JOURNAL OF RESEARCH IN INDUSTRIAL TECHNOLOGY & EDUCATIONAL STUDIES (JRITES)

Homepage: http://Journals.unizik.edu.ng/index.php/jrites

e-ISSN 3122-0436

Vol 2 Issue 2 (2026) 123-131

Extent of Utilization of New Technological Skills by Auto-Mechanics Teachers for Teaching in Auto-Mechanics Trade in Technical Colleges in South East States, Nigeria

Chukwuemeka Ezekiel Aja[1]*, Francisca N. Nnajiofor[1], Promise N. Onyebuenyi[2]

[1]Department of Industrial Technology Education, Nnamdi Azikiwe University, Awka.

[2]Department of Vocational Technology and Entrepreneurship Education, Enugu State University of Sci & Tech (ESUT), Enugu

Corresponding author

Abstract: This study was conducted to determine the extent of utilization of new technological skills by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States, Nigeria. The study was guided by two research questions and two null hypotheses and adopted a descriptive survey research design. The population comprises 130 respondents, this includes 30 auto-mechanics trade teachers in Abia, 29 in Anambra, 19 in Ebonyi, 27 in Enugu and 25 in Imo States from all the Technical Colleges offering auto-mechanics trade in Southeast States. Due to the manageable size of the population, no sampling technique was employed. The instrument used for data collection was a structured questionnaire developed by the researcher titled "Extent of Utilization of New Technological Skills by Auto-Mechanics Teachers Questionnaire" (EUNTSAMTQ)" The instrument was face-validated by three research experts; two experts from the Department of Industrial Technology Education, Faculty of Technology and Vocational Education and one expert from the Measurement and Evaluation unit of Educational Foundations, Faculty of Education. The reliability of the instrument was established through pilot study and data computed and analyzed using Cronbach Alpha coefficient using Statistical Package for Social Science, (SPSS), which gave an index of .74. The two research questions raised were analyzed using mean and standard deviation while the null hypotheses formulated were tested at .05 level of significance and appropriate degrees of freedom using t-test. Based on the findings, the study showed among others that on-board detection diagnostic system skills are moderately utilized by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States. Based on the hypothesis, there is no statistically significant difference in the mean ratings between experienced (6 and above years) and less experienced (0-5 years) auto-mechanic teachers on the extent to which on-board detection diagnostic system skills are utilized for teaching auto-mechanics in technical colleges in Southeast States, Nigeria. Thus, the recommendations; The improvement needs on availability of on-board detection diagnostic system facilities should be carry out by all concerned authorities of these facilities in Southeast States Technical Colleges and, Motor Vehicle mechanics trade (MVM)teachers should be re-trained and evaluate on contemporary electronic fuel injection system skills to ensure adequate skill acquisition upon completion of in-service training program.

Keywords: Utilization; New Technological Skills; Auto-mechanics Teachers

INTRODUCTION

The evolution of the world has in recent times, brought about tremendous growth in the living standard and society, especially in the use of technology. Technology can be said in this context as the application of scientific information, facts and practical skills in the

Corresponding author: chukwuemekaezekiel42@gmail.com

production of digital products for man's use. When technology is being adopted in the activities of man, it simplifies such activity in effective, efficient and timely manner. Udogu (2015) stated technology as the application of scientific knowledge in providing solutions to practical problems that plague and puzzle mankind. In the application and utilization of technology in any setting, skills are necessary.

Skill can be said to be the display of practical mastery of knowledge in the timely performance and delivery of task. It involves an individual's ability to practically carry-out a function effectively. Mbah and Elobuike (2016) noted skill as the ability to make purposeful movements that are necessary to complete or master a particular task. Thus, skill acquisition is pivotal in the utilization of technological innovation as lack of corresponding skill may create a gap which in-turn hampers the utilization of the said technologies. Skills, when newly formed, especially for the utilization of trending technologies, are regarded as new technological skills.

New technological skills are simply stated as advancing sets of capacities formed and required to put to effective use, the trending technologies. These set of skills are said to be new and requires acquisition by concerned individuals for excellence in the use of new technologies for specific purposes. Mosweu and Chaterera-Zambuko (2021) noted that new technology as technologies whose development, practical applications, or both are still largely put into use, such that they are figuratively new into prominence from a background of nonexistence or obscurity. New technological skills could be acquired through education, especially at technical colleges.

Technical colleges are core-skill enriched schools designed to empower recipients with necessary abilities for productivity. According to Ibuom, Deebom and Puyate (2024) noted that technical colleges are designed to equip students with the skills necessary for various occupations, thereby preparing them for the demands of the workplace. The general technical education programmes as offered in Nigeria technical colleges according to National Board for Technical Education [NBTE], 2012) syllabus include: window and door installation, roofing, radio, television and electronics work, auto-wiring, wiring and equipment installation, coil and armature winding and repair, auto-mechanic, wheel alignment and tyre balancing, auto-body repair, auto-shop and service station management, auto-air conditioning, engine cleaning and lubrication, brick laying and concreting, building construction, block moulding and bricks making, painting, air conditioning and refrigeration servicing and repair, among others. These areas of specialization equip an individual with life-long career competencies for either self-employment or paid employment.

Auto-mechanics trade in technical colleges involves the application of scientific knowledge in the design, selection of materials, construction, operation and maintenance of automobiles (Eze, Onwusa, Oluyinka and Nwaosa, 2022). Udogu (2015) also noted that emerging technologies in automobiles include: Anti-lock Braking System (ABS), Electronic Fuel Injection (EFI), Electronic Ignition System, Electronic Transmission system, Variable Valve Timing Intelligence (VVV-I), On- Board Detection and Diagnostic system (OBD), All Wheel Drive (AWD) system, All Wheel Steering (AWS), Active Suspension System and Emission Control System. Obviously, these specific areas demand corresponding skills of individuals in maintaining automobiles. Hence, the need to emphasis the extent of utilizing on-board detection diagnostic system and electronic fuel injection system as new technologies by teachers in teaching auto-mechanics trade in technical colleges in Southeast States for optimum performance.

In view of the above, on-board detection diagnostic system (OBD) is simply an electronic device that is designed for troubleshooting purposes in automobile. The device is charged with the functional capacity to scan and detect faults in an automobile system. According to Geotab (2023), on-board detection diagnostic system refers to the automotive electronic system that

provides vehicle self-diagnosis and reporting capabilities for repair technician. An OBD gives technicians access to subsystem information for the purpose of performance monitoring and analyzing repair needs. In line with the benefits of OBD, hence the need for electronic fuel injection system skills.

Electronic fuel injection system (EFIs) and its competency are vital in modern engines maintenance. They replace carburetors, delivering fuel directly into the engine's cylinders. This precise and efficient method optimizes combustion, enhances fuel efficiency, reduces emissions, and improves overall engine performance. Walters and Brun (2018) stated that electronic fuel injection (EFI) has proven to be the most precise, reliable, and cost-effective method of delivering fuel to the combustion chambers of today's engines. Possession of sound knowledge of the afore-discussed new technologies demands effective teaching by auto-mechanics teachers.

An auto-mechanic teacher is an individual that is well-equipped with the necessary pedagogical competencies in automobile and its related trade. Eze, Onwusa, Oluyinka and Nwaosa (2020) are of the view that an auto-mechanic teacher, just like other technical teachers are individuals who have acquired special competency required to effectively teach a particular subject area to a group of learners. Thus, auto-mechanic teachers are charged with the responsibilities of empowering the Technical College graduates especially in auto-mechanics with new technological skills for self or paid employment in present time. Hence, an auto-mechanic teacher's level of skill acquisition can be said to be based on years of experience.

Experience can be defined as the resultant quality of knowledge or skill gained over time. It could be few months, few years or more. Adeyemi (2018) also noted that experience is actually one of the very observable teacher characteristics that are consistently correlated with achievement, and its effect is among the strongest, especially for some sub-groups of teachers. In this context, teachers experience can be said to span through years of active practices and expressed as: 0 – 5years for less experienced teachers while 6 and above years denotes experienced teachers. This is pertinent to determine the extent of utilization of new technological skills by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States.

Statement of the Problem

The advancement in technology is evident in virtually all spheres of life. Specifically, on the area of automobiles, new products are invented on timely basis with distinctive feature. A number of the automobiles that are manufactured, imported or assembled are controlled primarily by chips on computers, sophisticated electronic gadgets and control systems that require higher degree of maintenance, as well as specialized diagnostic tools and instruments. Consequently, vehicle technology and maintenance processes in present time have adversely affected corporate individuals and transportation system/industries in Nigeria. As a result, the availability of adequately skilled graduates to provide service to the ever-growing automobile industries is seen as a critical area where there is a gap between the automobile industrial requirements and the quality of training received by graduates of auto-mechanics.

Hence, in most cases, the issues of skill mismatch and rising unemployment rate among graduates of auto-mechanics could be a resultant effect of the auto-mechanics instructional process, where most teachers are said to resort to the traditional auto-mechanics instructional process against the new auto-mechanics instructional processes. This had adversely affected the level of skills acquisition in new technology and undoubtedly affected the productivity of skilled auto-mechanics trade students, most of the inadequate trained students as a result resort to all manners of socio-economic vices like stealing, kidnapping, smoking, among others in the society. Against these backdrops was the need by the study to determine the extent of

utilization of new technological skills by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States, Nigeria.

Research Questions

The following research questions guided the study:

1. To what extent are on-board detection diagnostic system skills utilized by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States?
2. To what extent are electronic fuel injection system skills utilized by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States?

Hypotheses

The following null hypotheses were tested at .05 level of significance:

1. There is no significant difference in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which on-board detection diagnostics system skills are utilized by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States.
2. There is no significant difference in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which electronic fuel injection system skills are utilized by auto-mechanics teachers for teaching auto-mechanics trade in technical colleges in Southeast States.

METHODS

The study adopted a descriptive survey research design. The study was carried out in Southeast States which comprises Abia, Anambra, Ebonyi, Enugu and Imo States with a population of 130 teachers of auto-mechanics trade in all the technical colleges offering auto-mechanics trade in Southeast States. These include 31 auto-mechanics trade teachers in Abia, 29 in Anambra, 19 in Ebonyi, 27 in Enugu and 25 in Imo State. This population was further parted into two groups, based on years on experiences (77 teachers for 6 and above years and 53 teachers for 0-5 years). The instrument for data collection was a 28 items statement questionnaire titled “Extent of Utilization of New Technological Skills by Auto-Mechanics Teachers Questionnaire” (EUNTSAMTQ)” structured on a five-point likert scale of Very Highly Utilized (VHU), Highly Utilized (HU), Moderately Utilized (MU), Lowly Utilized (LU) and Lowly Utilized (VLU) with weighting values of 5, 4, 3, 2, and 1 point respectively. The instrument for data collection was face-validated by three experts. The reliability of the instrument was determined by administering 20 copies of the instrument on 20 teachers of auto-mechanics trade in Rivers State. The data collected was analyzed using Cronbach Alpha which was found to be 0.74, indicating that the instrument was reliable and, hence used to collect data for the study. In analyzing the data collected, mean and standard deviation were used to answer the research questions. Upper and lower limits of the mean were used as the basis for decision making. Thus; VHU: 4.50 – 5.49, HU: 3.50 – 4.49, MU: 2.50 – 3.49, LU: 1.50 – 2.49 and VLU: 0.05 – 1.49. The null hypotheses were tested at .05 level of significance and appropriate degree of freedom using t-test. The null hypotheses were rejected when t-calculated was greater than t-critical value and were not rejected when t-calculated value was less than t-critical value.

RESULTS

Extent On-Board Detection Diagnostic System Skills are Utilized by Auto-Mechanics Teachers

Table 1: Mean Ratings and Standard Deviations on On-board Diagnostics System Skills Utilized by Auto-mechanics Teachers for Teaching Auto-mechanics

S/N	Extent to which on-board diagnostics system skills are utilized by auto-mechanics teachers include;	MVMW Teachers (6 and above) N = 77		MVMW Teachers (0 -5 yrs.) N = 53		Overall N = 130		Remarks
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2	$\bar{x}_G$	SD_G	
1	Ability to identify the diagnostic link connector	2.26	1.02	2.28	1.01	2.27	1.02	LU
2	Ability to install a windmill software for interpreting on-board diagnostic data	2.69	1.10	2.91	1.07	2.80	1.09	MU
3	Ability to connect the vehicle on-board computer to an on-board diagnostic software	2.98	1.01	2.39	0.78	2.69	0.90	MU
4	Ability to retrieve diagnostic trouble codes and freeze frame data stored in the electronic control module memory	2.07	0.81	2.49	1.21	2.28	1.01	LU
5	Ability to use knowledge of on-board diagnostic port in modern vehicles	2.53	1.07	2.84	1.07	2.69	1.07	MU
6	Ability to set the check mode diagnosis	2.95	1.03	2.83	1.05	2.89	1.04	MU
7	Ability to use knowledge of diagnostic trouble codes	2.27	1.01	2.25	1.02	2.27	1.02	LU
8	Ability to carry out parts inspection using problem symptom table	2.91	1.07	2.69	1.10	2.80	1.09	MU
9	Ability to use knowledge of use of on-board diagnostic tools to amend the automobile computer operating programme	2.68	0.94	2.52	0.83	2.60	0.89	MU
10	Ability to clear diagnostic trouble codes	2.53	0.89	2.63	0.66	2.58	0.78	MU
11	Ability to replace faulty actuators	2.91	1.09	2.92	1.06	2.92	1.08	MU
12	Ability to switch off the interface correctly	2.98	1.01	2.39	0.78	2.69	0.90	MU
13	Ability to inspect circuits using diagnostic trouble code chart	2.42	1.14	2.35	0.97	2.39	1.06	LU
	Cluster Mean	**2.63**	**1.01**	**2.58**	**0.97**	**2.61**		**MU**

Key: MU (Moderately Utilized; LU (Lowly Utilized); SD (Standard Deviation)

Table 1 shows that the mean ratings of the experienced (6 and above years) MVMW teachers on items number 2, 3, 5, 6, 8, 9, 10, 11 and 12 are 2.69, 2.98, 2.53, 2.95, 2.91, 2.68, 2.53, 2.91 and 2.98 which indicates that the listed on-board diagnostics system skills are moderately utilized by auto-mechanics teachers for teaching auto-mechanics among technical colleges in Southeast States. The Table also indicated lowly utilized responses for the same respondents on items number 4, 7 and 13 with the mean ratings of 2.26, 2.07, 2.27 and 2.42. For the less experienced (0 – 5 years) teachers, the Table shows on items number 2, 5, 6, 8, 9, 10 and 11 the mean ratings of 2.91, 2.84, 2.83, 2.69, 2.52, 2.63, 2.92 and 2.64 which indicates moderately utilized responses while the other items with mean ratings of 2.28, 2.39. 2.49, 2.25, 2.39 and 2.35 as contained in items number 1, 3, 4, 7, 12 and 13 depicts lowly utilized responses. However, the overall cluster mean of 2.63 denotes that on-board diagnostics system skills are moderately utilized by auto-mechanics teachers for teaching auto-mechanics among technical colleges in Southeast States. Thus, the overall cluster standard deviation of 1.01 obtained for all the items depicts homogeneity in the opinions of the respondents.

Table 2: t-test on the Mean Ratings of experienced and Less Experienced MVMW Teachers on the Extent to which On-board Diagnostics System Skills are Utilized by Auto-mechanics Teachers for Teaching Auto-mechanics

Teachers Years of Experience	N	X	SD	df	P	t-cal	t-tab	Decision
6 and above	77	2.63	1.01	128	.05	0.187	1.984	NS
0 – 5	53	2.58	0.97					

NB: NS = Not Significant. SD = Standard Deviation. df= Degree of freedom

Table 2 shows that the t-calculated value of 0.187 was obtained at 0.05 level of significance and 128 degree of freedom with the t-table value of 1.984. The t-calculated value (0.187) is less than the t-table value of 1.984; the null hypothesis is therefore not rejected for these items. This implies that there is no significant difference in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which on-board diagnostics system skills are utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States. On this note, the years of experiences of the respondents is seen to have no significant influence on their responses to the items.

Extent Electronic Fuel Injection System Skills are Utilized by Auto-Mechanics Teachers

Table 3: Mean Ratings and Standard Deviations on Electronic Fuel Injection System Skills Utilized by Auto-mechanics Teachers for Teaching Auto-mechanics

S/N	Extent to which electronic fuel injection system skills are utilized by auto-mechanics teachers include;	MVMW Teachers (6 and above) N = 77		MVMW Teachers (0 -5 yrs.) N = 53		Overall N = 130		Remarks
		$\bar{x}_1$	SD_1	$\bar{x}_2$	SD_2	$\bar{x}_G$	SD_G	
14	Ability to test the manifold absolute pressure sensor using multimeter	2.77	1.09	2.34	1.19	2.61	1.14	MU
15	Ability to use knowledge of fuel system diagnostic trouble codes	2.72	1.18	2.71	1.12	2.72	1.15	MU
16	Ability to troubleshoot fuel system circuits	2.45	1.19	2.11	0.93	2.32	1.11	LU
17	Ability to retrieve fuel system diagnostic trouble code	2.44	1.19	2.20	1.15	2.30	1.16	LU
18	Ability to connect a diagnostic scan tool to the data link connector	2.81	0.96	2.64	1.12	2.70	1.06	MU
19	Ability to inspect oxygen sensor	2.78	1.12	2.55	1.11	2.63	1.11	MU
20	Ability to troubleshoot fuel pump pressure	2.59	1.13	2.48	1.11	2.52	1.11	MU
21	Ability to carry-out proper injector cleaning	2.67	1.24	2.48	1.07	2.55	1.13	MU
22	Ability to refit fuel injection fuel rail	2.37	1.15	2.64	1.14	2.54	1.14	MU
23	Ability to replace faulty O-rings onto the new injector	2.52	1.22	2.70	1.09	2.63	1.14	MU
24	Ability to install fuel injectors	2.20	1.15	2.44	1.19	2.30	1.16	LU
25	Ability to test the fuel pressure by controlling the activity of the pump with a scan tool	2.52	0.83	2.68	0.94	2.60	0.89	MU
26	Ability to carryout throttle actuator inspection	2.53	0.89	2.63	0.66	2.58	0.78	MU
27	Ability to use knowledge of all under hood wiring	2.91	1.09	2.92	1.06	2.92	1.08	MU
28	Ability to inspect the hoses of the air induction system	2.53	1.07	2.84	1.07	2.69	1.07	MU
	Cluster Mean	**2.59**	**1.10**	**2.56**	**1.06**	**2.57**		**MU**

Data as presented in Table 3 shows that the mean ratings of the experienced MVMW teachers on items number 14, 15, 18, 19, 20, 21, 23, 25 to 28 ranged 2.52 to 2.91. This indicates that the listed electronic fuel injection system skills are moderately utilized by auto-mechanics

teachers for teaching auto-mechanics among technical colleges in Southeast States while the rest of the items with mean ratings range of 2.07 to 2.42 depict lowly utilized responses by the same respondents. The Table shows that the mean ratings range of 2.55 to 2.92 are obtained for the less experienced MVMW teachers items number 15, 18, 22, 23, 25 to 28. This indicates moderately utilized perceptions while the mean ratings range of 2.11 to 2.44 obtained for the rest of the items shows lowly utilized responses by the less experienced MVMW teachers respectively. However, the overall mean rating ranged from 2.26 to 2.92. Thus, the **Table** shows that electronic fuel injection system skills moderately utilized by auto-mechanics teachers for teaching auto-mechanics among technical colleges in Southeast States. This is evident as the overall cluster mean value of 2.57 obtained for all the items attests to that with the cluster standard deviation of 1.08 depicting that the disparity in the responses is slim.

Table 4: t-test Statistics on the Mean Ratings of experienced and Less Experienced MVMW Teachers on the Extent to which Electronic Fuel Injection System Skills are Utilized by Auto-mechanics Teachers for Teaching Auto-mechanics

Teachers Years of Experience	N	X	SD	df	P	t-cal	t-tab	Decision
6 and above	77	2.59	1.10	128	.05	0.765	1.984	NS
0 – 5	53	2.56	1.06					

Result in Table 4 above unveils that the t-calculated value of 0.765 was obtained at 0.05 level of significance and 128 degree of freedom with the t-table value of 1.984. However, since the t-value is less than the t-table value, the null hypothesis is statistically insignificant and by extension, not rejected for these items. This therefore means that there is no significant difference in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which electronic fuel injection system skills are utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States.

DISCUSSION

The findings of this study revealed that the respondents affirmed that on-board detection diagnostics system skill is necessary as it is needed by the teacher to teach how to **ability to** replace faulty actuators, ability to set the check mode diagnosis, ability to carry out parts inspection using problem symptom table, ability to install a windmill software for interpreting on-board diagnostic data, ability to identify the on-board diagnostic port in modern vehicles, ability to connect the vehicle on-board computer to an on-board diagnostic software, among others. It therefore becomes pertinent to state that the acquisition of competency in on-board diagnostics system is significant in equipping MVMW teachers in Technical Colleges in Southeast States for all round productivity.

Similarly, there is no significant difference in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which on-board detection diagnostics system skills are utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States. This is evident as the obtained significant value is greater than the level of significance set for the study. Thus, the status of the respondents is seen to have no significant influence on their responses to the items. These findings is in agreement with the findings of Geotab Team (2023) that stated an OBD gives technicians access to subsystem information for the purpose of performance monitoring and analyzing repair needs.

The study affirmed that the electronic fuel injection system skills are moderately utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in

Southeast States. Evidently, the study specifically noted that it is utilized by the teacher to teach how ability to inspect all under hood wiring, ability to interpret fuel system diagnostic trouble codes, and many more. On the basis of the above statement, electronic fuel injection system skills of MVMW teachers becomes eminent in ensuring excellence in teaching of MVMW towards equipping competent graduates that can confidently manage automobiles upon graduation. Thus, the hypothesis test yielded a higher significant value against a low level of significance. Hence, no significant difference was found in the mean ratings of experienced and less experienced auto-mechanic teachers on the extent to which electronic fuel injection system skills are utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States. The findings above tallies with the findings of Kunjam, Sen and Sahu (2015) who stated that electronic fuel injection system; strict emission standards require precise fuel delivery, computers used to calculate fuel needs, EFI very precise, reliable & cost effective and EFI provide correct A/F ratio for all loads, speeds, & temp range.

CONCLUSION

The study discussed the extent of utilization of new technological skills by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States. It discussed the on-board detection diagnostic system and electronic fuel injection system skills utilized by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States. The findings of the study have shown the need for the utilization of trending technological by auto-mechanics teachers for teaching auto-mechanics in technical colleges in Southeast States especially, in ensuring the inculcation acceptable standards into the learners for effectiveness upon graduation. Hence, it is, thereafter, believed that effective measures are taken to ensure that the auto-mechanics teachers utilize the afore-discussed skills, that would undoubtedly enhanced teaching auto-mechanics trade for productivity and economic development, invariably increased employment, and reduces involvement in social vices upon graduation by technical college students in Southeast States.

RECOMMENDATIONS

Based on the findings, the recommendations made are as follows:

1. Improvement needs on availability of on-board detection diagnostic system facilities should be made by all concerned authorities to ascertain the level efficient of its utilization for productivity in Southeast States Technical Colleges.
2. Auto-mech teachers should be re-trained and assessed on contemporary models of electronic fuel injection system to ensure adequate skill acquisition upon completion of in-service training.

REFERENCES

Adeyemi, T.O. (2018). Teacher's teaching experience and Students' learning outcomes in secondary schools in Ondo state, *Nigeria. Journal of Educational Research and Review*, 3 (6), 204 – 212

Eze. T. I., Onwusa. S.C, Oluyinka. B. O & Nwaosa. F. I. (2022). Assessment of the extent of auto-mechanics teachers' utilization of instructional materials for teaching in technical colleges in Edo and Delta States, Nigeria. *Education Research Journal*, 10(10), 305-317.

Geotab Team (2023). What is OBDII? History of on-board diagnostics. Retrieved from: *https://www.geotab.com/blog/obd-ii/*.

Godwin. A. (2014). The dearth of skilled manpower in Nigeria. Onitsha: Wisdom Publisher.

Ibuom. J, Deebom. T. M & Puyate. S. T. (2024). Integration of autotronics maintenance skills in instructional delivery for employability of motor vehicle mechanic works students in

technical colleges Rivers State. *International Journal of Information, Engineering & Technology*, 12 (6), 134-146.

Kunjam. R. K, Sen. K. P & Sahu. G. (2015). A study on advance electronic fuel injection system. *International Journal of scientific research and management (IJSRM*), 3(10), 3608-3613.

Mbah, C. O. & Elobuike, H.U. (2016).Achieving quality assurance in informal automobile apprenticeship training system for sustainable self- employment of trainees in Enugu metropolis. *Journal of Research in Science and Technology Education JORSTED 6(1)*, 146-155.

Mohammed. E. M & Mustapha. M. J. (2022). Mechatronics skills needed by motor vehicle mechanics in Minna Metropolis of Niger State, Nigeria. *Global Scientific Journals*, 10(12), 733-744.

Mosweu. O & Chaterera-Zambuko. F. (2021). Blockchain Technology for Records Management in Botswana and Zimbabwe. Retrieved from; https://www.igi-global.com/book/industry-use-cases-blockchain-technology/256626.

National Board for Technical Education (NBTE, 2012). *Curriculum for Technical colleges (Revised).* Kaduna: NBTE Press.

Onyebuenyi P. N. (2018). Emerging technological skills required for maintaining digital electronics appliances for self-employment of technical college graduates in Enugu State. *Unpublished M.Sc Thesis*. Department of Technology and Vocational Education, ESUT.

Udogu, K. C. (2015). Emerging technological skills required by Technical College Graduates of Motor Vehicle Mechanic's Work (MVMW) in establishing automobile enterprises in Southeast States of Nigeria. *Unpublished M.Ed project*, Department of Vocational Teacher Education, University of Nigeria, Nsukka.

Walters. J & Brun. F. (2018). An advanced fuel supply unit for single cylinder gas engines. SAE, 2018.