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EFFECTS OF MODEL-LEAD TEST STRATEGY ON INTEREST OF SENIOR SECONDARY TWO STUDENTS IN ORGANIC CHEMISTRY IN BENUE STATE, NIGERIA

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ABSTRACT: *This study investigated the effect of Model-Lead Test Strategy in promoting interest of senior secondary two students in hydrocarbon aspect of organic chemistry in Benue State of Nigeria. The study adopted the non-randomized pre-test, post-test quasi experimental control group design. The population comprises all Senior Secondary two (SSII) students studying Chemistry as a subject in all secondary schools in Makurdi Local Government Area of Benue State. The sample of the study was made up of 145 consisting of 76 males and 69 females in Senior Secondary two drawn from two schools. Stratified random sampling technique was used for selecting the Makurdi Local Government Area which was stratified into two, that is Makurdi North and South and Makurdi East and West, then, simple random sampling technique was used to select two co-educational secondary schools. Hydrocarbon Student's Questionnaire (HSQ) was the instrument used for data collection. The instrument was validated by three experts. The reliability coefficient of HSQ was 0.97 using Cronbach Alpha. Using Analysis of Covariance it was found that there was a significant difference between pretest and post-test inters mean scores of the experimental and control groups of SS II students in Chemistry. It was also found that there was a significant effect of Model-Lead-Test strategy (experimental treatment) on male students' interest in hydrocarbon aspect of Organic Chemistry and that there was a significant effect of Model-Lead-Test strategy (experimental treatment) on female students' interest in Organic Chemistry. Based on the findings it is recommended among others that Chemistry teachers should use Model-Lead-Test strategy to teach Organic Chemistry irrespective of gender.*

KEY WORDS: teaching organic chemistry; hydrocarbon; model-lead-test strategy; interest in chemistry; gender

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INTRODUCTION

Nigeria as a nation needs is a functional Chemistry education that will assist in national development. Chemistry education has been identified to be as bedrock for the transformation of the national economy. Chemistry Education is therefore the systematic process of acquiring the fundamental knowledge about the universe. With the so indispensable knowledge richly acquired, man can shape and reshape his world for his benefit. Hence, the development of the nation is usually measured by the degree and extent of growth brought to it through the enterprise of science education and a gate way to it is Chemistry education but it has not reached the expectations.

Chemistry as opined by Gordon (2019) is the study of matter what it consists of, what its properties are, and how it changes. It is also seen a branch of science that deals with changes in matter. Chemists perform experiments and learn to observe, record, calculate precisely and make intelligent inference. These processes train the mind of chemists to incline to scientific methods (Ababio, 2016). Chemistry is an important science subject that occupies a prominent place in the school science curriculum. It serves as a prerequisite to the study of medicine, pharmacy, agriculture, engineering, textile and clothing (Bennett, 2016). Bennett observed that Chemistry is pre-occupied with the molecular transformation and manifestation of matter, implying that Chemistry is involved in industrial set-up (fertilizer, petroleum and cement), the execution of other professions (engineering, agriculture, and medicine) and the improvement of quality of life of the citizenry. Based on the foregoing relevance, it is expected that the study of Chemistry should be on the intensified.

Organic Chemistry as defined by American Chemical Society (2015) is the study of the structure, properties, composition, reactions and preparation of carbon-containing compounds, which include not only hydrocarbons, but also compounds with any number of other elements, including hydrogen (most compounds contain at least one carbon–hydrogen bond), nitrogen, oxygen, halogens, phosphorus, silicon and sulfur. The focus of this work is hydrocarbons. A hydrocarbon is an organic chemical compound composed extensively of hydrogen and carbon atoms. Hydrocarbons are naturally occurring compounds and form basis of crude oil, natural gas, coal and other important energy sources. They can serve as fuels and lubricants as well as raw materials for the production of plastics, fibers, rubbers, solvents, explosives and industrial chemicals. Also when the petroleum's various fractions are separated by fractional distillation we will have the fractions as refinery gases, petrol, diesel oil, kerosene, fuel oil and asphalt. Nigerian petroleum is in high demand in the world market because it has low sulphur content.

Interest is a subjective feeling of intentness or curiosity over something (Hornby, 2019). Alireza and Shella (2011) defined interest as an excitement or feeling accompanied by special attention to

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something. It is an important variable in learning because when one becomes interested in an activity, he or she is likely to become more deeply involved in that activity. The enthusiasm with which students enter into any learning activity is determined by their interest in that particular activity. Students seem to learn more efficiently those things that appear to interest them.

Mahdi (2014) reported that a good percentage of his respondents found Chemistry an interesting subject and believed that Chemistry is not a boring subject but not an easy subject to study. Mahid opined that this maybe related to the fact that Chemistry involves different terminologies, structures and calculations. Furthermore, the report indicated that the help students may receive from home, teacher or school may contribute to increase their interest in Chemistry. These factors can be seen as corresponding directly to yield the increased interest. An individual who is attracted to the field through positive role models is more likely to consider Chemistry as a career, and thus be, further interested in the field. Hence, the need to investigate the effects of model-lead-test instructional strategy on the interest of senior secondary school students in organic Chemistry.

Lingua (2015) maintained that the elements of interest are cognitive, affective and behavioral. Affective is the feeling aspect of interest. This is seen when a person attaches his emotions to the perception he has about somebody or something. For instance, when a student that likes Chemistry i**s** connecting his emotion through likeness to the perception he has towards Chemistry. Behavioral element of interest refers to the physical show. It is the outward behaviour of an interest. Kinds of interest include cognitive interest which refers interest that comes as a result of certain action and affective interest which refers to interest that may be developed following the way a teacher presents a learning material in a particular subject.

The model-lead test is a three phase teaching strategy where the teacher model the correct use of the strategy, the teacher will then lead the students to practice the correct use of the strategy and the teacher finally tests the students' independent use of the strategy. The model-lead test approach to teaching is used to provide and demonstrate frequent opportunities for students to develop and practice new cognitive and psychomotor skills. The model lead-test approach includes three phases. These are model phase, lead phase and test phase. The model phase is the teacher demonstrating and modeling expected skill(s); the lead phase enables the students to practice the skill and leads them towards automatically responding as a group. The test phase measures the students' ability to perform the skill correctly and automatically. This approach provides an automatic response for teachers which support the learning needs. Omwirhiren and Ubanwa (2016) advised the use of models in the teaching and learning process for thee will improve students' ideas and understanding. The use of the third stage, TEST, in MLT instructional strategy is important, because during the process of teaching and learning, there is usually the false perception of students' ability to solve problems

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which may hinder many of them from benefitting from instruction, correction of assignment and revision classes (Adesoji, Omilani & Dada, 2017). The test phase is likely to correct any of such perceptual errors.

Gender has remained an issue in the front burner of academic discourse. The differentiation of human kind into males and females is conditioned not only by biology and genetics, but also by those socially learned roles, functions, norms, behavioural patterns and expectations that are associated with maleness and femaleness in the concrete society. (Kavara, 2011) listed reasons why science education should involve the female gender. These are: Equity of opportunity which is necessary for both sexes can be part of the mainstream development, the need for many female scientists in decision-making positions to enable them control the direction of technological research and promote policies that favour females to promote intellectual understanding, exploration and mastery of the environment and the subject matter.

Statement of the Problem

Recent attention has focused on some aspects of Chemistry in order to find out what exactly is responsible for the high failure rate in chemistry. Much of these literatures point to poor and ineffective instructional strategy as well as students' anxiety towards organic Chemistry. These researchers express the view that teachers shy away from activity-oriented teaching methods, which are known to be effective, and rely on the teaching methods that are easy but most times inadequate and inappropriate. Students' anxiety towards organic Chemistry may be connected to the complex structures that organic Chemistry is known for and it is believed that a teaching method like M-L-T, which is more participatory than the traditional instructional method will enhance the interest of student, allay, their anxieties and ultimately improve performance, hence achievement. Most of these researchers, have used different teaching method to correct and solve this problem of poor interest to no avail. That is why the study seeks to employ the M-L-T strategy to see if it will boost the interest of secondary school students in organic Chemistry in Hydrocarbon in Makurdi Local Government of Benue State.

Aim and objectives of the study

The aim of the study is to seek the effects of model-lead test strategy on interest of Senior Secondary II students in Organic Chemistry in Benue State, Nigeria. This is achieved through the following specific objectives:

1. Determine the pre-test and post-test interest mean scores of SS II experimental and control groups.
2. Ascertain the pre-test and post-test interest mean scores of SS II male and female chemistry students.

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Research Questions

The following research questions were raised to guide the study:

1. What are the pre-experimental and post-experimental mean interest ratings of SS II chemistry students when exposed to Model-Lead-Test strategy?
2. What are the pre-test and post-test mean interest rating of males and females in the experimental and control groups when exposed to Model-Lead-Test strategy?

Hypotheses

The following hypotheses were formulated and will be tested at 0.05 level of significance:

1. There is no significant difference between pretest and post-test interest mean ratings of the experimental and control groups of SS II chemistry students.
2. There is no significant difference between pretest and post-test mean interest rating of males in the experimental and control groups of SSII chemistry students.
3. There is no significant difference between pretest and post-test mean interest rating of females in the experimental and control groups of SSII chemistry students.

RESEARCH METHODOLOGY

The study adopted the non-randomized pre-test, post-test quasi experimental control group design. The non-randomized pretest post-test design is an experiment where measurements are taken both before and after treatment. Intact classes were used. The population comprised all SSII students studying Chemistry as a subject in all secondary schools in Makurdi Local Government Area of Benue State. The choice of Makurdi Local Government Area is due to the fact that interest in organic chemistry in the headquarters is usually low compared to the rural areas, hence the choice of the headquarters for this study to know if the model-lead-test strategy would boost interest of students. The sample consisted of 145 respondents consisting of 76 males and 69 females in Senior Secondary II drawn from two schools namely Special Science Secondary School and Mount Saint Gabriel Secondary School. Stratified random sampling technique was used for selecting the schools in Makurdi Local Government Area. Makurdi Local Government Area was stratified into two, that is, Makurdi North and South and Makurdi East and West. Thereafter simple random sampling technique was employed to select two co-educational secondary schools.

Instrument for Data Collection

HSQ is a-20 item instrument developed by the researcher. The Hydrocarbon Student's Questionnaire (HSQ) was developed using information from the review of relevant literature on interest towards hydrocarbon and will have 20 Likert scale questions. The researcher used the questionnaire to find out students' interest and feeling about hydrocarbon. It is a four point rating scale that is divided into

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two sections. Section A demands information of the students while section B demand their response to questions on interest in Hydrocarbon. The items of the scale are coded as: Strongly Agree (SA), Agree (A), Disagree (DA) and Strongly Disagree (SD). The items are positively and negatively skewed. The items weighed as 4, 3, 2 and 1 respectively. A strongly positive item earned respondent four marks; similarly a strongly negative item will also earn four marks. The sequence of 4, 3, 2 and 1 will stand for positive statements while those of negative statements will be scored in reverse order of 1, 2, 3 and 4.

The HSQ was subjected to scrutiny by three experts, two experts in Chemistry Education and one expert in Research, Measurement and Evaluation unit. They scrutinized the items in terms of comprehensiveness, appropriateness and clarity in the language based on the content of organic chemistry in line with the hypotheses formulated for the study. Factor analysis was used to establish the construct validity of the instrument.From the trial testing, the data collected were analyzed using Cronbach Alpha to determine the reliability coefficient of the instrument and it was 0.97. This was considered appropriate for the study according to Nwabueze, (2009).

Procedure for Data Collection

Lesson notes were planned and written for each unit and they were used by the research assistants. In all, they were fourteen lesson notes, seven for the experimental group using M-L-T where students were expected to construct organic structures using M-L-T and seven lesson notes for the control group. The experimental groups that were exposed to the treatment were divided into groups of two-three members. All the groups received 80 minutes (double periods) of instruction in organic chemistry based on their respective methods of teaching. The first began with the training of research assistants and the administration of pre-test to both groups in the schools. Lessons commenced in the second week and continued to the seventh week. The teacher taught the students in the experimental group using the Model-Lead-Test instructional strategy for six weeks. Students in the control group learned the same content with the experimental group using the lecture method. They were taught by the untrained research assistant while the exercise was being monitored by the researchers.

In the eight week, there was a general review of all the topics taught and strategies used. Then a post test was administered for all the groups. In order to control extraneous variables which may introduce bias into the study, the researcher adopted control for Hawthorne effect, teacher variables, subjects interaction effect, inter group and maturation. Data were finally collected with the HSQ. The scores obtained from the pre-test and post-test were analyzed according to the research questions using mean and standard deviation for answering the research questions and ANCOVA was used to test all hypothesis at 0.05 level of significance.

RESULTS

The raw data that were used to answer the research questions and test the formulated hypotheses.

Research Questions One

What are the pre-experimental and post-experimental mean interest ratings of SS II chemistry students when exposed to Model-Lead-Test strategy?

Table 1 shows a summary of pre-experimental and post-experimental mean interest ratings of SS II chemistry students when exposed to Model-Lead-Test strategy.

Table 1: Mean and Standard Deviations of Pre-Experimental and Post-Experimental Mean Interest Rating of SS II Chemistry Students when Exposed to Model -Lead –Test Strategy

	Pre-Test			Post-Test		
Group	**N**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean gain**
Experimental Groups	76	2.75	0.21	3.98	0.32	1.23
Control Groups	69	1.30	0.13	1.77	0.23	0.47

Table 1 revealed the mean interest ratings of SS II chemistry students when exposed to Model -Lead–Test strategy. From the results, those taught using Model-Lead-Test strategy (experimental group) had a pretest mean interest ratings of 2.75 while their counterparts taught using conventional strategy (control group) had a pretest mean interest ratings of 1.30. However, the posttest mean interest ratings of students in the experimental group after exposure to Model-Lead-Test strategy was 2.98, while that of their counterparts in the control group was 1.77 respectively. The findings showed that students in the experimental group had a higher mean interest ratings in organic chemistry after exposure to the Model-Lead-Test strategy than their counterparts in the control group who were taught organic chemistry using the Model-Lead-Test strategy. This implies that the mean interest ratings of the students can be improved by using Model-Lead-Test strategy to teach organic chemistry rather than using the conventional strategy.

Research Questions Two

What are the pre-test and post-test mean interest rating of males and females in the experimental and control groups when exposed to Model -Lead –Test strategy?

Table 2 shows a summary of the pre-test and post-test mean interest rating of males and females in the experimental and control groups when exposed to Model -Lead –Test strategy.

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Table 2: Mean and Standard Deviations of Pre-Test and Post-Test Mean Interest Rating of Males and Females in The Experimental and Control Groups when Exposed to Model -Lead –Test Strategy

		Pre-Test			Post-Test		
Strategies	**Gender**	**N**	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean gain**
Experimental Groups	Male	59	2.72	0.19	2.99	0.30	0.27
	Female	17	2.79	0.24	2.97	0.39	0.18
Control Groups	Male	58	1.38	0.45	1.79	0.24	0.41
	Female	11	1.29	0.25	1.76	0.25	0.47

Table 2 revealed the mean interest ratings of males and females in the experimental and control groups when exposed to Model-Lead-Test strategy. The findings revealed that male and female students in the experimental group that are taught using Model-Lead-Test strategy had a pretest mean interest ratings of 2.72 and 2.79 respectively. When both students were exposed to the treatment using Model-Lead-Test strategy, the mean interest ratings of the male students in the experimental group improved to 2.99 as against 2.97 of their female counterparts. This implies that despite the fact that both male and female students were exposed to the treatment of Model-Lead-Test strategy, male students had a slightly higher mean interest rating than their female counterparts as revealed by their post-test interest mean score of 2.99 for male as against 2.97 for the female students. Similarly, the findings from the control group revealed that male and female students had mean interest ratings of 1.79 and 1.76 respectively. This means that organic chemistry should be taught to both male and female student using the Model -Lead –Test strategy for better interest in the subject.

Hypotheses One

There is no significant difference between pretest and post-test interest mean ratings of the experimental and control groups of SS II chemistry students.

Table 3 provides a summary of the analysis of covariance (ANCOVA) results of interest mean ratings of the experimental and control groups of SS II chemistry students

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Table 3: ANCOVA of Interest Mean Ratings of the Experimental and Control Groups of SS II Chemistry Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.013[a]	2	.007	.148	.862	.002
Intercept	10.289	1	10.289	232.851	.000	.645
PostOCSQa	.013	1	.013	.293	.589	.002
Strategies	1.236	1	1.235	.004	.050	.000
Error	5.656	142	.044			
Total	992.785	145				
Corrected Total	5.669	144				

a. R Squared = .002 (Adjusted R Squared = -.013)

Table 4: Results of Sidak Post hoc Comparison of Difference Between the Interest Mean Scores of the Experimental and Control Groups of SS II Chemistry Students

I Model-Lead-Test Strategy	**J Conventional strategy**	**X – diff (I – J)**	**Std Error**	**P-value**
2.74	1.71	1.03	.019	0.050

P=0.05

Analysis of covariance (ANCOVA) was conducted to determine of a significant difference exists in the interest mean scores of the experimental and control groups of SS II chemistry students. Table 3 shows that F(1,142) = 0.004, p = 0.05, since the p value of 0.050 is equal to 0.05 level of significance, the null hypothesis was rejected, indicating that there was a significant effect of Model-Lead-Test strategy on students' interest in hydrocarbon. The results further revealed an adjusted R squared value of 0.013 which means that 1.3 percent of the variation in the dependent variable which is students' interest in organic chemistry is explained by the treatment, while the remaining is due to other factors not included in this study. The sidak post hoc test in Table 4 confirmed that the corrected difference between experimental group and control group was statistically significant, I – J = 1.03. Hence we say that Model-Lead-Test strategy does increase students' interest in organic chemistry compared to conventional strategy.

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Hypotheses Two

There is no significant difference between pretest and post-test mean interest rating of males in the experimental and control groups of SSII chemistry students.

Table 5 provides a summary of the analysis of covariance (ANCOVA) results of interest mean ratings of males in the experimental and control groups of SSII chemistry students.

Table 5: ANCOVA of Post-Test Mean Interest Rating of Males in the Experimental and Control Groups Of SSII Chemistry Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.824[a]	2	.412	.010	.990	.000
Intercept	13092.409	1	13092.409	317.502	.000	.713
PreOCSQ	.053	1	.053	.001	.972	.000
Test	.777	1	.777	.019	.009	.000
Error	5278.168	114	41.236			
Total	139487.000	117				
Corrected Total	5278.992	116				

a. R Squared = .000 (Adjusted R Squared = -.015)

Analysis of covariance (ANCOVA) was conducted to determine of a significant difference exists in the mean interest ratings of male students in the experimental and control groups of SSII chemistry students. The effect of treatment on the groups (experimental and control) yielded, experimental (M = 2.03; SD = 0.65) and control (M = 1.79; SD = 0.71). It indicates that the mean interest ratings of male students in the experimental group differ from that of control group. Table 5 further showed that F(1,114) = 0.019, p = 0.008,since the p value of 0.008 is less than 0.05 level of significance, the null hypothesis was rejected, indicating that there was a significant effect of Model-Lead-Test strategy (experimental treatment) on male students' interest in hydrocarbon. The results further revealed an adjusted R squared value of 0.022 which means that 2.2 percent of the variation in the dependent variable which is male students' interest in organic chemistry is explained by the Model-Lead-Test strategy(experimental treatment), while the remaining is due to other factors not included in this study.

Hypotheses Three

There is no significant difference between pretest and post-test mean interest rating of females in the experimental and control groups of SSII chemistry students.

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Table 6 provides a summary of the analysis of covariance (ANCOVA) results of interest mean ratings of females in the experimental and control groups of SSII chemistry students.

Table 6: ANCOVA of Post-Test Mean Interest Rating of Females in the Experimental and Control Groups of SSII Chemistry Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.047[a]	1	.047	.001	.973	.000
Intercept	15487.074	1	15487.074	378.453	.000	.746
PreOCSQ	.047	1	.047	.001	.973	.000
Female	.561	1	561.	.421	.001	.000
Error	5278.945	24	40.922			
Total	139487.000	28				
Corrected Total	5278.992	27				

a. R Squared = .000 (Adjusted R Squared = -.008)

Analysis of covariance (ANCOVA) was conducted to determine of a significant difference exists in the mean interest ratings of female students in the experimental and control groups of SSII chemistry students. The effect of treatment on the groups (experimental and control) yielded, experimental (M = 2.76; SD = 0.37) and control (M = 1.07; SD = 0.32). It indicates that the mean interest ratings of female students in the experimental group differ from that of control group. Table 6 further showed that F(1,24) = 0.421, p = 0.001,since the p value of 0.001 is less than 0.05 level of significance, the null hypothesis was rejected, indicating that there was a significant effect of Model-Lead-Test strategy(experimental treatment) on female students' interest in organic chemistry. The results further revealed an adjusted R squared value of 0.008 which means that 0.8 percent of the variation in the dependent variable which is female students' interest in organic chemistry is explained by the Model -Lead –Test strategy(experimental treatment), while the remaining is due to other factors not included in this study.

DISCUSSION

Findings indicated that students in the Model-Lead-Test strategy (experimental group) developed more positive interest towards chemistry than the students in the conventional strategy (control group). Therefore, the Model-Lead-Test strategy is more facilitating than the conventional strategy in teaching organic aspect of chemistry. Further the tested of corresponding hypothesis it was found

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that there is significant difference in the pretest and post-test mean interest ratings of the experimental and control groups of SS II chemistry students. This result is further confirmed by the sidak post hoc test of I – J = 1.03 as the corrected difference between experimental and control group showing statistical significance. The test proves that Model-Lead-Test strategy indeed does increase the interest of students in the study of organic chemistry.

The results is in line with the work of Adetunyi (2012) examined the effect of simulation strategy on students' interest in Chemistry, in Badagry area district 5 of Lagos state and found that simulation instructional strategy significantly increased students' interest scores in Chemistry than traditional lecture method. Similarly, Tang (2012) investigated the impact of computer-assisted instructions on students' interest in Chemistry, among senior secondary school students in Benue State and found that CAI significantly enhanced students' interest in Chemistry than the traditional lecture method. Also, Okeke (2013) determined the effect of blended learning on secondary school students' interest and interest in Chemistry in Enugu state Nigeria and found that the use of blended learning strategy significantly improved students' interest in secondary school Chemistry than the traditional lecture method. The result of the hypothesis means that the two groups of students cannot be taught with the two strategies in the same class. They have to be separated for effective outcome to be achieved. The students must be separated and the more facilitating strategy used in which case Model-Lead-Test strategy because the model is more effective than the conventional strategy at the senior secondary school level.

It was also found that male students in the Model-Lead-Test strategy (experimental group) had a higher mean interest gain in chemistry than the female students while in the conventional strategy (control group) female students had a higher mean interest gain than the male students. The overall implication of this result is that organic chemistry should be taught to both male and female students in their classes using the Model-Lead-Test strategy bearing in mind that it is gender sensitive. Therefore, Model-Lead-Test strategy is a better teaching strategy for male and female students in organic chemistry. Again, male and female students' interest is higher and better with Model-Lead-Test strategy than with conventional strategy. Thereby supporting the use of Model-Lead-Test strategy in teaching organic chemistry to students.

Another finding indicated that there is significant difference in the pretest and post-test mean interest rating of males in the experimental and control groups of SSII chemistry students. Similarly, there is a significant difference in the pretest and post-test mean interest rating of females in the experimental and control groups of SSII chemistry students. The tests prove that Model-Lead-Test strategy indeed does boost the interest of male and female students in the study of organic chemistry.

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The above significance in the result is in agreement with Ogbeche (2009) investigated the efficacy of self-regulation learning in enhancing students' interest and interest in chemistry in Orlu Imo state and found that self-regulated learning significantly enhanced students' interest in chemistry than those taught with traditional lectures methods. However, the findings disagrees with that of Ogbuanya and Owodunni (2013) investigated the effect of reflective inquiry instructional technique on students' interest and interest in Radio Television and Electronic works trade (RTVE) among technical college students in Lagos State, Nigeria and found that gender affected students' mean interest scores in RTVE in favour of boys though the difference was not statistically significant.

CONCLUSION AND RECOMMENDATIONS

It can be concluded that interest mean scores of the students can be improved by using Model-Lead-Test strategy to teach organic chemistry better than using the conventional strategy. Organic chemistry can be taught to both male and female students using the Model-Lead-Test strategy for better development of interest in the subject as the strategy is not gender sensitive. It is therefore recommended that Chemistry teachers should use Model-Lead-Test strategy to teach Organic aspects to both male and female students. Curriculum experts, textbook writer and workshop experts should consider including the Model-Lead-Test strategy in their future endeavours.

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