Impact of Passive and Active Teaching Methods on Students’ Learning among Secondary School Students in Yenagoa, Bayelsa State

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Abstract: The purpose of this study is to find out the impact of passive and active teaching methods on students’ learning in Yenagoa, Bayelsa State. Pretest-posttest experimental design was adopted for this study. Two hundred secondary school students were randomly selected for this study (X = 14.42; SD = 0.91). The sample was made of 72 males and 128 females. Data was collected via administration of achievement test in Biology with specific focus on Osmosis and Diffusion. Frequency count, percentages, ANOVA and MANOVA were used to analyse data. The findings showed that the traditional lecture method (verbal teaching) was the most commonly used teaching method in public secondary schools in Yenagoa, Bayelsa State. Out of the four teaching methods assessed, students attain 61% level of learning with video watching method, 70% with traditional lecture method, 84% with practical teaching method and 85% with discussion method. On the overall, active teaching methods had significant impact on students’ learning than the passive teaching method at p<.05 level for the four conditions (F (3,192) = 162.03, p = .000). However, gender factor appeared not to have significant effect on students’ learning. Based on these finding, it was recommended that the Ministry of Education should embark on enlightenment campaign on the need for teachers to employ effective teaching methods in classroom.

Keywords: Passive teaching method; Active teaching method; Learning.

Introduction
It can be argued that one prominent underlying cause for students’ failure is poor teaching. Teaching and learning are two sides of the same coin. Consequently the quality and teaching method ultimately determine the quality and type of learning.
Students’ learning has a lot to do with teaching method. The major purpose of teaching at any level of education is to bring a major change in the learner (Tebabal & Kahssay, 2011). To simplify the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and level exit outcomes. In the traditional age, many teachers widely applied traditional lecture method to impart knowledge to learners. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower et al., 2011). Moreover, research on teaching and learning constantly endeavour to examine the extent to which different teaching methods enhance growth in student learning.

Ellington (2012) concluded after his research on learning and its importance in education that students and the school will suffer a great deal if preferred learning style of students is not properly assessed. He further said knowing students’ preferred learning style will not only enhance students learning but also direct teachers on how lessons should be conducted to bring about maximum learning. He further said that improved assessment of teaching methods will enhance students’ performance both in and out of school.

Learning can only be experienced when effective teaching method is used. Presently, a lot of questions are been asked on how students’ learning outcome is affected by effective teaching method and this have increased the interest of researchers in the field of educational psychology (Hightower 2011). Educators therefore strive to provide the most productive classroom experience for students in order to achieve positive learning outcomes and better academic performances. Educators have classified teaching into passive and active. When teaching is passive, learning is likely to be passive and when teaching is active, learning is likely to be active. Edgar’s cone of learning described the passive and active teaching and learning methods. Edgar posited that students to a very large extent are able to learn when they are actively engaged in practical work, rather than when they are passively engaged with more listening and seeing. That is, the more senses are involved in learning, the better the learning outcome. For example, when teaching students how to build a drone, a teacher may do so with only verbal instructions (passive teaching), while teacher may physically engage the students in manipulating the drone to have better understanding of the process of building it (active teaching).

According to Boyer (1990) educators have over the years used the traditional lecture method in imparting knowledge to learners. The traditional lecture teaching method is termed passive as information is verbally passed to students and they are in no way actively involved. Stewart-Wingfield & Black (2005) also characterised the process of students receiving information from teachers as passive learning. Although passive
learning has been the commonly used teaching method in schools, many educators argue that students require much more. If educators can go a step further in understanding and applying the effective teaching methods then students will doubtlessly learn more satisfactorily, perform better academically, become more productive in their studies, exhibit greater self-confidence and apply creative skills and knowledge in other fields.

Active teaching involves student participating in a discussion, giving a talk on the proposed topic to be learned, doing a presentation and doing the real thing (practical). The example given earlier of students being thought how to build a drone by engaging them to manipulate the drone themselves is an example of active teaching and learning. Researchers have argued that students learn better with active teaching and learning because of its effectiveness in enhancing retention (Harasym et al., 1995; Slater et al., 2007). Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower et al., 2011). Moreover, research on teaching and learning constantly endeavour to examine the extent to which different teaching methods enhance growth in student learning.

Lawton and Gordon (1993) posited that students’ learning refers to the present attainment or acquiring of a specific skill or knowledge displayed by information of some kind in assessment and performance test. According to Kpolovie, Joe and Okoto (2014), learning is measured based on the ability of such student to study, encode facts and being able to pass the knowledge gained verbally or in the form of a test in an examination setting. They also defined academic performance as the result of education which examines and explains the degree to which the individual, teacher, curriculum and the school have met the pre-determined academic goals. Joe, Kpolovie, Osonwa and Iderima (2014) defined learning as the noticed and uniform aspect of a student's comprehensive knowledge of a skill and subject which are measured with valid and reliable tests.

**Methods**

A total of 196 senior secondary school students in four public schools participated in this study. Their age ranged between 13-18 years. (Mean age 14.42, SD = 0.91) there were 72 male and 124 female. All participants are students in senior secondary school 1.

**Sampling method and instrument**

This study adopted simple random sampling techniques, test was used as instrument. There were three categories of instrument used for this study, one was the teaching plan on Osmosis and Diffusion, the teaching aids such as yam tubers, knife, bowl, water, sugar solution, ammonia solution and the achievement test on Osmosis and Diffusion. A video of the practical session demonstrated by the researcher was also recorded. The achievement test consist of three sections; the first section was on the
respondents’ demographic data which included gender, age and name of school. The second section featured 15 multiple choice questions while the third section of 10 theoretical questions on the topic. Content validity was established by subject expert and a psychometrician to ensure the content of the test measures what it is supposed to measure and in line with the curriculum.

**Result and discussion**

**RQ1** What is the commonly used teaching method in public secondary schools in Yenagoa, Bayelsa State.

![Commonly used teaching methods](image)

**RQ2** What is the comparative level of learning attained by students based on teaching methods in Edgar’s cone of learning and the current study?

**Table 1:** Learning attained by students in Edgar’s cone of learning and level of learning observed in the current study.

| Teaching method                              | Edgar’s cone of learning | Learning observed in the current study |
|----------------------------------------------|--------------------------|---------------------------------------|
| Traditional lecture method(listening)       | 20%                      | 70%                                   |
| Video watching method                        | 50%                      | 61%                                   |
| Students interactive discussion              | 70%                      | 85%                                   |
| Real practical work (doing the real thing)   | 90%                      | 84%                                   |

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The results in Table 1 shows that on the average, students attained the highest level of learning (85%) with students interactive discussion, followed by real practical work (doing the real thing) which delivered 84% of learning, and the traditional lecture method (listening) which achieved 70% of learning. The teaching method that delivered the least level of learning in this study was video watching with 61%.

**Hypothesis 1:** There is no significant difference in the impact of active and passive teaching on students learning.

Table 2: One way ANOVA result on the impact of teaching methods on students’ learning.

| Sum of squares | df | Mean square | F       | Sig.  |
|----------------|----|-------------|---------|-------|
| Between groups | 18829.612 | 3 | 6276.537 | 162.026 | .000  |
| Within groups  | 7437.669  | 192 | 38.738  |        |       |
| Total          | 26267.281 | 195 |         |        |       |

*P<.05*

The result in table 2 shows that there is a significant difference in the relative impact of active teaching methods (discussion and practical) and passive teaching (traditional lecture and video watching). [F (3,192) = 162.03, p = .000]. The post-hoc analysis that followed shows the most impactful teaching methods.

Table 3: Students’ Mean performance in the four teaching methods.

| TEACHING METHOD                                | N  | Mean     |
|------------------------------------------------|----|----------|
| Real Practical Work (Doing the Real Thing)     | 50 | 84.7000  |
| Students’ Interactive Discussion               | 50 | 85.2800  |
| Traditional Lecture Method (Listening)         | 50 | 70.5200  |
| Video Watching                                 | 46 | 61.8261  |

Table 4: The result of post hoc analysis on the impact of teaching methods on students’ learning.

| (I) NAME OF SCHOOL                           | (J) NAME OF SCHOOL                      | Mean Difference (I-J) | Std. Error | Sig.  |
|----------------------------------------------|----------------------------------------|-----------------------|------------|-------|
| PRACTICAL (DOING THE REAL THING)             | STUDENTS INTERACTIVE DISCUSSION.        | -.58000               | 1.24479    | .966  |
|                                              | TRADITIONAL LECTURE METHOD (LISTENING). | 14.18000*             | 1.24479    | .000  |
|                                              | VIDEO WATCHING.                         | 22.87391*             | 1.27157    | .000  |

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The ANOVA results in Tables 3 & 4 shows that the active teaching methods (practical and students interactive discussion) registered the highest level of learning with mean performances of 85.3 and 84.7 respectively, while the passive teaching methods (traditional lecture and video watching) registered the lowest level of learning with mean performance of 70.5 and 61.8 respectively. The post hoc analysis further shows that the active teaching methods were significantly more impactful than the passive teaching methods with mean difference of 14.18; \( p = .000 \) for practical versus traditional lecture; and the mean difference of 22.9; \( p = .000 \) for practical teaching versus video watching method; mean difference of 23.5; \( p = .000 \) for students interactive discussion method versus video watching and mean difference of 14.8; \( p = .000 \) for students interactive discussion versus traditional lecture method. It is important to note that there was no significant difference in the two active teaching methods engaged in this study.

**Ho 2** Gender has no significant effect on students’ learning outcome based on the different teaching methods.
Table 5: The effect of gender on students’ learning.

Multivariate Tests

| Effect          | Value     | F         | Hypothesis | df | Error df | Sig. |
|-----------------|-----------|-----------|------------|----|----------|------|
| Intercept       | Pillai's Trace | .999 | 10547.543^b | 4.000 | 41.000 | .000 |
|                 | Wilks' Lambda | .001 | 10547.543^b | 4.000 | 41.000 | .000 |
|                 | Hotelling's Trace | 1029.029 | 10547.543^b | 4.000 | 41.000 | .000 |
|                 | Roy's Largest Root | 1029.029 | 10547.543^b | 4.000 | 41.000 | .000 |
| GENDER          | Pillai's Trace | .052 | .557^b | 4.000 | 41.000 | .695 |
|                 | Wilks' Lambda | .948 | .557^b | 4.000 | 41.000 | .695 |
|                 | Hotelling's Trace | .054 | .557^b | 4.000 | 41.000 | .695 |
|                 | Roy's Largest Root | .054 | .557^b | 4.000 | 41.000 | .695 |

a. Design: Intercept + GENDER
b. Exact statistic

The result in table 5 shows gender has no significant effect on the impact of active and passive teaching methods on students’ learning in this study.

**Conclusion**

The findings of this study emphasize the need for secondary school teachers and educators who aim to reduce poor performance of students in both internal and external examinations to incorporate effective and most preferably active teaching methods in class as this method impacts more on students and increases their retention level.

**Recommendations**

From the findings of the study, the following recommendations are made:

- The Ministry of Education in the state should embark on enlightenment campaign on the need for teachers to employ teaching methods in classes that will best bring about learning.
- School time table be arranged such that subjects that require active teaching will be allotted more time.

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