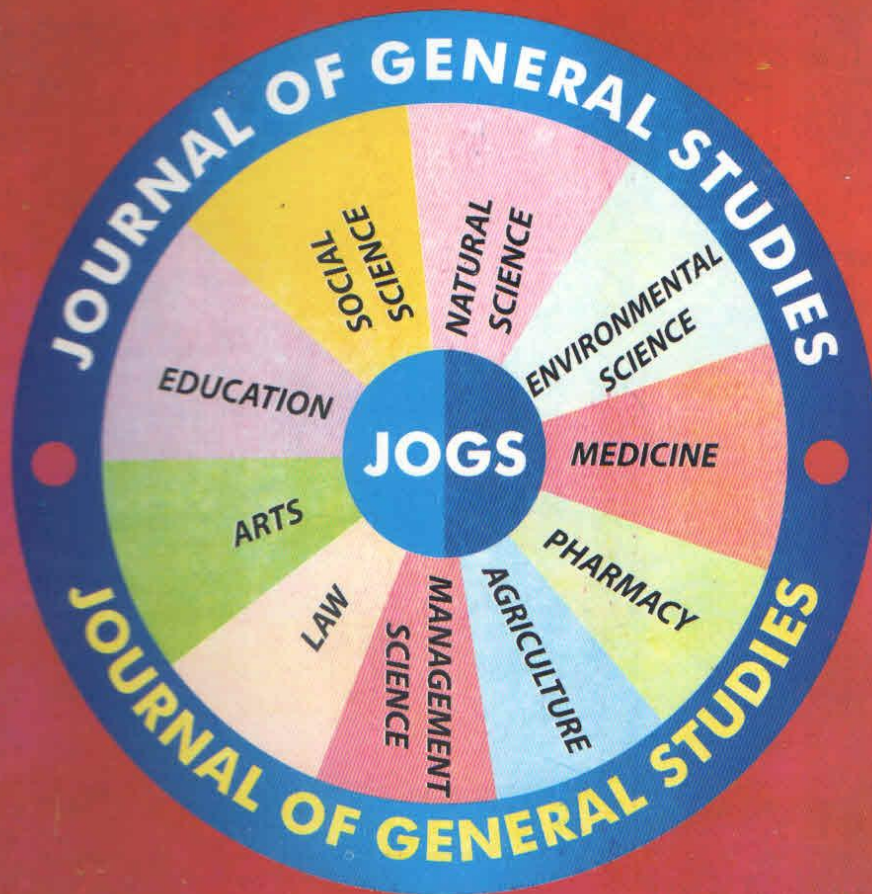


# JOURNAL OF GENERAL STUDIES (JOGS)

28



*Volume IV Number I*  
*March 2016*

# EFFECTS OF SIMPLE AND MASSES REPETITION METHODS ON SECONDARY SCHOOL STUDENTS' ACHIEVEMENTS IN BIOLOGY

By

Casmir N. Ebuoh, Ph.D.

Department of Science and Computer Education, Enugu State University of Science and Technology, Agbani- Enugu

## Abstract

The study was designed to find out the effects of simple and massed repetition methods on SSI students' achievement in Biology. The researcher adopted a non-equivalent quasi-experimental design. The researcher sampled 252 SS 1 students from a population of 1376 students in Nkanu West Local Government Area of Enugu State. Three schools were also sampled out of the 14 secondary schools in the area. Simple random sampling technique (balloting without replacement) was adopted. In each school used, two intact classes were randomly drawn; one intact class was then randomly assigned to the experimental groups I and II respectively. The two groups were taught using simple and massed repetition methods respectively. Research question and hypothesis was stated to guide the study. Relevant data for the study were collected using simple and massed repetition Biology Achievement Test (SMRBAT). Research question was answered using mean and standard deviation while hypothesis was tested using Analysis of Covariance (ANCOVA). The results proved that the use of massed repetition method in teaching Biology in secondary schools was found to achieve higher than simple repetition method. Based on the findings of the study, the researcher recommended that the serving teachers of Biology in secondary schools should adopt the use of massed repetition method in teaching Biology lessons than simple repetition method.

**Key Words:** Simple and massed repetition, teaching method, students' achievement, Biology in secondary schools.

## Introduction

Science such as Biology deals with facts and words associated with critical thinking which is essential for scientific skills and growth. Biology cuts across all aspects of human life and it is described as a vital subject in the study of various sciences (Maduabum, 1984). It would be difficult for man and woman to live together, to think, to act, and share ideas together without Biology. It is possible for man to engage in scientific conversation, transfer of ideas, thoughts, feelings, and to develop scientific inquires through Biology. The importance of Biology cannot be over-emphasized because there is no school curriculum or a national development planning without emphasis on the area of Biology (Federal Republic of Nigeria, 2013) stated that the broad aims of secondary education are to prepare individual for useful living and higher education. In order to realize the above stated objectives/goals, Biology (science) is included as one of the core and compulsory subject in secondary schools in Nigeria. The aims and objectives of Biology is to enable the individual to think creatively, acquire manipulative skills in science (Biology), apply Biology skills, comprehend the wide applicability of Biology in other disciplines, discover, appreciate and admire the beauty of nature (Maduabum, 1984). Those aims and objectives of the Biology can be realized using planned repetition methods in teaching Biology in secondary schools. Planned repetition means saying a thing over and over again. About thirty to forty learners make up a class, and during a teaching situation, it is possible that everybody in the class is learning all that the teacher is saying at the same time, some pupil may be absent minded; some may be distracted, while some may be engaged in some secret conversations or discussions unknown to the teacher. These categories of learners cannot reasonably hear and understand all

the teacher may say. Some students may hear, but would not understand; others may hear and understand things which are different from what the teacher wishes that they would understand. In the hope of situation, the teacher is bound to repeat some words in such a way that it will make it easy for the students remembering it, as a result of over learning. Mere repetition (unplanned and unconscious repetition) does not increase learning. It hardly had any effect on the learner. But there are repetitions that are carefully and meaningfully planned to increase students learning. The purpose of planned repetition is to enable the learner master the materials presented to him. The materials are given emphasis by repeating them (Idoko 2010).

Idoko, Nwaemeka and Nwosu (1989) viewed that when the Biology teaching methods are uninteresting and less meaningful and narrow demands on students' intelligence, learning is likely to be affected. The problem of low achievement in Biology at secondary school level could be attributed to the teachers' use of inappropriate teaching methods. Sequel to the above, Biology teachers may have tried varieties of instructional methods at their disposals without simple and massed repetition teaching methods. This underscores the need, to investigate into the impact of simple and massed repetition teaching methods in improving students' achievements in Biology at secondary schools. Some of the teaching methods adopted have been criticized and seen not to be effective for the teaching of some aspects of secondary school Biology. Holings (1990) investigated the effect of the use of project in science teaching and found out that at the secondary school level, behavioral element in formulation and implementation, and lack of understanding act against its utilisation. The question then is, will the use of simple and massed repetition teaching methods in Biology teaching help in improving the students' achievement in Biology? Will the use of simple and massed repetition teaching methods make Biology teaching more important and also, much meaningful on students' intelligence, capabilities, talents and improve performance in Biology. Simple repetition teaching method involves a repetition of a concept, phrases, some concept, idea, formula, etc, immediately after the initial presentation. This is done to increase learners hardly achieve mastery of materials at their first summative examination focuses on the overall effectiveness of programme an immediate repetition of that material without any intervening variable is what is termed as simple repetition. The students are asked to repeat what the teacher has said.

Massed repetition teaching method is the repetition of all the major points made in the whole lesson - a summary. It may be verbal or written. It is just like a newscaster on radio and television, who by the end of the news goes through the major points of the news (Ebuoh, 2006 and Idoko, 1998). It is the opinion of the researcher that some of the Biology teachers do not use simple and massed repetition teaching methods in teaching Biology in secondary schools in Nigeria. This could be responsible for the students' low achievement in Biology in secondary schools. The inability to use simple and massed repetition teaching methods could be attributed to the students' low performance in Biology. It appears that, teachers prefer using other planned repetition teaching method than simple and massed repetition teaching methods in teaching. A question that arises then is: is the use of the planned repetition teaching method better than the use of simple and massed repetition teaching methods in attaining higher achievement in Biology in secondary schools. Furthermore, it is not certain which teaching method is related with student's higher performance in Biology particularly with the use of simple and massed repetition teaching methods.

#### Purpose of the Study

The purpose of the study was to find out the effects of simple and massed repetition teaching methods on the mean achievement scores of students in biology in secondary schools in Nkanu Local Government Area of Enugu State.

### Research Questions

The following research question was posed to guide the study:

1. What are the effects of simple and massed repetition teaching methods on the mean achievement scores of students in Biology in secondary schools?

### Hypothesis

The null hypothesis ( $H_0$ ) was tested at 0.05 level of significance.

1. There are no significant effects of simple and massed repetition teaching methods in mean achievement scores of students in Biology in secondary schools.

### Method

The design for this study is quasi-experimental. The design is specifically a pretest post-test, non-equivalent group design. The choice of this design agrees with Abimbade (1997) who observed that this design is often used in classroom experiments when experimental and non-control groups are naturally assembled groups, such as intact classes will be randomly assigned to experimental groups I, and II respectively.

**Table 1: Diagrammatic representation of pre test – post test non equivalence control group design:**

Group	Pre Test	Research Conditions	Post Test
$E_1$	$O_A$	$X_1$	$O_B$
$E_2$	$O_A$	$X_2$	$O_B$

Where

$E_1$  = Represent experimental treatment group on simple repetition teaching method.

$E_2$  = Represent experimental treatment group on massed repetition teaching methods.

$O_A$  = Represents pre test on achievements

$O_B$  = Represents post test on achievements

$X_1$  = Represents treatment condition on simple repetition teaching methods.

$X_2$  = Represents treatment condition on massed repetition teaching methods.

The area covered by this study is Nkanu West Local Government Area of Enugu State. The population for this study comprised all the 1,376 SS1 biology students in all the fourteen secondary schools in Nkanu West Local Government Area of Enugu State. Simple random sampling technique (balloting without replacement) was used to draw three schools from the fourteen secondary schools in Nkanu West Local Government Area. In each of the sampled schools, simple random sampling (balloting without replacement) was used to sample two intact classes of SS1 in each school and 252 students. Two intact classes were randomly assigned to the experimental group I and II. In all, a total of 252 students were used in the experimental groups. In each school, an intact class of 32 students was assigned to experimental group I and II respectively, making a total of 64 students.

Simple and Massed Repetition Biology Achievement Test (SMRBAT) was developed by the researcher for data collection. The number of periods that essentially cover a particular unit and the objectives of the Biology contents guided the development of SMRBAT. This implies that where more time was required to teach a unit, more items were drawn from such a unit. SMRBAT consisted of 40 objective test items. Objective test items were chosen to enable the researcher to cover more content areas. Twenty five objective test items were at the lower cognitive level (that is knowledge and comprehension) while 15 items were in higher thinking process (that is application). The instrument was used for pre-test and post test except the serial numbers of the items were rearranged during post testing. The items for the SMRBAT were written to reflect the items on the table of specification. The instrument went through both face

content validations. The items of SMRBAT and experimental packages were subjected to the validity by two experts in Biology, one expert in measurement and evaluation. The instrument and experimental packages were validated in terms of clarity, appropriateness of the language used. Their comments were useful in modifying the items of the tests, and experimental packages. The surviving items were regarded to be adequate for data collection. The table of classification was validated by the experts to determine how effective it is in selecting items considering the percentage allocation of the various levels of content. Forty questions survived out of 47 items after validation. The reliability of SMRBAT was found using measure of stability (test-retest method). This method was chosen because it is most appropriate in determining the correlation between sets of scores from two administrations of the test. The SMRBAT was administered to two intact classes of 50 students each at Community secondary school, Imezi in Ezeagu L.G.A of Enugu State. The SMRBAT was re-administered to the students and scores collected. Then the two sets of scores from first and second administrations of SMRBAT were correlated using the Spearman's Rank Order correlation. A correlation co-efficient value of 0.85 was obtained.

#### **Experimental Procedure**

The Biology teachers from each of the sampled schools receive training for a period of one week from the researcher on the use of simple and massed repetition teaching methods in teaching Biology respectively. Prior to the treatment, the Biology teachers in the sampled schools who received training on how to use the research instruments administered the SMRBAT respectively to SS 1 students at the end of the teaching. At the end of the pretest, the question papers and the answer scripts were collected from each student who took the pre test. This is because the same test item is used for post test, except that the serial numbers of the items were rearranged in the post test. This made the items look different at first glance. After the pre test, the teachers provided treatment to the two groups by using simple and massed repetition teaching methods to teach the students for a period of four weeks. At the end of the duration of the treatment, the teachers re-administer the SMRBAT respectively as post tests.

#### **Experimental Control:**

There are some extraneous or confounding variables that the researcher felt could constitute potential threats to the validity, reliability and generalization of the results of this study. Such variables include inter-group variables, teacher variables and Hawthorne effect. In seeking to achieve validity, the following measures were made to ensure that these confounding or intervening variables, which might introduce bias into the study, were either minimized or controlled.

**Inter-group variable:** To remove the errors of non-equivalence arising from non randomization of the research subjects, analysis of covariance (ANCOVA) was used in data analysis. This is to correct the error of initial difference in the ability levels among the research subjects.

**Teacher variable:** To minimize the error which may arise due to teacher difference, the researcher gave lesson notes prepared by the researcher on the topics to all the Biology teachers who were used for the study. The lesson notes and procedure for presentation of the simple and massed repetition teaching methods were to large extent discussed with the teachers. Each teacher taught the equivalent of students at Community Sec. Sch. Oghe in Ezeagu L.G.A. during trial teaching with the lesson notes. After, the trial teaching, discussion was held on the teachers' presentation of the lessons.

**Hawthorne effects:** This is a situation in which the research subjects' behaviour is affected not by treatment per se but by their knowledge of participation in the study. This was avoided by the

use of regular Biology teachers in the school in administering the treatments. The researcher was not directly involved in the treatment in order to avoid sensitizing the students being used for the research.

SMRBAT was administered respectively as pretests on the first week of treatment by the research assistants. Scores of the students on the pretests were recorded and kept for use after the experiment. The posttest data were also obtained after re-administration of SMRBAT to the students on the last week of treatment. For each of the groups, data for pretests and post tests were recorded separately. The test items on SMRBAT were scored and two marks were allocated to each number to give a maximum mark of eighty.

Mean (x) and standard deviation were used in answering the research question. The Mean was employed because it is the most appropriate statistical device to use for such data because it takes all measurement (observations) into consideration. Analysis of covariance was used to test the hypothesis. Analysis of covariance (ANCOVA) is used because intact classes were used and as such corrects the error of initial differences in the ability levels among the students involved in the study. The null hypothesis (Ho) will be rejected if t - calculated is greater than the t - table at 0.05 then fail to reject the null hypotheses at 0.05 if the t-calculated is less than t - table at 0.05.

### Results

What are the mean achievement scores of students taught Biology using simple and massed repetition teaching methods in secondary schools?

**Table 2: Mean achievement scores and standard deviation of students taught Biology using simple and massed repetition teaching methods.**

Groups	Mean (X)		Standard Deviation		N
	Pretest	Posttest	Pretest	Posttest	
Experimental Group1:(simple repetition method)	20.0	23.07	5.04	4.30	126
Experimental Group2:(massed repetition method)	19.3	74.71	3.09	1.19	126
Total					252

Table 2 showed that the experimental group 11 taught Biology using massed repetition teaching methods had 19.30 in pretest and 74.71 in posttest. The group also had standard deviation of 3.09 and 1.19 in pretest and posttest respectively. This means that the experimental group 11 taught Biology using massed repetition teaching method obtained mean achievement scores of 20.08 and 23.07 in pretest and posttest respectively. The group too had a standard deviation of 5.04 in pretest and 4.30 in posttest.

Table 3:  
 massed repetition  
 Source of variance  
 Covariance  
 Main effect  
 Teaching method  
 Error  
 Residual  
 Total  
 S = Significance  
 The result of  
 This means  
 hypothesis of  
 using simple  
 levels of significance  
 Discussion:  
 The result of  
 teaching method  
 This is in agreement  
 methods of  
 revealed the  
 with simple  
 teaching method  
 agreement on  
 more effective  
 Eritri Location  
 Conclusion  
 The result of  
 repetition teaching  
 teaching method  
 mean achievement  
 methods in  
 teaching method  
 Recommendation  
 The following  
 1. Teachers  
 2. Students

Table 3: Analysis of Covariance of students' achievement through the use of simple and massed repetition teaching methods in teaching Biology.

Source of variation	Sum of square	Df	Mean square	F-Cal	Sig	Dec
Between variation	6199.877	1	6163.767	127.628	0.00	
Within	16830.953	2	87515.494	252.867	000	
Teaching methods	3498.070	2	1698.073	54.031	000	S
Residual	18102.931	248	76.561			
Total	10126.312	4	1531.578	48.032		
Grand Total	60921.18	2903	10875.575			

**Significance at P<.05**  
 The result of Analysis of covariance in table 3 above, showed that  $F(54.031) = 0.000; P < 0.05$ . This means that the F calculated, F (54.031) is greater than the F critical 0.05. Thus, the null hypothesis of no significant difference in the mean achievement scores of SS1 students taught using simple and massed repetition teaching methods in teaching Biology was rejected at 0.05 level of significance. This implies that the use of teaching method in teaching Biology has significant influence on students' achievement in Biology.

#### Discussion of the Findings

The result showed that the experimental group II taught Biology using massed repetition teaching method did better than those taught Biology using simple repetition teaching method. This is in agreement with Okafor (2000) and Tami (1995) who observed that the quality and methods of teaching affects the students' performance in Geography. The result of the hypothesis tested that there was a significant difference in the mean achievement scores of students taught using simple and massed repetition teaching methods in favour of the use of massed repetition teaching method followed by simple repetition teaching method. The result of the study is in agreement with the findings of Amulu (2012) where repetition teaching method was found to be more efficacious than the use of project in teaching 200 SS2 students Integrated Science in Igbo Local Government Area of Enugu State.

#### Conclusion

The result of the findings showed that experimental group II taught biology using massed repetition teaching method performed higher than those taught biology using simple repetition teaching method. Again, the researcher found out that there was significance difference in the mean achievement scores of students taught with using simple and massed repetition teaching methods in favour of using massed repetition teaching method followed by simple repetition teaching method.

#### Recommendations

- The following recommendations were made based on the findings of the study.
1. Teachers of Biology should use massed repetition teaching method in teaching Biology lessons than simple repetition teaching method.
  2. Student -teachers should be made to emphasize the need to teach the subject (Biology) using simple and massed repetition teaching methods while in school.

## REFERENCES

- Abimbade, A. (1997) *Principles and Practice of Educational Technology*. Ibandan: International Publishing.
- Amulu, C. P. (2012). Effects of project method on students' achievement in Introduction of Technology in Junior secondary schools in Ezeagu Local Government Area of Enugu State. Unpublished M. Ed. dissertation. Enugu: ESUT
- Ebuoh, C. N. (2006), *Practical teaching guide for teachers*. Enugu: Sky Printing Press.
- Ebuoh, C.N., Nnaemeka, A.O. and Nwosu, V.C. (1989). An investigation into the extent of use of laboratory method in teaching Biology in Senior Secondary Schools in Enugu urban and Anambra State. *Unpublished Project Report*. Nsukka: University of Nigeria.
- Federal Republic of Nigeria (2013) *National Policy on education*. Lagos: Federal Ministry of Education.
- Hollings, G.E. (1990) *A Primer of Literary Criticism*, London: University Tutorial Press.
- Howard, A. W. (1998). *Teaching in middle schools*. London: Ponny Ivania International textbooks Co.
- Idoko, C.E (2010) *Science education and instruction: A practical approach*. Enugu: Chestnut Press Limited.
- Madubam, M. A. (1984) *Teaching biology effectively*. Jos: Jos university press limited.
- Okafor, G.A (2000). Effects of note taking patterns on students achievement, in interest and retention in Geography. *Unpublished Ph. D. Thesis* Nsukka: University of Nigeria.
- Tami, P. (1995). *Homework and science learning in schools: Israel science Education*. New York: John Willay and sons Inc.