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Effectiveness of Demonstration and Project-Based Teaching Methods in Developing Students "Psychomotor Skill in Motor Vehicle Mechanics and Maintenance Work in Technical Colleges Edo State, Nigeria

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Abstract: *The study was carried out to determine relative effectiveness of demonstration and project-based teaching methods in developing student's psychomotor skills and interest in motor vehicle mechanics and maintenance work in technical colleges in Edo state. Two research questions guided the study while two hypotheses were formulated and tested at 0.05 level of significance. The study adopted quasi-experimental research design. The population for the study is composed of the entire 167 National Technical Certificate (NTC) II students (118 males and 49 females) of 2018/2019 session in motor vehicle mechanics and maintenance works in all the five technical colleges in Edo State. A purpose sampling technique was used to select two intact classes of 99 (59 males and 40 females) NTC II students in Motor Vehicle Mechanics and Maintenance work from two technical colleges for the study. The instrument used for data collection was structured questionnairThe instrument used for data collection was achievement test and interest scale titled psychomotor skill performance Test in Motor Vehicle Mechanics and Maintenance Work (PSPTMVMMW) and Inventory Scale on Motor Vehicle Mechanics and Maintenance Work (ISMVMMW). Reliability coefficient of the scores was established using Cronbach Alpha Formula which yields 0.82 and 0.80 respectively. Data collected were analysed using the arithmetic mean and standard deviation to answer the research questions. Analysis of Covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance.From the study, the research question one revealed that project based teaching method is more effective in developing students' psychomotor skills in Motor Vehicle Mechanics and Maintenance works in technical colleges in Edo State. The probability value associated with calculated F-value was less than the significance level of 0.05 which indicates that there was significant difference in the relative effectiveness of demonstration and project-based teaching methods in psychomotor development skills of students in Motor Vehicle Mechanics and maintenance work in favour of the project based teaching method. Based on the findings of the study, recommendations were made that, teachers in technical colleges should use project-based teaching method more in order to facilitate development of psychomotor skills in learners and equip them for gainful employment on graduation as employees or self-employed and employers of labour in their respective trades. Management of technical colleges should provide relevant facilities to enable teachers effectively use project-based and demonstration teaching methods in order to develop students" psychomotor skills and interest in their trades.*

Keywords*:* demonstration, project-based, psychomotor skills, motor vehicle mechanic, maintenance work.

INTRODUCTION

The major purpose of education is to equip recipients with knowledge and skills needed to function effectively and thus contribute to the development of the society. Education has remained an instrument for change and national development. Education is a process through which humans become useful to themselves and the society through the systematic acquisition of knowledge,

relevant skills, values and attitude (Aguba, 2016). Nations currently desire economic growth, improvement in the quality of life, human rights and peaceful co-existence among communities and education is therefore an important factor in achieving them. Thus education is the foundation for sound economic development, wealth-creation, values, attitudes and knowledge acquisition for efficient utilization of human, material and financial resources to produce goods and services that satisfy societal demands (Amadi, 2011). Nigeria is actively involved in the global deliberations on Education For All (EFA) as reflected in her policies and programmes such as Sustainable Development Goals (SDGs), which was developed, adopted and implemented since 2015. SDG has three critical elements namely; economic development, poverty relief and inequalities. Also, the Federal Government of Nigeria (2014) stated that the goals of education are on the development of mental, physical and social abilities/competencies and acquisition of appropriate skills as equipment for the individual to contribute to the development of the nation. These goals of education can be easily achievable through a well-designed vocational and technical education programmes.

Vocational and technical education as a multifaceted, multi-disciplinary and pragmatic field of study is aimed at equipping individuals with requisite skills which will enhance their relevance and functionality in the society (Eze, 2010). Vocational and technical education is aimed at developing not only practical skills, but desirable work habits and attitudes that make the recipient very creative and resourceful. Furthermore, practical skill acquisition entails accumulation of different competencies and abilities that enhance task performance through integration of both theoretical and practical forms of knowledge. It makes provision for adequate training of trainee for self-employment using practical activities to enhance psychomotor skill development and practice in a conducive environment.

Psychomotor skills are those capabilities involved in a task or various tasks that learners are expected to acquire as a result of persistent practice (Ayonmike, 2014). Moreso, psychomotor skills are those skills or special abilities required by a learner in human activities which can be acquired through learning and constant practice. Additionally, Ayonmike stated that principles that guide psychomotor skill development are necessary in the education process for it to contribute to the development of a nation through effective human capital development to meet employment requirements. Supporting this view, Eze (2010) asserted that psychomotor skill development begins with practice in schools, adding that employment opportunities await graduates who possess relevant skills. However, it is common knowledge that many graduates of Nigerian educational institutions sometime lack psychomotor skills relevant for gainful employment in industries. This could be attributed to the methods of instructional delivery. Psychomotor skills are more often done through developed technical education.

Technical education at all levels of the education system emphasizes acquisition of psychomotor skills. Uwaifo (2010) viewed technical education as education and training which encompasses knowledge, skills, competencies and structural experiences for securing jobs in various sectors of the economy and even enabling an individual to become self-dependent by being a job creator. The author further stressed that if technical education instruction is delivered appropriately to facilitate acquisition of psychomotor skills, individuals could explore their environment and harness the resources which could serve them and create wealth for the society.

In view of this, Dokubo and Dokubo (2013) asserted that psychomotor skill is the major distinguishing aspect of technical education which makes it outstanding from liberal arts. The authors further stressed that in teaching technical trades (motor vehicle mechanics and maintenance work inclusive) instructors should adopt teaching methods which can increase interest and motivate students to improve on their academic achievement. Teaching methods employed in mechanical technology should be able to match the programme objectives (Uwaifo, 2016).

Motor Vehicle Mechanics and Maintenance work is an option in technical education programme and it is one of the trades in technical colleges which provide students the necessary skills to be self-reliant economically. The option covers detecting and diagnosing faults in engines and parts, fitting, examining, testing and servicing motor vehicle and motorcycle engines, replacing engine components or complete engines, including reassembling engines and parts after being repaired (NBTE, 2013; UNESCO, 2016). Motor Vehicle Mechanics students of technical colleges are expected to secure employment either on completion of the entire programme or after completing one or more modules. It is also expected that they should be able to set up their own businesses, become self-employed and able to employ others (FGN, 2014). To fully achieve the objectives of the programme as highlighted above, teachers should adopt effective instructional methods to adequately equip students to be self-reliant and thus reduce unemployment and poverty. In furtherance, Okoye (2016) affirmed that Motor Vehicle Mechanics option of the technical education programme should equip students with salable skills and competencies to enhance their development of self-reliance initiatives.

In technical colleges, Motor Vehicle Mechanics and maintenance work is a trade that provides learners with practical skills and knowledge required for effective Motor Vehicle Mechanics technicians. Such persons are needed for employment in organizations like Automobile Industry, manufacturing, mining, oil and gas industries. Motor Vehicle Mechanics and maintenance work comprises six modules namely; Automotive brakes systems service technician, Diesel fitter (road transport) , Engine fitter (motor vehicle), Garage mechanic, Motorcycle mechanic, Motor vehicle engine and fuel systems service, (NABTEB 2010). Additionally, graduates of this programme are expected to develop psychomotor skills in operating, maintaining and repairing of motor vehicle systems such as engines, brakes and vehicle body building. Motor Vehicle Mechanic and maintenance work ought to be taught effectively, as anything less would not only wreak havoc to the lives of motor vehicle or car users but will also worsen unemployment and poverty to the trainees (Uwaifo, 2016). The authors affirmed that students can only be proficient in handling the above stated tasks in repairs and maintenance when teachers employ appropriate teaching methods.

Over the years, the conventional method of instructional delivery has been dominantly used in Nigerian schools. This method of teaching according to Aguba (2015) is simply an act of spoon feeding learners with information or facts which has done more harm than good for courses that are skill based. Akem in Ayonmike (2014) stated that conventional method is good for large classes since much work could be easily covered in a short time but it makes the teacher a custodian of information, ideas, and knowledge, thereby denying learners the opportunity to develop psychomotor skills which is needed for nation building. The resultant effect is the low

achievements as evidenced in students learning outcomes portrayed both in the results of internal and external examinations. This could be the reason, Olokede and Olusanjo (2009) submitted that many researchers have adduced that low achievement in technical college public examinations is traceable to teaching methods employed by technical teachers. Futhermore, Edu, Ayang, and Idaka (2012) posited that conventional (lecture and demonstration) method cannot improve psychomotor skill development and interest of students in technical college trades.

Supporting this view, Yinusa (2014) lamented that inspite of all the important roles science and technology play in the development of the nations; their enhancement in Nigeria has been low. In the same vein Eze and Osuyi (2018) affirmed that even though the indispensability of technical education in the production of skilled trade persons for nation building and development of society has been universally acknowledged, the outcome of the implementation of technical education programme in Nigeria is still not encouraging. This is why many researchers, technical educators and other stakeholders have been searching for more effective ways to ensure effective teaching and learning of psychomotor skills in technical education for the benefit of the students and the nation.

Demonstration method is a teaching technique that combines oral explanation with "doing" to communicate processes, concepts and facts. It is particularly effective in teaching a skill that can be observed. Demonstration in this study will involve the teacher and student (teacher-student demonstration performance). This is because the technical teacher is expected to demonstrate the skill to the students and observe them display what they have learnt. Demonstration method of teaching allows students to make use of all their senses- sight, smell, taste, hearing and touch (Omeje and Onaga, 2015). Students learn physical or mental skills by actually performing those skills under supervision (Edu, Ayang, Idaka, 2012). Furthermore, Daluba (2013) affirmed that teacher-student demonstration method is generally effective in teaching practical subjects, science, technical and vocational education. However, Edu stated that in using demonstration teaching method, giving students assignments/projects is inevitable for their better acquisition of needed skills. Such measures enhance the teaching-learning process.

Project-based method of teaching is one of the instructional methods used by technical instructors as it enables students‟ participation. According to Omeje and Onaga (2015), project-based teaching method involves units of activities carried out by the students in a spirit of purpose to accomplish a defined, attractive and seemingly attained predetermined goals based on their background knowledge and experience. The authors further explained that project-based teaching method is like assignment method in which a task is given to students or a number of tasks are shared to students to carry out practicals allowing a great deal of students involvement right from the planning stage, the sketching of the project, the steps of executing it, the tools, equipment and materials to be used in the project. This will enable students to conceptualize the content and put the task into practice repeatedly in order to improve their psychomotor skill development and interest for societal development.

Therefore, there is need to investigate the relative effectiveness of demonstration and project-based teaching methods effect in developing students "psychomotor skill and interest in Motor Vehicle Mechanics and maintenance work in technical colleges in Edo State.

Statement of the Problem

Skill improvement in different trades is critical for sustainable economic development of products of technical colleges and the society. Psychomotor skills and interest in the study of Motor Vehicle Mechanics and maintenance work among students in technical colleges have been dwindling over the years. Hassan and Babawuro (2013) reported that most of the products of vocational and technical education programmes in tertiary institutions in Nigeria are half-baked as they lack psychomotor skills and therefore, are unable to function effectively in the world of work on graduation. This is why they are unable to exhibit the technical skills required to become self-dependent especially as they lack clear understanding of the theories and principles of Motor Vehicle Mechanics and maintenance work. This ugly trend could be attributed mainly to instructional methods used by teachers since the use of instructional methods that match the objectives of the programme will increase students" interest in the study as well as equip and empower them with skills to fit into jobs in the society. The goal of Motor Vehicle Mechanics and maintenance work in technical colleges is to produce skilled craftsmen with good knowledge of working principle of Motor Vehicle Mechanics and safety practices involved in its maintenance.

The problem of this study is that performance in theory and principles of Motor Vehicle and maintenance work of students in technical colleges in psychomotor skill test in NABTEB examinations has consistently been poor in recent times. Although such other factors like parental and societal influence can be implicated for the ugly trend, instructional methods used by teachers could be a key factor (Eze and Osuyi, 2018). The popular use of conventional (chalk-talk) instructional methods by teachers in technical colleges may have neglected or be unsuitable for psychomotor skills development which is the main focus of technical education programme. Researchers have recommended the use of demonstration and project-based methods but it is not clearly known whether one is more effective than the other or both are equally effective in developing students" psychomotor skills and interest in Motor Vehicle Mechanics and maintenance work. This prompted this study on relative effectiveness of demonstration and project-based teaching methods in developing students" psychomotor skills and interest in Motor Vehicle Mechanics and maintenance work in technical colleges in Edo State.

Purpose of the Study

The purpose of this study is to determine the relative effectiveness of demonstration and project-based teaching methods in developing psychomotor skill and interest among students in Motor Vehicle Mechanics and maintenance work in technical colleges in Edo State. Specifically, the study determined:

1. The academic achievement mean scores of psychomotor skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method.

2. The interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching methods.

Significance of the Study

This study will be of immense benefits to technical college students, technical teachers, Ministry of Education, Industries and government.

Research Questions

The following research questions were raised to guide the study:

1. What is the academic achievement mean scores of psychomotor skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method?
2. What is the interest mean scores of students taught Motor Vehicle Mechanic and maintenance work using demonstration teaching method and those taught using project-based teaching method?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance;

1. There is no significant difference in the academic achievement mean scores of psychomotor skills of students‟ taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method.
2. There is no significant difference in the interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method.

METHOD

This chapter presents the method used in this study under research design, area of the study, population of the study, sample and sampling techniques, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

Research Design

The study adopted a quasi-experimental research design. According to Uzoagulu (2011), a quasi-experimental design involves periodic measurement on one group before and after treatment without disrupting the normal school programme and time table. Specifically, the design involved a pre-test, post-test, non-equivalent control group with no randomization. This design is deemed appropriate for this study as the aim is to pre-test the subjects before and post-test them after treatment to determine the relative effectiveness of demonstration and project-based teaching methods in developing psychomotor skill and interest among students in Motor Vehicle Mechanics and maintenance work in technical colleges. This is because it was not possible to randomize and place subjects in groups as in pure experiment without disrupting the programme and timetable of the schools involved in this study.

Population of the Study

The population for this study comprised the entire 167 National Technical Certificate (NTC) II students (118 males and 49 females) of 2018/2019 session in motor vehicle mechanics and maintenance work in all the five technical colleges in Edo State. The rationale behind the choice of NTC II students of motor vehicle mechanics and maintenance work for this study is that the NTC III students may be busy preparing for the NABTEB certificate examination while the NTC I students may not have gotten enough knowledge of motor vehicle mechanics and maintenance work to warrant subjecting them to an experiment. Moreover, the NTC II students will eventually replace the final year students who are at the verge of graduation and the demonstration and project-based teaching methods could enhance their psychomotor skill performance in NABTEB practical examination.

Population Distribution of Government Technical College Students of MVMMW in Edo State

S/N	**NAMES OF SCHOOLS**	**NO STUDENTS**		TOTAL
1	Government Technical College, Benin	Male	Female	
		31	19	50
2	Government Science And Technical College, Igarra	22	02	24
3	Government Science And Technical College, Osugbenu-Irrua	21	06	27
4	Government Science and Technical college, Uromi	28	21	49
5	Government Technical College Afuze, Edo State	16	1	17
	Total	118	49	167

Source: *Researcher's 2023 field survey in technical colleges in Edo State.*

Sample and Sampling Technique

A purposive sampling technique was used to select two intact classes of 99 (59 males and 40 females) NTC11 students in motor vehicle mechanics and maintenance work from two technical colleges for the study. The two technical colleges were selected based on the number of male and female students and availability of facilitities for practical activities. Toss of a coin was used to assign one intact class (Government Technical College, Benin) to experimental group 1 (demonstration teaching method) and the other (Government Technical College, Uromi) to experimental group 2 (project-based teaching method).

Instrument for Data Collection

Instruments used for data collection were achievement test and interest scale titled Psychomotor Skill Performance Test in Motor Vehicle Mechanics and Maintenance Work (PSPTMVMMW) and Interest Inventory Scale on Motor Vehicle Mechanics and Maintenance Work (IISMVMMW).

Validation of the Instrument

The PSPTMVMMW has been validated by test developers in National Business and Technical Examination Board (NABTEB) while IISMVMMW was face validated by three experts; two from the Department of Vocational and Technical Education and one from the Department of Guidance and Counselling all in Ambrose Alli University, Ekpoma.

Reliability of the Instrument

The reliability of the instruments was determined by administering PSPTMVMMW and IISMVMMW on an intact class of 30 NTC11 students of Motor Vehicle Mechanics and Maintenance Work in Igarra Technical College, who were not part of the study. Reliabilibity co-efficient of the scores was established using Cronbach Alpha formula which yielded 0.82 and 0.80 respectively.

Method of Data Collection

Data for the study were collected through pre-test and post-test. The pre-test was administered to the subjects before the treatment to provide the researcher with baseline data about the subjects while post-test was administered to them one week after the treatment. Data collected from the two tests (pre and post) were used for data analysis.

Method of Data Analysis

Data collected were analyzed using mean scores. In this case, the data collected from the pre-test and post-test were analyzed using the arithmetic mean and standard deviation to answer the research questions and to ascertain the closeness or other wise of the achievement mean scores of the groups respectively. Participating classes were non-equivalent groups; therefore, the analysis of covariance (ANCOVA) was used to test the null hypotheses at 0.05 level of significance. ANCOVA was used for the study to take care of the initial group differences across the groups due to the differences in the initial background.

RESULT AND DISCUSSION

This chapter presents statistical analysis of data according to the research questions and hypotheses as follows:

Answer to Research Questions

The answers to research questions were arrived at using mean and standard deviation

Research Question 1

What is the academic achievement mean scores of psychomotor skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method?

Analysis of data in respect of this research question is presented in Table 1.

Table 4.1.1
Mean and standard deviation of academic mean scores of psychomotor skills of students taught using demonstration teaching method and those taught using project-based teaching methods

Teaching Method		Pre-test		Post-test		Mean Gain
	N	Mean	SD	Mean	SD	
Demonstration Teaching	59	7.15	2.33	12.40	3.14	5.25
Project-based Teaching	40	7.77	2.24	17.20	2.61	9.43

Table 1 shows that pre-test and post-test academic achievement mean scores of psychomotor skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method were 7.15 and 12.40 with mean gain of 5.25. Those taught with project-based teaching method had 7.77 and 17.20 with mean gain of 9.43 However, for each of the groups, the post-test means were greater than the pre-test means with the group taught using project-based teaching method having a higher mean gain. This shows that project-based teaching method has more effect on students‟ psychomotor development skill in Motor Vehicle Mechanics and maintenance work than demonstration teaching method.

Research Question 2
What is the interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method?
Analysis of data in respect of this research question is presented in Table2.

Table 4.1.2
Mean and standard deviation of interest mean scores of students taught using demonstration teaching method and of those taught using project-based teaching method

Teaching Method		Pre-test		Post-test		Mean
	N	Mean	SD	Mean	SD	Gain
Demonstration Teaching method	59	2.75	0.98	3.62	.376	0.87
Project-based Teaching method	40	2.62	0.89	3.68	.355	1.06

Table 2 shows the pre-test and post-test interest mean scores of students taught electrical installation and maintenance work using demonstration teaching method and those taught using project-bsed teaching method were 2.75 and 3.62 with mean gain of 0.87. Those taught with project-based teaching method had 2.62 and 3.68 with mean gain of 1.06. However, for each of the groups, the post-test means were greater than the pre-test means. This shows that both teaching methods have relative effects on students‟ interest in Motor Vehicle Mechanics and maintenance work, with project-based teaching method having a higher mean gain.

Test of Hypotheses

Hypothesis 1
There is no significant difference in the academic achievement mean scores of psychomotor skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method.
The test of hypothesis 1 is presented in Table 7.

Table 4.1.7

Summary of Analysis of Covariance (ANCOVA) of academic achievement mean scores of psychomotor skills of students taught with demonstration and those taught using project-based teaching methods

Source of Variation	Sum of Square	DF	Mean Squares	F	Sign.
Corrected Model	4.72726	2	236.138	28.387	.000
Intercept	1736.664	1	1737.664	208.771	.000
Pre-test	11.476	1	11.476	1.380	.244
Method	472.099	1	472.099	56.753	.000
Error	640.524	96	8.318		
Total	18636.000	99			
Corrected Total	112.800	98			

Table 7 shows the probability value associated with the calculated value of F (56.753) is 0.000. Since this value 0.000 is less than the 0.05 level of significance, the null hypothesis is rejected. It means that there is significant difference in the academic achievement mean scores of psychomotor skill of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method. The null hypothesis was, therefore, rejected. However, the direction of the difference is in favour of the project-based teaching method which had a higher post-test mean score as shown in Table 1.

Hypothesis 2
There is no significant difference in the interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and that of those taught using project-based teaching method.
The test of hypothesis 2 is presented in Table 8.

Table 4.1.8
Summary of Analysis of Covariance of interest mean scores of students taught using demonstration and those taught using project-based teaching method

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.358	2	179	1.342	.265
Intercept	189.607	1	189.607	1.4213	.000
Pre-test	.226	1	.226	1.694	.195
Group	.156	1	.156	1.171	.281
Error	18.278	96	.133		
Total	1891.278	99			
Corrected Total	18.636	98			

Table 8 shows the probability value associated with the calculated value of F (1.171) is 0.281. Since this value 0.281 is greater than the 0.05 level of significance, the null hypothesis is accepted. It means that there is no significant differences in the interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method. This means that both demonstration and project-based promotes students interest as shown in Table 2.

DISCUSSION OF FINDINGS

The results of this study were discussed in line with the variables as follows:

Teaching Methods and Psychomotor Skill Development in Technical Colleges

Findings of the study as shown in Table 1 revealed that project-based teaching method is more effective in developing students‟ psychomotor skills in Motor Vehicle Mechanics and maintenance work in technical colleges in Edo State than demonstration teaching method. This finding is in line with that of Omeje (2011) that project-based teaching method enhanced the academic achievement, interest and retention of low ability students in carpentry and joinery in technical colleges. This superiority of project-based teaching method over demonstration could be due to the interaction among students which enabled them to gain competence in psychomotor skill during the treatment. The finding also agrees with that of Udofia and Udofia (2013) which showed that technical college students taught electrical installation and maintenance work using project-based teaching method showed evidence of greater performance in skill acquisition than those exposed to e-learning. Udofia and Udofia suggested that this could be due to the social interaction and friendliness that project based teaching method provides for the students. Similarly, the probability value associated with calculated F-value was less than the significance level of 0.05 which indicates that there was significant difference in the relative effectiveness of demonstration and project-based teaching methods in psychomotor development skills of students in Motor Vehicle Mechanics and maintenance work in favour of the project based teaching method.

Furthermore, findings of the study as shown in Table 2 revealed that demonstration and project-based teaching methods promote students‟ interest in Motor Vehicle Mechanics and maintenance work but the latter is slightly more effective. This finding agrees with Okoro (2013) who conducted a study on the effect of project based teaching method on secondary school students‟ academic achievement,

interest and retention in home economics in Enugu State and found that the method improved students‟ achievement and interest in the field of study. This could be as a result of the fact that the method facilitates active participation of students in the teaching learning process which improved their level of skill development and interest in the subjects. This is understandable because demonstration and project-based teaching methods encourage students to be deeply involved in different activities in the teaching-learning process which enhances their interest in the study or subject matter. Similarly, the probability value associated with calculated F-value is greater than the significance level of 0.05 which indicates that there was no significant difference in the relative effectiveness of demonstration and project-based teaching methods on students‟ ‟ psychomotor skill and interest in Motor Vehicle Mechanics and maintenance work in technical colleges in Edo State.

Summary of the Findings

Findings from the study are summarized as follows:

1. Project-based teaching method is more effective in developing students‟ psychomotor skill in Motor Vehicle Mechanics and maintenance work than the demonstration teaching method.
2. Demonstration and Project-based teaching methods promotes students‟ interest in Motor Vehicle Mechanics and maintenance work.
3. There was significant difference in the academic achievement mean scores in psychomotor development skills of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method in favour of the project-based group.
4. There was no significant difference in the interest mean scores of students taught Motor Vehicle Mechanics and maintenance work using demonstration teaching method and those taught using project-based teaching method.

CONCLUSION

Technological advancements in the current era have occasioned the need for teachers to use suitable teaching methods and techniques for students‟ psychomotor skill development in technical colleges to facilitate their performance in the industry which will lead to technological advancement in the country. This study determined the relative effectiveness of demonstration and project-based teaching methods in developing students‟ psychomotor skill and interest in Motor Vehicle Mechanics and maintenance work in technical colleges. It was found that the two methods improved student's ‟psychomotor skill development and interest in Motor Vehicle Mechanics and maintenance work. However, the project-based teaching method was found to be more viable in enhancing students‟ psychomotor skill development and both methods promotes students interest in the trade.

It was, therefore, concluded that the use of demonstration and project-based teaching methods by teachers in technical colleges will lead to improved psychomotor skill development and interest of both male and female students in Motor Vehicle Mechanics and maintenance work.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Teachers in technical colleges should use project-based teaching method more in order to facilitate development of psychomotor skills in learners and equip them for gainful employment on graduation as employees or self-employed and employers of labour in their respective trades.
2. Management of technical colleges should provide relevant facilities to enable teachers effectively use project-based and demonstration teaching methods in order to develop students‟ psychomotor skills and interest in their trades.
3. Technological institutions producing teachers of technology should update their curricular to incorporate the use of practical based teaching methods like demonstration and project-based teaching methods.

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