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ASSESSMENT OF INSTRUCTIONAL FACILITIES IN IMPLEMENTING THE CONTENTS OF THE MOTOR VEHICLE MECHANICS' WORK CURRICULUM IN TECHNICAL COLLEGES IN NORTH CENTRAL NIGERIA

[1]Ogbuanya, T. C. and [2]Usman, D. A.
[1]Industrial and Technical Education Department, University of Nigeria, Nsukka, Nigeria;
[2]Federal Government Girls' College, Bwari, Abuja, Nigeria
Email: usmandavid007@gmail.com

ABSTRACT

The training of motor vehicle mechanics is not only expertise demanding, but also requires a lot of facilities which has to be effectively utilized for the realization of instructional objectives. The objectives of the study were (1) to ascertain the availability of instructional facilities; and (2) to find out the extent of the usage of the instructional facilities in implementing the contents of the MVMWC. The population of the study was 465; consisting of 418 male and 38 female MVMW National Technical Certificate (NTC) III graduating students for the 2017/2018 session, in the 22 accredited technical colleges in the North-Central States of Nigeria, and 9 MVMW graduates of technical colleges in the area of study who were operating functional workshops. The study adopted a Multi-stage Sampling Technique to select a sample size of 189 which comprised 165 male and 15 female MVMW NTC III graduating students and 9 MVMW graduates of technical colleges from the area of the study. A questionnaire and Focus Group Discussion (FGD) were used as instruments for data collection. The research questions were analyzed using mean, frequency count, and percentages. The findings of this study revealed: lack of basic instructional facilities for effective implementation of the MVMWC in technical colleges in the North Central States of Nigeria; and a low extent of utilization of the very few instructional facilities available.

Keywords: assessment, availability, instructional facilities, technical colleges, utilization

INTRODUCTION

As prime movers of people and goods, automobiles contribute daily to economic and social systems. The automobile, commonly known as a motor vehicle or car, is a composite of many complex systems with a sophisticated group of technologies assembled. Malone [1] stated that today's cars are factory equipped with computer systems that have more intelligence than the United States' National Aeronautic and Space Administration (NASA) spacecraft sent to the moon. Automobiles now use sophisticated computer technology, advanced wiring, intricate circuitry, and complex engineering [2]. The automobile today is controlled by various electronic sensors, actuators, circuits, and computers [3]. Electronics control is approximately 75 percent of modern automobile's operation [4]. Today's car is a rolling computer; as there are 30 to 100 microprocessors in a car controlling various systems. These systems require routine diagnosis, maintenance, and service [5]. The maintenance of the numerous subsystems of modern automobiles has become highly challenging and expertise demanding.

The automobile maintenance personnel, commonly known as motor vehicle mechanics, must therefore be equipped with the relevant knowledge, skills, and the right attitude for effective maintenance of modern automobiles, owing to the influx of automobiles into Nigeria and the challenges of maintaining them. Today's motor vehicle mechanic is expected to diagnose, service, and completely repair any problem in the automobile. He/she must be specially trained and equipped for on-board

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diagnostic (OBD-2) technology to avoid potential errors in diagnosing car trouble codes and making appropriate repairs [1]. The motor vehicle mechanic faces the challenges of understanding each of the systems found in the automobile and the interrelationship of these systems, as well as, the need to stay current with changes as new models appear every year [3]. They must understand not only the parts, nomenclature, and operation, but also understand the diagnosis and service procedure for each system in the vehicle. United States Bureau of Labor Statistics (USBLS) [6] stated that motor vehicle mechanics must have an increasingly broad knowledge of how vehicles' complex components work and interact. They also must be able to work with electronic diagnostic equipment and digital manuals and reference materials. Motor vehicle mechanics also need to have: an interest in mechanical/electronic systems in a motor vehicle, good problem-solving ability, good vision, hearing and sense of smell, manual dexterity, and mechanical aptitude, ability to communicate well in English, physical fitness, and strength, ability to drive a range of vehicles, ability to read technical diagrams and illustration, have concern for safety and responsible work attitude; and in keeping up to date with technology [7]. The above requirements, therefore, not only make the training of motor vehicle mechanics highly tasking and expertise demanding, but also require a very rich curriculum with a lot of facilities for effective and efficient implementation. Motor Vehicle Mechanics' Work Curriculum (MVMWC), in this study, is the program in use for training motor vehicle mechanics in the Nigerian formal school system for the maintenance of all types of vehicles.

The components of the Motor Vehicle Mechanics Work Curriculum (MVMWC) include aim, objectives, contents, teaching strategies, instructional facilities, and method of evaluation. The availability of the appropriate instructional facilities, as well as the effective utilization of the instructional facilities, are not only imperative to the realization of the objectives of the program but are also the determinant of the success and otherwise of the program.

Instructional facilities are vital in the teaching and learning process. One major index for measuring the successful implementation of any curriculum is the provision and management of the facilities available for such programs [8]. It is a very good means of measuring the standard and quality of the education to be provided, Nzekwe stressed. Instructional facilities are specifically meant for direct teaching and learning. They include classrooms, classroom seats, workshops, laboratories, internet facilities, libraries, equipment, chalkboard, audio-visual learning equipment, among others [9]. These facilities bear directly on the teaching-learning process. They enable the teacher to carry out his/her work well and also help the learners to learn effectively [10]; therefore, they are an integral component of the conditions of learning. The instructional facilities offer the reality of experience, provide visual aspects to a process or technique, facilitate the understanding of abstract concepts, and provide the opportunity for the learner to manipulate [8]. In this study, instructional facilities are those things that enable teachers/instructors to carry out their work well and also help trainees to learn (acquire skills, knowledge, and attitude) effectively for the achievement of the aim and objectives of MVMWC. Anike & Tari [10] posited that, the quality of training that trainees get bears on direct relevance to the availability or the lack of physical facilities and overall atmosphere

where the learning takes place. According to the Nigerian Educational Research and Development Council (NERDC) [11], the MVMW program is inherently workshop-based; and therefore, calls for an adequately equipped automobile workshop in each school that offers the course. This was reiterated in the National Board for Technical Education [12] guidelines and procedures for the establishment of private technical and technological institutions in Nigeria that, an adequately equipped workshop for the specific modules to be taught in technical colleges must be on the ground as criteria for accrediting any technical college program. However, researches show that students' potentials are not properly channeled as schools lack basic instructional facilities necessary for effective curriculum implementation [13], [14]. In addition to the adequate availability of instructional facilities, effective utilization of the instructional facilities is imperative; because it is one thing to have the facilities, and another thing entirely to (be able to) use them.

The availability and effective utilization of instructional facilities, in addition to the quality of curriculum implementation of any society, is the bedrock of its political, economic, scientific, and technological well-being.

The education system in northern Nigeria is facing a lot of challenges. The implementation of the MVMWC in the North Central States of Nigeria is also factored in the situation, as graduates of technical colleges in Plateau State, a case study carried out by Nyapson [16], have irrelevant and inadequate skills in motor vehicle mechanic, which has rendered most of them jobless in the society. Nyapson stated that they neither set up their workshops nor are they being employed by automobile industries in the state. Jika [17] posited that such half-baked auto craftsmen in the society often cause more damages on vehicles than repairs when contracted to work on them; and many serviced/repaired vehicles by these craftsmen, according to Jika, have sent many people to their early deaths due to inaccurate or faulty work they've performed on them. Regrettably, lack of instructional facilities, coupled with the ineffective utilization of the few available, in the implementation of the MVMWC in technical colleges in North Central states of Nigeria has been the major bane of the program; as graduates of the program lacked the basic skills and the right attitude needed for gainful employment in today's automobile industry. Therefore, the problem of this study was to assess the availability and utilization of instructional facilities in implementing the MVMWC in technical colleges in the North Central states of Nigeria.

Today's automobile is a composite of many complex systems with a sophisticated group of technologies assembled. Today's motor vehicle mechanic is expected to diagnose, service, and completely repair any problem on the automobile. Furthermore, the mechanic must possess good problem-solving ability, manual dexterity and mechanical aptitude, responsible work attitude; and keeping up to date with technology. The above requirements can only be achieved via a rich curriculum with a lot of facilities for effective implementation.

Unfortunately, several studies [7], [18]–[21] have revealed that technical college products of the MVMW program lacked the basic skills needed for gainful employment in today's automobile industry. Regrettably, lack of instructional facilities, coupled with the ineffective utilization of the few available, in the implementation of the MVMWC in technical colleges in North Central states of Nigeria has been the major

bane of the program; as graduates of the program lacked the basic skills and the right attitude for gainful employment in today's automobile industry. Therefore, the problem of this study was to assess the availability and utilization of the instructional facilities in implementing the MVMWC contents in technical colleges in North Central Nigeria.

METHOD

The study adopted a descriptive survey research design. The study was carried out in North-Central Nigeria; comprising of Kogi, Niger, Benue, Kwara, Plateau, Nassarawa, and the Federal Capital Territory. The population for this study was 465; consisting of 418 male and 38 female MVMW NTC III graduating students for the 2017/2018 session in the 22 accredited technical colleges in the North-Central Zone of Nigeria, and 9 MVMW graduates who were operating functional workshops. The study adopted the Multi-stage Sampling Technique. The subjects for the study comprised two sample groups – graduating students and graduates of MVMW. A sample size of 189 was used for the study, comprising of 165 male and 15 female MVMW NTC III graduating students, and 9 MVMW graduates who were operating functional workshops. In stage one, a purposive sampling technique was adopted to select (based on school type) two Federal Science and Technical Colleges and six State-owned Technical Colleges. In stage two, a proportionate stratified random sampling technique was adopted to sample the 165 male and 15 female MVMW NTC III graduating students from the selected schools representing a ratio of 11:1 based on the proportion of the population of male and female. Some 9 other MVMW graduates who were operating functional workshops in the area of the study were also selected for Focus Group Discussion (FGD).

The study utilized both quantitative and qualitative techniques to enrich the findings. The following instruments were used for data collection: For Research Question one (RQ1), a Checklist of instructional facilities available, containing 91 items based on the specified minimum number of tools and equipment required by NBTE for implementation of the MVMWC was used; and the response categories for the checklist were: A = Available, BHANR = Below Half of Average Number Required, and NA = Not Available, respectively. For Research Question two (RQ 2), a Questionnaire titled: the Extent of the Usage of the Instructional Facilities Available in Implementing the Contents of the MVMWC was used; with response categories of Very Great Extent (VGE), Great Extent (GE), Moderate Extent (ME) Low Extent (LE) and Lowest Extent (LSE) rated 5, 4, 3, 2, and1 respectively. Cronbach Alpha (α) reliability technique was used to establish the internal consistency of the instrument. The reliability coefficient for the instrument was 0.77

The Focus Group Discussion (FGD) was conducted with nine graduates of technical colleges in the area of the study who were operating functional workshops. This was to find out from them, based on their experience on the job after school and the tools and equipment used on the job after leaving school; the quantity and quality of the tools and equipment that were available and effectively utilized during their school program in training them; and comparing them with those of the workplace.

Questionnaires were administered to the respondents by the researcher through personal contact and with the help of MVMW teachers from each of the sampled schools,

who served as research assistants. The adequate copies of each instrument were administered accordingly and retrieved from the respondents for analysis. Thereafter, the nine graduates selected in the area of the study who were operating functional workshops were assembled in a designated location, and the focus group discussion was conducted.

Data collected were subjected to appropriate quantitative and qualitative analyses using descriptive statistics. The research questions were analyzed using mean, frequency count, and percentages. Research question 1 was analyzed using frequency counts and percentages, while mean was used in analyzing research question 2.

RESULTS AND DISCUSSION

The instructional facilities available, for implementing the curriculum contents of the MVMWC in technical colleges in North Central Nigeria are presented in Table 1.

Table 1. Frequency and Percentage of Instructional Facilities Available for Implementing the MVMWC Contents in Technical Colleges in North Central Nigeria

SN	Tools and Equipment Required by NBTE for Implementing MVMWC Contents in Nigeria's Technical Colleges	Minimum Number Required in Each Technical College	Total Minimum Number Required in Sampled Technical Colleges	Total Number Available in Sampled Technical Colleges	%	Remark
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)	10	80	21	26.25	BHAMNR
2	Ball pein hammer	10	80	24	30.00	BHAMNR
3	Hacksaws with extra blades	10	80	27	33.75	BHAMNR
4	300mm engineer rule socket spanners sets, with extension	10	80	23	28.75	BHAMNR
5	(6-32) open and flat spanners	10 sets	80	21	26.25	BHAMNR
6	Ring spanners (6-32mm)	10 sets	80	20	25.00	BHAMNR
7	Energy stone/block cloth	10	80	0	0	NA
8	Plug spanners	10	80	17	21.25	BHAMNR
9	Magnet spanners	10	80	16	20.00	BHAMNR
10	Allen keys	10	80	19	23.75	BHAMNR
11	Feeler gauges	10	80	17	21.25	BHAMNR
12	Oil cans	10	80	23	28.75	BHAMNR
13	Grease guns	10	80	14	17.75	BHAMNR
14	Spark plug files	10	80	6	7.5	BHAMNR
15	Combination pliers	10	80	22	27.50	BHAMNR
16	Longnose pliers	10	80	21	26.25	BHAMNR
17	Wirecutter	10	80	11	13.75	BHAMNR
18	Tyre pressure gauges	10	80	6	7.50	BHAMNR
	DRILLING AND SCREW CUTTING					
19	Electric Hand Drill	2	16	4	25.00	BHAMNR
20	Drill bits	3 sets	24 sets	9 sets	37.50	BHAMNR
21	Set of stock and dies - UNC, UNF, and metric	2 sets	16 sets	2 sets	12.50	BHAMNR
22	Taps and wrenches - UNC, UNF, and metric	2 sets	16 sets	2 sets	12.50	BHAMNR
23	Thread file	2	16	3	18.75	BHAMNR
24	Roller type thread restorer	2	16	1	12.50	BHAMNR
25	Screw (stud) extractor set	2	16	2	12.50	BHAMNR

	MEASURING TOOLS					
26	Vernier caliper	15	120	22	18.33	BHAMNR
27	Hand gloves/apron	5	40	12	30	BHAMNR
28	Surface plates	2	16	6	37.50	BHAMNR
29	Vee blocks	8	64	16	25.00	BHAMNR
30	Micrometer 0.25mm, 25-50mm, 50-75mm internal and external	3 each	24 each	10	41.67	BHAMNR
31	Dial gauge indicator with magnetic stand	2	16	4	25.00	BHAMNR
	MACHINE TOOLS					
32	Grinding machines with assorted wheels	1	8	2	25.00	BHAMNR
33	A bench grinder with wheels	1	8	3	37.50	BHAMNR
34	Workshop surface gauges	15	120	8	6.67	BHAMNR
35	Valve grinding machine	1	8	2	25.00	BHAMNR
36	Blow lamps	5	40	6	15.00	BHAMNR
37	Soldering iron	5	40	6	15.00	BHAMNR
	LUBRICATION BAY/TYRE AND WHEEL SERVICE					
38	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)	1	8	0	0	NA
39	Wheel balance (rim 13-15)	1	8	1	12.50	BHAMNR
40	Portable tire inflator	2	16	2	12.50	BHAMNR
41	Weld master vulcanizer	1	8	1	12.50	BHAMNR
42	Airline gauge	2	16	2	12.50	BHAMNR
43	Steam cleaner (complete) oil-fired or electric	1	8	0	0	NA
44	High-pressure washer	1	8	1	12.50	BHAMNR
45	Tire changer complete with bead breaker	1	8	0	0	NA
46	Various sizes of wheel braces	3 sets	24 sets	8sets	33.33	BHAMNR
47	Tyre repair kit comprising rasp, scissors, tire knife, sticher, wire brush, etc	2 sets	16 sets	2	12.50	BHAMNR
48	Service station set of tool kit plus special varnishes for removal of oil filter	2 sets	16 sets	4	25.00	BHAMNR
49	Pipe wrench, clamp or vice	3 sets	24 sets	9	37.50	BHAMNR
50	Wheel alignment gauge	1 set	8 sets	1	12.50	BHAMNR
51	Flat spanners (long and short)	2	16	6	37.50	BHAMNR
52	Clutch alignment gauge	5	40	4	10.00	BHAMNR
53	Adjustable wrench	3	24	8	33.33	BHAMNR
54	Injector repair machine	1	8	1	12.50	BHAMNR
55	Injector needle service kit	1	8	1	12.50	BHAMNR
56	Pullers, different sizes	3	24	4	16.67	BHAMNR
57	Spark plug tester	4	32	2	6.25	BHAMNR
58	Workbench with vices	2	16	9	56.25	BHAMNR
59	Portable engine hoist	2	16	3	18.75	BHAMNR
	GENERAL/SERVICE AND RECONDITIONING					BHAMNR
60	Diesel engine phasing and calibration machine	1	8	0	0	NA
61	Electrical test bench	1	8	0	0	NA
62	Cylinder boring machine with accessories and assorted tools	1	8	0	0	NA
63	Honing machine with accessories and assorted cutters	1	8	0	0	NA
64	Bottle jack (hydraulic) light and heavy	1	8	2	25.00	BHAMNR
65	Vehicle tire	2 each	16 each	6	37.50	BHAMNR
66	Trolley jacks	2	16	2	12.50	BHAMNR
67	Motor scope (engine analyzer)	2	16	1	6.25	BHAMNR
68	Auto Electrical system instructional chassis	1	8	0	0	NA
69	Armature growler	1	8	0	0	NA
70	Hydraulic nipple forming tool	1	8	0	0	NA

71	Timing light	1	8	1	12.50	BHAMNR
72	Inspection pits	2	16	6	37.50	BHAMNR
73	Compression gauge	2	16	3	18.75	BHAMNR
74	Valve spring compression kit	2	16	2	25.50	BHAMNR
75	Coil spring compressor (for suspension)	2	16	0	0	NA
76	Torgue wrench pre-set type	2	16	5	31.25	BHAMNR
77	Torque wrench dial type	2	16	3	18.75	BHAMNR
78	Carburetor service kit	2	16	1	6.25	BHAMNR
79	Piston ring compressor	2	16	4	25.00	BHAMNR
80	Axle stands	8	64	24	37.75	BHAMNR
81	Diagnostic testing machine (exhaust gas analyzer)	1	8	1	12.50	BHAMNR
	OTHER UTILITIES					BHAMNR
82	Fire extinguisher	4	32	2	6.25	BHAMNR
83	Sand buckets	4	32	2	6.25	BHAMNR
84	Water buckets	4	32	21	65.63	A
85	Hoist and box	1	8	1	12.50	BHAMNR
86	First aid box	1	8	2	25.50	BHAMNR
87	Workshop overalls	Depending on no of staff and students	Depending on no of staff and students	Available	95.00	A
88	Complete vehicle engine (petrol)	1	8	5	62.50	A
89	Complete vehicle engine (diesel)	1	8	2	25.00	BHAMNR
90	Live vehicle	1	8	2	25.00	BHAMNR
91	Camshaft grinding machine	1	8	0	0	NA

Key: A (50% and above) = Available, BHAMNR (1% to 49%) = Below Half of Average Minimum Number Required, NA (0%) = Not Available

The data presented in Table 1 revealed that at the time of collecting data for this study, only 4 items out of the 91 tools and equipment required by NBTE for implementing MVMWC contents in Nigeria's technical colleges were available at 50% and above in technical colleges in North Central Nigeria based on NBTE minimum Standard. The items were: Workbench with vices, water buckets, workshop overalls, and petrol engines, with 56.25%, 65.63%, 95%, and 62.50% respectively. All the other 87 tools and equipment required by NBTE for the implementing the curriculum contents of the MVMWC in technical colleges in the North Central States fall short of 50% of the minimum standard required by NBTE. 13 items were 0% that is not available, while 74 items were (1% - 49%) below the average of the minimum number required. FGD also corroborated the lack of instructional facilities in technical colleges from their report.

The data presented in Table 2 revealed that 1 item (workshop overalls) with a mean of 4.75 was used to a very great extent. Some other 4 items (open and flat spanners; Pipe wrench, clamp or vice; Flat spanners long and short; Workbench with vices) with their mean ranged from 3.87 to 4.37 were used to a great extent. Another 25 items were moderately used with their mean range from 2.82 and 3.45. The other 37 items were utilized to a low extent with a mean from 1.55 to 2.47 while 24 items others were utilized to the lowest extent with a mean of 1.00. The grand/overall mean was 2.21. This shows that the extent of utilization of instructional facilities as revealed by respondents was generally low. FGD as well reported a low extent of the use of instructional facilities in technical colleges.

Table 2. Mean Ratings and Standard Deviation (SD) of Respondents on the Extent of Utilization of Instructional Facilities in Implementing the MVMWC Contents in Technical Colleges in North Central Nigeria

SN	The extent to which Instructional Facilities were Effectively Utilized in Implementing the MVMWC Contents	Mean	SD	Remarks
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)	3.37	0.32	Moderate Extent
2	Ball pein hammer	2.12	0.32	Low Extent
3	Hacksaws with extra blades	3.00	0.49	Moderate Extent
4	300mm engineer rule socket spanners sets, with extension	3.37	0.48	Moderate Extent
5	(6-32) open and flat spanners	3.87	0.32	Great Extent
6	Ring spanners (6-32mm)	3.43	0.35	Moderate Extent
7	Energy stone/block cloth	1.00	0.00	Lowest Extent
8	Plug spanners	2.45	0.24	Low Extent
9	Magnet spanners	2.12	0.29	Low Extent
10	Allen keys	2.11	0.00	Low Extent
11	Feeler gauges	2.47	0.32	Low Extent
12	Oil cans	3.00	0.00	Moderate Extent
13	Grease guns	3.24	0.48	Moderate Extent
14	Spark plug files	2.12	0.32	Low Extent
15	Combination pliers	3.42	0.50	Moderate Extent
16	Longnose pliers	2.87	0.32	Moderate Extent
17	Wirecutter	3.27	0.48	Moderate Extent
18	Tyre pressure gauges	2.12	0.32	Low Extent
	DRILLING AND SCREW CUTTING			
19	Electric Hand Drill	2.87	0.32	Moderate Extent
20	Drill bits	3.27	0.34	Moderate Extent
21	Set of stock and dies - UNC, UNF, and metric	2.00	0.00	Low Extent
22	Taps and wrenches - UNC, UNF, and metric	2.00	0.00	Low Extent
23	Thread file	2.12	0.23	Lowest Extent
24	Roller type thread restorer	1.64	0.21	Lowest Extent
25	Screw (stud) extractor set	1.00	0.00	Lowest Extent
	MEASURING TOOLS			
26	Vernier caliper with clock	2.87	0.32	Moderate Extent
27	Hand gloves/apron	2.82	0.50	Moderate Extent
28	Surface plates	3.41	0.43	Moderate Extent
29	Vee blocks	2.00	0.00	Low Extent
30	Micrometer 0.25mm, 25-50mm, 50-75mm internal and external	3.34	0.45	Moderate Extent
31	Dial gauge indicator with magnetic stand	1.00	0.00	Lowest Extent
	MACHINE TOOLS			
32	Grinding machines with assorted wheels	3.43	0.45	Moderate Extent
33	A bench grinder with wheels	2.24	0.48	Low Extent
34	Workshop surface gauges	1.74	0.24	Low Extent
35	Valve grinding machine	1.00	0.00	Lowest Extent
	JOINING METALS			
36	Blow lamps	2.00	0.00	Low Extent
37	Soldering iron	2.00	0.00	Low Extent
	LUBRICATION BAY / TYRE AND WHEEL SERVICE			
38	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)	2.00	0.00	Low Extent
39	Wheel balance (rim 13-15)	2.00	0.00	Low Extent
40	Portable tire inflator	1.72	0.15	Low Extent
41	Weld master vulcanizer	2.00	0.00	Low Extent
42	Airline gauge	1.00	0.00	Lowest Extent
43	Steam cleaner (complete) oil-fired or electric	1.00	0.00	Lowest Extent
44	High-pressure washer	1.00	0.00	Lowest Extent
45	Tire changer complete with bead breaker	2.00	0.32	Low Extent
46	Various sizes of wheel braces	3.12	0.32	Moderate Extent

47	Tyre repair kit comprising rasp, scissors, tire knife, sticher, wire brush, etc	1.71	0.26	Low Extent
48	Service station set of tool kit plus special varnishes for removal of oil filter	1.62	0.48	Low Extent
49	Pipe wrench, clamp or vice	4.00	0.00	Great Extent
50	Wheel alignment gauge	2.37	0.48	Low Extent
51	Flat spanners (long and short)	4.32	0.50	Great Extent
52	Clutch alignment gauge	1.00	0.00	Lowest Extent
53	Adjustable wrench	3.00	0.00	Moderate Extent
54	Injector repair machine	1.00	0.00	Lowest Extent
55	Injector needle service kit	2.00	0.00	Low Extent
56	Pullers, different sizes	2.00	0.00	Low Extent
57	Spark plug tester	1.62	0.48	Low Extent
58	Workbench with vices	4.37	0.48	Great Extent
59	Portable engine hoist	1.00	0.00	Lowest Extent
	GENERAL / SERVICE AND RECONDITIONING			
60	Diesel engine phasing and calibration machine	1.00	0.00	Lowest Extent
61	Electrical test bench	1.00	0.00	Lowest Extent
62	Cylinder boring machine with accessories and assorted tools	1.00	0.00	Lowest Extent
63	Honing machine with accessories and assorted cutters	1.00	0.00	Lowest Extent
64	Bottle jack (hydraulic) light and heavy	2.37	0.48	Low Extent
65	Vehicle tire	2.00	0.00	Low Extent
66	Trolley jacks	2.00	0.00	Low Extent
67	Motor scope (engine analyzer)	1.00	0.00	Lowest Extent
68	Auto Electrical system instructional chassis	1.00	0.00	Lowest Extent
69	Armature growler	1.00	0.00	Lowest Extent
70	Hydraulic nipple forming tool	1.00	0.00	Lowest Extent
71	Timing light	2.00	0.00	Low Extent
72	Inspection pits	2.85	0.43	Moderate Extent
73	Compression gauge	1.55	0.13	Low Extent
74	Valve spring compression kit	1.00	0.00	Lowest Extent
75	Coil spring compressor (for suspension)	1.00	0.00	Lowest Extent
76	Torgue wrench pre-set type	3.21	0.53	Moderate Extent
77	Torque wrench dial type	2.22	0.43	Low Extent
78	Carburetor service kit	2.00	0.00	Low Extent
79	Piston ring compressor	3.12	0.32	Moderate Extent
80	Axle stands	3.12	0.45	Moderate Extent
81	Diagnostic testing machine (exhaust gas analyzer)	1.45	0.12	Lowest Extent
	OTHER UTILITIES			
82	Fire extinguisher	2.11	0.30	Low Extent
83	Sand buckets	2.12	0.32	Low Extent
84	Water buckets	3.44	0.00	Moderate Extent
85	Hoist and box	1.00	0.00	Lowest Extent
86	First aid box	1.00	0.00	Lowest Extent
87	Workshop overalls	4.75	0.32	Very Great Extent
88	Complete vehicle engine (petrol)	3.45	0.00	Moderate Extent
89	Complete vehicle engine (diesel)	2.00	0.00	Low Extent
90	Live vehicle	2.84	0.34	Moderate Extent
91	Camshaft grinding machine	1.00	0.00	Lowest Extent
	Grand/Overall	2.21	0.14	Low Extent

The data presented in Table 1 provided answers to research question number 1 which is on the instructional facilities available for implementing the curriculum contents of the MVMWC in technical colleges in the North Central States of Nigeria. Findings revealed that only four items out of the 91 tools and equipment required by NBTE for implementing MVMWC contents in Nigeria's technical colleges were available at 50% and above in technical colleges in the North Central States

of Nigeria based on NBTE minimum standard. The items were: Workbench with vices, water buckets, workshop overalls, and petrol engines, with 56.25%, 65.63%, 95%, and 62.50% respectively. All the other 87 tools and equipment required by NBTE for implementing the curriculum contents of the MVMWC in technical colleges in the North Central States fall short of 50% of the minimum standard required by NBTE. 13 out of the 87 tools and equipment not available were absent with 0% recorded. FGD also corroborated the lack of instructional facilities in technical colleges from their report. Findings revealed that there is a dearth of instructional facilities in the technical colleges in the North Central States of Nigeria. This finding is in line with the views of Ofoha et al. [13] and Omosewo, & Akanmu [14] who stated that schools lack basic instructional facilities necessary for effective curriculum implementation. Most of the equipment, tools, and workshop facilities in the technical colleges are either broken down, damaged, or dilapidated and they are not replaced or renovated [22]. Abassah [23] stated that instructional materials and consumables in technical colleges are very expensive and the federal and state governments have not been providing funds to address this critical area. The government, according to Abassah, is giving just lip service to technical education.

Table 2 presented an answer to research question 2 which is on the extent of utilization of instructional facilities in implementing the curriculum contents of the MVMWC in technical colleges in the North Central States of Nigeria. Findings revealed that only 1 item (workshop overalls) was used to a very great extent while 4 other items were used to a great extent. Another 25 items were moderately used while 29 items were utilized to a low extent and 32 items were utilized to the lowest extent; owing to unavailability. This shows that the extent of utilization of the very few instructional facilities that are available in implementing the curriculum contents of the MVMWC in technical colleges in the North Central States is generally low. FGD as well reported a low extent of the use of instructional facilities in technical colleges. This could be attributed to the high scarcity of the facilities which adversely affected the utilization of the very few available ones; especially as some of the few available facilities could not be used in isolation. Furthermore, even some of the very few available facilities are broken down, damaged, or dilapidated; hence, their utilization impossible.

CONCLUSION

The findings of this study revealed: lack of basic instructional facilities for effective implementation of the MVMWC in technical colleges in the North Central States of Nigeria; and a low extent of utilization of the very few insignificant numbers of instructional facilities available. Therefore, unless affirmative action is taken to remedy above established factors, by all stakeholders of the MVMWC implementation in the North Central States of Nigeria, technical college graduates will continue to graduate without the relevant knowledge, attitude, and skills required for a successful career in the MVMW vocation; making them irrelevant and almost useless in the automobile industry, and finding it difficult to gain employment or even establish self-owned automobile enterprises. The government should provide basic instructional facilities for the implementation of MVMWC in all the technical colleges in North Central Nigeria. The instructional facilities for the implementation of MVMWC in all the

technical colleges in North Central Nigeria should be effectively utilized when made available. Based on the findings of this study, it was concluded that, for graduates of the MVMW program in technical colleges in North-Central Nigeria to acquire the relevant knowledge, attitude, and skills required for gainful employment and be successful in the MVMW vocation, all hands must be on deck by all MVMWC implementation stakeholders to salvage the situation through: provision of basic instructional facilities; as well as effective utilization of the available instructional facilities by teachers and instructors.

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