Assessment of Teaching and Learning Styles in Practical Motor Vehicle Mechanics Work At Technical College Level in Niger State, Nigeria

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Abstract

This study was designed to assess teaching and learning styles in practical motor vehicle mechanics work at technical college level in Niger State. Two research questions were formulated to guide the conduct of the study. A descriptive survey research design was employed for the study. The study was carried out in all the Technical Colleges in Niger State. A total of 403 respondents comprising 375 students and 28 teachers were used as population of the study. A structured questionnaire was developed by the researcher and used for data collection. The instrument was face and content validated by three Lecturers. Mean statistical tool was used to analyze the data for answering research questions. The findings of the study revealed among others that teachers adopt High Teacher Centered (HTC) styles in teaching practical skills; and that students preferred High Learner Centered (HLC) and Intermediate Learner Centered (ILC) styles in acquiring practical skills. Based on the findings it was recommended among others that Niger State Science and Technical Schools Board should organize workshop for its teachers in technical colleges on the effective use of student centered styles of teaching and teachers should always allow the students to participate actively in any activities when teaching practical skills.

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Introduction

Motor Vehicle Mechanics work is one of the Technical vocational Education programmes which involves the acquisition of scientific knowledge in design, selection of materials, construction, operation and maintenance of motor vehicles. According to National Board for Technical Education (NBTE, 2001) Motor vehicle mechanics work students are expected to, upon completion of this training, be able to: test, diagnose, service and repair any fault on conventional motor vehicle assembly main units and systems to the manufacturers' specifications. Duffy (1987) explained that the objectives of the practical aspect of Motor Vehicle Mechanics at the technical college level include the ability of motor vehicle craft trainees to be able to: test, rebuild and replace injector nozzles, dismantle and reassemble carburettor following appropriate procedure, replace major emission control components, diagnose all problems relating to steering, braking and suspension systems, and so on.

For these foregoing objectives to be achieved in practical situations, both motor vehicle mechanics teachers and students must adopt effective styles in their teaching and learning. Teaching styles refer to a person's pervasive instructional qualities that persist even though situational condition may change. Jerry and John (1998) explained that teaching style as it relates to workshop practice is an identifiable set of teaching behaviours which are consistent even though the skills that are being taught may change. They identified teaching styles in Vocational Technical Education courses to include High Teacher-Centered (HTC), Intermediate Teacher Centered (ITC) and Moderate Teacher Centered (MTC).

The ways in which an individual characteristically acquires, retains and retrieves information as regard practical skills are collectively termed individuals learning style. Cross (1976) and Kolb (1984) opined that learning style refers to the characteristics ways in which individuals collect, organize and transform data into useful information. However, Jerry and John (1998) identified three categories of learning styles in Vocational Technical Education to include; High Learner-Centered (HLC), Intermediate Learner-Centered (ILC), and Moderate Learner Centered (MLC). Hence the need to assess the two.

Assessment is a simple method teachers can use to collect feedback, early and often, on how well their students are learning practical skills they are being taught. Akinboye (1987) sees assessment

as the practice and measures used to describe an individual's learning styles of behaving, knowing, learning, working, achieving and failing.

Motor vehicle mechanics work is designed to equip motor vehicle mechanics graduates from technical colleges with required practical skills that will enable them to secure paid employment, become self-employed and be able to employ others (NBTE, 2001). But, evidences from literature show that students of Motor Vehicle Mechanics Work from Technical Colleges are graduating without pre-requisite practical skills, as a result of this they are ill-equipped and therefore unemployable (Abdulkadir, 2011). Enemali (1993), Aina (2000) and Akinsola (2004) attributed this situation to the lack of tools, equipment, qualified personnel, learning environments and use of irrelevant techniques. Abdulkadir (2011) lamented that even with the provisions of necessary tools, equipment, qualified personnel and workshops, most technical teachers shy away from organizing the practical contents of the technical subjects which motor vehicle mechanics work is an integral part of. He further stressed that technical teachers only hide under the lack of facilities for practical activities and rely heavily on the use of classroom for the entire teaching.

Based on the foregoing, it is possible that teaching and learning styles adopted by the teachers and students for the teaching and learning of practical components of motor vehicle mechanics work may be responsible for the inability of students to graduate from technical colleges with requisite practical skills. The problem of this study therefore, is to assess teaching and learning styles in Practical Motor Vehicle mechanics Work at Technical College level in Niger State, Nigeria.

This study has been designed to (a) assess the teaching styles adopted by teachers in practical Motor Vehicle Mechanics work; and (b) assess the learning styles of students in practical Motor Vehicle Mechanics work.

Materials and Methods.

A descriptive survey research was adopted for this study. A total of 403 respondents comprising of 375 students and 28 teachers from all technical colleges in Niger State formed the population for this study and the entire population was studied. A structured questionnaire developed by the researcher, named Teaching and Learning Styles Assessment Questionnaire (TLSAQ) and validated by three experts from Industrial and Technology Education Department was used for data collection. The questionnaire was assigned four points rating scale of Strongly Agree, Agree, Disagree and Strongly Disagree. 417 copies of questionnaire were distributed to teachers and students and 366 copies were dully filled by the respondents and retuned. Mean statistical tool was used to analyze the data for answering research questions. A mean score of 2.50 was used as a bench mark for accepting or rejecting items. Therefore, items with a mean score of 2.50 and above were considered accepted; while items with mean score of 2.49 and below were considered rejected.

Consequently, these research questions were formulated to guide the study:

- What are the teaching styles adopted by the teachers in practical Motor Vehicle Mechanics work?
- What are the learning styles of students in practical Motor Vehicle Mechanics work?

RESULTS

Research Question 1

What are the teaching styles adopted by the teachers in practical Motor Vehicle Mechanics work?

Table 1. Mean Responses of Teachers on Teaching Styles in Practical Motor Vehicle Mechanics work (High Teacher Centered Styles)

S/No	ITEMS	$\overline{X}$ N = 28	Decision
	High Teacher Centered (HTC) Styles		
1	Teacher controls every aspect of the lesson in order to facilitate practical skills acquisition	3.44	Agreed
2	Students have no freedom in what goes on in the workshop	3.40	Agreed
3	Teacher decides what aspects of skill that should be practiced by the students	3.35	Agreed
4	Teachers engaged large group for practical lessons	3.33	Agreed
5	Teachers do not allow students to participate in any activities when teaching practical skills	3.46	Agreed
6	Problem-solving activities are not given to students to learn correct practical skills	2.50	Agreed
7	Enough time is not given to students to practice skills	2.67	Agreed
8	Teacher decides content areas and determine what student learn and how they learn it	3.34	Agreed
9	Teachers demonstrate specific practical skills to students	2.50	Agreed

Key: $\overline{X}$ = Mean Responses of Teachers, N = Number of Teachers

Table 1 revealed that the respondents jointly agreed will all items as the type of teaching styles adopted by the teachers in teaching practical motor vehicle mechanics work.

Table 2. Mean Responses of Teachers on Teaching Styles in Practical Motor Vehicle Mechanics work (Intermediate Teacher Centered Styles)

S/No	ITEMS	$\overline{X}$ N = 28	Decision
	Intermediate Teacher Centered (ITC) Styles		
1	Teacher allows students to make some of the decision concerning their own learning	2.06	Disagreed
2	Problem-solving activities are sometimes given to the students	2.43	Disagreed
3	Teacher sometimes direct student to the development of increasingly complex ways of reasoning and problem solving	1.92	Disagreed
4	Both students and teachers are involved in determining skills to be learnt	1.48	Disagreed
5	Teacher sometimes encourages students to develop critical skills	2.00	Disagreed
6	Teachers encourages students to exercise creativity and explore alternative	2.24	Disagreed

Key: $\overline{X}$ = Mean Responses of Teachers, N = Number of Teachers

Analysis in the table 2 revealed that the respondents disagreed with all items as the type of teaching styles adopted by the teachers in teaching practical motor vehicle mechanics work.

Table 3. Mean Responses of Teachers on Teaching Styles in Practical Motor Vehicle Mechanics work (Moderate Teacher Centered Styles)

S/No	ITEMS	$\overline{X}$ N = 28	Decision
	Moderate Teacher Centered (MTC) Styles		
1	Teachers encourages students to work together to decide how to develop the skills to be learned	2.30	Disagreed
2	Teachers allows student to practice skill in pairs, one doing the work whilst other observes	2.46	Disagreed
3	Students develop creativity and organizational skills	1.03	Disagreed
4	Students are allowed to progress at their own rate	1.76	Disagreed
5	Teacher give correct guideline in order to encourage group interaction	2.40	Disagreed
6	With problem-solving teaching style students are doing different activities	2.00	Disagreed
7	Teachers value students prior skills	2.49	Disagreed
8	Problem-solving teaching style is employed by most teachers to teach practical skills	2.32	Disagreed
9	Teacher considers interpersonal skills of students	2.33	Disagreed
10	Teacher allows students to express their emotional and intellectual needs	2.08	Disagreed
11	Teacher carryout manually operated function	2.09	Disagreed
12	Teacher provides students with authentic task in real work thing	1.76	Disagreed
13	Teacher relates ideas explicitly to the time of the students	1.82	Disagreed
14	Teacher leaves students unguided in practical skills in the workshop	1.79	Disagreed
15	Teachers emphasizes logical reasoning	1.90	Disagreed
16	Teachers demonstrate manipulation of machines and machinery	1.59	Disagreed
17	Teachers use analytic approach	1.37	Disagreed
18	Teacher promotes the acquisition of values and practical skill through concrete experimentation	1.99	Disagreed
19	Teachers allows student to engage in self-creativity	1.76	Disagreed
20	Teachers respond to current problems and issues in the area of practical skills acquisition	1.62	Disagreed

Key: $\overline{X}$ = Mean Responses of Teachers, N = Number of Teachers

Analysis in the table 3 revealed that the respondents disagreed with all items as the type of teaching styles adopted by the teachers in teaching practical motor vehicle mechanics work.

Research Question 2
What are the learning styles of students in practical Motor Vehicle Mechanics work?

Table 4. Mean Responses of Students on Learning Styles in Practical Motor Vehicle Mechanics Work (High Learner Centered Styles)

S/No	ITEMS	$\overline{X}$ N = 375	Decision
	High Learner Centered (HLC) Styles		
1	Students' readiness form the basis of acquiring practical skills in the workshop always	2.46	Disagreed
2	Students interest form the basis of learning practical skills in the workshop	2.43	Disagreed
3	Students always allowed to practice the use of hand tools and equipment in the workshop	2.43	Disagreed
4	Students learn practical skill by trial and error	3.67	Agreed
5	Students learn practical skills by observation	3.54	Agreed
6	Students learn practical skills by doing	3.44	Agreed
7	Students want to participate alone in acquiring practical skill	2.75	Agreed
8	Students don't want to be guided by the teachers in any activities, rather they prefer working alone	2.42	Disagreed

Key: $\overline{X}$ = Mean Responses of Students, N = Number of Students

Analysis in the table 4 revealed that the respondents agreed with all items as the type of learning styles adopted by the students in learning practical motor vehicle mechanics work

Table 5. Mean Responses of Students on Learning Styles in Practical Motor Vehicle Mechanics Work (Intermediate Learner Centered Styles)

S/No	ITEMS	$\overline{X}$ N = 375	Decision
	Intermediate Learner Centered (ILC) Styles		
1	Students' readiness are sometimes considered	2.47	Disagreed
2	Students take information through analysis	3.45	Agreed
3	Students take information through observation	3.41	Agreed
4	Students take information through thinking	3.48	Agreed
5	Students like facts	3.46	Agreed
6	Students like data	3.55	Agreed
7	Students like experimentation	3.76	Agreed
8	Students like innovation	3.75	Agreed
9	Students dislike repetition	3.29	Agreed
10	Students are bored by details	2.69	Agreed
11	Students welcome complication	2.86	Agreed
12	Students learn well in situations that enables them learn by doing	3.00	Agreed
13	Students learn well in situations that provide them with opportunities to think about the information being presented	3.80	Agreed
14	Level of participation of teachers and students in teaching/learning process is the same	2.46	Disagreed

Key: $\overline{X}$ = Mean Responses of Students, N = Number of Students.

Table 5 revealed that the respondents jointly agreed will all items as the type of learning styles adopted by the students in learning practical motor vehicle mechanics work.

Table 6. Mean Responses of Students on Learning Styles in Practical Motor Vehicle Mechanics Work (Moderate Learner Centered Styles).

S/No	ITEMS	$\overline{X}$ N = 375	Decision
	Moderate Learner Centered (MLC) Styles		
1	Students readiness are occasionally considered in teaching practical skills	1.33	Disagreed
2	Students sequentially learn the acquisition of practical skills	2.30	Disagreed
3	Students are occasionally allowed to acquire, retain and retrieve information on practical skill acquisition	1.11	Disagreed
4	Students prefer practical application of theories and ideas that has to do with the skill acquisition	3.00	Agreed
5	Students absorb information through direct experience by doing	3.45	Agreed
6	Students absorb information through direct experience by sensing	3.65	Agreed
7	Students absorb information through direct experience by feeling	3.74	Agreed
8	Students are patient with details	2.57	Agreed
9	Students dislike complication	2.67	Agreed
10	Students prefer information to be demonstrated rather than spoken	2.76	Agreed
11	Students prefer spoken or written explanations to visual presentations	3.76	Agreed
12	Students remember much of what they hear and then say	2.00	Disagreed
13	Students learn best when material is presented in a steady progression of complexity and difficulty	2.00	Disagreed
14	Students grasp learning experiences regarding any skill acquisition by systematically researching ideas	2.21	Disagreed

Key: $\overline{X}$ = Mean Responses of Students, N = Number of Students

Analysis in the table 6 revealed that the respondents disagreed with all items as the type of learning styles adopted by the students in learning practical motor vehicle mechanics work.

Results and Discussion

Table 1 showed that teachers adopt High Teacher Centred (HTC) for teaching practical aspect of motor vehicle mechanics work this is in line with the views of Jerry and John (1998) who explained that High Teacher Centred (HTC) classification of teaching styles is a situation where teacher did almost everything on his own, which according to them did not arguer well for practical skill acquisition. The researcher observes that the greatest obstacle encountered in technical colleges in Niger State is the use of High Teacher Centred types of teaching styles by motor vehicle mechanics work teachers in teaching practical skills. A technical teacher must have an in depth

knowledge of various types of teaching styles. This is because teaching according to Wraser (2003) should be to assist the learner to: acquire, retain and be able to use practical knowledge to analyze and apply, develop desirable attitudes toward practical skills acquisition.

Table 2 showed that teachers views were divergent on Intermediate Teacher Centered (ITC) that is they do not adopt ITC in teaching practical skills. The researcher observed that in teaching practical skills of motor vehicle mechanics work the needs an assistance and guidance that is Abdulkadir (2011) opined that in ITC teaching styles teaching is mid-way between the teacher and learner which according to them promote practical skill acquisition; And that in MTC styles learners are left to do most thing on their own with moderate assistance from teacher. This according to them facilitates practical skill acquisition since the learner is actively engage in learning.

Table 3 also revealed that teachers do not adopt Moderate Teacher Centered (MTC) styles in teaching practical aspect of motor vehicle mechanics work. The researcher is of view that in teaching practical skills teacher should rendered some assistance to the students from where the teaching and learning can progress from simple to complex.

Table 4 showed that most students adopt High Learner Centred (HLC) which is in line with the views of Jerry and John (1998) with lamented that in this situation students dominate the entire learning. Similarly, Abdulkadir (2011) noted that situation occurs most especially where students developed interest in acquiring practical skills.

Table 5 revealed that students adopts Intermediate Learner Centred (ILC) Intermediate Learner Centred (ILC) according to Jerry and John (1998) is where the teaching-learning process is midway between the teacher and the learner and that High Learner Centred (HLC) is where the learner acquired experiences on their own. Results in Table 6 however showed that their views on Moderate Learner Centered (MTC) were divergent, that is they do not adopt MTC for acquiring practical skills.

The researcher observed that students adopted High Learner Centered (HLC) and Intermediate Learner Centered (ILC) styles in acquiring practical skills in motor vehicle mechanics works and that teacher adopts Higher Teacher Centered (HTC) in teaching practical skills. This shows that there was miss-match between teaching styles of teachers and learning styles of students and therefore students do not learn permanently. This perhaps may be responsible for inability of students of motor vehicle mechanics works graduating without practical skills. Felder (1993) lamented that when there is a miss-match between the teaching styles of teachers and learning style of students in the workshop students may become bored and inattentive in the workshop, do poorly on test and get discouraged about practical skills acquisition. Hence, the relationship between the teaching styles of teachers and learning style of students must match all the time as this will facilitate the acquisition of practical skills in the workshop (Caudron, 2000).

Conclusion

Based on the findings of this study, the following conclusions were drawn: One of the factors responsible for low level of practical skill among technical college students may be attributed to High Teacher Centered (HTC) styles adopted for teaching practical motor vehicle mechanics work. Motor vehicle mechanics works teachers control every aspect of practical skill acquisition in the workshop, and they do not allow students to have freedom in whatever goes on in the workshop. Students learn well in a situation that will provide them with opportunities to think about the practical tasks being presented. It is concluded that when the

recommendations of this study are effectively utilized, a batch of highly motivated and adequately equipped and trained students would be produced. These will in-turn improve teaching and learning of practical skills in technical colleges in Niger State.

Recommendations

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

- The Niger State Science and Technical School's Board should organize workshop for its technical college teachers on the effective use of student centered styles of teaching and assessment.
- Teachers should allow the student to participate actively in any activity when teaching practical skills.
- Teachers should try as much as possible to adopt other classes of teaching style such as Intermediate Teacher Centered (ITC) and Moderate Teacher Centered (MTC) rather than High Teacher Centered (HTC).
- Students should be allowed to practice and acquire practical skills by doing, observation and trial and error.
- Students should be provided with data and facts concerning practical skills acquisition.

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