**IMPROVING SKILLS ACQUISITION IN PLUMBING AND PIPE FITTINGS WORKS IN TECHNICAL COLLEGES IN NORTH CENTRAL STATES FOR SUSTAINABLE ECONOMY RECOVERY IN NIGERIA**

**By**

**Agada, Ameh Michael**

**Department of Technical Education**

**College of Education, Oju**

**Abstract**

The paper is to evaluate improving skills acquisition in plumbing and pipe fittings works in technical colleges in north central states for sustainable economy recovery in Nigeria. The study adopted a survey research design and was carried out in the North Central States of Nigeria. The population for the study was 124 respondents. This is made up of 83 technology/ technical teachers and 41 technical instructors in all the selected area of the study, No sampling was carried out since the population is of manageable size. The instrument used to collect data for the study was a structured questionnaire titled “Improving skills acquisition in plumbing and pipe fittings works questionnaire”. (ISAPPFQ) The instrument used is a modified four-point scale. The reliability coefficient of 0.81 was obtained. Mean and standard deviation were used to analyse the data collected. The study revealed that skills are available for acquisition in plumbing and pipe fittings Technical Colleges in North Central States, while the methods of improving skills acquisition in plumbing and pipe fittings are develop to improve practical skills for sustainable economy recovery in Nigeria. One of recommendation is that, the methods of improving skills acquisition in plumbing and pipe fittings should be encouraged to enhance access to self-employment

**Keywords**

**Skills Acquisition, Plumbing and Pipe Fittings, Technical Colleges, and Sustainable Economy Recovery**

**Introduction**

Improving skill acquisition is the ability to increase learning ability or to learn something very well more then what is already learnt or acquired. A skill can be intellectual learning such as learning to listen, speak, read, write or design. improving Skill acquisition refers to ability to expertly use one’s hands, legs entire body in combination with facts in one’s brains in order to perform higher tasks. It goes beyond mere recall of facts, to applying them along with body movement to perform a task. NPE, (2013) Stipulates that the main goals of teaching technical and vocational education in Nigerian technical colleges are to prepare students for the world of work through the acquisition of theoretical and practical skills.

Skills acquisition can be the ability to do something expertly and well. It is an organized sequence of actions, proficiently executed and usually displayed in flexible but systematic temporal patterning. The views of Omo-Ojugo and Ohiwerei (2008) points out that student are expected to be equipped with the necessary knowledge within their trades in order to face the challenges of the labor market. Skills acquisition can be manual such as learning to build or make something ieplumbing and pipe fittings works. One acquires skills by learning them and can also improve on the skills. Njoku (2002) described skill possession/acquisition to be demonstrating the habits of acting, thinking and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practice. Skill denotes the ability to bring about some end results with maximum certainty through the repetitive performance of an operation which is acquired through training. Uloka (2010) explained that skill is made up of two components, the knowledge component and the activity component. Improving skills acquisition therefore involves the mastery of practical skills and knowledge in a field of study through training, teaching experiences and on the job training.

Again Udu and Udu (2008) identified and categorised three main skills acquired in

and maintain pipe-related works and skill to work on a project. Plumbing and Pipe Fittings skills are acquired through vocational and technical education which is regarded as an education for work. Plumbing and Pipe Fittings involves knowledge and training in the general education, Theory and related courses, workshop practical and industrial training/production works are the four components for technical training as outlined by the National Policy on Education (2004).

Technical Colleges in Nigeria are established to produce craftsmen at the craft level and master craftsmen at the advance craft level. The courses offered at the technical colleges lead to the award of National Technical Certificate (NTC) and Advance National Technical Certificate (ANTC). The curriculum programmes of technical colleges according to Federal Government of Nigeria (2013) are grouped into related trades. These include; the computer trades, electrical/electronic trades, mechanical trades and building trades. Again National Policy on Education (2013) also made the production of craftsmen, artisans and other sub-professional skilled personnel the responsibility of technical college education. Okoro (2002) contended that technical colleges are responsible for the training and preparation of craftsmen for the industrial and technological development of the country. Aneale (2005) in agreement with the objectives of technical colleges as contended by Okoro (2002) described technical colleges as institutions for full time and part time education, especially in science, technical subjects and trades connected with skills and machines. The integral scope of technical colleges is basically in the acquisition of skills in technology. The duration of training is three years, leading to the award of National Technical Certificate. Also available in some technical colleges are advance course leading to the award of Advanced National Technical Certificate (ANTC) or Advanced National Business Certificate (ANBC) in the various field of study (NBTE 2003).The requisite qualification for entry into technical college is a junior secondary school certificate (JSSC) or Vocational Trade Center Certificate (VTCC) in the relevant discipline.

Sustainable development like every other concept is faced with various definitions, and by so many authors ,but in a unilateral way Kundan (as cited in Ugoh, 2008,) describes sustainable development as a construct, which envisages development as meeting the need of the present generation without compromising the needs of the future generation. Adebola (2007, P 130) defines sustainable development as a kind of development that can be initiated and managed properly in such a way as to give attention to continuity and preservation as people explore explicit available resources for the enlargement of their existence. While in more unilateral way Okeke as cited in Osuafor (2010) posited that for development to be sustained there must be human development. Arogundade (2011, P.26) points out the major essential tool for achieving sustainable development should include,

* Improving the quality of basic education
* Reorienting existing education programme to address sustainable development.
* Developing public awareness and understanding, and
* Providing training for all sectors of private and civil society

In another view Kundan as cited in Ugoh, 2008 argues that sustainable development is only possible or assured when concrete steps are taken to make the youth acquire skills that will enable them to be self-reliant and therefore become the tools for achieving development and its sustainability.Furthermore, it is observed that a country cannot develop technologically, industrially and economically without technical, vocational education and training which must be provided with adequate facilities, equipment and resources (Nwokolo, 2011, P. 65).

Plumbing and Pipe Fittings graduates need to improve and upgrade their skills as to be more successful in the labour markets, with the standard skills. At the beginning of TVET implementation, attention is focused on the formation of skilled workers in technical fields that focus on the skills of the hands (hands-on skills).The passage of time and technological developments however demand changes. Change needs to be done in TVET to form a generation that has a variety of skills, not only in technical skills and knowledge, but in producing future leaders of integrity. For Nigeria to achieve a great and dynamic economy, it has to recognize, among other things entrepreneurial skills development, and the place of TVET as a veritable tool in achieving self-reliant economy. According to Federal Ministry of Budget and National Planning (2017,p.5) Nigeria’s economic downturn has prompted a response by the Federal Government in form of a National Development Plan which covers a four year period from 2017 to 2020. The Economic Recovery and Growth Plan are aimed at strengthening economic diversification by focusing on three broad objectives: Restoring sustainable growth, building a globally competitive economy, and investing in human capital development. Economic recovery efforts are a critical step to reduce vulnerability and build resilience and thereby ‘helping countries achieve the simultaneous eradication of poverty and significant reduction of inequalities and exclusion earlier on during and after a disaster or conflict’ An economic recovery is the phase of the [business cycle](https://en.wikipedia.org/wiki/Business_cycle) following a [recession](https://en.wikipedia.org/wiki/Recession), during which an economy regains and exceeds peak employment and output levels achieved prior to downturn. A recovery period is typically characterized by abnormally high levels of growth in real gross domestic product, employment, corporate profits, and other indicators.Wikipedia 2016 described it as a turning point from contraction to expansion. This often results in increase in consumer confidence

**Statement of the Problem**

plumbing and pipe fittings graduates from technical college are expected to upon completion of the modulised curriculum, must have acquired practical skills to enable them secure paid employment or become entrepreneurs by setting up their own shops where they can employ others and embark on plumbing and pipe fittings construction and maintenance, but the situation seems not to be attainable.

this has become a problem and graduate of technical colleges’ inability to secure paid employment or set their own business venture in plumbing and pipe fittings is attributed inadequate skills acquisition, caliber of teachers teaching the course in technical college, step involved in carrying out practical work, quality of the teachers and instructors handling the subject at NTC level. Therefore the study is set out to find the methods of improving skills acquisition in plumbing and pipe fittings works in Technical Colleges in North Central States for sustainable economy recovery in Nigeria

**Research Questions**

The following research questions guided the study

1. What are the skills available for acquisition in plumbing and pipe fittings?
2. What are the methods of improving skills acquisition in plumbing and pipe fittings?
3. What the effect of improving skills acquisition in plumbing and pipe fittings?

**Research Method**

 Survey research involves the accurate assessment of the characteristics of the population using questionnaire (Osuala, 2001). This study therefore adopted a survey research design. The study was carried out in the North Central States of Nigeria. It comprised the following States: Benue, Plateau, Niger, Kwara, Nasarawa, Kogi States and FCT, Abuja which is not a state but the capital of Nigeria. There are a total of thirty one (31) Technical colleges in the North Central Zone of Nigeria. Four (4) are Federal Technical Colleges, twenty (20) of Technical Colleges are owned by State government while the remaining seven (7) Technical Colleges are owned by private individuals and organizations. The population for the study was 124 respondents. This was made up of 83 technology/ technical teachers and 41 technical instructors in all the selected Technical Colleges in North Central States, No sampling was carried out since the population is of manageable size. The instrument used to collect data for the study was a structured questionnaire titled Improving skills acquisition in plumbing and pipe fittings works questionnaire. (ISAPPFQ) The instrument used is a modified four-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with numerical values of 4, 3, 2 and 1 respectively. The instrument is divided into three sections A, B and C. Section A seeks for information on skills available for acquisition in plumbing and pipe fittings in Technical Colleges. Section B requires information on the methods of improving skills acquisition in plumbing and pipe fittings in Technical Colleges. While section C was on effect of improving skills acquisition in plumbing and pipe fittings in Technical Colleges. The instrument was validated by five technical/technology experts and tested for reliability using Cronbach alpha. The reliability coefficient of 0.81 was obtained. The data were collected by the researchers and research assistants in the zones covered by the study. The researchers and assistants administered the instrument on the respondents. All the instruments administered were correctly completed and used for data analysis using SPSS package.

**Results:**

Mean and standard deviation were used for answering the three research questions. Based on the modified four-point scale, any item with mean score of 2.50 and above was regarded as agree while any item with mean score of less than 2.50 were regarded as disagree.

Research question 1: What are the skills available for acquisition in plumbing and pipe fittings?

The result on the skills available for acquisition in plumbing and pipe fittings was as presented in Table 1

**Table 1:** Mean response scores of respondents on skills available for acquisition in plumbing and pipe fittings

**S/No. Questionnaire Item Statement** X̅ **SD**  Remark

Skills available for acquisition in plumbing and pipe fittings

1. Creative thinker and Innovative skills 3.59 0.62 Agree

2. Being Self-motivated and disciplined skills 3.59 0.56 Agree

3. Skills to plan organize and coordinate 3.97 0.17 Agree

4. Responsibility and make decisions skills 2.86 0.91 Agree

5. Skills to work under pressure 3.90 0.37 Agree

6. Willingness to take risks 3.59 0.59 Agree

7. Skills to work as a team or independently 3.80 0.41 Agree

8. Communication skills (e.g. Ideas and persuade others) 2.88 0.87 Agree

9. Financial Management skills 3.90 0.37 Agree

10. Management skills (e.g manages time and people) 3.77 0.43 Agree

Symbols keys: **X̅** = Mean score, **SD =** Standard Deviation**, N=** Numbers of respondent

Data presented in Table 1 Shows that the respondents agreed on all the items on skills available for acquisition in plumbing and pipe fittings based on the means scores which range from 2.88 to 3.97 and standard deviation 0.37 – 0. 91. The standard deviation shows that the respondents are not far from each other on their responses. This indicates that skills are available for acquisition in plumbing and pipe fittings.

Research question 2: What are the methods of improving skills acquisition in plumbing and pipe fittings?

The result on the methods of improving skills acquisition in plumbing and pipe fittings was as presented in Table 2

**Table 1:** Mean response scores of respondents on the methods of improving skills acquisition in plumbing and pipe fittings

**S/No Questionnaire Item Statement** X̅ **SD**  Remark

 Allows the learner to develop improved practical skill on

11**.** Bending copper pipe and jointing skills 3.80 0.41 Agree

12. Plastic tube and fittings skills 3.50 0.59 Agree

13. Steel pipe and fittings skills 2.66 0.90 Agree

14. Hand and power tools skills 2.78 0.81 Agree

15. Clipping and bracketing skills 2.86 0.61 Agree

16. Lifting floor surfaces skills 2.79 0.89 Agree

17. Cutting out timber and brickwork, tiling skills 3.13 0.83 Agree

18. Installing bathroom appliances, radiator skills 2.81 0.60 Agree

19. Maintenance of taps and valves skills 3.80 0.41 Agree

20. Safety precaution skills 3.86 0.42 Agree

Data presented in Table 2 Shows that the respondents agreed on all the items on methods of improving skills acquisition in plumbing and pipe fittings. The standard deviation shows that the respondents are close on their responses based on the mean range of 2.66 to 3.86 and standard deviation 0.41 – 0.89. This indicates that methods of improving skills acquisition in plumbing and pipe fittings are develop improved practical skills.

Research question 3: What are the effects of improving skills acquisition in plumbing and pipe fittings?

The result on the effect of improving skills acquisition in plumbing and pipe fittings was as presented in Table 3

**Table 1:** Mean response scores of respondents on the effect of improving skills acquisition in plumbing and pipe fittings

**S/No Questionnaire Item Statement** X̅ **SD**  Remark

Effect of improving skills acquisition on plumbing

and pipe fittings

21. Improved skills on Safety precaution 3.90 0.37 Agree

22. Good technics of Bending copper pipe and jointing skills 2.88 0.87 Agree

23. Improved methods of fixing Plastic tube and fittings 3.59 0.56 Agree

24. Fixing steel pipe and fittings correctly 2.75 0.86 Agree

25. Correct use of Hand and power tools 3.59 0.62 Agree

26. Clipping and bracketing correctly 2.86 0.91 Agree

27. Fixing and lifting floor surfaces correctly 2.98 0.77 Agree

28. Using timber, brickwork and tiling correctly 3.97 0.17 Agree

29. Installing bathroom appliances and radiator 3.65 0.55 Agree

30. Maintenance of taps and valves correctly 3.59 0.56 Agree

 Data presented in Table 3 Shows ratings of the respondents on the effects of improving skills acquisition in plumbing and pipe fittings The mean score values range from 2.59 - 3.59 and standard deviation 0.37 – 0.91. This indicates that the effect of improving skills acquisition on plumbing and pipe fittings are useful.

**DISCUSSION**

The findings presented in Table 1: show that 10 items on the skills available for acquisition in plumbing and pipe fittings Technical colleges in the North Central Zone of Nigeria which agree with the opinions of Abdulkarim (2002) and Osuala (2004) that it is necessary to empower individuals for innovative entrepreneurship through capacity building and entrepreneurship education. The study found 10 items on Table 2: on the methods of improving skills acquisition in plumbing and pipe fittings indicates that respondents agree with the all opinions on methods of improving skills acquisition in plumbing and pipe fittings in Technical colleges in the North Central Zone of Nigeria. Which are developing to improved practical skills? This is in line with one of the principles of TVET that there is a minimum standard, within which TVET should not be attempted [Prosser & Quigley (as cited in Okoro, 2000,). While 10 items on Table 3: on the source of the effect of improving skills acquisition in plumbing and pipe fittings Technical colleges in the North Central Zone of Nigeria Indicates that respondents agree with the all opinions.

**CONCLUSION**

Improving skill acquisition is the ability to increase learning ability or to learn something very well more then what is already learnt or acquired. A skill can be intellectual learning such as learning to listen, speak, read, write or design. Improving Skill acquisition refers to ability to expertly use one’s hands, legs entire body in combination with facts in one’s brains in order to perform higher tasks When people are empowered, the community is empowered and when the community is empowered, the nation is better off. This will eventually reduce the social vices associated with poverty as a result of unemployment thereby sustainable development and economic recoveries are achieved.

**RECOMMENDATIONS**

Based on the findings of the study, the following recommendations are made:

1. Skills available for acquisition in plumbing and pipe fittings be made practical oriented by provision of adequate instructional materials and facilities.

2. The methods of improving skills acquisition in plumbing and pipe fittings should be encouraged to enhance access to self-employment

3. Awareness/advocacy programmes should be carried out to enlighten the general public on effect of improving skills acquisition in plumbing and pipe fittings with regards to its value towards creating employment in Nigeria

**References**

Adebola, H.E (2007). Standard in Mass literacy. Adult and Non-Formal Educatoin. Capacity Building and Sustainable Development in Nigeria. *UNIZIK Orient Journal of Education. 3(1),* 129 – 133.

Anaele, E. (2002). Building Construction skills Needed by technical College Students for Self-Employment. Technology and Research Journal 1(2) 23-24.

Arogundade, B.B (2011). Entrepreneurship education: An imperative for sustainable development in Nigeria. *Journal of Emerging Trends in Educational Research and Policy Studying. 2(1)* pp.26-29.

Federal Republic of Nigeria (FRN) (2013). *National policy on education* (revised edition). Lagos: Nigerian Educational Research and Development Council (NERDC) Press.

Nigerian National Planning Commission (NNPC): (2004). *Meeting Everyone’s Needs: National Economic Empowerment and Development Strategy.*  Retrieved from http:/siteresources.worldbank.org/INTPRS/Resources/Nigeria.

Okoro, O.M. (2004). *Measurement and Evaluation in Education* Obosi: Pacific Publisher Ltd.

Omo-Ojugo, O. O. and Ohiwerei, O. F. (2008). School Factors Affecting the Teaching and Learning of Business Education Studies in Nigeria Schools. *Pakistan Journal of social studies*,5 (7) 663-675.

Osuala, E.C. (2005) *Introduction to Research Methodology The Millenium Edition*. Enugu:Chest on Agency Ltd.

Udu,A.A, Udu,G.O.C,Eze,F.C (2008) Entreprenuership.Enugu; Rhyce Korex Publishers

Uloka, M.E (2010) skill acquisition in Nigeria educational system through home Economics Education; *journal of qualitative education* 6:1 Benin Association for Encouraging qualitative education in Nigeria

Muscroft,S.(2016) PlumbingElsevierHttp://www.books.googl.com/books?Id=kgkeh5fpzic&dp=plumbing Retrieved 4 January 2016 *p. 3*

NBTE (2003). *Plumbing and Pipe Fitting* *Work-National Technical Certificate (NTC) and Advanced National Technical Certificate (ANTC).*National Board for Technical Education. National Technical Certificate.