JTET

http://penerbit.uthm.edu.my/ojs/index.php/jtet
ISSN 2229-8932 e-ISSN 2600-7932

Journal of Technical Education and Training

Exploring a Necessity of Technical Skills for an Informal Roadside Metalwork Fabrication Apprenticeship Practice

Halizah Awang[1]*, Jamilu Danyaro Kankia[2], Rohayu Roddin[1], Zawawi Daud[3], Azmanirah Abd Rahman[1], Zurina Yasak[1]

[1]Faculty of Technical and Vocational Education,
Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat, Johor, MALAYSIA

[2]Technical Education Department, Hassan Usman Katsina Polytechnic, NIGERIA

[3]Faculty of Civil Engineering and Built Environment,
Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat, Johor, MALAYSIA

*Corresponding Author

DOI: https://doi.org/10.30880/jtet. 2021.13.01.013
Received 04th January 2021; Accepted 22nd February 2021; Available online 31st March 2021

Abstract: There was range of disadvantages in the informal roadside metalwork fabrication apprenticeship practice in north western Nigeria that includes the lack of appropriate technical skills to better serve the society. The purpose of this research was to identify those technical skills needed for the informal roadside metalwork fabrication apprenticeship practice in Nigeria. To this effect an investigation was carried out through a survey research, using questionnaire instrument and interview as entailed by methodological triangulation. The survey research was conducted using 140 population of master craft persons from sampled workshops in seven states of North West geo-political zone of Nigeria, using structured questionnaire instrument. Interview of 10 participants was made, who were randomly selected from, industry-based trainers, lecturers and instructors within the seven states in north western Nigeria. The interviews were conducted to ensure a balance result. Open coding was made, followed by Axial coding. Selective coding was lastly made and the results were interpreted as it complemented the descriptive results which entailed the methodological triangulation method. To validate the results obtained from methodological triangulation, eleven Delphi panel of experts were involved. Binary analysis and Kendall's coefficient of concordance (Kendall's W[a]) were used to measure and determine the consensus of the experts on the technical skills items. Positive results were obtained because, the level of consensus between the participants was 0.621.The results also indicated an inter-judge reliability. Suggestions were made for the improvement of the sector, as the appropriate and valid technical skills needed were outlined.

Keywords: Technical skills, apprenticeship practice, validation, improvement, needs

1. Introduction

Informal roadside metalwork fabrication apprenticeship is presently witnessing a rapid growth in Nigeria, for the fact that youth are making mass entry due to high competition in the formal apprenticeship practice. However, apprentices trained under the system have low level of skill education that can better serve the needs of the society. A work done by Ehimen (2012) and Udu (2015) identified among others, the shortage of technical/vocational skills in the informal apprenticeship practice.

*Corresponding author:halizah@uthm.edu.my

According to Federal Government of Nigeria (2005), International Labour Organisation, ILO (2001-2002) key indicators of the labour Market for Nigeria, the labour force participation rate (i.e. the measure of the extent of an economy's working-age population that is economically active) was 66.8%, with a marked difference between men (86.7%) and women (47.6%). Figures showed that 48.8% were self-employed workers, with 41.9% waged and salaried workers. Most employment in the same year was found in the services sector (75.1%) followed by industry (22.0%) with agriculture (2.9%). Agriculture accounted 30.1% of Nigeria's Gross Domestic Product (GDP) which offered informal employment of over 65% of the population force, and accounted 70 % of non-oil exports. Millions of people in Nigeria gain their livelihood through economic activities that are not officially registered or connected with formal avenues of training and finance (Sola Fajana, 2008). Youth unemployment is estimated to be around 1.2% among the 15 to 19-year age group. Many school leavers have difficulty finding employment in urban areas because of their lack adequate job skills, while employers experience difficulties in recruiting skilled workers and production technicians.

A major problem of the road side metalwork apprenticeship system was that, it was generally believed to meant for people who was not performing well in formal education system or those whose parents cannot afford to sponsor their education. This perception deters the youth from facing the training with full force of seriousness. (Adekola, 2013). Poor rating of the roadside apprentices by the society is another disturbing issue. People undergo roadside apprenticeship are tagged as 'never do well' people and they are not recognized, not to mention their rights deserved such as counterparts in the formal school system. Roadside metalwork fabrication apprenticeship practice in the North-west geo-political zone of Nigeria is similar to that which is practiced all over Nigeria today (Udu, 2015). The shops where the practices are carried out are usually located along the busy road and in under developed plots of land, hence they are referred to as "road side apprenticeship". Such roadside locations were necessary because it enhances accessibility and makes the public to be aware that such trade is practiced around there.

Therefore it was aimed at providing a framework for quality improvement in the informal roadside metalwork fabrication apprenticeship practice, as called upon by the ILO, (2011). This kind of move was what Hofmann (2011) described as redressing weakness in informal apprenticeship system at the same time maximizing its potentiality for the benefit of the youths leading to entrepreneurial activities.

2. Recruitment and Entry into an Informal Apprenticeship Practice

Following an increased in awareness through development, the era of family monopoly of a particular vocation started to fade away. The idea of choosing a career outside the family inherency started to gain distinction. Therefore, parents started to allow their children and wards to train under people who are skilled in such career chosen by the parents or their children. This period marked the beginning of an informal apprenticeship system in Nigeria.

Entry in an informal apprenticeship has no age limit or restrictions based on educational attainment. This is to say that a boy or a youth just out of primary or secondary school could be apprenticed directly. Similarly, an elderly man or an adult, say, a farmer from a land-scarce community or drought-stroked community may migrate to an urban area to train in a trade for self-reliance. Other prominent ways of recruiting apprentices in the informal African apprenticeship were; by parents approaching the proprietor or the proprietor discussing his needs with neighbours, patrons, friends or relatives (Munkaila, 2016).

In whatever method of entry, contract agreements are then reached (verbally or written) between the craftsperson and the apprentice or his parents. In the agreement a fixed fee is sometimes made payable by the apprentice to the master or labour attached on the apprentice to reciprocate with the training he is receiving (in this case, some amount of money is sometime gave to the apprentice by the master). In the recent time, many master craftsmen require apprentice to possess certain educational qualifications before he can fit into the vocation, in such vocations as printing, tailoring, electronics, surveying etc. The idea of issuing certificate to apprentice during freedom is also new in the practice of apprenticeship system, which is not made officially as part of the apprentice's right (Adekola, 2013).

3. Formal Apprenticeship Programs and Training Methods in Nigeria

Governments of Nigeria superficially perceived apprenticeship system as useful as formal education. In their strategies to combat unemployment in the country directed the various states of the federation to establish Basic Apprenticeship Training Centres (BATC). The government policies of Nigerians youth self-employment strategies were to gear up the drive for real development and changing the mode of operation and approach of both traditional and informal apprenticeship system. It has been observed that the rekindling of the values of apprenticeship has been one of the most significant trends in vocational education in recent years. This is to organize the youths to undergo apprenticeship training in various vocational fields which could make them independent on the completion of such skill acquisition but this was faced with multiple of problems (Udu, 2015).

The concern is raised on the cost of training the informal sector apprentice linking it with the formal sector. As Berik et al., (2011) stated that it is quite expensive training the informal sector apprentice linking it with the formal sector thus therefore required cooperation from all those who have a stake in this effort. It would have been great, if recognition is fully made on such informal roadside apprenticeship practices that constitute greater percentage of youth's patronage in the Nigerian cities, towns and villages.

Students Industrial Work Experience Scheme (SIWES) managed by the ITF is another avenue through which youth acquire skills during their studentship. In a study conducted by Okolocha and Okolocha (2012) of such effect in 258 Nigerian students in Anambra State, they found that Student's Industrial Work Experiences Scheme (SIWES) is an important programme that can help to bridge the gap between school life and the world of works by blending meaningful job experiences with related institutions learnt in the classroom. For SIWES to help students to acquire the appropriate vocational skills that will help them face the challenges of unemployment and economic problems, proper machinery to sustain SIWES programme was advocated. But the ITF an advocate of the SIWES is faced with the Lack of fund as the major impediment to achieve the mandate of the Industrial Training (Halima, 2011). Chibuzor (2013) also observed that, the ITF being an icon of manpower training and development has failed to meet up with human resource development in the area of apprenticeship despite the establishment of Instructors Training Centre in Kano.

The authority should therefore face-up to the challenges and proffer a way out of the dilemma of unemployment which has resulted in insecurity and economic instability in the country. To effectively use such programmes as the ITF there should be a direct link to the informal roadside apprenticeship being practiced across the country, to alleviate the itching improper skill services rendered by the roadside informal apprentices' operators.

4. Methodology

The method that represents the most common meaning of the term in all these forms of techniques was the methodological 'triangulation' approach which this research used, data collected in quantitative was confirmed by interviewing experts through qualitative affirmation (Figure 1). These identified Technical skills and Attitudes needed were validated by Modified Delphi panel experts (thus, answering research questions 5 and 6) as phase three, thus explained.

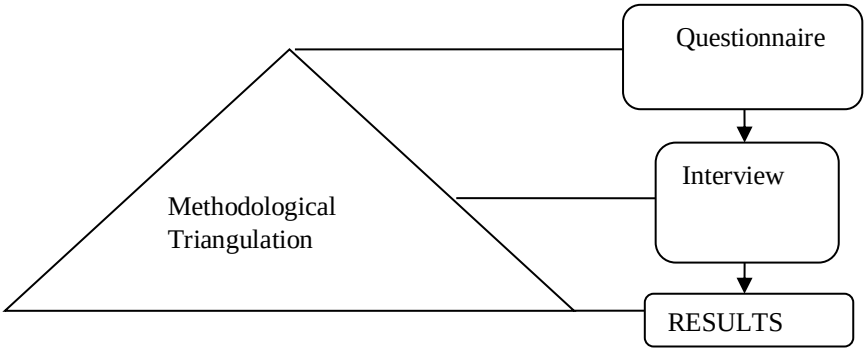

Fig. 1 - Methodological triangulation approach

First phase, questionnaire instrument was first adopted in this survey research. Purposive sampling involved identification and selection of individuals or groups of individuals that were proficient and well-informed with an occurrence of interest. The participants were 140 craftspeople and ten interviewed personnel. According to Byrne (2013) sample size below 100 was considered as small, between 100 and 200 was noted as medium and above 200 was regarded as large in quantitative research study. It was therefore ideal to have 140 as medium target participants. The participants were available and willing to participate, and had the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner (lker, Sulaiman, Musa, Rukayya, & Alkassim,2016). The informal roadside metalwork Master Craftsperson (MC), in the North-West Nigeria had these characteristics. Therefore purposive sampling was adopted. First, research questions were analysed using mean score and standard deviation. The data collected in quantitative was confirmed by interviewed experts through qualitative affirmation (Figure 1). The open-ended questions were asked during the interview and were coded. Consistency was achieved in the qualitative research, by using quotations that objectively captured individual interviewed participant' experiences, credibility, confirmation and true value were obtained, indicating 'neutrality' thereby establishing completeness (Bekhet & Zauszniewki, 2012; Guba & Lincon, 1989) which was similar to reliability in the quantitative research.

Second phase, to this effect qualitative data coding processes were adopted. Open coding was first done. This according to Khairie (2012) is a process where by listening of the recorded interview is done, to make sense out of the interview, then, was written down. The Axial coding was followed, which according to him was to identify data that relate to one another. Comparison of similarities was merged of various respondents' views on each construct or sub construct. Selective coding was then made as the final stage; the Technical skills needed were selected. From the selected technical skills a duty and task for the roadside metalwork apprenticeship program will be form. The duty and task then will be validated by selected experts. High profile Delphi panel of experts were employed to validate the Technical skills items in two rounds. A binary analysis of the results obtained from the panel of experts was done as the first cycle. The results were tabulated by calculating the percentage using descriptive analysis in the SPSS. Any items with 80% to 100%

was regarded as consensus being reached for that item. Similarly, any item with 0% to 79% was regarded as consensus not reached (Franc, 2014; Davidson, 2013). Cycle two was made on the items yet to reach consensus.

5. Results and Discussion

The major statistics used in order to present information concerning the collective judgments of respondents, were measures of central tendency and level of dispersal, which is standard deviation. This was done through the use of SPSS. The research questions were analysed using mean score and standard deviation. Craftsperson, mean scores were used in reporting the responses on degree of agreement and the most likely selected items as needed. Any item that gets 3.50 and above means response was accepted as needed. Qualitative Data coding analysis was adopted. Open coding was first done, by listening of the recorded interview, to make sense out of the interview, then, was written down. The Axial coding was followed, which was to identify data that relate to one another. Comparison of similarities was merged of various respondents' views on each construct or sub construct. Selective coding was then made as the final stage; the Technical skills needed were finally selected.

Table 1 - Technical skills (safety practice items)

DUTY	S/NO	TASK	MEAN	STD DEVIATION
Safety Practice	1	Skill ability in getting ready to act mentally, physically & emotionally	4.171	.283
	2	Skill ability to recognize danger	4.150	.912
	3	Acquire skill to recognize sounds that indicates malfunctions	4.328	.917
	4	Skills to setup arc welding equipment correctly and safely	4.142	1.007
	5	Skills to setup gas welding equipment correctly and safely	4.250	1.011
	6	Skill to set oxy acetylene flame for gas welding correctly & safely	4.314	.893
	7	Skill ability in guiding mechanical activities using sensory signs	4.128	.920

Table 1 was the summary of results of descriptive analysis constituting the mean, standard deviation, on Technical skills needed (TSN) (safety practice items). These items were outcome of craftspeople opinion on safety practice items needed in the informal roadside metalwork fabrication apprenticeship practice in Nigeria. It could be deduced that all items had mean scores above 3.50. Therefore, these items were recommended by craftspeople as needed. Interviews of experts on the items are as follows:

Interview participants **(P**) (the Experts) were asked to comment on the needed technical skills of the Safety Practice items.

> Participant number 1**(P1)** stated that*".....Safety practice items in the technical skills are all needed".*
>
> Similarly, participant number 2 **(P2)** lamented that *".....safety precaution and safety practice should be giving a very good consideration*".
>
> *"...the items in the technical skills, the safety practice, are, to my opinion needed",* as said by participant number 3 **(P3).**
>
> Participant number 6 **(P6)** stated that *".....actually because of time factor let me summarise it. I will start with safety precaution which is very important*"
>
> Participant number 9 **(P9)** lamented that*"...technical skills needed which include safety practice are as well needed in the training.....this is an important research work which is very much needed here in Nigeria, to enhance technical and vocational skills among the Nigerian youth for the promotion of entrepreneurial activities. So I wish you successful completion of this project*" (**P9).**
>
> Participant number 10 **(P10)** had this to say on the Safety practice items in the technical skills that *".....okay all the tasks in the safety practice seems to be needed"*

All the items in the Safety Practice pointed out by the Craftspeople as needed were recommended by interviewed participants, however several participants emphasised item 1 in the safety practice of the Technical skill (Skill ability to

recognize danger), as highly needed in the practice. This declaration by the experts enriched and made better understanding of the data therefore better-informed decisions were made.

Table 2 - Identification of tools and equipment items

DUTY	S/NO	TASK	MEAN	STD DEVIATION
Identification of Tools & Equipment	8	Skill ability to identify welding equipment, tools and materials	4.200	.899
	9	Identify gas welding equipment and accessories/tools	4.442	.770
	10	Identify different types of rivets and their correct applications.	4.321	.850
	11	Identify the different riveting tools used in workshop	4.150	1.010
	12	Identify the tools and accessories needed for soldering and brazing operation	4.371	.984
	13	Acquire skills to adapt, alter, reorganize, change or revise correctly	4.435	.721
	14	Skills to prepare metal joint for arc metal welding in any giving situation	4.492	.673
	15	Skills ability to prepare metal surfaces for gas welding process	3.878	1.255

Table 2 is the result summary of descriptive analysis that constituted the mean and standard deviation on Identification of Tools and Equipment items. It could be deduced that all items had mean scores above 3.50. Therefore, these items were recommended as needed by craftspeople of the informal roadside metalwork fabrication apprenticeship practice in Nigeria. Interviews of experts were conducted to balance the results obtained as regards to the items.

The Interview as regards to the Identification of Tools and Equipment items were as follows:-

> Participant number 1**(P1)** was saying that*"...identification of tools, equipment and items are also needed especially item no 9, and 12"***(P1)**

> Participant number 5 **(P5)** pointed out that*"...identification of tools and equipment also needed especially number 9 and 12"***(P5).**

> Participant number 10 **(P10)** also lamented that *"... items in the identification of tools and equipment in the technical skills are needed especially item... 8 and 9"*

From the forgone statements made by the various interviewed experts, it could be realised that all items of the 'Identification of tools and equipment' were recommended as needed. However some were said to be highly needed. These were items number 8, 9 and 12. This declaration by the experts enriched and made better understanding of the data therefore better-informed decisions were made.

Table 3 - Response on tools and equipment usage items

DUTY	S/NO	TASK	MEAN	STD DEVIATION
Tools & Equipment Usage	16	Weld metal pieces to form assembly of parts correctly	4.150	.905
	17	Weld metal component using gas welding equipment	4.050	1.140
	18	Carryout arc weld in different positions	4.428	.805
	19	Grinding off excess weld bead on welded joints without weakening the joint	4.057	1.136

	20	Carryout cold riveting of work pieces with a hand Riveting Machine	3.978	1.332
Tools & Equipment Usage	21	Carryout hot riveting of work pieces with a hand riveting machine	4.321	.899
	22	Rivet work piece with power riveting machine	4.064	1.132
	23	Prepare appropriately surface to be soldered or brazed	4.250	1.093
	24	Solder metal work pieces using electric soldering bits	4..078	1.106
	25	Solder metal work pieces using blow lamp	3.842	1.265
	26	Braze metal pieces using blow lamp	4.257	.780
	27	Skills ability in acting, building, performing, implementing, recreating (manipulation)	4.328	.834
	28	Skills ability in starting to learn complex skills through imitation and trial and error.	4.250	.840
	29	Skills ability in gaining confidence and proficiency in Learning complex skills.	4.378	.662
	30	Operate arc welding machine/equip to lay welding beads on metal pieces correctly	4.157	.670
	31	Skills ability in performing complex movement skilfully	4.692	.943
	32	Skill ability in modifying movement patterns to fit specific requirements (adaptation)	4.128	.863
	33	Skill ability in adapting, combining, constructing , coordinating creating (articulation)	4.100	.954
	34	Skill ability in creating new movement pattern (origination	4.114	.952
	35	Skill ability in designing, developing, inventing, specifying (naturalisation)	4.085	.817
	36	Acquire skills in correct usage of modern tools	4.385	.735
	37	Acquire skills in correct usage of modern equip	4.457	.743

Table 3 shows the summary of results of descriptive analysis that constituted the mean, standard deviation, Tools and Equipment usage items. It could be seen that all items had mean scores above 3.50. Therefore, these items were recommended as needed by craftspeople of the informal roadside metalwork fabrication apprenticeship practice in Nigeria. Interviews of experts were conducted to complement the result obtained as regards to the items.

Participant number 1 (**P1**) commented on the Tools and Equipment usage item that;- *"..tools and equipment usage duty, all the items are needed".*

Similarly, the response made by participant 2 **(P2)** was that *"...all the items in the Tool and equipment usage are very important"*

Participant number 5 **(P5)** also remarked that *"...In tools and equipment usages, duty, the tasks are all needed with 44 being highly needed".*

While participant number 3 **(P3)** pronounced that **"...***emphasis should be placed on item 28 and 29 in the tools and equipment usage duty, that is, the skill ability in starting to learn complex skills through imitation and trial and error, skill ability in gaining confidence and proficiency in learning complex*

skills respectively.....generally is good for the society and I wish you successful completion of the work".

From what had been stated by the various Experts, it could be deduced that all items in the 'Tools and equipment usage' were needed. Moreover the items emphasized by interviewed experts as highly needed which were

- Skills ability in starting to learn complex skills through imitation and trial and error.(item 28)
- Skills ability in gaining confidence and proficiency in learning complex skills.(item 29)

The set of Technical skills items identified by craftspeople and interviewed experts were sent to Modified Delphi panel of experts for validation through first and second round. Using the binary analysis, consensus was determined for the first cycle. Panel of experts responded to the questionnaire items that solicited their various opinions on the Technical Skills, rated as either 'Not needed'=1 and 'Needed' = 2. This binary analysis results were tabulated by calculating the percentage using descriptive analysis in the SPSS. Items that reached consensus were sorted, those not reached were sent back to the panel of experts for the second round.

Cycle 2 was made on the items yet to reach consensus. An e-questionnaire was developed in Google drive, sent to every panel member. It was significant to make the final questions as open as possible, this was to gain a strong response .Therefore Five-point Likert scale was used, the value of which were as follows: 1= highly not needed, 2=not needed, 3=slightly needed, 4=needed, and 5= highly needed. The questionnaire was emailed to each of the panel members. The response to the questionnaire was 100%. Kendall's coefficient of concordance (Kendall's W) was used to measure and determine the level of consensus, through SPSS.

The modified Delphi process is considered complete when consensus response rate is greater than 70%. The consensus in Cycle 1 were 31 items, while in Cycle 2 were 11 with a total of 42 items. In this case the response rate needed to stop rounds was achieved, at 87.5%. Out of 48 items identified by Master craftspeople and interviewed participants, 37 were recommended as valid by the Delphi panel of experts, as 11 items were unanimously discarded by the panel.

The Kendall's coefficient of concordance (Kendall's *W*), which ranges from 0 to 1, indicating the degree of consensus reached by the panel (strong consensus for $W > 0.7$; moderate consensus for $W = 0.5$; and weak consensus for $W < 0.3$) was run in SPSS. Table 6.7 portrayed among others, Delphi panel of experts' level of agreement on Technical Skills items, as Kendall's W^a was 0.621. The scale of the coefficient of concordance also indicated that there were satisfactory level of coordination and agreement in the panel. This indicated the inter-judge reliability. This suggested that the panellists have scored items according to their needed importance, therefore agreed to each other. The process was completed as consensus has been clearly defined, valid Technical skills items were made visible.

6. Discussion

Thirty-seven (37) out of forty-eight (48) items were validated, therefore recommended by modified Delphi panel of experts as needed in the practice. It is vital to make apprentices understand the safety requirements and standards. Welding, soldering, and brazing in fabrication processes present significant hazards, including exposure to hot materials, ultraviolet light, gases, fumes, noise, and heat stress. Therefore items validated should be taught comprehensively in the apprentice skill practice. Such item as number 1: 'Skill ability to recognize danger' stressed out as highly needed in the practice.

Udu (2015) observed that the work arrangement in the traditional society, as part of the culture was passed down from one generation to the other through the process of indigenous education. Know-how in the family work was considered as loyalty to the family. Therefore, an apprentice should be coached to be able to deal with work hazards, accidents & injuries, should be able to know the work hazards, should be able to respond in case of fire by using fire extinguishers and other techniques. Fire safety and hazards knowledge, should be taught practically such as: causes of fire, fire risks, process and respond in case of emergency, types of fire extinguishers, welding fires, sparks and spatter, ability to use fire extinguishers, fire blankets, water and sand. The essence is to remain safe and keep others safe as well, therefore recognizing danger and making precautionary measures is of importance, responding correctly in case of emergency is as well important. The apprentice should have injuries knowledge of health hazards occurring due to fabrication processes, possible injuries that can occur during the practical. He should be able to know about the first aid during work, its provision, and emergency responses. He should remains conscious and provide first aid to his co worker who is suffering. He should know what to do in case of emergency. Keep the work place safe to ensure proper ventilation systems, he should be able to understand the ventilation system, ducting and its types, exhaust fans and smoke catchers. Welding plant should be placed where there is proper ventilation, keeping the environment smoke free.

Skill ability to identify Arc and Gas welding equipment, tools and materials were also of high importance, as pointed out by the craftspeople. As Munkaila (2016) said, prominent ways of recruiting apprentices need to be identified according to the needs of working environments. Apprentice should be able to know and understand the functionality of each tools and equipment for example, regulators and their types, gas cylinders as well, electrical connection of arc welding machine, receptacle, gas cylinders, types and usage, current flows, insulators, connectors, and thimbles installations, regulators installations, type of regulators, back fire arresters' function and their installation before the start

of work. He should be able to identify the suitable equipment, tools and materials for certain jobs. Item number 12, identify the tools and accessories needed for soldering and brazing operations was also of importance. Apprentice ought to be able to identify the tools and accessories needed for soldering and brazing operations. Such as soldering copper or iron, solder and flux. The apprentices ought to know the brazing equipment tools and materials, such as furnace, oxyacetylene torch, filler metals, and fluxes etcetera.

'Skills ability in starting to learn complex skills through imitation and trial and error' is also labelled as an item of importance. It is expected of the apprentice to learn complex skills, having gone through novice stage, advance beginner, to this stage of competency. He should be able to arrange the tools and equipment required to perfume jobs, the Machines required in a safe and precautious manner. This could be described as *Guided response level*. Hence, the ideas of issuing a duty and task as a procedure in doing an apprenticeship is proposed as a new practice in training system (Baldi, G. et al., 2014). This explains the early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing. This level talk more on the apprentice, who face the challenges of new tasks, as he uses (for example) a power brush just after observing craftsperson demonstrates its use. He experiments with various ways to measure a given volume of lubricant for lubrication. He performs a mathematical equation as demonstrated by the craftsperson. He follows instructions to construct a Jig, folding stainless steel chair, for example. This could be described as *Mechanism* stage which is an intermediate stage in learning a complex skill. Learnt responses have become habitual and the movements can be done with confidence and proficiency.

Skills are now well developed and the individual can modify movement patterns to fit special requirements. The informal roadside metalwork fabrication apprentice can now adapts, alters changes, rearranges, reorganizes, revises, and varies a certain job. Apprentice at this stage is expected to be able to create new movement patterns to fit a particular situation or specific problem. Therefore, the apprenticeship program will be the most significant trends in vocational education in recent years in organizing the youths to undergo the training based on the duty and task proposed. The apprentice must increases his/her knowledge and improve his/her skill by learning out of other's experiences. This could be through developing the habit of reading books to gain knowledge about technology, new techniques and methodologies, learning new advancements and adopting the same in his own practices, and sharing the information with others. An apprentice must have a 'Sense of initiative and entrepreneurship'. This could be achieved if the apprentice is encouraged to make visits to exhibitions and factories, learning the practical implication of the technology changes and adaptability, knowing the latest modern skills used in the industry, modern machinery being inducted in the industry, as well as contemporary knowledge about practical techniques and materials introduced (Abd Samad et al., 2013). By doing so, he/she can enhances his knowledge and practical aspect. Audio Visual Aids could also be used to enhance knowledge of the practical aspect, especially new techniques in executing certain jobs. The system of the youth getting skills on the job from an experienced master has its roots in traditional African life as previously explained, when blacksmiths, carvers, native doctors and others with specific skills took member of the younger generation into their households to give them specialized training over a period of years (Fafunwa,2004). Now the system has widened to include the whole range of modern skills as mentioned by Amadi and Abdullah (2012), from their study that a larger percentage of the sampled youth reported high and moderate levels of their capacity building, implying that the vocational skills acquisition and development was a successful area.

7. Conclusion

The needed technical skills identified were of utmost importance in the practice. Therefore the research work promotes TVET activities was an attempt to answer the call made by the International Labour Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO) for an absolute, crucial increase in the level of skills of the informal sector operators by Informal apprenticeship practice, addressing the perennial bottle necks of haphazardness to its growth and development, towards skill standards and decency in the practice. These promote economic and social growth in the society. These also improve the learner's suitability, enabling entry into formal system of further education, as one of those benefits of validation. The work would be of benefit to the apprentices and Master Craftsperson as it would enable him/her to operate and graduate participants as competent, industrious apprentice, with clear vocational path, with the potentialities of entrepreneurial ability. Those, a standard duty and tasks or format such as the propose Job profile, relieves roadside metalwork fabrication workshops of the burden of haphazardness. Adopting this relieves individual workshop arrangements or negotiations of contract and provides each party with a clear statement of rights and responsibilities with redress for failure to observe the apprenticeship directives or contract. This could be achieved by formulating suitable policies and regulations, which lead to the means of recognition of the informal roadside metalwork fabrication apprenticeship practice

Acknowledgement

It is pertinent to acknowledge the vast encouragement and support vested on the researcher for the successful completion of this research by Research Supporting Grant Scheme (Skim Geran Penyelidikan Pensiswazahan Guru-PPG; K004), from Universiti Tun Hussein Onn Malaysia, Ministry of Higher Education Malaysia (MOHE) and FPTV staff,

the entire community of UTHM and the Centre for Graduate Studies (CGS). Of course, the effort made by several experts and craftspeople in the series of interviews and attending to the questionnaire is appreciated.

References

Amadi, O. B. Abdullah, H. (2012). Perception of Capacity Building among Youths Involved in Vocational Skills Development. *Journal of Social and Development Sciences 3: 214-221*

Baldi, G., Brüggemann-Borck, I., & Schlaak, T. (2014). The effect of the business cycle on apprenticeship training: Evidence from Germany. Journal of Labor Research, 35(4), 412-422

Byrne (2013) A genome-wide association study of sleep. Wiley Online Library. Retrieved on January 15, 2017 from *onlinelibrary.wiley.com/doi/10.1002/ajmg.b.32168/abstract*

Bekhet,A.K, Zauszniewswki, J. A. (2012) Methodological Triangulation: An Approach to Understanding Data. Retrieved on 25/10/2018. From: https//pdf.*semanticscholer.org*

Creswell, John W. **(**2014) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. Thousand Oaks, California: SAGE Publications, 2014.Retrieved 21/6/2017from https://adams.marmot.org/Record/.b40623245

Devid, M. and Sutton, CD. (2012) Social Research basics. London: SAGE Publications. *Apprentices vocational potentiality as mediator*. Apprentice's vocational ability mediates between these variables and the predicting variable, skilled apprentice with decency

Davidson (2013). The Delphi Technique In Doctoral Research: Considerations and Rationale. University of Phoenix, USA. *www.intellectbase.org/journals* 13 Published by Intellect base International Consortium, USA

Ehimen, Ehijele, Ehimen (2012*)* Modalities For Enhancing Mode Of Training Metalwork Craftmen In Apprenticeship Practice In Edo State. ATBU Journal of Science, Technology and Education, [S.l.], v. 1, n. 1, p. 129-136, jun. 2012. ISSN 2277-0011. Available at: <*http://www.atbuftejoste.com/index.php/joste/article/view/79*

Franc, (2014). Delphi technique: The Do Nots and Why Nots. *Retrieved on 7/12/2018 from, https://www. YouTube*

Guba E. G, Lincon Y. S,(1989) *Fourth Generation Evaluation*. Sage publication, Newbury park, CA

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). Multivariate Data Analysis.*Vectors*

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing, 32 (4), 1008-1015*

Hubert & Dreyfus (1991). *Sustaining Non-rationalised practices: Body mind Power and Situational Ethics* .An interview with Hubert and Stuart Dreyfus. Oxford: Praxis, International, No.1Pp93-113

lker Etikan, Sulaiman Abubakar Musa, Rukayya Sunusi Alkassim, (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*. Vol. 5, No. 1, 2016

ILO, (2011). *Skills for Employment, Upgrading Informal Apprenticeship Systems*, International Labour Office, A Resource Guide For Africa (Geneve, ILO)

S Ismail, N Hashim, R Kamis, H Harun, NNA Samad (2013). Determinants of Attitude towards Estate Planning In Malaysia: An Empirical Investigation. Procedia Economics and Finance

Khairie M (2012) Qualitative Data process; Retrieved on August 30, 2018 from *Youtube.https/www.youtube.com*

Loannis Koskoses, (2009). Communicating InformationSystems Goals:A case in Internet Banking Security.Retrieved on 25/10/2018 fromhttps://www.research gate.net

Performing Arts Safety Manual, (2014). Retrieved on October 15, 2018 from; https://www.ucop.edu/environment-health-safety/_files/perform-arts/tm-weld.pdf

Simpson E. J. (1966/72) Psychomotor Domain Retrievied on August 30, 2018 from http://www.businessballs.com/bloomstaxonomyoflearningdomains.htm#bloom%27s%20taxonomy%20overview

Munkaila, (2016).The major constraints militating against apprenticeship training scheme in the informal sector of Ghana: the case of tamale metropolis .Retrieved from *http://ijecm.com.uk/*

Udu (2015) Apprenticeship Orientation and Performance of Micro-Businesses In Ebonyi State, Nigeria. *European Journal of Biology and Medical Science Research*Vol.3, No.6, pp.1-11, December 2015. Published by European Centre for Research Training and Development UK