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Effects of two inquiry techniques on the psychomotor achievement of technical college students in motor vehicle mechanic work in Nigeria

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Abstract

Objective of the study:- The objective of this study is to determine the effect of inquiry techniques on the psychomotor achievement of technical college students in motor vehicle mechanic work in Ekiti State Nigeria.

Design/methodology/approach:- A quasi-experimental design was used in this study. Specifically, the pre-test, post-test, non-equivalent control group design was adopted. The design was considered suitable to conduct the study because intact classes (non-randomized groups) were assigned to the two different inquiry teaching techniques. A total of 195 randomly selected year two students in motor vehicle mechanic work students were drawn from all four technical colleges offering motor vehicle mechanic work in Ekiti State, Nigerian. 94 of the subject were assigned to experimental group A(Guided inquiry) while 101 were randomly assigned to experimental group B (Structured inquiry). The research instrument adopted for the study was the Motor Mechanic Psychomotor Achievement Test (MMPAT). The MMPAT items were adapted from the National Business and Technical Examination Board (NABTEB) CMV 14 (transmission system) and CMV 15 (suspension, steering and braking systems) past question papers. The instrument (MMPAT) contained list of specific practical tasks which students are expected to carry out and to be rated by the examiner was administered on both experimental groups before the commencement of treatment (pretest). It was later administered as posttest on the students in both the experimental groups after ten weeks of treatments. Two research questions and tree hypotheses were formulated to determine if there was significant difference in the achievement of the technical college year two students when taught motor vehicle mechanic work using inquiry teaching techniques. Gender difference in students' performance was also determined. mean was used to answer the research questions while analyses of Covariance (ANCOVA) was used to test the hypotheses. Pre-test scores of the students were used as covariate to adjust for initial difference in the students. *Findings:-*Results from the study showed that the students in both experimental groups performed well, but that the students taught with guided inquiry techniques performed significantly better than the students in the structured inquiry

experimental group. Further analysis revealed that there was a significant gender difference in the students' psychomotor achievements in MVMW. *Originality/value:-* The article explores extensively on the possible implication of the study and addresses these to the teachers and school authorities.

1. Introduction

Motor Vehicle Mechanic work (MVMW) is one of the trade subject offered at the technical college level in Nigeria whose main objective is to equip students with the necessary basic knowledge, skills and attitude to be self-reliance. The goal of motor vehicle mechanic work according to the National Board for Technical Education NBTE (2000) is to produce skilled craftsmen with good knowledge of the working principles of motor vehicles, the techniques and safety practices involved in its maintenance. Trained motor vehicle mechanics, on completion of their training programme like in all other trades in technical colleges in Nigeria will have three options. These options according to the National Policy on Education (FGN, 2004) is to either secure employment in the industries, pursue further education in advance craft in a higher technical institutions or set up their own business and become self-employed.

Unfortunately, despite all effort by the government to ensure qualitative education at the technical colleges and bring about high quality products both in academic and employability, there have been persistent reports of high failure rate among graduates of the colleges (FGN, 2001). According to The National Business and Technical Examination Board (NABTEB) only 59,100 of the 143,755 candidates who sat for the May/June 2012 examinations conducted by the board got five credits, including English Language and Mathematics. Thus, the figure represents 41.1 per cent of the total candidate that sat for the examination. Particularly worst, as revealed by NABTEB, are trade subjects such as motor vehicle mechanic work (MVMW) (Daily Times NG, 2011). This thus makes the goal of MVMW seemingly unachievable.

The goal can however be achieved only when motor vehicle mechanic work is appropriately and effectively taught to learners. This can be possible by making teaching/learning process to be student-centred as against being teacher-centred and by also viewing students as problem solvers rather than direction followers such as the case in a traditional teaching method.

As technology is changing, there is need for the motor vehicle mechanics to change with it so that their level of thinking on diagnoses, repairs, maintenance and on all psychomotor domain related activities could commensurate with maintenance need of today's automobiles.

Psychomotor domain is concerned with development of muscular skills and coordination. Objectives from this domain emphasize motor skill, manipulation of materials or

objects or an act which requires neuromuscular coordination (Knoll, 2004). This could be a performance task as simple as using a screwdriver to fasten a screw or as complex as using a series of tools and instruments in overhauling an engine. The objectives in this domain are suitable for an automobile class that emphasizes the development of motor skills. In order to sustain gains in psychomotor achievement, teaching method must be capable of bridging the achievement gap between genders. In other words, only teaching methods that equip students with the higher order thinking skills for easy adaptability and flexibility to latest technology invention such as the inquiry teaching method is a viable option in the present globalized but competitive economy.

Inquiry-based teaching is one of the most effective methods of active learner participation in learning process. According to Agboola and Oloyede (2007), it creates situations in which students take the role of scientists. This is because students take the initiative to observe and question phenomena, pose explanations of what they see, devise and conduct tests to support or contradict their theories, analyse data, draw conclusion from experimental data, design and build models or any combination of these. It is a method that elicits critical thinking skills. That is, mentally engaging in cognitive process to understand conflicting factors in a situation (Moon, 1999; Davis 1996).

For maximum utilization of inquiry-based teaching to be achieved, important key elements or tools of the inquiry teaching method that enhance effective teaching/learning process need be adapted in an inquiry class. One of such elements is concept presentation. The explanation of a concept or principle underlying a given problem to be solved by teachers is to enable prompt student's reflecting based on newly presented information (Moon 1999; Ashton; 1988). Other inquiry tools include usage of adequate wait time usage. i.e. waiting a few seconds after putting a question to students, thereby giving them time to think before answering such question, The bringing of authentic and real life experience by teachers to classroom learning activities, usage of collaborative learning in which students explore their understanding and misunderstanding together and The use of scaffolding tools such as interactive journals and question prompts.

The fundamental goal of inquiry is student engagement during the learning process. The degree of the students' engagement or involvement during classes also depends on the inquiry teaching technique adopted. Various scholars, among whom are Colburn (2000), Martin-Hansen (2002), Irit and Michal (2009) has attested to the existence of different techniques of the inquiry teaching method. Two of which include structured and guided inquiry teaching techniques. According to Hartman (2002), differences between these techniques rest upon the mode of administration of the teaching method. Colburn (2000) submitted that the differences among the techniques lie in the level of involvement of the teachers.

In a structured inquiry technique, students are expected to follow precise teacher instruction to complete a hands-on-activity. Teachers using this method are expected to lead students step by step through the process but avoiding the temptation of revealing answers to problem under study (Prince & Felder, 2007). On the other hand, the guided inquiry technique does not make provision for teachers providing procedural steps for solving problems after presentation of concepts, but teachers define a clear understanding of the problem at hand in addition to the provision of the practical materials needed to arrive at a solution (Denise, 1999)

The inquiry teaching method has been found to be most suitable for the teaching of science oriented courses by different scholars than the traditional teaching method (Nwagbo, 2001; Eick and Reed, 2002; Ibe and Nwosu, 2003; Alvarado and Herr, 2003; Glenda, Hebrank, Ybara and Kenk, 2005; Schwarz and Gwekwerere, 2006; Adeoye and Raimi, 2006; Prince and Felder, 2007). The inquiry teaching method may be suitable to teach fault diagnosis and repairs in vehicles at a period when motor vehicles are experiencing design revolution

Thus the comparative effects of the structured and guided inquiry techniques as an alternative teaching technique to the traditional teaching method of which The inquiry teaching method has been found to be most suitable for the teaching of science oriented courses by different scholars (technical and engineering courses inclusive) than the traditional teaching method (see last paragraph) on the psychomotor achievement of MVMW students in technical college is the focus of this study. Specifically the study sought to determine:

1. Inquiry techniques (structured and guided) on students' psychomotor achievement in motor vehicle mechanic work.
2. Gender on the psychomotor achievement of students (male and female) taught motor vehicle mechanic work with inquiry techniques.

2. Research Questions

The following research questions were posed to guide this study:

1. What is the effect of structured and guided inquiry techniques on students' psychomotor achievement in motor vehicle mechanic work?
2. What is the effect of Gender on psychomotor achievement of students (male and female) when taught motor vehicle mechanic work with the structured and guided inquiry techniques?

3. Hypotheses

The following null hypotheses were formulated to guide the study and will be tested at .05 level of significance:

HO₁: There will be no significant difference between the effect of treatments (structured and guided inquiry techniques) on students' mean scores in MVMW psychomotor achievement test.

HO₂: There will be no significant difference between the effect of gender (male and female) on students' mean scores in MVMW psychomotor achievement test.

HO₃: There will be no significant interaction effect of treatments given to students taught with inquiry techniques and their gender with respect to their mean scores in the MVMW psychomotor achievement test.

4. Methodology

A quasi-experimental design was used in this study. Specifically, the pre-test, post-test, non-equivalent group design was adopted. This design was considered suitable for the study because intact classes (non-randomized groups) were assigned to the two different teaching inquiry techniques as there was no plan to disrupt the schools' calendar.

The study was carried out in Ekiti State, Nigeria. The rapid rate of economic development in Ekiti state has given rise to increase in the use of modern vehicles by the residents. Hence the upsurge in the establishment of automobile industries requires the services of well trained motor vehicle mechanics. To this end therefore, the area was considered very suitable for conducting the study.

The sample size for this study was all the 195 year two motor vehicle mechanic work students in the four technical colleges offering motor vehicle mechanic work in Ekiti state. The reason for choosing year II classes is that the students have undergone the curriculum of the trade in their year one and they could respond to the test items. Secondly, the major practical topics in motor vehicle mechanic work curriculum are in the second year. The sample comprised 160 male and 35 female students. The reason for choosing year II classes is that the students have undergone the curriculum of the trade in their year one and they could respond to the test items. Secondly, the major practical topics in motor vehicle mechanic work curriculum are in the second year. The simple random sampling technique was adopted for randomly assigning the four colleges that offers motor vehicle mechanic work to both experimental groups (structured and guided) in the study. The four technical colleges offering MVMW and their corresponding student population are Government Technical College (GTC), Ado-Ekiti (53); Government Technical College (GTC), Ijero-Ekiti (41); Government Technical College (GTC), Ikole Ekiti (39); Federal Science and Technical College(FSTC), Usi Ekiti (62). Thus 94 of the subjects were assigned to guided technique (GTC Ado Ekiti and GTC Ijero Ekiti) while 101 subjects were assigned to structured technique (GTC Ikole Ekiti and FSTC Usi Ekiti)

5. Instrument for Data Collection

The instrument used for data collection was the Motor Mechanic Psychomotor Achievement Test (MMPAT). The items of the instrument were adapted from National Business and Technical Examination Board (NABTEB) CMV 14 (transmission system) and CMV 15 (suspension, steering and braking systems) past question papers. The instrument contained three specific practical tasks which students are expected to carry out and to be rated by the examiner.

The structured and guided inquiry (SI and GI) technique lesson plans were developed by the researcher also for the use of teaching the two experimental groups, this was to ensure standardization and control invalidity that could be caused by teacher variability. Each of the lesson plans has at least three inquiry elements built into it that is scaffolding tool usage, collaborative learning, wait-time usage, concept explanation and authentic and real life experience. Each SI and GI lesson plan indicated among others, the lesson topic, specific objectives, entry behaviour, instructional materials and the instructional procedure. The instructional procedure showed details of the steps, content development, students' and teachers' activities.

The MMPAT contained list of specific practical tasks which students are expected to carry out and to be rated by the examiner. The test items were adapted from the National Business and Technical Examination Board (NABTEB) CMV 14 (transmission system) and CMV 15 (suspension, steering and braking systems) past question papers. The items therein have been validated by the National Business and Technical Examination Board (NABTEB), NABTEB is an examination body that uses expert test developers and subject specialists in setting their questions and thereafter subject the developed items to various stages involved in validation and standardisation of test. In addition, face and content validation were conducted on the MMPAT by three experts from the Department of Vocational Teacher Education, University of Nigeria, Nsukka and two motor mechanic teachers from Technical Colleges in Ekiti State. The validation process entails checking the MMPAT items against the topic and content of the lesson plans by ensuring that the test items reflected the course content. It also entails checking for typographical errors, arrangement and logical sequence, ascertaining the superficial quality of the instrument. Each of the validators was served with a copy of the MMPAT instruments, Research questions, Hypotheses, syllabus and the Guided and structured inquiry lesson plans. The comments and suggestions by the validators were incorporated into the final draft of the Instrument.

The reliability of the MMPAT was established after the corrections suggested by the experts were incorporated into the final draft of the Instrument by trial testing the MMPAT on a group of 30 year II motor vehicle mechanic trade students in Government Technical College, Osogbo, an area which was not part of the study area. This is for the

purpose of obtaining the coefficient of concordance of the Instrument. The MMPAT instrument was administered on the students and was rated simultaneously by three instructors. The established ratter reliability coefficient computed for the MMPAT was 0.76. According to Sidney and Catellan (1988), Kendal coefficient of concordance can be used for assessing agreement among different ratters on an issue or test, this is with a view to assess the consistency of the ratters arriving at a common or near common scores/agreement. Four different MVMW instructors were involved in the administration of the MMPAT instrument in their various schools; there is need therefore, to assess the consistency or the coefficient of agreement among different ratters.

6. Experimental Condition

- I. Experimental Bias: The following conditions were laid down to minimize experimental bias: (a) the same lesson topic was taught to both experimental groups: (b) the same achievement test was given to both groups at the same time in order to avoid experimental bias : (c) the students had no pre knowledge of their involvement in the experiment: (d) the researcher was not directly involved in the test administration, this is to ensure that the performance of research subjects are not affected by their awareness of involvement in an experiment.
- II. Teacher Variability: All lesson plans used for the study was prepared by the researcher in order to control invalidity that could be caused by teacher variability.
- III. Training of Teachers: A two –week intensive training was organized for the participating teacher by the researcher on the use of the structured and guided inquiry instructional techniques and their lesson plans.

7. Experimental Procedure

The study was conducted in three phases, as described below:

The first phase was the pre-test stage. It was the phase in which the MMPAT was administered on the subjects in the two experimental groups. This phase of the study was done in the first week of the experiment. This exercise provided baseline data on psychomotor achievement

The second phase which is the experimental or test phase featured the two experimental groups that were taught with the developed inquiry teaching technique lesson plans. Motor vehicle mechanic work teachers in each of the participating schools used the lesson plans to teach their own group. During the treatment, students were divided into groups of three and four. The workshop activities was organized in such a way that each of the groups was provided with a vehicle, clutch assembly, brake component and gear box assemblies (depending on the topic being

treated), complete tool box, brush and petrol. Each of the two sets of lesson plan used for the study incorporated at least one inquiry teaching technique i.e. structured or guided inquiry technique.

The experimental group taught with the use of the structured inquiry teaching technique was provided with a probing question or problem alongside a complete step by step process or procedure that students followed in order to find or arrive at a solution to the problem or task. On the other hand, the experimental group taught with the guided inquiry teaching technique was not provided with complete procedural steps (as in the structured inquiry technique) for solving the problem. Rather, the teacher provided the problem to be solved and the explanation of the principle of operation to the students in addition to the provision of the practical materials needed to arrive at a solution. Students were expected to figure out the procedures or steps needed to solve the problem posed. Teachers were also at hand to attend to students' need where necessary.

Inquiry teaching techniques are student centred. The students therefore participated actively in the teaching learning process, through interaction with one another and with component materials provided for the teaching-learning process. Each experimental group was taught for 10 weeks. Practical classes are always carried out once a week in all the schools used for the study. Thus, each of the experimental groups was taught for a total of ten periods. The third phase was the post-test phase. The phase also lasted for one week, the same MMPAT were administered as post-test. This exercise provided post intervention data on the psychomotor achievement after the treatments. The teachers used the marking scheme provided to grade the students by imploring a process evaluation format for grading the psychomotor achievement of each student using a rating scale sheet,

The data obtained from the students' scores were analyzed using mean for answering research questions and analysis of covariance (ANCOVA) to test the hypotheses of no significant difference

8. Result

The results of data analysed in this study are as follows

Table 2. Mean of Psychomotor Achievement Test scores of MYMW students taught with Inquiry Techniques based on gender.

Gender	Guided Technique				Inquiry Techniques Structured Technique			
	n	Pretest	Posttest	Mean Gain \bar{X}	n	Pretest	Posttest	Mean Gain \bar{X}
Male	74	13.01	54.62	41.61	86	12.89	52.61	39.75
Female	20	12.85	50.40	37.55	15	12.66	46.60	33.94

The data presented in Table 2 shows that male students taught motor vehicle mechanic work with guided inquiry technique had a mean score of 13.01 in the pretest and a mean score of 54.62 in the posttest making a posttest mean

8.1. Research Question 1

What is the effect of structured and guided inquiry techniques on students' psychomotor achievement in motor vehicle mechanic work?

To answer the research question 1, the pre-test and post-test mean values were determined in respect of guided and structured inquiry techniques. The results are presented in table 1

Table 1. Mean of Psychomotor Achievement test scores of MYMW students taught with guided and structured inquiry techniques.

Test	Inquiry Techniques			
	Guided Inquiry		Structured Inquiry	
	n	Mean	n	Mean
Pre-test	94	12.97	101	12.86
Post-test	94	48.72	101	46.72
Mean gain score		35.75		33.86

The data presented in Table 1 shows that the treatment group taught motor vehicle mechanic work with guided inquiry technique had a mean score of 12.97 in the pretest and a mean score of 48.72 in the posttest making a posttest mean gain in the treatment group taught with guided inquiry technique to be 35.74. The treatment group taught motor vehicle mechanic work with structured inquiry technique had a mean score of 12.86 in the pretest and a posttest mean of 46.72 with a posttest mean gain of 33.86. With these results, both guided inquiry technique and structured inquiry technique are effective in improving students' psychomotor achievement in motor vehicle mechanic work but the effect of guided inquiry technique on students' psychomotor achievement in motor vehicle mechanic work is higher than the effect of structured inquiry technique.

8.2. Research Question 2

What is the effect of Gender on the psychomotor achievement of students (male and female) taught motor vehicle mechanic work with inquiry techniques?

To answer the research question 2, the pre-test and post-test mean value scores, based on gender were determined in respect of guided and structured inquiry techniques. The results are presented in table 2.

gain in the male students taught with guided inquiry technique to be 41.61. Meanwhile, female students taught motor vehicle mechanic work with guided inquiry technique had a mean score of 12.85 in the pretest and a

posttest mean of 50.40 with a posttest mean gain of 37.55. Also, male students taught with the structured inquiry technique had a mean score of 12.86 in the pretest and a mean score of 52.61 in the posttest making a posttest mean gain in the male students taught with structured inquiry technique to be 39.75. Meanwhile, female students taught motor vehicle mechanic work with the structured inquiry technique had a mean score of 12.66 in the pretest and a posttest mean of 46.60 with a posttest mean gain of 33.94. With these results male students taught motor vehicle mechanic work with guided inquiry technique had higher mean scores than female students in the Motor Mechanics Psychomotor Achievement Test. Thus, there is an effect attributable to gender on the achievement of students taught motor vehicle mechanic work with inquiry teaching techniques.

8.3. Hypotheses

The statistical significant test of 3 hypotheses (1, 2 & 3) of treatments, gender and interaction effects of treatments and gender on students' psychomotor achievement in MVMW are presented in table 3.

HO₁: There will be no significant difference between the effect of treatments (structured and guided inquiry techniques) on students' mean scores in MVMW psychomotor achievement Test

HO₂: There will be no significant difference between the effect of gender (male and female) on students' mean scores in MVMW psychomotor achievement Test.

HO₃: There will be no significant interaction effect of treatments given to students taught with inquiry techniques and their gender with respect to their mean scores in the MVMW psychomotor achievement Test.

Table 3. Summary of Analysis of Covariance (ANCOVA) for Test of Significance of Three Effects: Treatments, Gender and Interaction Effect of Treatments and Gender on Students' Psychomotor Achievement in MVMW.

Source of Variation	Sum Squares	of df	Mean Square	F	Sig of F
Covariates	.15	1	.15	.01	.93
Pre-test	.15	1	.15	.01	.93
Effects	868.55	2	434.28	22.57	.00
Treatment	235.50	1	235.50	12.24	.00
Gender	730.34	1	730.36	37.96	.00
2-way Interactions	22.65	1	22.65	1.18	.28
Treatment*Gender	22.65	1	22.65	1.18	.28
Explained	937.92a	4	234.48	12.19	.00
Residual	3655.99	190	19.24		
TOTAL	4593.92	194	23.68		

*Significant at sig of F < .05

The data presented in Table 3 shows F-calculated values for three effects: treatment, gender and interaction effect of treatments and gender on students' psychomotor achievement in motor vehicle mechanics work. The F-calculated value for treatment is 12.24 with a significance of F at .00 which is less than .05. The null-hypothesis is therefore rejected at .05 level of significance. With this result, there is a significant difference between the effect of treatments (structured and guided inquiry techniques) on students' psychomotor achievement in motor vehicle mechanic work. The F-calculated value for gender is 37.96 with a significance of F at .00 which is less than .05. This means that there is significant effect of Gender on students' psychomotor achievement in motor vehicle mechanics work. Therefore, the null hypothesis of no significant difference between the effect of gender (male and female) on students' achievement in motor vehicle mechanics work is rejected at .05 level of significance. The interaction of treatments and gender has F-calculated value of 1.18 with significance of F of .28. Since .28 is greater than .05, the null hypothesis for interaction effect of treatment and gender is accepted. Hence, there is no significant interaction effect of treatments given to students taught motor vehicle mechanics work with inquiry techniques and

their gender with respect to their mean scores on psychomotor achievement test.

9. Findings of the Study

The following findings emerged from the study based on the data collected and analyzed and hypotheses tested.

1. The effect of guided inquiry technique on students' psychomotor achievement in motor vehicle mechanic work is higher than the effect of structured inquiry technique.
2. There was a significant difference between the effect of treatments (structured and guided inquiry techniques) on students' psychomotor achievement in motor vehicle mechanic work.
3. There was significant effect of Gender on students' psychomotor achievement in motor vehicle mechanics work.
4. There was no significant interaction effect of treatments given to students taught motor vehicle mechanic work with inquiry techniques and their gender with respect to their mean scores on psychomotor achievement test.

10. Discussion of Findings

The findings on table 1 revealed that Structured inquiry technique and Guided inquiry technique are effective in improving students psychomotor achievement in motor vehicle mechanic work but the effect of Guided inquiry technique is higher than the effect of Structured inquiry technique. At the same time, Analysis of covariance was employed to test the first hypothesis, Table 3, at the calculated F- value (12.24), significance of F (.00) and confidence level of .05, there was a significant difference between the effect of treatments (Structured inquiry and Guided techniques) on the students' psychomotor achievement. this implies that Guided inquiry technique is more effective than structured inquiry technique in improving students' psychomotor achievement in motor vehicle mechanic work. The finding is similar to the finding of Jeffray, Marcus & Tia (2009) in which guided inquiry proved more effective than structured inquiry for undergraduate biology students in conducting crosses with *Drosophila* strain Carrying P (Laew) transposing insertions in genes without documented recombination map positions of the genes given them. It is also in line with that of Suryanmisyh (2011) who in his study also found that adoption of guided inquiry instructional approach in the teaching of chemistry improve student's psychomotor achievements among other achievement than the modified direct instruction. The effectiveness of the guided inquiry technique when compared to structured inquiry technique may probably be due to the fact that students diagnose vehicle faults themselves, and also proffer solution to the faults identified. This they are able to do with minimal guidance from teachers after their introduction to the basic concept underlying the performance of such vehicle component. Moreover, structured inquiry students were more passive than their guided peers as these students were initially led by their teachers. Thus, students thought with structured inquiry were not subjected to critical debate as to identifying the correct equipment/tools and the optimum method to carry out repair activities.

The data presented in Table 2 provided answer to research question two. Finding revealed that male students taught motor vehicle mechanic work with Inquiry techniques had higher mean scores than female students in the motor mechanic psychomotor achievement test (MMPAT). Thus, there is an effect attributable to gender on psychomotor achievement of students taught motor vehicle mechanic work with Inquiry techniques. analysis of covariance was employed to test the second hypothesis, Table 3, at the calculated F- value (37.96), significance of F (.00) and confidence level of .05 there was a significant difference between the effect of gender (male and female) on students' psychomotor achievement in motor vehicle mechanic work which confirmed that the difference between the psychomotor achievement test scores of male and female students in motor vehicle mechanic work was statistically significant favouring boys. Male advantages in

psychomotor achievement have been established in studies by Nemeth and Hoffmann (2006), Burin, Delgado and Prieto (2000), Medina, Gerson and Sorby (2000) and Branoff (1998), Voyer, Voyer, and Bryden (1995), Linn and Petersen (1985), and Maccoby and Jacklin (1974), where the trends of gender differences were found to be stable and consistent. Thus, in studies where differences in psychomotor achievement were evident males typically had stronger practical skills than girls. In the same vein, analysis of covariance was also used to test the third hypothesis, Table 3. at the calculated F-value (1.18), significance of F (.28) and confidence level of .05, there was no significant interaction effect of treatments given to students taught with Inquiry and their gender with respect to their mean scores on the psychomotor achievement Test. With these results there were no differential effects of Inquiry treatments over all levels of gender. Thus, Guided inquiry technique was found to be more effective in improving students' psychomotor achievement in motor vehicle mechanic work regardless of levels of Gender.

Recommendations

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

1. Workshops, seminars and conferences should be organized by Ministry of Education, NABTEB and NBTE to enlighten technical teachers and improve their knowledge and skills on the use of guided inquiry techniques for improving students' performance in motor vehicle mechanic work.
2. Technical teachers of motor vehicle mechanic work should prepare their lessons in such a way that students are allowed ample opportunity to interact freely with one another in the guided inquiry space so as to improve their psychomotor achievement

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