IMPACT OF FREQUENCY OF TESTING ON ACHIEVEMENT IN MATHEMATICS AMONG SECONDARY SCHOOL STUDENTS IN OGUN STATE, NIGERIA

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Abstract
This study examined the impact of frequency of testing on achievement in Mathematics among secondary school students in Ogun State, Nigeria. Two hypotheses were postulated to direct the study. Quasi experimental pre-test / post-test research design was used for the study. The population of the study comprised all senior secondary school students in Ogun State. The sample for the study comprised 157 (76 male and 81 female) SSII students selected (using Multistage Random Sampling technique) from five senior secondary schools located in five of the twenty Educational Zones in Ogun State. The schools were randomly assigned to the five experimental conditions (weekly testing, two weeks testing, three weeks testing, four weeks testing and control group). The Mathematics Achievement Test (MAT) was used as instrument for collecting data for the study. The data generated were analysed using descriptive statistics and Analysis of Covariance, tested at 0.05 level of significance. One of the two research hypotheses was accepted while the other was rejected. The findings showed that there was a significant difference in the scores of students' Achievement in Mathematics as a result of exposing students to varying test frequencies. In addition, the study revealed that gender is not a significant factor when planning to improve Achievement in Mathematics. On the basis of these findings, test frequency of every two weeks was recommended to improve students' academic achievement in Mathematics.

Keywords: Frequency of Testing, Assessment, Achievement in Mathematics

Introduction

The knowledge of Mathematics is significant in our daily lives and across diverse human disciplines. As a result, Anaduaka and Okafor (2013) opine that Mathematics is one subject that is an integral part of everyone's life and it affects virtually every field of human endeavour. Similarly, in the school system, Tella (2007) described Mathematics as an important school subject that is associated with academic and career opportunities. Hence, Mathematics as a subject has its aims and objectives which have been incorporated into the school curricula. Hence, Jaiyeoba and Atanda (2011) reported that Mathematics is one of the compulsory subjects that students must offer in senior secondary school, not minding whether such students are in science, commercial, arts or social science class. The school system is established to facilitate teaching and learning and to serve as an agent through which knowledge and purposeful education is transferred across generations. It is expected that classroom learning should be transformed into solving problems in real life situation (Anyichie & Onyedike, 2012). Consequently, the extent to which such classroom activities and learning take place is judged using the students' academic achievement. Good (in Ganai & Mirashraf, 2013), refers to academic achievement as the knowledge obtained or skills developed in the school subjects usually designed by test scores or marks assigned by the teacher. In spite of the importance accorded Mathematics in the society, students' achievement in Mathematics has been poor at the Secondary School level of the education in the country. Students' performance in external examinations such as the Secondary School Certificate Examinations (SSCE) showed that students do not perform up to the expected level.

Table 1: Statistics of May/June (SSCE) Mathematics Performance (Nigeria) from 2003-2012.

Year	*Total Entry*	*Total Pass at Credit Level and above*	*Percentage Pass*
2003	936,506	341,928	37%
2004	844,525	287,484	34%
2005	730,379	282,394	39%
2006	1,149,277	474,674	41%

2007	1,249,028	584,024	47%
2008	1,369,142	188,394	14%
2009	1,373,009	356,981	26%
2010	1,351,557	534,841	40%
2011	1,540,250	587,630	38%
2012	1,672,224	649,156	39%
Average	**1,221,590**	**428,751**	**35%**

Source: West African Examination Council, Research Division Annual Reports.

A look at the West African Examination Council's Report between 2003 to 2012 presented in Table 1 shows that an average of 35 per cent of the entire average enrolment of over 1.2 million passed Mathematics at credit level and above. The low scores recorded in the examinations may not be true reflections of the students' abilities. Such low achievements could be linked to technique of testing/assessment. Since assessment of students' learning provides the objective evidence necessary in the decision making process in education, Van De Walle (2004) and Shirvani (2009) noted that one important factor that affects student learning is assessment.

In Nigeria, the assessment of learners' achievement used to be based purely on one-shot examinations, usually administered at the end of the term or the school year. Its numerous defects such as poorly accounting for students' cognitive, affective and psychomotor abilities throughout the entire academic period led to the introduction of continuous assessment (Obioma, 1984; Ononyumolo, 2012; O'Kwu & Orum, 2012). Section 1 of the National Policy on Education (Federal Government of Nigeria, 2004), which deals with the philosophy and goals of Education in Nigeria, paragraph 9(g) states that "educational assessment and evaluation shall be liberalised by their being based in whole or in part on continuous assessment of the progress of the individual" (p.9). However, if the teacher has taught all the scheme of work, the students are expected to be exposed to, the frequency at which the students are exposed to test might really assist in making students familiar with the way tests are constructed and administered to capture students' knowledge in the subject.

In the view of Deck (2008), frequent testing is perceived as testing students every week excluding the final examination. Shirvani (2009) considers frequency of testing as ranging from administering test more than once in a term or semester, giving tests once a week to giving daily quizzes. Thus, frequency of testing refers to the rate of test administration usually during the term or semester other than the end of term/year examination. Shirvani (2007) and Marcell, (2008) reported that when test is frequent, students will be engaged and that getting the students to respond to questions and discuss read materials, will positively affect their academic achievement.

Zgraggen (2009) hinted that frequent testing may keep information fresh in the memory of students and also keep students on their toes. Another research study showed that when frequency of testing increased then there would be an increase in involving students, responding to questions, and discussing reading materials (Marcell, 2008). Haigh (2007) found that regular testing is popular with students because it reinforces student engagement with the course and provides immediate positive feedback.

Frequent tests during teaching and before school examinations offer students interim feedback on their performances, allowing them to know if their study efforts are appropriate and to become aware of their areas of strengths and weaknesses. Also, when tests are frequent and focused on a small number of topics, students may find it easier to organize their work, imbibe good study habit and retain information with a positive effect on their learning process and academic achievement. Frequent tests might help students who procrastinate as they end up studying regularly. On the other hand, when tests given to students are too frequent, they might not have enough time to deepen their knowledge and to understand the relationships among the range of concepts covered in a given subject. Moreover, they may be exposed to an excessive amount of stress (De Paola & Scoppa, 2010).

Test is a part of assessment and assessment is defined as any procedure or activity that is designed to collect information about the knowledge, attitude, or skills of the learner or group of learners (Greaney, 2001; Mwebaza, 2010). However, when such assessment is carried out as an on-going process, it is referred to as Continuous Assessment (CA) (Mwebaza, 2010). CA involves every decision made by the teacher in class to improve students' achievement in the cognitive,

affective and psychomotor domains of learning (Federal Ministry of Education, Science and Technology, 1985; Mwebaza, 2010).

CA may take different forms such as formal questions given to students during class (tests), take-home assignments/exercises, projects, practicals and recapitulation exercises. In the school system and with particular emphasis on test, it could be observed that giving students continuous short tests during classroom learning should not put students under great pressure as final examination does at the end of the term and during school certificate examination. This has led to the question of how tests are used during students' learning. Though, the NPE supports the use of continuous assessment during teaching and learning, the rate at which students should be tested to achieve a desirable and satisfactory students' achievement is yet to be ascertained.

Statement of the Problem

Mathematical competence seems to be one of the key competences necessary for personal fulfilment, active citizenship, social inclusion and employability in the modern society. The application of Mathematics cuts across various human endeavours, with pervasive influence on everyday lives including positive contribution to the wealth of the nation. Learning of Mathematics trains every individual to think logically and to solve problems using such skill. However, the performance of students in Mathematics in the Senior Secondary School Certificate Examination (SSCE) has been poor, despite the fact that the subject has obvious application to students' immediate environment and across various human endeavours. About 93% of secondary school leavers in any given year fail to qualify for university education due to poor performance in English and Mathematics with increasing decline in students' academic performance in Mathematics being more pronounced (Obemeata, 1995; Adepoju, 2002; Adepoju & Oluchukwu, 2011; Adeyemo, Oladipupo & Omisore, 2013).

Thus, with the current rising concern about the persistent poor performance of students in public examinations and the societal reliance on test scores to measure academic achievement, it is necessary to engage the students more and increase their activities via assessment with the use of frequent testing in Mathematics. Students who have not formed the habit studying regularly can be trained in

regular studies such that students' achievement in Mathematics could be improved.

Purpose of the Study

The primary purpose of this research study was to:

1) ascertain whether there is any difference in the scores of Mathematics achievement test among students exposed to frequent testing and those not exposed.
2) establish if there is any difference in the scores in the Mathematics achievement test among students exposed to the experimental conditions due to gender.

Research Hypotheses

The following hypotheses guided the study:

1. There is no significant difference in the Mathematics Achievement Test scores among students exposed to the experimental conditions.
2. Mathematics Achievement Test will not significantly differ among students exposed to the experimental conditions due to gender.

Methodology

Research Design

The research design for this study was quasi experimental pre-test/post-test control group. The population of the study consisted of all Public Senior Secondary School Students in Ogun State. The target population was all senior secondary school II students (SS II) in public secondary schools. Multistage sampling technique was used for this study. At the first stage, simple random sampling method was used to select one of the four geo-political regions (or strata) in Ogun State (that is, Remo, Ijebu, Yewa and Egba). Thereafter, five Local Education Zones were selected through simple random sampling from the geo-political zone earlier selected.

The next step of sampling was selecting one co-educational public secondary school from each Local Education Zone through simple random sampling. Four of the five schools selected for the study were used as the periodic testing groups while the remaining one was

used as the control group. The assignment of the schools into experimental (periodic testing) groups was randomly done. A total of two hundred and forty students consisting of one hundred and twenty one male and one hundred and twenty nine female were selected for the baseline studies.

All the participants selected for the final studies scored below forty per cent in their Mathematics Achievement Test (MAT). The participants who qualified for inclusion in the experimental programme were randomly assigned into the experimental groups as shown in Table 2. Figures in Table 2 describe the number of students who participated in the Base-line assessment (Pre-Testing Periods) and those who actually completed the Periodic Testing Conditions in this study. From the Table, a total sample of 250 students was pretested on the MAT instrument. A total of 187 students qualified and started the periodic testing conditions.

Table 2: Distribution of Students in the Pre-Assessment Selection for baseline data and Testing Groups

SCHOOLS (Testing Groups)	***Pre-Assessment Participants***			***Frequency of Testing***	***Experimental Participants***		
	Male	***Female***	***Total***		***Male***	***Female***	***Total***
School A	27	31	58	Weekly Testing	16	17	33
School B	23	26	49	Two Weeks Testing	14	17	31
School C	26	22	48	Three Weeks Testing	16	15	31
School D	22	21	43	Four Weeks Testing	16	16	32
School E	23	29	52	Control (No Test)	14	16	30
Total	***121***	***129***	***250***	***Total***	***76***	***81***	***157***

However, only 157 students completed the periodic testing programme due to experimental mortality. In addition, of the participants who completed the periodic testing conditions (that is, 187 participants), 76 were male while 81 were female. The distribution of the participants across the five selected schools was as shown in Table 2.

Instrument

Mathematics Achievement Test was constructed and refined by the researcher. The instrument comprised three sections (Sections A, B and C). Section A aimed at getting the background data of students. Section B had fifty multiple choice items which attracted fifty marks while

Section C was the Theory part consisting of three questions which attracted fifty marks. In order to align the objectives, content covered and assessments, a Test Blueprint (Alade & Igbinosa, 2014) was developed based on the first term's scheme of work for Mathematics by the Ogun State Ministry of Education, Science & Technology as shown in Table 3. However, only the topics taught during the experimental period were included and validated using the Test Blueprint (in Table 3). These items were also validated by experts in Mathematics Education and Measurement & Evaluation. Item analysis was carried out during the pilot study and the indices of difficulty ranged from 0.2 to 0.8. All the discrimination indices were positive values (Obe, 1980; Ilogu, 2005; Okoli, 2005). The MAT I was used as pre-test to measure the entry behaviour of the students at the start of the experiment and another equivalent instrument called MAT II was used for post test to measure performance at the end of the experiment. MAT II was constructed from the same Test Blueprint as MAT I. Test-retest reliability was used to measure the consistency of the instruments which generated a reliability coefficient of 0.81. Also, concurrent validity was used to ensure equivalence between MAT I and II. The correlation coefficient yielded 0.89.

Table 3: The Test Blueprint for the 50-item Multiple Choice Objective Mathematics Test

Topics	*Week(s) Schedule*	*Weight (%)*	*Knowledge 22%*	*Comprehension 34%*	*Application 44%*	*Total*
Logarithm	2	24	3	4	5	12
Circle Theorem	3	22	2	4	5	11
Approximation and Error	1	16	2	3	3	8
Quadratic Equation	2	18	2	3	4	9
Measure of Central Tendency	1	20	2	3	5	10
Total	**9**	**100**	**11**	**17**	**22**	**50**

Data Collection Procedure

An introductory letter was collected from the Department of Educational Foundations, University of Lagos, Akoka. The letter was taken to the Ogun State Ministry of Education, Science and Technology,

Department of Secondary Education, Oke-Mosan in Abeokuta, Ogun State, Nigeria. The Ministry in turn gave the researcher a permission letter to the Zonal Education Officers in the selected Local Government Areas of the state. Afterwards, the respective Zonal Education Officers issued an introductory letter for the researcher to present to the respective principals of the selected secondary schools where the study was conducted. Afterwards, the researcher presented the letters to the respective school Principals and explained the objectives of the study. Thereafter, the researcher obtained permission to use the schools for the study.

Administration of Instruments/Data Collection

The administration of the instruments lasted for eleven (11) weeks. The instruments were administered to the participants in groups by the researcher with the help of the research assistants. The details of the experiment procedure are as follows:

Procedure

The testing period which lasted for eleven weeks was carried out in three phases.

Phase One: Pre-Testing Periods: On resumption for the first term 2014/2015 academic session, a baseline assessment (or pre-test) was conducted for all the two hundred and fifty students selected across the five secondary schools. The researcher administered the pre-test using MAT.

Phase Two: Testing Periods: There were five experimental groups. Four groups were exposed to varying frequencies of testing during teaching/instruction in the course of the study, while the fifth group (that is, control group) was not given test. Group one was tested every week. Group two was tested every two weeks. Groups three and four were tested every three and four weeks respectively. The classes met four times in a week for nine weeks with a total of 160 minutes lesson session per week to teach students based on topics in the Ogun State Ministry of Education, Science and Technology's Scheme of Work for first term in Senior Secondary Schools in the State. However, apart

from teaching the term's topics, the control group was not given any test during the study period.

Phase Three: Post-Testing Periods. In the eleventh week after the experiment was completed, the researcher re-administered MAT to all the participants in both the experimental and control group in order to gather post-test data.

Periodic Testing Packages

Frequency of Testing

The essence of this experiment was to help determine if the achievements of students in Mathematics would be affected when exposed to different frequencies of testing and to determine the optimal testing frequency. The different Periodic Tests were used as instruments during test administration in Phase Two (Testing Periods).

Week I: Introduction

The researcher was introduced to the students in the different schools by the Mathematics Teacher. The researcher created a friendly atmosphere and established rapport with the students with the aim of making the classroom environment conducive and encouraging to the participants. The researcher presented the list of topics based on the scheme of work for the term, for the students to write in their exercise books. Thereafter, the researcher administered the pre-test using MAT before teaching commenced. Teaching started the following day after the administration of the research instruments.

Week II to X: Teaching and Testing Periods

The researcher taught the five schools based on the outlined scheme of work given to the students. School A was tested weekly after teaching the week's topic while school B was tested every two weeks using two Periodic Tests (PTs) after teaching two topic(s) that covered two weeks' lessons. School C was tested every three weeks using three PTs after teaching for three weeks and School D was tested every four weeks using four PTs that covered four weeks' lessons. The control group was not given any PT throughout the testing periods as shown in Table 2.

Week XI: Administration of Post Test. The researcher administered the post-test, that is, MAT on the experimental groups.

Method of Data Analysis

Descriptive and inferential statistical tools were used. Mean and Standard Deviation were computed for all the groups where applicable. The Statistical Package for Social Sciences (SPSS) was used for the analysis. All the hypotheses were tested with Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Testing of Hypotheses
Results obtained

Hypothesis 1: There is no significant difference in the Mathematics Achievement Test scores among students exposed to the experimental conditions.

Table 4: **Descriptive Data on Pre-test and Post test scores on the Mathematics Achievement Test among students exposed to the experimental conditions.**

SCHOOL CATEGORY	Testing Period	PRE TEST			POST TEST			Mean Difference
		N	MEAN	STD	N	MEAN	STD	
SCHOOL A	One Week Testing	33	20.55	5.61	33	60.6	9.24	40.05
SCHOOL B	Two Weeks Testing	31	20.03	2.63	31	61.1	6.7	41.07
SCHOOL C	Three Weeks Testing	31	20.06	4.49	31	42.65	8.01	22.59
SCHOOL D	Four Weeks Testing	32	20.87	6.17	32	40.13	6.5	19.26
SCHOOL E	Control Group	30	20.77	4.21	30	39.17	11.46	18.4
Grand Total / Average		**157**	**20.46**	**4.76**	**157**	**48.89**	**13.1**	**28.43**

A cursory look at Table 4, School A has a pre-test score of 20.55 and School B has a pre-test score of 20.03. School C, School D and School E have 20.06, 20.87 and 20.77 respective. Table 9 also shows that at post-test, Schools A, B, C, D and E had mean score of 60.6, 61.1, 42.65, 40.13 and 39.17 respectively. The table further shows that School B (Two Weeks Testing) had the highest mean difference of 41.07 above the average Mean Difference of 28.43. To determine whether there was significant difference in mathematics achievement test as a result of

experimental conditions, an Analysis of Covariance (ANCOVA) was done and the results are presented in Table 5.

Table 5: ANCOVA on Mathematics Achievement Test among the Experimental Groups.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	16237.61	5	3247.52	46.55	*
Intercept	12987.61	1	12987.61	186.17	*
Covariate	585.03	1	585.03	8.39	*
Experimental Groups	15846.44	4	3961.61	56.79	*
Error	10534.32	151	69.76		
Corrected Total	26771.94	156			

*Significant at 0.05; Fcritical at 0.05 (4, 151) = 2.37

The data in Table 5 shows that a calculated F-value of 56.79 resulted as the difference in achievement in mathematics test among the experimental groups. Since the F-value of 56.79 is greater than the critical F-value of 2.37, given 4 and 151 degrees of freedom at 0.05 level of significance, the null hypothesis was rejected. This indicates that students' achievement in the mathematics test significantly differed as a result of the experimental conditions. In order to determine the degree of difference in the experimental conditions in Mathematics Achievement Test, LSD's Post Hoc Multiple Comparison was carried out and the outcome is presented in Table 6.

Table 6: **Multiple Comparison of Mathematics Achievement Test and Experimental Groups**

(I) Experimental Groups	(J) Experimental Groups	Mean Difference (I-J)	Sig.
SCHOOL A	SCHOOL C	17.765*	0.000
	SCHOOL D	20.616*	0.000
	SCHOOL E	21.530*	0.000
SCHOOL B	SCHOOL C	18.465*	0.000
	SCHOOL D	21.316*	0.000
	SCHOOL E	22.230*	0.000

*. The mean difference is significant at the 0.05 level.

Table 6 shows that participants in School A had significant mean difference when compared to Schools C (Mean diff. = 17.765; ρ = 0.000), D (Mean diff. = 20.616; ρ = 0.000) and E (Mean diff. = 21.530; ρ = 0.000). Also, School B had significant mean difference when compared to Schools C (Mean diff. = 18.465; ρ = 0.000), D (Mean diff. = 21.316; ρ = 0.000) and E (Mean diff. = 22.230; ρ = 0.000). This indicates that participants tested weekly and every two weeks (that is, School A and B) had significant achievement in Mathematics when compared with other experimental groups. Besides, the result shows no significant difference in the achievement of Schools exposed to weekly (School A) and two weeks testing (School B).

Hypothesis 2: Mathematics achievement will not significantly differ among students exposed to the experimental conditions due to gender.

Table 7: **Descriptive Data on effect of Gender and Experimental Conditions on Mathematics Achievement Test among participants**

SCHOOL	GENDER	N	PRE TEST		POST TEST		MEAN
			MEAN	STD	MEAN	STD	DIFFERENCE
SCHOOL A (Weekly Test)	MALE	16	21.56	5.19	62.69	10.17	41.13
	FEMALE	17	19.59	5.97	58.65	8.08	39.06
	TOTAL	**33**	**20.55**	**5.61**	**60.61**	**9.24**	**40.06**
SCHOOL B (Two Weeks Test)	MALE	14	20.29	3.00	62.29	5.88	42.00
	FEMALE	17	19.82	2.35	60.12	7.33	40.29
	TOTAL	**31**	**20.03**	**2.63**	**61.10**	**6.70**	**41.06**
SCHOOL C (Three Weeks Test)	MALE	16	21.38	5.24	46.56	6.23	25.19
	FEMALE	15	18.67	3.11	38.47	7.74	19.80
	TOTAL	**31**	**20.06**	**4.49**	**42.65**	**8.01**	**22.58**
SCHOOL D (Four Weeks Test)	MALE	16	22.38	7.07	41.00	8.63	18.63
	FEMALE	16	19.38	4.90	39.25	3.36	19.88
	TOTAL	**32**	**20.88**	**6.17**	**40.13**	**6.50**	**19.25**
SCHOOL E (Control Group)	MALE	14	21.00	4.47	39.57	13.70	18.57
	FEMALE	16	20.56	4.10	38.81	9.52	18.25
	TOTAL	**30**	**20.77**	**4.21**	**39.17**	**11.46**	**18.40**
Grand Total / Average	**MALE**	**76**	**21.32**	**4.99**	**50.42**	**8.92**	**29.10**
	FEMALE	**81**	**19.6**	**4.09**	**47.06**	**7.2**	**27.46**
	TOTAL	**157**	**20.46**	**4.76**	**48.89**	**8.06**	**28.43**

Evidence from Table 7 shows that the mean Mathematics Achievement Test scores for male participants (at pre-test) was 21.56 for School A, 20.29 for School B, 21.38 for School C, 22.38 for School D while School E scored 21. Likewise, pre-test mean values of Mathematics Achievement Test for the female participants were 19.59 for School A, 19.82 for School B, 18.67 for School C, 19.38 for School D and 20.56 for School E.

The Table further shows that at post-test, the male participants in School A has 62.69, School B has 62.29, School C has 46.56, School D has 41.00 and School E has 39.57. The post-test mean scores for female participants shows that School A, B, C, D and E have 58.65, 60.12, 38.47, 39.25 and 38.81.

Thus, it is observed that male (42.0) and female (40.29) participants in School B with periodic test every two weeks had the highest achievement above the average Mean Difference of 29.1 and 27.46 respectively. To determine whether significant difference existed on Mathematics Achievement due to gender and experimental conditions, analysis of covariance (ANCOVA) statistics was used. The result is presented in Table 8.

Table 8: **Analysis of Covariance on the effect of Gender and Experimental Conditions on Mathematics Achievement Test.**

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	16751.53	10	1675.15	24.41	*
Intercept	13252.51	1	13252.51	193.09	*
Covariate	392.07	1	392.07	5.71	*
Experimental Groups	15897.83	4	3974.46	57.91	*
Gender	291.01	1	291.01	4.24	*
Experimental Groups / Gender	225.01	4	56.25	0.82	ns
Error	10020.41	146	68.63		
Corrected Total	26771.94	156			

*Significant at 0.05; ns = Not Significant; Fcritical at 0.05 (4, 146) = 2.37

The result in Table 8 shows that a calculated F-value of 0.82 as the interaction effect between gender and the experimental conditions. This calculated F-value of 0.82 is not significant since it is less than the critical F-value of 2.37 given 4 and 146 degrees of freedom at 0.05 level of significance. Thus, the null hypothesis was accepted, indicating that there is no significant interaction effect of experimental conditions and gender on students' Achievement in Mathematics.

Discussion of findings

Hypothesis One: stated that there is no significant difference in the Mathematics Achievement Test among students exposed to the experimental conditions. This research showed that significant difference exist in the students' Mathematics Achievement Test scores when exposed to the experimental conditions. The findings showed Schools tested every two weeks followed by School tested weekly yielded most impact towards achieving improved academic achievement than the other experimental groups (i.e. Schools tested every three weeks and four weeks), while the control group had the least achievement. The finding is in line with the study of Deck (2008) who found significant difference in achievement in the students tested weekly as against the monthly group. In other similar studies, it was observed that students in the treated group undertaking the intermediate examination performed better and got better grades than obtained by those in the control group (Shirvani, 2009; De Paola & Scoppa, 2010). In addition, the findings align with Zgraggen's (2009) view when he observed that students who were tested on a bi-weekly basis scored better in the final exam than the weekly tested group.

Hypothesis Two: stated that Mathematics Achievement will not significantly differ among students exposed to the experimental conditions due to gender. The findings showed no significant difference in the scores on Mathematics Achievement Test among students exposed to the experimental conditions due to gender. The findings align with those Parveen, Noor-Ul-Amin, and Nazir (2013), Devine, Fawcett, Szucs, and Dowker (2012), Ayodele (2011), Zhu (2007), Nuthanap (2007) and Joshi (2000) in their separate studies to determine whether gender difference in Mathematics performance existed among secondary school students', they all observed that there exists no difference between the performance of male and female students. However, the finding is in contrast with Tella (2007) who observed significant difference in academic achievement with respect to gender.

Conclusion and Recommendations

The findings of this study have shown that Schools tested every two weeks and weekly yielded more impact towards improved academic achievement than other experimental groups (i.e. schools tested every three weeks and four weeks), while the control group (i.e. the school with no test) has the least academic achievement. Furthermore, the findings showed no significant interaction effect between gender and experimental conditions among the students in the experimental groups. Consequently, the following recommendations were given.

1. Testing students every two weeks interval proved to be most efficacious in improving students' achievement in Mathematics.
2. Regular feedback through frequent testing on students' achievement will help increase their achievement in Mathematics.
3. Gender should not be given priority when planning to improve students' achievement in Mathematics using frequency of testing.

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