Comparative Effectiveness of Conventional Rote Learning and Mnemonics Techniques in Teaching-Learning of Physical Geography in Public Senior Secondary Schools in Nigeria

Adadu, Paulinus M. A., Ph.D.
School of Early Childhood Care and Primary Education
Cross River State College of Education, Akamkpa
P.M.B. 1171 Calabar, Cross River State, Nigeria.
E-mail: paulinusadadu@gmail.com
Phone: +2348036637047

Ogbiji, Joseph E., Ph.D.
Department of Educational Administration
Cross River State University of Technology, Calabar
Cross River, Nigeria

Agba, Rosemary U., Ph.D.
Department of Early Childhood Care Education
School of Early Childhood and Primary Education
Cross River State College of Education, Akamkpa,
Cross River, Nigeria

…………………………………………………….

Abstract

This study investigated the relative effectiveness of Mnemonics technique (MNIT) and conventional rote learning technique (CRL) on the teaching-learning of physical features (Geography). A pre-test and post-test control group design was adopted for the study. A sample of ninety SS I students was randomly selected out of one thousand one hundred & fifty SS I Geography students in Cross River State and divided into three groups. The first group was taught with Mnemonics technique (MNIT), the 2nd group was taught with the conventional Rote Learning Technique (CRLT), while the 3rd

group combined the two methods. A pre-test was administered before treatment and after six weeks of instruction, a post-test was similarly administered. The data obtained were analysed using ANOVA and F-statistics. The results showed that there was a significant difference in the academic achievement of students taught with MNIT. Also, a significant difference existed in the mean achievement scores of students who were exposed to MNIT coupled with CRLT and those exposed to CRLT alone. There was also a significant difference in the academic achievement of students when CRLT, MNIT and MNIT/CRLT groups were compared. It was therefore concluded that MNIT/CRLT was more effective in teaching-learning physical Geography and that augmenting CRLT with MNIT allows students learn better.

Key Words: Conventional Rote Learning technique, Mnemonics technique and students' academic achievement.

Introduction

An educated person/student reads some material or the other every day, like newspaper, story books, magazines, text books, encyclopedia, lecture notes. When we read, we remember every word, but after a period of time, we find that only a part of what we have read is retained. Every individual has many incidents stored in his memory. These memories may be of his childhood, or of any other period in his life. Gradually, with the passage of time, many of them fade away. Sometimes, students cannot retain what they have studied. The ancient psychologists discovered that the human mind jumps from one subject to another.

If the mind is controlled, there will be a heightened awareness of different subjects. This will help in reaching a deeper level of the mind, ie, the meditation level. The Romans and Greeks used a similar system and gave it the name Mnemonics from the memory goddess Mnemosyne. An example of Mnemonics is the HOMES standing for the lakes of Canada: H = Lake Huron, O = Lake Ontario M = lake Michigan, E = Lake Erie and S = Lake Superior. Many foreign memory experts and psychologists call it photographic memory. Through experience, the subject that is retained in our mind is called memory using five of our senses namely: touch, taste, smell, sight and sound Kapadla (2008)

A person's memory system can be divided into three stages, each having a different time span: sensory memory, short-term memory and long-term memory. The sensory memory holds information only a while for an instance suppose one looks at the picture of a sunset, information about the sunset passes through one's eyes and gets stored in one sensory memory. This holds nearly exact images of the picture briefly. The image quickly fades and disappears.

Short-term memory holds a fact for as long as one actively thinks about it. For example, when you look up a telephone number and repeat it to yourself until you dial it, you are using your short-term memory. This memory fades after about 200 seconds, unless you continually repeat the information to yourself, it will disappear.

Long-term memory includes a large amount of information which may be retained for a lifetime. Two factors are responsible for entry of information into long-term memory. Repetition and intense emotion: if you keep on repeating the multiplication tables every

day, you will commit it to long-term memory. Again, strong emotions, like the first experience of love, stays on in the long-term memory (Kapadla 2008).

Sometimes, however, students cannot retain what they have learnt. They encounter some obstacles while learning and are not able to get the maximum benefit from what they have studied, as individuals nor as a class let alone in comparison with another class. A comparative study of two teaching techniques in teaching-learning of physical Geography in public senior secondary schools in Nigeria becomes necessary.

Statement of the Problem

Many a time when one is taught something as an individual or in a group the individual or group of learners are not able to reproduce what they have learnt. They may be able to recall such a subject matter slightly. Some of them may be able to recall vividly but some may not be in a position to call to mind the subject matter even though, they are of the same age bracket and are taught under similar environment and method. Owing to this state of teaching/learning situation, the researchers have decided among other variables to find out the comparative effectiveness of conventional role learning and mnemonics in learning physical geography in public senior secondary schools in Nigeria.

Purpose of the Study

The study aimed at finding out the effect of using mnemonics as a supportive means on the performance of students in physical Geography in the secondary school. This is with a view to provide solution to the development of strong memory of students in giving Geographical facts amidst low or inadequate teaching aids. The mnemonics introduced may be a remedy to forget fullness in students as a result of seeming abstract nature of the subject matter, and as an alternative to rote learning.

Objectives of this Study

The specific objectives of this study are to:

a. Compare the relative effectiveness of conventional rote learning technique (CRL) and use of mnemonics technique (MNIT) in the learning of facts in Geography.

b. Investigate the effectiveness of (MNIT) when used together with (CRIT) in the learning of facts in Geography and

c. Examine the relative effectiveness of CRIT, MNIT and a combination of CRIT in the learning of physical features in Geography

Hypothesis

1. There is no significant difference in the performance of students in facts of Geography taught and applying CRIT and those taught with MNIT

2. There is no significant difference in the mean achievement of students exposed to MNIT completely with CRLT and those exposed to CRLT only.

3. There is no significant difference among the performance of students when CRLT, MMIT and MNT/CRLT are used in the learning of physical Geography.

Methodology

The population of the study was all SS I Geography students (1150) in public secondary schools in Cross River State, and the sample comprises ninety SSI Geography students randomly selected from three public secondary schools from three senatorial districts of the state involving urban and rural areas. The research instruments used in this study were (i) Conventional Rote learning – A teacher made test on Geographical facts (20 items). (ii) A twenty – Item supply – response question tagged test on geographical facts (MNIT).

The two twenty item tests were questions on relevant geographical facts all over the globe. They questions were standardized and validated. The reliability test of the instruments was also determined and the reliability coefficients were 0.61 and 0.63 respectively using test – retest method.

All the participating students in both experimental and control groups were first given a test (pre - test) on the first day in each school. The actual teaching started in the second lesson. The experimental groups I SS I were taught physical features using conventional rote learning method which lasted for eight periods running 40 minutes each period. The SSI students in experimental group II, were taught with conventional rote learning method and then mnemonics (MNIT). This also lasted for eight lesson periods of 40 minutes each. The teacher paused at intervals when discussion was to come in.

The control students were taught using conventional rote learning method only. The experimental and control groups were examined after the teaching session with a post-test using the same test items used in pre-test but restructured.

The scripts of the students were marked and scored and the scores obtained during the experiment served as the data for analysis as the dependent variables. The data collected was analysed by using t – test and f_c – tests statistics.

Results

The Mnemonics test instrument (MNT) which was administered as pre-test to the three groups was to determine the background knowledge of the students in physical features (geography). The data obtained were subjected to a one-way analysis of variance (ANOVA) and f – value calculation.

Table 1: Analysis of variance of scores of the MNT, CRL and MNIT/CRLT Groups on the pre-test scores sources of variation

Sauce of variation	Sum of squares	Degree of freedom	Mean square	Fc
Between Groups	0.26	2	0.13	-
Within groups	232.14	87	2.67	0.049
Total	232.4	89	2.80	-

FC = 0.049 while F1 (F = table value)

FC = 3.07 ie Fc < F1. This implies that there was no difference in the mean score of he three groups in the MNIT test on geographical facts in the pre-test indicating similar background knowledge.

Hypothesis One: There is no significant difference in the performance of students in facts of Geography taught using CRLT and those taught with NMIT.

Table 2: t –test Analysis of the performance of MNIT and CRLT groups

Group	N	$\bar{x}$	SD	T
MNIT	30	19.29	9.83	
CRLT	30	13.83	7.68	4.96

From the table, t = 4.96 at p = 0.05 and degree of freedom 58. That is $t_c > t_I$ indicated a significant difference existed in the performance of students that were taught Geographical facts using MNIT and those taught using CRLT. The MNIT group performed better than the CRLT group.

Hypothesis Two: There is no significant difference in the achievement scores of students who were exposed to MNIT coupled with CRLT and those exposed to CRLT only.

Tables 3: t – test Analysis of the performance of MNIT/CRLT group and the CRLT group alone

Group	N	$\bar{x}$	SD	t
MNIT	30	13.83	7.68	
CRLT/CRLT	30	30.27	11.35	6.57

The value of $t_I = 1.98$ indicating $t_c > t_I$. and the null hypothesis is rejected. This implies that a significant difference existed in the performance of students taught Geographical facts coupled using MNIT with CRLT only. The MNIT/CRLT performed better than CRLT group alone.

Hypothesis Three: There is no significant difference among the performance of students when CRLT, MNIT and CRLT/MNIT are used in the teaching-learning of Geographical physical features.

Table 3: Analysis of variance of scores of the three groups CRLT, MNIT and CRLT/MNIT on post – test scores

Sauce of variation	Sum of squares	Degree of freedom	Mean square	Fc
Between Groups	4205.75	2	2102.88	-
Within groups	8527.91	87	98.02	21.45
Total	12733.66	89	2200.9	-

At probability level of 0.05 and degree of freedom of 2.67, the calculated F value (F_c) is 21.45 while that of table, F_I is 3.07 i.e $Fc > F_I$. This implies that a significant difference exists in the mean scores of the three groups. The CRLT/NMIT group had better performance, than MNIT and CRLT separately with group means equal to 30.27 and 13.83 respectively   .

Discussion

The findings of this study showed that the combination of conventional rote learning technique and the use of Mnemonics technique (CRLT/MNIT) strategy was more effective in enhancing students' achievement in enumerating geographical facts than the conventional rote learning technique (CRLT) and the use of Mnemonics (MNIT) separately.

The contribution of Mnemonics technique (MNIT) and conventional rote learning technique (CRLT) allow the students to utilize the lessons by the teacher using the conventional rote learning technique to grasp the topic taught more than ever before. The performance of the student that were taught using MNIT was even better than conventional rote learning technique (CRLT) alone. The results of this study is consistent with those of Nakhien (1992), Sawrey (1990), Mastropieru and Mushinski Fulk (1990) who ascertained that conventional rote learning with the use of Mnemonics results in students' academic performance on immediate and delayed recall measures, increase significantly under Mnemonics instructional conditions.

Conclusion

The results and the findings of this study indicated that the use of conventional rote learning coupled with the use of mnemonics technique or used alone is very effective method of teaching. The effectiveness of the mnemonics instruction gives the opportunity of using the strategy where there a Geography teacher in the school to learn physical features. That is it could be a good substitute for the actual learner in the classroom. Aside from this, the method could be useful to learn in schools where there are no equipment and teaching aids to use.

Counselling Implications

Based on the findings, it behooves the teachers of geography to develop positive attitude towards assisting students in learning the subject in an environment that is novel for academic achievement such that there is immediate and long-term recall of learn materials, increase ability to generate recall tips independently and effectively utilize them. Finally, teaching-learning should be inter-passed with CRLT & MNIT techniques to enhance students' academic achievement.

References

Allen, D.S. (2000). *The use of constructional materials*. Yale: New Jersey teachers institute. Retrieved from http//www.jerseyedu/shjubs.

Mahesh, K. (2008). *Increasing memory power. An essential guide to a better memory*. New Delhi: New Dawn Press Inc.

Mastropierus, M. A. & Mushinski, F. (1990). *Enhancing academic performance with mnemonic instruction.* pp. 102-121. Spinger Link Ltd.

Nakhien, N. B. (1992). Why some students don't learn Chemistry. *Journal of Chemistry Education*, Vol. 69 pp. 191-196

Sawrey, B. A. (1990). Concept of learning versus problem solving. *Journal of Chemistry Revisited*. Vol. 67 pp. 253-254, Education.