdi. The Association of Refrigeration and Air-Conditioning Artisans (ARAT, 2015) put the population of registered and government recognized RAC artisans in various towns as follows: 220 RAC artisans in Makurdi, These are RAC artisans who own workshops in Makurdi metropolis.

This study used descriptive survey design. The sample size consist of 220 RAC artisans drawn from Makurdi metropolis using table of sample size (n) required for a given population (N) as recommended by Emaikwu (2015). The researcher adopted Multi- stage sampling technique. The sample of RAC artisans from the town is drawn using Anaekwe (2007) formula for calculating proportionate stratified random sampling. Finally, the researcher adopted accidental sampling technique to select the first artisans which the researcher can reach. The questionnaire is structured on 4-point Likert Scale. Descriptive statistics of mean and standard deviation was used to answer research questions while Chi-Square was used to test the null hypothesis at 0.05 level of significance.

Result

Research Question 1

What are the troubleshooting skills required by refrigeration and air conditioning artisans in Benue State?

Table1: Mean and standard deviation on the troubleshooting skills possessed by refrigeration and air conditioning artisans

SN	Items	N= 234	\bar{x}	SD.	Remark
1	Test capacitance of a capacitor using Multi-meter		3.1068	.84997	Possessed
2	Test Wire distortion of a refrigerator with multi-meter		2.9103	.88166	Possessed
3	Test Wire distortion of an air conditioner with multi-meter		2.8462	.93217	Possessed
4	Read voltage with meter		2.7607	.85568	Possessed
5	Interpret wiring diagrams		2.4786	1.02834	Not Possessed
6	Test overload protector with Multi-meter		2.6496	.96564	Possessed
7	Test cut off fuse with Multi-meter		2.8205	.86531	Possessed
8	Reset A/C using remote control		2.8462	.81946	Possessed
9	Test gas pressure with pressure gauge		2.7863	.95683	Possessed
10	Test leakage with torch leak detector		2.7949	.95870	Possessed
11	Check leakage with soup solution		2.7308	.99362	Possessed
12	Test value of current supply with ohm meter		2.7479	1.00668	Possessed
13	Test value of voltage supply with Multi-meter		3.4957	.85039	Possessed
14	Test resistivity of compressor winding with Multi-meter		2.2778	1.29533	Not Possessed
15	Test air flow rate on condenser fines		3.3761	.90517	Possessed
16	Test air flow rate on evaporator fines		3.2991	.87173	Possessed
17	Test refrigerant leakage using electronic leak detector		2.2051	1.23635	Not Possessed
	Cluster Mean		2.8313	.58144	

From Table 1, it can be seen that the mean rating scores of all the items are above 2.50 except items 5, 14 and 17. This implies that the refrigeration and air conditioning artisans possessed skills of interpreting wiring diagrams, testing resistivity of compressor winding with Multi-meter and testing

refrigerant leakage using electronic leak detector is with much difficulty. However, the refrigeration and air conditioning artisans possess the rest of the troubleshooting skills with quality and initiative.

Research Question 2

What is the extent to which artisans can carry out maintenance in refrigeration and air conditioning work in Benue State?

Table 2: Mean and Standard Deviation on extent RAC Artisans Can carry out Maintenance in Refrigeration and Air Conditioning work

SN	Items	N= 234	\bar{x}	SD.	Remark
18	Cut pipes (1¼,¾,5/16) using tube cutter		3.3205	.89577	High Extent
19	Check the noise of RAC systems		3.3376	.95910	High Extent
20	Pump down A/C unit		3.1154	.77483	High Extent
21	Remove air filter on indoor unit of A/C		3.0598	.80011	High Extent
22	Remove condenser cover of A/C		3.4487	.81268	High Extent
23	Clean air filter(dusting, washing)		3.0128	.73234	High Extent
24	Connect manifold gauge on RAC systems		3.0171	.83366	High Extent
25	Remove water drainage tray of indoor A/C unit		3.3632	.83928	High Extent
26	Fix water drainage pipe/ horse of indoor A/C unit		3.3462	.88614	High Extent
27	Clean pipe/horse of indoor A/C unit		3.3803	.88174	High Extent
28	Connect flare joint using shifting spanners		3.3718	.93261	High Extent
29	Lubricate fan bearing (outdoor condenser fan)		3.3291	.91168	High Extent
30	Lubricate fan bearing(indoor unit fan)		3.3632	.85949	High Extent
31	Swage pipes using swaging kit		3.3590	.90266	High Extent
32	Set digital thermostat		2.3162	1.28143	Low Extent
33	Retrofit refrigerant		2.2863	1.25984	Low Extent
34	Recover refrigerant using recovery machine		2.1325	1.27857	Low Extent
35	Refill refrigerant using manifold gauge		3.3846	.93429	High Extent
	MnMaintenance		3.1080	.56982	
	Valid N (listwise)				

From Table 2, it can be seen that the mean rating scores of all the items are above 2.50 except items 32, 33 and 34. This implies that the extent to which refrigeration and air conditioning artisans can carry out maintenance such as setting digital thermostat, retrofitting refrigerant and recovering refrigerant using recovery machine is high. However, the refrigeration and air conditioning artisans carry out maintenance in refrigeration and air conditioning work to a low extent.

Hypothesis 1

Refrigeration and air conditioning artisans do not significantly require troubleshooting skills in Benue State.

Table 3: Chi-Square (χ^2) Goodness of fit on Troubleshooting Skills Required by Refrigeration and Air Conditioning Artisans

Response	Observed N	Expected N	χ^2	df	(P.Valu e)	Decision
Refrigeration and air conditioning artisans do not require trouble shooting skills in RAC	62	117.0	51.709	1	.000	Significant
Refrigeration and air	172	117.0				

conditioning artisans require trouble shooting skills in RAC						
Total	234					

From Table 3, there is an indication from 62 with expected frequency of 117.0 respondents that refrigeration and air conditioning artisans do not require troubleshooting skills in RAC, while from 172 with expected frequency of 117.0, refrigeration and air conditioning artisans require troubleshooting skills in RAC. Testing for the hypothesis, $\chi^2 = 51.709$ with $df = 1$ and had computer calculated associated probability for decision taking (Asymp. Sig.) = .000 = P. Since P is less than 0.05 (significance level) then the difference is significant. Therefore, the hypothesis is rejected with the conclusion that refrigeration and air conditioning artisans significantly require trouble shooting skills in refrigeration and air conditioning work.

Hypotheses 2

Refrigeration and air conditioning artisans do not significantly carry out maintenance in refrigeration and air conditioning work to any extent.

Table 4: Chi-Square (χ^2) Goodness of fit on Skills Possessed by Refrigeration and Air Conditioning Artisans in Maintenance

Response	Observed N	Expected N	χ^2	df	(P.Value)	Decision
Refrigeration and air conditioning artisans do not carry out maintenance to any extent	38	117.0	106.684	1	.000	Significant
Refrigeration and air conditioning artisans carry out maintenance to an extent	196	117.0				
Total	234					

From Table 4, there is an indication from 38 with expected frequency of 117.0 respondents that refrigeration and air conditioning artisans do not carry out maintenance to any extent, while from 196 with expected frequency of 117.0, refrigeration and air conditioning artisans carry out maintenance to an extent. Testing for the hypothesis, $\chi^2 = 106.684$ with $df = 1$ and had computer calculated associated probability for decision taking (Asymp. Sig.) = .000 = P. Since P is less than 0.05 (significance level) then the difference is significant. Therefore, the hypothesis is rejected and the implication is that refrigeration and air conditioning artisans do significantly carry out maintenance in refrigeration and air conditioning work to an extent.

Discussion of the findings

The finding of the study as revealed in Tables 1 showed that the extent to which refrigeration and air conditioning artisans possess skills of interpreting wiring diagrams, testing resistivity of compressor windings with Multi-meter and testing refrigerant leakage using electronic leak detector is “with much difficulty”. However, the refrigeration and air conditioning artisans perform the rest of the troubleshooting skills with quality and initiative. Importantly, this is in line with best practices in RAC as recommended by Labour Market Integration Directorate Canada (2014) and Nyiahule (2006), that refrigeration and air conditioning artisans are required to have an increasing knowledge of computers and automated control systems as remote access technology is becoming more common, not just in large commercial but in light commercial and residential applications such as air conditioners. This is to ensure that refrigeration and air conditioning artisans possess troubleshooting skills with quality and initiative for better maintenance.

Based on the result in Table 2, the study revealed that the extent to which refrigeration and air conditioning artisans possess skills of setting digital thermostat, retrofitting refrigerant and recovering refrigerant using recovery machine is can not perform. However, the refrigeration and air conditioning artisans possess the rest of the maintenance skills to perform with quality and initiative. This agrees with Labour Market Integration Directorate Canada (2014) and Nyiahule (2006), who asserted that refrigeration and air conditioning artisans need maintenance skills to perform with quality and initiative and to be able to carry out maintenance on refrigerators and air conditioners after troubleshooting. They interact with customers to identify system requirements and to obtain problem descriptions.

Recommendations

Considering the findings of this study, the researcher therefore, recommended that:

- i. Refrigeration and air conditioning artisans should make deliberate effort to improve on their jobs and ensure to go for retraining on troubleshooting skills of interpreting wiring diagrams, testing resistivity of compressor winding with Multi-meter and testing refrigerant leakage using electronic leak detector.
- ii. Refrigeration and Air Conditioning Artisans require maintenance training on setting digital thermostat, retrofitting refrigerant and recovering refrigerant using recovery machine.

References

1. Abdulkadir, M., Kagara, A.B., Isah, M. & Ibrahim, D. (2014). Development of a retraining programme for electronics technicians on basic electronics troubleshooting and repairs. *International Journal of Technology Enhancements and Emerging Engineering Research*, 2 (8), 76-82.
2. Agabi, E.M. (2005). Manpower quality development in Nigeria. *Nigeria Vocational Journal*, 13 (1), 23-55.
3. Agbabu, D.A. & Esene, J.O. (1997). *Introduction to vocational and technical education*. Enugu: Agbor Krisbee Publishers.
4. Asare-Bediako, K. (2008). Management practitioners (1HRMP) Ghana. Retrieved from www.humanresources.org.gh/mdex.php/.com on 20/6/2016
5. Association of Refrigeration and Air-Conditioning Artisans, (2016). List of registered and government recognized Refrigeration and Air-Conditioning (RAC) Artisans in Makurdi. Makurdi: ARAC.
6. Atsumbe B.N. and Abdulsalam .I. (2009). Work – skill required for training of secondary school dropout in Niger State. *Nigerian Vocational Journal*, 13 (1), 14-22.
7. Atsumbe, B.N., Umar, I.Y., Mele, E.F. & Afolayan J.A. (2012). Re – training needs of mechanical engineering technologists for improved performance in scientific equipment development institutes in Nigeria. *Industrial Engineering Letters*, 2 (7), 42-51.
8. Beard, C. & Wilson, P. (2002). *Attaining a wise outcome: problem solving for public officials*. Pittsburgh: South Western Pennsylvania Commission.
9. Bernstein, D.A. (2008). *Essentials of psychology*. 5th Ed. Belmont, CA: Wadsworth Cengage Learning
10. Cascio, W.F. (1992). *Managing human resources: Productivity quality of work life profit*. New York: McGraw-Hill.
11. Chukwuedo, S.O.& Nwachukwu, C.E. (2014). Maintenance practices in mobile phones for training prospective electronic technologists. *JORIND*, 12 (1), 215-222.
12. Cole, G.A. (2004). *Personnel and human resources management*. London: Thomas Rennie.

13. Cooper, T. (2010). Longer lasting products: alternatives to a throwaway society. Surrey: Gower Publishing
14. Crunkilton, J.L. & Finch, C.R. (2001). Curriculum development in Vocation and Technical Education, planning, content and implementation. Newton: Allyn and Becon.
15. Dabale, W.P., Jagero, N. & Nyauchi, M. (2014). The Relationship between training and employee performance: The Case of Mutare City Council, Zimbabwe. *International Journal of Human Resources Studies*, 4 (4), 2162-3058.
16. DeCenzo, A.D. & Robbins, S.P. (2000). Fundamentals of Human resources management. 3rd ed. San Diego: John Wiley & Sons, Inc.
17. Degraft-Otoo, E. (2012). Understandings, values, knowledge and skills. Retrieved from <http://erknust.edu.g/bitstream/123456789>
18. Dugan Laird (1999). Approaches to training and development. California: Addison Wesley publishing company
19. Egungwu, V.N. (1992). Human resources development and utilization in Nigerian private enterprises. In A.D. Yahaya & L.I. Akinyele (Eds.). *Human resources development and utilization; policies and issues* (pp.100). Badagry, Lagos: ASCON Press.
20. Emaikwu, S.O. (2015). Fundamentals of research methods and statistics. Rev. ed. Makurdi: Selfers Academic Press.
21. Eraut, M. (2004). Transfer of knowledge between education and workplace settings. Sussex: University of Surrey Press.
22. Ezeji, J.U. (2001). Vocational industrial education. Bauchi: Leagues of Researchers in Nigeria.
23. Federal Government of Nigeria, (FRN,2013). National policy on education. Abuja: NERDC.
24. Grab, A. (2003). Foundation of analog and digital electronics devices. New York: McGraw Hill Companies Inc.
25. Haughn, M. & Rouse, M. (2017). Troubleshooting: defining the terms. Retrieved from [http://whatis.techtarget.com/definition/trouble shooting](http://whatis.techtarget.com/definition/trouble%20shooting)
26. Home Builders Institute - HBI, (2015). Residential Heating, Ventilation and Air Conditioning Standards (Vol. 1). Retrieved from <http://www.delmarlearning.com/companions/content/1401849016/skills/SkillsSummary.pdf>
27. Imhabekhai, C.I. (2000). Manpower training and retraining for effective health care delivery. *Benin Journal of Education Studies*, 12 (13), 61-70.
28. Jackson, V.S. & Shulur, B.A. (2003). Meaning of training and development. Retrieved from <http://www.writework.com/essay>
29. Johnson, B. (2009). Refrigeration and Air conditioning Technology. 6th ed. Brentwood, NY: CMHE Suffolk.
30. Josh, B. (2013). Technical skills and knowledge necessary to meet work demands. Retrieved from <http://www.forbes.com> Kirkpatrick, D. (1975). Evaluating training programme. California: Berrette Keohler Publishers.
31. Labour Market Integration Directorate Canada (2014): National Occupational Analysis, Refrigeration and Air Conditioning. Retrieved from www.red-seal.ca/docms/racm.noa20104-eng.pdf
32. Lauren, B. (2002). Giving psychology away: from individual learning to learning organisations. London: Taylor and Francis Group.

33. Lecamwasam, L., Wilson, J. & Chokolich, D. (2014). Guide to best practice & maintenance & operation of HVAC systems for energy efficiency. Canberra: Department of Climate Change and Energy Efficiency Press.
34. Maduabum, C. (1992). Identification of training needs. In A.D. Yahaya & C.I. Akinyele (Eds.). *New trend in personal management* (pp. 83). Badagry, Lagos: ASCCON Press.
35. McCade, J. (2016). *Problem solving: Much more than just design*. Millersville: Millersville University Press.
36. McCollough, J. (2009). Factors impacting the demand for repair services of household products: the disappearing repair trades and the throwaway society. *International Journal of Consumer Studies*, 33, 619-626.
37. Michigan Civil Service Commission, (MCSC,2010). Job specification refrigeration mechanic. Retrieved from http://www.michigan.gov/documents/Refrigeration_Mechanic_13069_7.pdf
38. Monappa, A.B. & Saiyadain, S. (2008). *Knowledge and skills for management of organizations*. New Delhi: McGraw-Hill.
39. Ndiomu, A. (1992). The important employees training development in an organisation. Retrieved from www.slideshare.net/hrd-ppt/34698409.
40. Nwachukwu, C.C. (1998). *Management: theory and practice*. Onitsha. Africana FEP publishers Ltd.
41. Nworgu, B.G. (2006). *Introduction to educational research*. Ibadan: Longman Nigeria Publishers.
42. Nworgu, B.G. (2006). *Introduction to educational research*. Ibadan: Longman Nigeria Publishers.
43. Nyiahule, P.M (2006): Impacts of Globalization and the need for Curriculum Review in Vocational and Technical Education in Nigeria. *Benue State University, Journal of Education*. 6, 162-167
44. Obikoya, A. (1996). The impact of training and development in a public sector management. Retrieved from www.articlesng.com/impact-training-development-in-public-sector Ogbanya, T.C. & Fakorede, S.O.A. (2009). Technical skill improvement needs of metal work Technology Teachers for entrepreneurship in Rescan to MDG for quality Assurance. Enugu: Cheston Agency Ltd.
45. Olaiya, O.M. (1998). Human resources management at Masodak Association, Lagos. Retrieved from www.ng.linkedin.com/in/moses.olaiya-olotu on 13/3/2014
46. Oyitso, M. & Olumukoro, C.O. (2012). Training and retraining Nigerian workers to enhance task performance. *Interdisciplinary Journal of Contemporary Research and Business*. Retrieved from www.Ijcrb.webs.com
47. Padelford, H.E. (2004). *Acquiring psychomotor skills*. Ann Arbor: University Microfilms International.
48. Pallant, J. F. (2007). *SPSS survival manual: a step by step guide to data analysis using SPSS for Windows*. England: Open University Press.
49. Pigors, M. (2006). Training and retraining Nigeria workers. Retrieved from www.to-journalarchives-18.webs.com/69-78.pdf
50. Rampelle, C. (2013). In hard economy for all Ages, older isn't Better----it's Brutal. Retrieved from <http://www.nytimes.com>
51. Red Seal, (2014). *National occupational analysis: refrigeration and air conditioning mechanic*. Ottawa: Employment and Social Development.
52. Resnick, B. (2000). *Testing the reliability and Validity of the self-Efficacy for exercise Scale: Utility and psychometrics*. Baltimore: A.A. Wally Imprint.

53. Reuse, (2016). Investigation into the reparability of Domestic Washing Machines, Dish washers and Fridges. Retrieved from http://www.rreuse.org/wpcontent/uploads/RREUSE_Case_Studies_on_reparability_-_Final.pdf
54. Riley, F. (2012). Work force development. Washington DC: AERA Publishing.
55. Sloan, A.A. (2001). Personal managing human resources. New Jersey: Prentice Hall, Inc.
56. Thompson, W. (2002). Skill training and human resources development. New York: University Press Inc.
57. Wang, S.K. (2000). Handbook of air conditioning and refrigeration 2nd Ed. New York: McGraw Hills.
58. Wilson, C.T. (2002). Handbook of air conditioning and refrigeration 3nd Ed. New York: McGraw Hills.