

# The Nexus between Teaching Method and Academic Performance of Students in Anambra State

Mayor, A.<sup>1</sup> and Ogbogbo, G. O.<sup>2</sup>

<sup>1,2</sup> *Department of Statistics, Delta State Polytechnic, Otefe-Oghara, Delta State, Nigeria*

**Abstract:** - This study examined teaching methods and their impact on performance of Student in a tertiary institution. The teaching methods considered in this study includes: discussion method, demonstration method, lecture method and questioning method. Primary source of data collection was adopted for this study with the aid of a well structured questionnaire. The Kruskal-Wallis test was used to analyze the obtained data. Findings showed that majority of the respondents agreed that discussion method is the most preferred teaching method. It was found that there exist no significant difference on the preferred teaching method. It was found that majority of the respondents to a large extent have the understanding of the various teaching methods. Also, it was found that there exist no significant difference on the level of understanding of the respondents on the various teaching methods. It was found that majority of the respondents believe that demonstration method is the best followed by discussion method of teaching while lecture method was found to be the least most effective method. Also, it was found that the commonly used method of teaching was the lecture method followed by demonstration method of teaching while questioning method was found to be the least most effective method of teaching.

**Keywords:** Demonstration method, Discussion Method, Lecture Method, Teaching Method, Questioning Method

## I. INTRODUCTION

In most developing nation, education has been viewed to focus on the instructional effects of teachers, including teaching methods, curriculum, and materials of teachers, without focusing on the learning effects on students (Barr and Tagg, 1995). Recently, education has begun to emphasize learners, changing learning models to analyze students, and researching teachers to explore effective learning approaches (Armila *et al.*, 2015). However, there are few studies on the teaching quality on teacher and student learning. Hence, the present study seeks to evaluate the different teaching methods and their effect on Students performance. Without any element of doubt, students are the major stakeholders of any learning institution be it Primary level, Secondary or higher institution. This is because they are directly involved in the teaching and learning process while teachers are regarded as the most imperative school-based factor that influences students' achievement levels.

Studies has shown that teacher quality has always been an important factor affecting student performance at all levels. There are few studies on the teaching methods adopted by the teachers in impacting the required learning. Precisely, the study evaluates the different teaching methods adopted by

teacher in Anambra State higher institution. Also, this study will seek to determine whether the teaching methods impact on the performance of the students in general statistics course.

## II. LITERATURE REVIEW

In most of developing countries, many graduated pupils of primary school have very lower skills in reading. Studies have often argued the importance of teaching methods on the students performance such reading. Corneille *et al.* (2017) in their study examined the effectiveness of four teaching methods used in teaching reading in order to determine what a teaching method contributes to higher performance of pupils in reading or what among four methods would be most suitable.

Armila *et al.* (2015) analyzed the effect of teaching methods on Students' academic performance among students of University of Dhaka. A sample size of 200 students were selected for the study. They employed a structured questionnaire as the research instrument to obtain the required data on students' level of agreement or disagreement regarding teaching methods. Findings showed that teachers' teaching skills, students and teachers' interaction, faculty feedback of the university and teachers' attitude seem to be significant factors for the satisfaction of the students on their academic performances. Also, teacher's assistance to solve problems, teacher's subject knowledge, teacher's attendance and library facilities of the university seem to be insignificant factors for the satisfaction of the students on their academic performances.

According to Ganyaupfu (2013), teaching is a joint venture which encompasses interaction by both learners and the lecturer. Teaching methods adopted by lecturers is expected to aligned with the subject content and specific outcomes in order to effectively enhance transmission of knowledge and information from the lecturer to the students (Adunola, 2011). As each individual learner interprets and responds to questions in a unique way, it is therefore crucial for lecturers to regularly review their teaching competences in respect of subject knowledge, lecturer attendance, teaching skills and lecturer attitude (Chang, 2010).

Wen-Hwa and Feng-Ming (2014) in their study examined the effect of the teaching quality of culinary arts teachers and student learning satisfaction on the academic performance of hospitality students. The findings of the study revealed that there exist is a significant positive correlation between

teaching quality of teachers and the learning satisfaction of students, between teaching quality of teachers and the academic performance of students, and between the learning satisfaction of students and the academic performance of students. It was observed that the learning satisfaction of students has a mediating effect on the relationship between the teaching quality of teachers and the academic performance of students.

In his contribution, Muzenda (2013) examined the distinct effects of lecturers' subject knowledge, lecturer attendance, teaching skills and lecturer attitude on students' academic performance among higher education and training students. Findings of the study indicated that subject knowledge, teaching skills, lecturer attendance and lecturer attitude have significant positive influence on students' academic performance.

### III. RESEARCH DESIGN

Research design refers to a set of methods and procedures used in collecting and analyzing measures of the variables specified in the research problem(s). Research designs are useful in research because they help the researcher to develop a logical image of the structure for the source of data and the analysis that will follow (Nworuh, 2004). The type of research design employed in this study was the Ex-post facto research design. The ex-post facto research design is a category of research design in which the investigation starts after the fact has occurred without interference from the researcher. The ex-post facto research design is often applied as a substitute for true experimental research to test hypotheses about cause-and-effect relationships or in situations in which it is not practical or ethically acceptable to apply the full protocol of a true experimental design.

#### 3.2 Area of Study

The area of study is Nnamdi Azikiwe University (NAU), Awka and Chukwuemeka Odumegwu Ojukwu University (COOU), Uli Campus, Anambra state. The respondents for this study were randomly selected from the Faculty of Management Science for the two Universities.

#### 3.3 Method of data collection

Primary source of data collection was adopted for this study with the aid of a well structured questionnaire. A total of 230 students were administered questionnaire (74 students for COOU and 156 students for NAU).

#### 3.4 The Kruskal – Wallis Analysis Rank Sum Test

Most survey data from experience never follow a Gaussian (normal) distribution precisely, because a Gaussian distribution extends infinitely in both directions, so it includes both infinitely low negative numbers and infinitely high positive numbers. Many kinds of biological data, however, do follow a bell-shaped distribution that is approximately Gaussian. Because ANOVA works well even if the distribution is only approximately Gaussian (especially with

large samples), these tests are used routinely in many fields of science (Montgomery and Runger, 2003; Ijeoma, 2014).

An alternative approach does not assume that data of interest follow a Gaussian distribution. In this approach, values are ranked from low to high and the analyses are based on the distribution of ranks. These tests, called nonparametric tests, are appealing because they make fewer assumptions about the distribution of the data. But there is a drawback. Nonparametric tests are less powerful than the parametric tests that assume Gaussian distributions. If the samples are large the difference in power is minor. With small samples, nonparametric tests have little power to detect differences.

The Kruskal – Wallis test which is an extension of the Wilcoxon test for location with two independent samples from continuous populations. The null hypothesis is that the  $k$  populations are the same, but when we assume the location model this hypothesis can be written in terms of the respective location parameters (or treatment effects) (Ijeoma and Aronu, 2013).

$H_0$  : The treatment effect are the same

$H_1$  : At least one differs

To perform the test, all observations are pooled into a single array and ranked from 1 to  $N$ . The test statistic for  $H$  is given as;

$$H = \frac{12}{N(N+1)} \sum_{i=1}^k \frac{R_i^2}{n_i} - 3(N+1) \quad (1)$$

For  $R_i$  being the sum of the ranks from the  $i^{th}$  sample; the appropriate rejection is the large value of  $H$ .

**Decision Rule:** The decision rule is to reject the null hypothesis when the P-value is less or equal to the  $\alpha=0.05$ , otherwise, accept the null hypothesis

#### 3.5 Data Presentation

Table 1: Cross-tabulation Analysis of Gender and Department of respondents

		Institution		Total
		COOU	NAU	
GENDER	FEMALE	53	26	79
	MALE	21	130	151
Total		74	156	230

Table 2: Respondents Response on Preferred Teaching Method

	Institution		Total
	COOU	NAU	
DISCUSSION METHOD	56	16	72
DEMONSTRATION METHOD	16	54	70
LECTURE METHOD	1	42	43
QUESTIONING METHOD	1	44	45
	74	156	230

Table 3: Response on level of understanding of respondents for the various teaching methods

MEASURED VARIABLES	I do not know	little extent	to large extent	to very large extent
I understand well when teaching is in form of discussion	13	22	96	99
I understand well when teaching is in form of demonstration	11	28	99	92
I understand well when teaching is in form of lecture	51	74	58	47
I understand well when teaching is in form of questioning	34	82	61	53

Table 4: Response on the most effective teaching method

	most effective teaching method				Total
	DISCUSSION METHOD	DEMOSTRATION METHOD	LECTURE METHOD	QUESTIONING METHOD	
COOU	53	19	1	1	74
NAU	16	55	34	51	156
	69	74	35	52	230

Table 5: Response on the commonly used teaching method

	Commonly used teaching method				Total
	DISCUSSION METHOD	DEMOSTRATION METHOD	LECTURE METHOD	QUESTIONING METHOD	
COOU	36	34	3	1	74
NAU	11	27	84	34	156
	47	61	87	35	230

Table 6: Response on evaluating the effect of teaching method on students performance

students grade		Teaching method impacts on student's performance				Total
		DISCUSSION METHOD	DEMOSTRATION METHOD	LECTURE METHOD	QUESTIONING METHOD	
F	COOU	3	0	0	0	3
	NAU	0	2	1	0	3
D	COOU	16	0	0	0	16
	NAU	2	8	4	7	21
C	COOU	18	10	1	1	30
	NAU	7	20	21	20	68
B	COOU	11	6	0	0	17
	NAU	3	15	6	13	37
A	COOU	8	0	0	0	8
	NAU	4	9	10	4	27

#### IV. DATA ANALYSIS AND RESULT

In this section, analysis will be performed using the data presented in section 3.5.

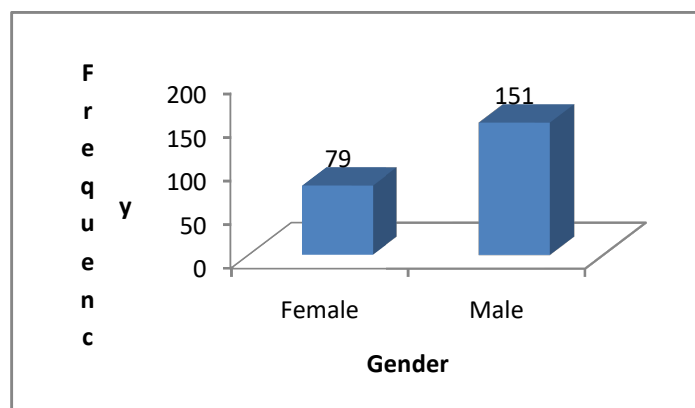


Figure 1: Frequency distribution of respondents by gender

The result of the frequency distribution of respondents by gender showed that Male respondents dominated the study.

#### 4.1 Result of Kruskal-Wallis Test Analysis on evaluating responds on preferred teaching method

Using the data presented in table 2, the Kruskal-Wallis test for evaluating the preferred teaching method was performed.

Table 7: Ranks of responds on preferred teaching method

	Methods	N	Mean Rank
Respondents response on preferred teaching method	DISCUSSION METHOD	2	5.75
	DEMOSTRATION METHOD	2	5.25
	LECTURE METHOD	2	3.25
	QUESTIONING METHOD	2	3.75
	Total	8	

The result of the rank analysis of the preferred teaching method presented in table 7 showed that discussion method recorded the highest mean rank of 5.75 while lecture method recorded the least mean rank of 3.25.

Table 8: Test Statistics of response on preferred teaching method

	Respondents response on preferred teaching method
Chi-Square	1.451
df	3
Asymp. Sig.	.694
a. Kruskal Wallis Test	
b. Grouping Variable: Methods	

The test statistic for the response on preferred teaching method found a Chi-square value of 1.45 and a p-value of 0.694 ( $p\text{-value} > \alpha = 0.05$ ) which falls on the acceptance region of the hypothesis. This result implies that there exist no significant difference on the preferred teaching method.

#### 4.2. Result of Kruskal-Wallis Test Analysis on evaluating respondents level of understanding of the various teaching methods

The Kruskal-Wallis test for evaluating respondents level of understanding of the various teaching methods was performed using data presented on table 3.

Table 9: Ranks of responds on level of understanding of the various teaching methods

	Category of response	N	Mean Rank
Response on level of understanding of respondents for the various teaching methods	I do not know	4	3.75
	little extent	4	7.50
	to large extent	4	12.12
	to very large extent	4	10.62
	Total	16	

The result of the rank analysis on the level of understanding of the various teaching methods revealed that majority of the respondents understand the various teaching methods since the response "to large extent" recorded the highest mean rank of 12.12 while response "to very large extent" recorded a mean rank of 10.62.

Table 10: Test Statistics of response on level of understanding of the various teaching methods

	Response on level of understanding of respondents for the various teaching methods
Chi-Square	7.285
df	3
Asymp. Sig.	.063
a. Kruskal Wallis Test	
b. Grouping Variable: Category of response	

The test statistic for the response on level of understanding of the various teaching methods found a Chi-square value of 7.285 and a p-value of 0.063 ( $p\text{-value} > \alpha = 0.05$ ) which falls on the acceptance region of the hypothesis. This result implies that there exist no significant difference on the level of understanding of the respondents on the various teaching methods.

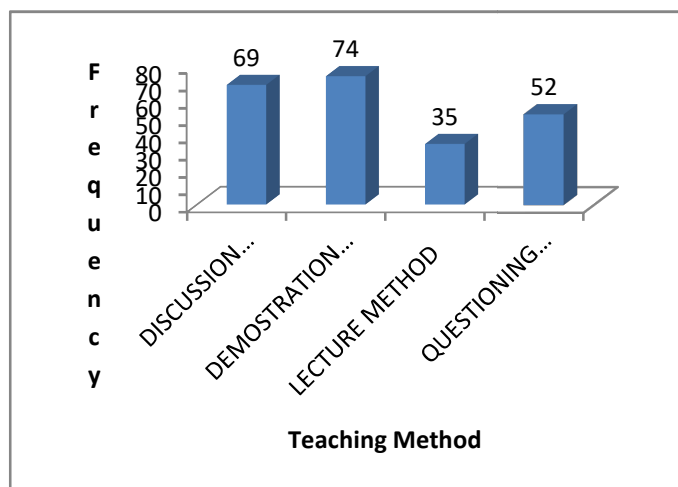


Figure 2: Distribution of Respondents response on the most effective teaching method

The result of figure 2 showed that majority of the respondents believe that demonstration method is the best (74 responses) followed by discussion method of teaching (69 responses) while lecture method was found to be the least most effective method of teaching (35 responses).

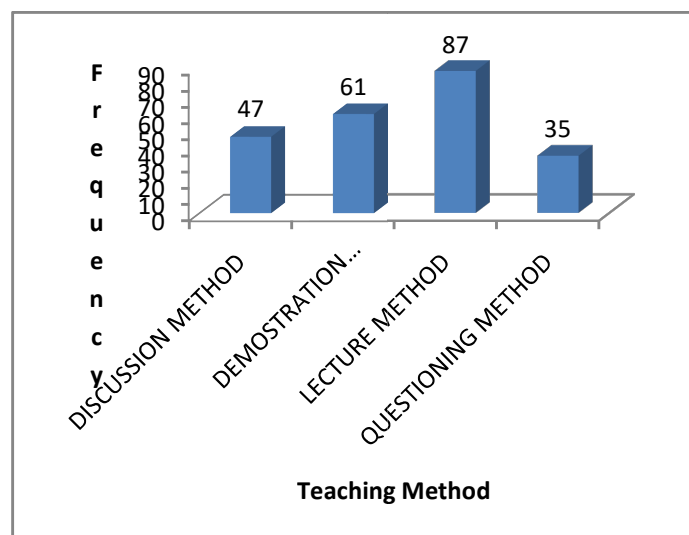


Figure 3: Distribution of Respondents response on the commonly used method of teaching

The result of figure 3 showed that the commonly used method of teaching was the lecture method (87 responses) followed by demonstration method of teaching (61 responses) while questioning method was found to be the least most effective method of teaching (35 responses).

Result of Kruskal-Wallis Test Analysis on the impact of teaching methods on Students performance

The Kruskal-Wallis test for evaluating whether teaching method impact on students performance using data presented on table 6.

Table 11: Ranks of responds on Whether teaching method impact on Student Performance

	Students Grade	N	Mean Rank
Response on impact of teaching method on Students performance	F	8	10.88
	D	8	18.94
	C	8	30.25
	B	8	23.06
	A	8	19.38
	Total	40	

The result of the rank analysis on the impact of teaching method on student performance revealed that majority of the respondents obtained grade C since grade "C" recorded the highest mean rank of 30.25 while grade "F" recorded the least mean rank of 10.88.

Table 12: Test Statistics of response on testing the impact of teaching method on students performance

	Response on the impact of teaching method on Student Performance
Chi-Square	12.016
df	4
Asymp. Sig.	.017
a. Kruskal Wallis Test	
b. Grouping Variable: Students Grade	

The test statistic for the response on testing the impact of teaching method on students performance found a Chi-square value of 12.016 and a p-value of 0.017 ( $p\text{-value} < \alpha = 0.05$ ) which falls on the rejection region of the hypothesis. This result implies that teaching method significantly impact on students performance.

## V. CONCLUSION

This study examined teaching methods and their impact on performance of Student in a tertiary institution. Findings of the study showed that majority of the respondents agreed that discussion method is the most preferred teaching method. It was found that there exist no significant difference on the preferred teaching method. It was found that majority of the respondents to a large extent have the understanding of the various teaching methods. Also, it was found that there exist no significant difference on the level of understanding of the respondents on the various teaching methods.

Result of the analysis showed that majority of the respondents believe that demonstration method is the best followed by discussion method of teaching while lecture method was found to be the least most effective method. Also, it was found that the commonly used method of teaching was the lecture method followed by demonstration method of teaching while questioning method was found to be the least most effective method of teaching.

In addition, findings revealed that majority of the respondents obtained grade C and the teaching method were found to

significantly impact on students performance. This result is in line with Muzenda (2013) who argued that subject knowledge, teaching skills, lecturer attendance and lecturer attitude have significant positive influence on students' academic performance.

The findings of this study revealed that the discussion method of teaching is the best approach that impacts on the students, we recommend that the demonstration teaching method should be applied more in teaching students in Anambra State.

## REFERENCES

- [1]. Adunola, O. (2011). *An Analysis of the Relationship between Class Size and Academic Performance of Students*. Ego Booster Books, Ogun State, Nigeria.
- [2]. Armila, D., Musfiq, M. C., Shorefuzzaman, M. and Min-Ho, K. (2015). Evaluation of teaching methods on students' academic Performance in the University of Dhaka. *AEIJMR*, 3(4): 1-15.
- [3]. Barr, R. B. and Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27, 12-15.
- [4]. Chang, Y. (2010). Students' Perceptions of Teaching Styles and Use of Learning Strategies, Retrieved from: [http://trace.tennessee.edu/utk\\_gradthes/782](http://trace.tennessee.edu/utk_gradthes/782).
- [5]. Corneille, L. T., Simon, K. S., and Guillaume, B. B. (2017). Effectiveness of the Teaching Methods of Elementary Reading on Pupils' Academic Performance. *Education*, 7(6): 112-123
- [6]. Ganyaupfu, E.M. (2013). Teaching Methods and Students' Academic Performance. *International Journal of Humanities and Social Science Invention*, 2(9): 29-35.
- [7]. Ijeoma, N. B. (2014). The Contribution of Fair Value Accounting on Corporate Financial Reporting in Nigeria. *American Journal of Business, Economics and Management*, 2(1): 1-8.
- [8]. Ijeoma, N., Aronu, C. O. (2013). Effect of Human Resource Accounting (HRA) on Financial Statement of Nigerian Banks. *International Journal of Advancement in Research & Technology*, 2(8): 342-347.
- [9]. Montgomery, D. C. and Runger, G. C. (2003). *Applied Statistics and Probability for Engineers (3rd Edition)*. John Wiley & Sons, Inc. USA, 2003.
- [10]. Muzenda, A. (2013). Lecturers' Competences and Students' Academic Performance, *International Journal of Humanities and Social Science Invention*, 3 (1): 6-13.
- [11]. Nworuh, G. E. (2004). *Basic Research Methodology for Researchers Trainees and Trainers in Management Sciences (Second Edition)*. Ambix Printers Nigeria.
- [12]. Wen-Hwa, K. O. and Feng-Ming, C. (2014). Teaching Quality, Learning Satisfaction, and Academic Performance among Hospitality Students in Taiwan. *World Journal of Education*, 4(5).