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Effectiveness of Learning Activity Package (Lap) On Students' Performance in Biology in Ekiti State Secondary Schools, Nigeria

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ABSTRACT: *The study examined the effectiveness of Learning Activity Package (LAP) on students' performance in Biology in Ekiti State secondary schools. The study specifically examined the difference between the pre-test, post-test and retention performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. This study adopted a quasi-experimental design in which two groups (one experimental group and one control group) were involved. The population of the study comprised of all S.S.S. 1 students offering Biology in public secondary schools in Ekiti State, Nigeria. The sample consisted of intact class size of students offering Biology drawn from 4 public secondary schools in Ekiti State. The sample was selected using multistage sampling procedure. A self-designed instrument tagged Biology Performance Test (BPT) was used for collecting the data for the study. The study was carried out in three phases namely the pre-treatment stage, treatment stage and post-treatment stage. The hypotheses were tested using t-test at 0.05 level of significance. The findings of the study revealed that there was no significant difference in the performance of both groups before treatment but there was significant difference between the post and retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. The study concluded that Learning Activity Package (LAP) strategy is effective in improving performance and retention of Ekiti state secondary school students in Biology. It was recommended among others that teachers teaching Biology in Ekiti State secondary schools should be encouraged to adopt Learning Activity Package (LAP) strategy in exposing the students to Biological concepts.*

KEYWORDS: effectiveness, learning activity package (LAP), performance, retention, biology

INTRODUCTION

Biology is a practical based subject that requires to be taught in a manner that the students will be actively engaged in the teaching and learning processes (Nwagbo & Chukelu, 2011, Enohuean, 2020, Olojo, Akinwumi & Olofin, 2022). Lawal (2011) and Miller and Levine (2017) state that Biology in addition to studying life, also studies the structures, functions, growth, origin, evolutions, distributions, inter-relationships, diseases and adaptations of living things. Despite the importance placed on biology, students' performance in the subject at both terminal school examination and external (WASSCE and NECO) examinations has been repeatedly inconsistent. The inconsistent performance of students in biology becomes more evident, looking at the records of the West African Examination Council (WAEC) results over the years which reveals that biology has a high number of students' enrolment yearly in the Senior School Certificate Examination but records inconsistent performances over the years.

In Ekiti State, the academic performance of Secondary School students in Biology has been a challenge to various stakeholders, including parents, students, school administrators and government in the state. The inconsistent performance of students in Biology may likely be associated with the use of ineffective methods of teaching. Despite the recommendations for use of innovative methods for teaching and learning science by the Federal Ministry of Education and suggestions by many Science Educators, reports from educators and researchers indicated that students' performance in Biology is still not encouraging.

The lecture method used in teaching biology concepts might have the advantage of presenting large amounts of information which can be used to cover the voluminous syllabus within a short time (Falebita & Olofin, 2020). However, the lecture method on the other hand, can hamper with the learning processes of the students, because learning is an active process not just listening to the teacher (Olofin & Falebita, 2020). It appears that the conventional method does not give attention to individual differences. This study, therefore, is a response to this challenge, and it is aimed at investigating the effect of Learning Activity Package (LAP) on students' performance in Biology.

Learning activity package (LAP) is a student centered activity oriented teaching strategy where the teacher acts as a facilitator of learning, guiding the students through a series of activities and problems which may help learners to achieve highly (Njoku & Akamobi, 2015). Learning activity package may involve a number of instructional strategies, depending upon the instructional objectives of the unit or module. A web page or site may be effectively utilized by teachers developing learning activity packages as a wide variety of instructional strategies may be incorporated. The web page or site may contain instructional content (text, audio and video) links to other sites, interactive activities (tutorials, simulations and experiments etc), assignments, evaluation guides and any other required content (Njoku & Akamobi 2015).

In LAP, learning materials are broken into small steps that are arranged sequentially from known to unknown and in an increasing order of difficulty. Learning activity package may involve any of a number of instructional strategies, depending upon the instructional objectives of the unit or module. A web page or site may be effectively utilized by teachers developing learning activity packages as a wide variety of instructional strategies may be incorporated. The web page or site may contain instructional content (text, audio and video) links to other sites, interactive activities (tutorials, simulations and experiments etc), assignments, evaluation guides and any other required content.

Njoku and Akamobi (2015) opined that the LAP consists of the following components: topic and sub-topics, rationale, behavioural objectives, pre-test, learning activity, unit activities and post-test. LAP is a learner centered activity that leads to individualization of instruction which leads to higher academic achievement. According to Akpokiniovo (2020), LAP is a learner centered activity that leads to individualization of instruction which leads to higher academic achievement. Learning activity packages are comparatively recent development in programmed instruction. A LAP is a "modular instructional unit designed to facilitate the individualization of instruction". A specific advantage of the LAP is that it allows the student a wide variety of choices in how he will achieve the behavioural objectives, thus allowing for differences in past achievement and in style of learning. Learning Activity Package is an innovative approach that acts as a vehicle that makes for individualization in learning. It is an adaptation of the programming of instruction.

According to Neboh (2012), the components of LAP are – topic or title and objectives, pre-test, activities, quizzes and post-test. Akpokiniovo (2020) found out that the LAP group achieved higher than the lecture method group both in Pre-PAT and post-PAT scores. Abu (2018) concluded that LAP enhanced the students' achievement in Biology irrespective of their previous academic standings. Njoku and Akamobi (2015) found out that the LAP was effective than conventional method. The result also showed that the students enjoyed independent learning.

From the above, it can be seen that the use of LAP method is likely to enhance performance. That is why the researcher investigated the effectiveness of LAP in teaching some biological topics and its effects on students' performance and retention. The main purpose of the study was to examine the effectiveness of Learning Activity Package (LAP) on students' performance in Biology in Ekiti State secondary schools. The study specifically examined:

i. the difference between the pre-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method;
ii. the difference between the post-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method; and
iii. the difference between the retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Research Hypotheses

The following null hypotheses were generated for this study.

Ho1: There is no significant difference between the pre-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Ho2: There is no significant difference between the post-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Ho3: There is no significant difference between the retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

METHODOLOGY

This study adopted a quasi-experimental design in which two groups (one experimental group and one control group) were involved. The pattern of the design is as shown below.

E: O_1 X_1 O_2 O_3: Experimental group
C: O_4 X_c O_5 O_6: Control group

Where
O_1, O_4, = Observation before treatment
O_2, O_5, = Observation after treatment
O_3, O_6, = Observation after 6 weeks of treatment
X_1 – Treatment by LAP strategy
X_c – Treatment by conventional method

The population of the study comprised of all S.S.S. 1 students offering Biology in public secondary schools in Ekiti State, Nigeria. The sample consisted of intact class size of students offering Biology drawn from 4 public secondary schools in Ekiti State. The sample was selected using multistage sampling procedure. In the first stage, one senatorial district was selected through simple random sampling technique. Two local government areas were selected from the senatorial district earlier selected in the second stage using simple random sampling technique. In the third stage, two public secondary schools were selected from each of the selected local government areas through simple random sampling technique. In stage four, the intact class size of students offering Biology in S.S.S. 1 of each of the four schools were used for the study.

A self-designed instrument tagged Biology Performance Test (BPT) was used for collecting the data for the study. It consisted of two sections A and B. Section A sought for the bio-data of the respondents while section B consisted of 50 objectives items with five options. The face and content validity of BPT was ensured by experts of Tests and Measurement, and Biology Education. One hundred items which were originally presented to the experts were reduced to fifty item question.

The study was carried out in three phases namely the pre-treatment stage, treatment stage and post-treatment stage. The researchers administered the pre-test instrument at the commencement of the study to both experimental and control groups in order to ascertain the homogeneity of

the two groups. Students in the experimental group were exposed to teaching, learning and evaluation for four consecutive weeks while students in the control group were taught using the conventional method. At the end of the treatment stage, BPT was re-administered on the students and after 6 weeks, the BPT was re-administered on the students the second time to determine their retention ability.

The data collected were analyzed using descriptive and inferential statistics. The hypotheses were tested using t-test at 0.05 level of significance.

RESULTS

Ho1: There is no significant difference between the pre-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Table 1: t-test analysis of pre-test scores of students exposed to Learning Activity Package (LAP) and conventional method

Variations	N	Mean	SD	df	t-cal	P
LAP	55	32.06	5.08	114	1.222	0.382
Conventional	61	33.12	4.16			

P>0.05

Table 1 shows that the t-cal value of 1.222 is not significant because the p-value of 0.382 is greater than 0.05 level of significance, this implies that null hypothesis is not rejected. Hence, there was no significant difference between the pre-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. Since there was no significant difference in the performance of both groups before treatment, it shows that students in the experimental and control groups were homogeneous at the commencement of this study.

Ho2: There is no significant difference between the post-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Table 2: t-test analysis of post-test scores of students exposed to Learning Activity Package (LAP) and conventional method

Variations	N	Mean	SD	df	t-cal	P
LAP	55	81.79	4.58	114	23.232*	.000
Conventional	61	57.69	6.51			

*P<0.05

Table 2 shows that the t-cal value of 23.232 is significant because the p-value of 0.000 is less than 0.05 level of significance, this implies that null hypothesis is rejected. Hence, there was significant difference between the post-test performance of students in Biology exposed to

Learning Activity Package (LAP) and the conventional method. The performance showed a large mean difference of 24.10 in favour of students exposed to LAP.

Ho3: There is no significant difference between the retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method.

Table 3: t-test analysis of retention test scores of students exposed to Learning Activity Package (LAP) and conventional method

Variations	N	Mean	SD	df	t-cal	P
LAP	55	72.41	5.19	114	22.506*	.000
Conventional	61	48.83	6.09			

*P<0.05

Table 3 shows that the t-cal value of 22.506 is significant because the p-value of 0.000 is less than 0.05 level of significance, this implies that null hypothesis is rejected. Hence, there was significant difference between the retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. The retention showed a large mean difference of 23.58 in favour of students exposed to LAP.

DISCUSSION

The findings of the study revealed that there was no significant difference between the pre-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. The students in the experimental and control groups were homogeneous at the commencement of this study.

The results also revealed that there was significant difference between the post-test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. In line with the this finding, Neboh (2012) found significant difference in the academic achievement of students taught Biology using LAP and Lecture methods; those students taught with LAP had higher academic achievement than those taught with lecture method. He concluded that students' academic achievement will be greatly enhanced when innovative strategies like Learning Activity Package are employed in the teaching and learning of science subjects. Abu (2018) found that LAP enhanced the students' achievement in Biology irrespective of their previous academic standings.

The study further revealed that there was significant difference between the retention test performance of students in Biology exposed to Learning Activity Package (LAP) and the conventional method. Njoku and Akamobi (2015), and Ifeyinwa (2019) found that LAP was effective in retaining students' knowledge in Biology

CONCLUSION

The study concluded from the findings of this study that Learning Activity Package (LAP) strategy is effective in improving performance and retention of Ekiti state secondary school students in Biology. Learning Activity Package (LAP) strategy is more effective than conventional method of teaching students Biology.

Recommendations

Based on the conclusion, it is hereby recommended that:

1. Teachers teaching Biology in Ekiti State secondary schools should be encouraged to adopt Learning Activity Package (LAP) strategy in exposing the students to Biological concepts.
2. There is need for continuous training and retraining of Biology teachers because of the evolving strategies of teaching among which is the Learning Activity Package (LAP) strategy.

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