Frontiers
2022; 2(1): 15-21
http://www.sciencepublishinggroup.com/j/frontiers
doi: 10.11648/j.frontiers.20220201.12

Assessment of the Work-skills Improvement Needs of Graduate of Auto-electricity/electronics in Motor Vehicle Mechanic Work

Olaitan Olawale Opeyemi, Orji Tobias Chibueze*

Department of Industrial Technical Education, University of Nigeria, Nsukka, Nigeria

Email address:
olawale.olaitan@unn.edu.ng (O. O. Opeyemi), tobias.orji@unn.edu.ng (O. T. Chibueze)

*Corresponding author

To cite this article:
Olaitan Olawale Opeyemi, Orji Tobias Chibueze. Assessment of the Work-skills improvement Needs of Graduate of Auto-electricity/electronics in Motor Vehicle Mechanic Work. *Frontiers*. Vol. 2, No. 1, 2022, pp. 15-21. doi: 10.11648/j.frontiers.20220201.12

Received: June 22, 2020; **Accepted**: August 25, 2020; **Published**: January 17, 2022

Abstract: The study focused on Assessment of workskill improvement needs of graduate of auto-electricity/electronics work in motor vehicle mechanic work in Enugu states of Nigeria. Four research questions guided the study. Descriptive survey research design was adopted for the study. The population for the study was hundred and ninety seven (197). The entire population constituted the sample because of the size of the population. A Ninety nine (99) item structured questionnaire was developed from the literature and used for data collection. Three experts validated the instrument. Cronbach alpha reliability method was used to determine the internal consistency of the instrument. A reliability coefficient of 0.88 was obtained. The data were analyzed using weighted mean and improvement needed index to determine the improvement needed by graduate of auto-electricity/electronics in motor vehicle mechanic work. The difference between the needed mean and performance mean i.e. (XN- XP) constituted the need gap for which improvement is needed by graduate of auto-electricity/electronics. It was found out from the study that graduate of auto-electricity/electronics in motor vehicle mechanic work needed improvement in seventy eight (78) out of ninety nine (99) identified items. Based on the findings from the study, appropriate recommendations were made.

Keywords: Assessment, Workskills, Improvement Needs, Autoelectricity/Electronics, Motor Vehicle Mechanic Work

1. Introduction

Motor vehicle mechanic work is a technical education programme that consist of the following tasks; maintenance, adjustment, inspecting, installing and repairs of automobile engines, engines accessories and power transmission [5]. It is designed to provide training for the youths and young learners who are interested in becoming skilled craftsmen in any of the following trades; service station mechanic, petrol engine maintenance, diesel engine maintenance, engine refurbishing, and auto-electricity/electronics. These trades are offered at the technical colleges.

Technical college in the NPE (2013) is a three year post junior secondary school where technical subjects are offered to interested learners to enable them graduate as competent skilled craftsmen in any of the trades in motor vehicle mechanic work. The trades are contained in the motor vehicle mechanic work programme developed by the National Board for Technical Education (NBTE) with specific goals of making individual learners occupationally competent or skilled at work in any of the trades as craftsmen after graduation. The programme according to NBTE (2003) is made up of five modules with each modules focusing on each trade. The modules are as follows; service station mechanic work, petrol engine maintenance work, diesel engine maintenance work, engine refurbishing work and auto-electricity/electronics. The concern of this study is on the module auto-electricity/electronics for training technical student as auto-electricity/electronics craftsmen.

Auto-electricity/electronics is a major component system of the motor vehicle which deals with the ignition systems, starting systems, charging systems, body electrical systems (lighting and wiring systems) and computer controlled systems (Giles, 2014). The ignition systems according to this author has to do with job of creating and distributing timed

spark to the engines cylinders through a process called electromagnetic induction, the starting systems has an electric motor usually mounted low on the rear of the engine, it has a small pinion gear on it that meshes with a large ring gear on the flywheel bolted to the crankshaft; the charging systems provides electricity while the engine is running to operate the ignition systems, body electrical components such as the lighting and other electrical accessories; the charging systems also include an alternator which is driven by a belt on the engine crankshaft pulley, the alternator produces electrical current and forces it into the battery to recharge it; while the computer controlled systems has to do with the electronic component installed in the vehicle which is also referred to as on-board electronics. This special area of auto-electricity/electronics manages the fuel and the emission systems, operation of the fuel injection, ignition systems components, automatic transmission shifting, antilock braking systems, body electronics accessories and several devices installed in the vehicle for safety and comfort. Many of today's vehicles have several auto-electricity/electronics component systems that manages the entire systems of the motor vehicle ranging from the movement of the vehicle, working systems of the engine to safety and comfort of the occupant of the vehicle.

Auto-electricity/electronics is of great importance in that it helps to promote efficient functioning of the vehicle, reduce accidents or hazards emanating from electrical related faults of a vehicle and improve the shelf-life or longevity of the vehicle. This can be achieved through diagnosis, maintenance, repairs of auto-electricity/electronics component of a vehicle by skilled competent craftsmen. It helps to provide occupation or work for individual craftsmen for earning a living through the automobile industry.

According to NBTE (2003), the objectives of auto-electricity/electronics is as follows:

1. Understand the principles of electricity generation as applicable to automobiles, diagnose faults and effect repairs to batteries.
2. Understand the procedure for effective maintenance and repairs of all units of the charging system in a motor vehicle without supervision.
3. Understand the operation of the starter motor, diagnose and effect repairs to a faulty one.
4. Understand the operation of all electrical components of a vehicle, trace and rectify faults in them.
5. Understand the wiring diagrams of a motor vehicle and be able to use such diagrams, symbols and signs as an aid in rewiring a faulty system.
6. Understand the operation of the coil ignition system, diagnose faults and rectify them.
7. Understand the operation of the transistorized ignition system, diagnose faults and rectify them.

These objectives also reflects on the relevant content such as; the ignition systems components, the starting systems components, the charging systems components the lighting and wiring systems components and computer controlled systems components.(NBTE, 2003). At the end of the three year programme or after graduation, individual craftsmen in this area is expected to have achieved the seven objectives listed above through their skill acquisition of workskills on competence of the content of auto-electricity/electronics.

Workskills is defined according to Ijaiya (2000) as expertness, practical ability, dexterity, tact in carrying out a particular sets of tasks. Workskills are also describe as the mechanism of carrying out a task and constitute vital factors in the effectiveness of the practitioner. In the context of this study, workskill is referred to as relevant skills in auto-electricity/electronics which the graduate craftsmen are supposed to acquired skill for work to earn a living.

A graduate is a person who is recognized by a university as having completed the requirement of a degree studied at the institution (NPE, 2013). Similarly, a graduate in the NPE (2013) could be referred to as a person who is recognized by a higher school or senior secondary school or any post primary form of education as having completed the requirement of a course or programme of study at the school. In the context of this study, a graduate is referred to as any individual who has satisfactorily completed motor vehicle mechanic work programme at the technical college leading to the award of the National Technical Certificate.

The observation of the researchers in the study environment revealed that there were many vehicles off the road or abandoned at the relevant mechanic village due to some electrical faults that could either not be identified, diagnosed, or rectify though there were some craftsmen in motor vehicle mechanic work trade that graduated from technical college seeking for white collar jobs at the government establishment either at the state or local government establishment. A focus group discussion by the researcher with the craftsmen on this embarrassing situation revealed that many of the craftsmen are ill-equipped with relevant workskills demanded by auto-electricity/electronics work by the new models of vehicles imported into the environment which are now vigorously favoured by the public than the 20th century vehicles. Therefore, to reduce this wastage among these graduates, and make them economically viable for self employment in the automobile industry, these craftsmen will require improvement in their workskills.

Improvement as stated by Olaitan, Okeme and Asogwa (2011) is the act of making something better. In the context of this study, improvement is the act of making craftsmen upgrade their acquired workskill in auto-electricity/electronics in order to make them become very relevant to the demands of the 21st century vehicles and also to enable them earn comfortable and sustainable income for livelihood.

As claimed by the technical colleges as a result of the certification to their graduates as craftsmen, coupled with the presence of these graduates in various offices looking for job, there is evidence of conflict between the institution and the craftsmen on the skilled required and those possessed,

therefore, to understand or become aware of the amount of skilled required above, training, these craftsmen need assessment.

Assessment according to Erwin (1999) is a systematic basis for making inferences about the learning and development of specific abilities of students. It involves the process of analyzing, defining, selecting, designing, collecting, interpreting, and using information to increase students learning and development of specific abilities. Assessment in the context of this study is considered as the process of analyzing, selecting, and defining the workskills possessed by the craftsmen in auto-electricity/electronics.

In the assessment of the workskills possessed by the craftsmen, it is compared along with the workskills required for meeting the target standard for improvement. The assessment of the difference between these two, that is possessed and required constitute a need gap, which is the improvement that is needed to meet the required skills sets. Amusa (2009) is of the opinion that if something improves, that thing or situation becomes better. The improvement of the craftsmen in motor vehicle mechanic work in auto-electricity/electronics who abinitio lacks the relevant technical workskills in auto-electricity/electronics needs retraining as to enhance their professional competences.

The objectives of this study is to identify the workskills improvement needs of auto-electricity/electronics craftsmen in motor vehicle mechanic work through the need gap analysis in the following areas; starting systems, ignition systems, charging systems, and Lightning system (electricity generation, lighting and wiring systems).

2. Method

Four research questions guided this study. Survey research design was adopted for the study Survey research, in the view of Eboh [4] entails going to the field with data collection instrument such as questionnaire to obtain information from respondents. It provides data which are used to answer pre-indefinite information needs. Survey design was therefore appropriate for the study since it tends to obtain data directly from the craftsmen of auto-electricity/electronics through the use of questionnaire. The study was carried out in Enugu State of Nigeria**.** The population for the study was hundred and ninety seven (197). The entire population constituted the sample because of the small size of the population. Ninety nine (99) questionnaire items developed from the literature review was use for data collection. The questionnaire was divided into two categories of needed and performances. The needed category has a 4-point response scale of highly needed, averagely needed, slightly needed and not needed. While the performance category also has 4-point response scale of high performance, average performance, low performance and no performance with a corresponding value of 4, 3, 2, and 1 for the two groups of scale respectively. Three experts from the Department of Industrial Technical Education, University of Nigeria Nsukka face validated the instrument. Their suggestions were used to improve the production of the final copy of the questionnaire item. Cronbach alpha reliability methods were adopted to determine the internal consistency of the questionnaire item with a Cronbach alpha coefficient of 0.88 obtained. All the one hundred and ninety seven (197) copies of the questionnaire were retrieved and analyzed using weighted mean and improvement needed index {INI} to answer the research questions and to identify areas where graduates of motor vehicle mechanic work require improvement in auto-electricity/electronics work. To determine the performance gaps and the proficiency improvement needs of graduate of auto-electricity/electronics, the following steps were taken:

The Weighted Mean (Xn) of the needed category was determined for each item.

The Weighted mean (Xp) of the performance category was determined for each item.

The performance gap was therefore determined by calculating the difference between Xn and Xp for each item; that is PG=Xn-Xp.

1) Where the value of PG is positive (+), it means proficiency improvement is needed because the level at which the graduates of motor vehicle mechanic work were performing in auto-electricity/electronics work is lower than what is needed.
2) Where PG is negative (-), it means proficiency improvement is not needed because the level at which the graduates of motor vehicle mechanic work were performing in auto-electricity/electronics work is more than what is needed.
3) Where PG value is zero (o), it means that proficiency improvement is also needed because the level at which the graduates of motor vehicle mechanic work were performing in auto-electricity/electronics work is equal to the level that was needed. [10].

3. Results

The results for the study were obtained from the answers given to the research questions through data collected and analyzed.

Research Question 1: What are the competencies in starting system for which graduates of motor vehicle mechanic work are not proficient and require improvement?

The data for answering research question 1 are presented in Table 1.

Table 1. *Performance Gap Analysis of the Mean Ratings of the Responses of graduates of motor vehicle mechanic work on Competencies in Starting System for which graduates are not proficient and required Improvement.*

S/N	Item Statement Ability To:	Xn	Xp	PG Xn-Xp	Rmks.
1.	Draw starter circuit diagram	3.85	2.50	1.35	*IN
2.	Interpret the starter circuit diagram	3.66	3.00	0.66	*IN
3.	Identify component parts of starter circuit	3.57	2.50	1.07	*IN
4.	State the function of starter system parts	4.00	2.80	1.20	*IN
5.	Identify the types of starter motor	3.37	2.70	0.67	*IN
6.	Fix the axial displacement of starter pinion into engagement with the flywheel	3.33	3.42	-0.09	**INN
7.	Repair the engagement of the starter pinion with the flywheel due to inertia	2.79	3.00	-0.21	**INN
8.	Dismantle the starter motor	3.34	3.00	0.34	*IN
9.	Couple the starter motor	2.90	2.20	0.70	*IN
10.	Punch out and replace bushings	3.19	2.50	0.69	*IN
11	Remove bad brushes	2.78	3.01	-0.23	**INN
12	Press in new brushings	3.03	3.44	-0.41	**INN
13.	Emery cloth new brushes	2.84	2.80	0.04	*IN
14.	Solder new brush lead to the pole shoe lead	3.70	2.20	1.50	*IN
15.	Detect worn or turn commutator	4.00	2.30	1.70	*IN
16.	Solder commutators	4.00	2.50	1.50	*IN
17.	Emery cloth commutator	3.54	3.00	0.54	*IN
18.	Rectify clicking starter problem	3.50	2.80	0.70	*IN
19.	Rectify no reaction starter problem	3.80	2.70	1.10	*IN
20.	Rectify noisy starter problem	2.87	2.70	0.17	*IN
21.	Rectify whining starter problem	2.71	3.00	-0.29	**INN

N-197, *Not Proficient, IN=Improvement needed, ** Proficient, INN=Improvement not needed

The data in Table 1 reveal that the performance gap values for sixteen out of twenty one items ranged from 0.04 to 1.70 and were positive. This performance gap values indicate that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in those items and therefore require improvement.

However, the table also revealed that items 6, 7, 11, 12 and 21 had their performance values to be -0.09, -0.21, -0.23, -0.41, and -0.29 respectively, indicating that graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are proficient in those items and therefore require no improvement.

Research Question 2: What are the competencies in Coil and Transistorized ignition system for which graduates of motor vehicle mechanic work are not proficient and require improvement?

The data for answering research question 2 are presented in Table 2 below.

Table 2. *Performance Gap Analysis of the Mean Ratings of the Responses of graduates of motor vehicle mechanic work on Competencies in Ignition System for which graduates are not proficient and required Improvement.*

S/N	Item Statement Ability To:	Xn	Xp	PG Xn-Xp	Rmks.
	Coil Ignition system				
1.	Identify the ignition system in the vehicle	3.48	2.01	1.47	**INN
2.	State the purpose of the ignition system	3.39	3.03	0.36	**INN
3.	State the purpose of each component in the ignition system	3.00	2.33	1.77	**INN
4.	Draw and label the ignition circuit system	2.99	2.45	0.54	**INN
5.	Interpret the ignition circuit diagram	3.36	2.10	1.26	**INN
6.	Identify the location of the spark plug	2.60	3.11	-1.51	**INN
7	State the use of the spark plug	2.14	3.86	-1.72	**INN
8.	Explain the constructional difference of short and long plug	3.80	2.50	1.30	*IN
9.	Remove and fixes back spark plugs	3.00	3.67	-0.67	**INN
10.	Remove contact breaker points	3.50	2.50	1.00	*IN
11	Replace contact breaker points	4.00	2.80	1.20	*IN
12	Recondition impaired contact breaker points	3.30	2.70	0.60	*IN
13.	Adjust to correct gaps in the installed contact points	3.20	3.00	0.20	*IN
14.	State the uses of ignition coil	2.70	3.00	-0.30	**INN
15.	Explain the internal construction of the coil	3.30	3.00	0.30	*IN
16.	Explain the operation of the coil	2.80	2.20	0.60	*IN
17.	Check contact point for burning or pitting	3.10	2.50	0.60	*IN
18.	Dismantle and emery cloth contact point	3.87	2.30	1.57	*IN
19.	Couple and set contact gap to recommended gauge	2.88	1.38	1.50	*IN
20.	Test carbon brush for firmness and springiness	3.76	2.37	1.39	*IN
21.	Remove spark plug and clean	2.13	2.87	-0.74	**INN
22	Reset spark plug	2.34	3.10	-0.76	**INN
23	Replace plugs according to the vehicle firing order	3.69	1.33	2.36	*IN
24	Identify and adjust sluggish starting	3.45	1.45	2.00	*IN

S/N	Item Statement Ability To:	Xn	Xp	PG Xn-Xp	Rmks.
25	Identify and adjust power delay in sudden throttling	3.33	1.03	2.30	*IN
26	Identify and adjust back firing on turning off ignition	3.58	2.77	0.81	*IN
	Transistorized Ignition System				
27	Explain the operation of transistorized coil ignition with contact point breaker control	3.61	2.12	1.49	*IN
28	State the functions of transistorized coil ignition with contact point breaker control	3.11	2.10	1.01	*IN
29	Repair transistorized coil ignition with contact point breaker control	3.19	2.22	0.97	*IN
30	Explain the operation of brakeless transistorized coil ignition	3.14	2.61	1.53	*IN
31	State the functions of brakeless transistorized coil ignition	3.23	3.00	0.23	*IN
32	Repair brakeless transistorized coil ignition	3.11	2.60	0.51	*IN
33	State the functions of transistorized coil ignition with hall effect generation	3.98	3.92	0.06	*IN
34	Repair transistorized coil ignition with hall effect generation	3.11	2.20	0.91	*IN
35	State the function of High tension capacitor ignition	3.44	2.23	1.21	*IN
36	Explain the operation of High tension capacitor ignition	3.00	2.33	1.77	*IN
37	Compare the different methods of transistorized ignition system	3.24	2.84	0.40	*IN
38	Explain the operation of magneto ignition system	3.36	2.14	1.22	*IN
39	Rectify high tension capacitor magneto ignition related problems	3.12	2.59	0.53	*IN
40	Rectify electronic spark control (ESC) related problems	3.58	1.44	2.14	*IN
41	Rectify electronic module retard (EMR) related problems	3.23	2.79	0.44	*IN
42	Rectify electronic spark selection (ESS) related problems	3.77	2.11	1.66	*IN

N-197, *Not Proficient, IN=Improvement needed, ** Proficient, INN=Improvement not needed

The data in Table 2 reveal that the performance gap values for thirty six out of forty two items ranged from 0.06 to 2.14 and were positive. This performance gap values indicate that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in those items and therefore require improvement.

However, the table also revealed that items 6, 7, 9, 14, 21 and 22 had their performance values to be -1.51, -1.72, -0.67, -0.30, 0.74 and -0.76 respectively, indicating that graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are proficient in those items and therefore require no improvement.

Research Question 3: What are the competencies in charging system for which graduates of motor vehicle mechanic work are not proficient and require improvement?

The data for answering research question 3 are presented in Table 3 below.

Table 3. *Performance Gap Analysis of the Mean Ratings of the Responses of graduates of motor vehicle mechanic work on Competencies in Charging System for which graduates are not proficient and required Improvement.*

S/N	Item Statement Ability To:	Xn	Xp	PG Xn-Xp	Rmks.
1.	Identify the charging system circuit in a vehicle	3.00	2.30	0.70	*IN
2.	State the purpose of the charging system	2.80	2.80	0.00	*IN
3.	Differentiate the alternator from other electrical units	3.00	2.20	0.80	*IN
4.	Interpret the diagram of charging system	4.00	2.30	1.70	*IN
5.	Remove and replace the charging system unit	3.50	3.00	0.50	*IN
6.	Convert AC to DC in Alternator	3.50	2.80	0.70	*IN
7.	Convert AC to DC in Dynamo	3.80	2.70	1.10	*IN
8.	Rectify Automatic valve related problems	2.80	2.70	0.10	*IN
9.	Rectify alternator stator	2.70	3.00	-0.30	**INN
10	Describe the construction details of the regulator	3.80	2.50	1.30	*IN
11.	Identify the sign for brush replacement	3.50	2.50	1.00	*IN
12.	Identify the need for bearing failure	4.00	2.80	1.20	*IN
13.	Punch out and replace brushes	3.30	2.70	0.60	*IN
14.	Re-install the alternator with optional drive belt tension	3.00	3.20	-0.20	**INN
15.	Recognize diode failure	2.70	3.00	-0.30	*IN
16.	Remove a faulty diode	3.30	3.00	0.30	*IN
17.	Re-solder new diode	2.80	2.20	0.60	*IN
18.	Perform continuity test	3.10	2.50	0.60	*IN

N-197**,** *Not Proficient, IN=Improvement needed, ** Proficient, INN=Improvement not needed

The data in table 3 reveal that the performance gap values for eighteen out of twenty items ranged from 0.00 to 1.70 and were positive. This performance gap values indicate that the teachers of auto-electricity/electronics in technical colleges in Enugu State are not proficient in those items and therefore require improvement.

However, the table also revealed that items 10 and 16 had their performance values to be -0.30 and -0.20 respectively, indicating that teachers are proficient in those competencies and therefore require no improvement for instructional competency.

Research Question 4: What are the competencies in lightening system for which graduates of motor vehicle mechanic work are not proficient and require improvement?

The data for answering research question 4 are presented in Table 4 below.

Table 4. *Performance Gap Analysis of the Mean Ratings of the Responses of graduates of motor vehicle mechanic work on Competencies in Lightening System for which graduates are not proficient and required Improvement.*

S/N	Item Statement Ability To:	Xn	Xp	PG Xn-Xp	Rmks.
1.	Explain the need for lightning in vehicles	3.42	2.90	0.62	*IN
2.	Identify the obligatory lights	3.33	3.30	0.03	*IN
3.	Read and interpret the lightening circuit diagram	3.57	3.55	0.02	*IN
4.	Draw the light circuit diagram	3.62	3.61	0.01	*IN
5.	Label each unit that make up the lightening circuit	3.29	2.62	0.67	*IN
6.	Identify sealed and open ended type of head lamp	3.51	3.56	-0.05	**INN
7.	Identify different protection measure and materials	3.68	3.55	0.13	*IN
8.	State the two circuit arrangements in lightening system of a vehicle	3.45	2.92	0.53	*IN
9.	Identify series and parallel connections in a vehicle	3.67	3.64	0.03	*IN
10.	Align headlamp with alignment gauge	3.26	2.60	0.66	*IN
11	Align headlamp without alignment gauge	3.05	3.25	-0.20	**INN
12	Fix faulty head lamp main beam	3.35	3.30	0.05	*IN
13.	Rectify faults in headlamp dim bulb	2.80	2.32	0.46	*IN
14.	Dismantle faulty units or sub units	3.01	3.48	-0.47	**INN
15.	Repair faulty parts	3.54	3.62	-0.08	**INN
16.	Test for functionality	2.63	1.97	0.66	*IN

N-197, *Not Proficient, IN=Improvement needed, ** Proficient, INN=Improvement not needed

The data in Table 4 reveal that the performance gap values for twelve out of sixteen items ranged from 0.03 to 0.67 and were positive. This performance gap values indicate that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in those items and therefore require improvement.

However, the table also revealed that items 6, 11, 14 and 15 had their performance values to be -0.05, -0.20, -0.47 and -0.08 respectively, indicating that graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are proficient in those items and therefore require no improvement.

4. Discussion

Results of the study in Table 1, shows that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in sixteen out of twenty one identified items in starting system and therefore require improvement on these items.

In addition, Table 2 shows that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in thirty six out of forty two one identified items in ignition system and therefore require improvement on these items.

Results of the study in Table 3 also revealed that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in eighteen out of twenty identified items in charging system and therefore require improvement on these items

Also, the results in Table 4 reveal that the graduates of motor vehicle mechanic work in auto-electricity/electronics in Enugu State are not proficient in twelve out of sixteen identified items in lightening system and therefore require improvement on these items.

The findings of the study are in agreement with those of Dimelu [1] who in a study on competency improvement needs of teachers of Home Economics in the use of ICT for effective teaching in colleges of education in South Eastern Nigeria found out that teachers of Home Economics in colleges of education needed improvement in 16 competency items in word processing, 13 competency items in Internet usage, and 15 competency items in PowerPoint presentation.

The findings of this study are also in agreement with those of Okeme, Ifeanyieze and Eze [8] who on a study on capacity building needs of teachers to measure the achievement objectives of Agricultural Science curriculum in senior secondary schools in Kogi state found out that teachers of Agriculture needed capacity building to enable them set good quality objective questions in all the six levels of the cognitive domain of learning and so required training.

The findings of this study are again in consonant with those of Ukonze, Eze and Olaitan [11] who in a study on capacity building needs of teachers in safety practices in farm workshops in colleges of Agriculture in South-Eastern Nigeria. Found that teachers of Agriculture needed capacity building in safety practice skills in farm workshops in the areas of farm tools, digging and carrying tools, implement and equipment and therefore required retraining. These earlier findings confirm credibility to the findings of this study.

5. Conclusion and Recommendation

The 3-year National Board for Technical Education Curriculum in Motor vehicle mechanic work for training technical college student as auto-electricity/electronics craftsmen has seven objectives which the graduates are meant to achieve in upon graduation. The researcher found out from the study that the graduates concerned as are not proficient enough to carry out the assignment of diagnosis, maintenance and repairs of auto-electricity/electronics component of a vehicle.

It is therefore recommended that the identified workskill items in this study be utilized to upgrade the skills of the

Motor vehicle mechanic work graduates in auto-electricity/electronics in the form of organized workshops, seminars or short duration courses.

References

[1] Dimelu, I. N. (2010) competency improvement needs of teachers of home economics in the use of ICT for effective teaching in colleges of education in South Eastern Nigeria. Nigeria*: Vocational Journal 14 (2) 17-25.*

[2] Denton, T (2004). *Automobile Electrical Electronics Systems. 3/e* Elsevier Butterworth- Heinemann: UK.

[3] Denton, T (2006). *Advanced Automobile Fault Diagnosis*. 2/e Elsevier Butterworth- Heinemann: UK.

[4] Ebo, E. C. (2009) *Social and Economic research Principles and Method Enugu.* Published by African Institute for Applied Economics.

[5] Erjavec, J (2010). *Automotive Technology: A Systems Approach* 5/e Delma Cengage Learning: USA.

[6] Halderman, J. D (2012). *Automotive Technology: Principles, Diagnosis, and Service.* Pearson's Educational: New Jersey.

[7] Kwa, Y. A & Hudu, M. I (2018). Skill Improvement needs of Electrical Teachers for the Maintenance of Electrical Laboratory Equipment in Technical colleges in Kano State. *International Journal of Advanced Academic Research, Sciences, Technology and Engineering 4 (7).*

[8] Okeme, I, Ifeanyieze, F. O. & Eze, S. O. (2009). Capacity building needs of teachers to measure the achievement of the objectives of agricultural science curriculum in senior secondary schools in Kogi. *A paper presented at the 2009 Annual Conference of Home Economics Research Association of Nigeria. (HERAN).* University of Nigeria, Nsukka. September, 2009.

[9] Olayinka, O & Oyenuga. A (2010). Integration of Automobile Technological Development in Nigeria Technical College Curriculum. *Academic Leadership online Journal, Issue 2 Spring 2010.*

[10] Olaitan S. O. and Ndomi B. M. (2000) *Vocametrics:* A high-tech Problem-Solving Quantitative Text with Computer Skills: Cape Publishers International Limited.

[11] Ukonze, J. A., Eze S. O. and Olaitan S. O. (2009) Capacity Building Needs of Teachers in Safety Practices in Farm Workshops in Colleges of Agriculture in South-Eastern Nigeria*. Journal of Curriculum Organization of Nigeria. 17 (3).*