



Influence of teaching methods on students' academic performance in Statistics for Political Science course in Bauchi State University

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Abstract

This study examined the influence of teaching methods on students' academic performance in statistics for political science at Bauchi State University, Gadau. The study adopted a descriptive survey research design. The target population of the study comprise 500 students' in the department of Political Science. 217 respondents were selected using a simple random sampling technique. The research instrument used for data collection in this study was a questionnaire designed. The internal consistency of the reliability test of 0.73 was acceptable. The hypotheses were subjected to inferential statistics while Chi-square was tested at a 0.05 level of significance. The findings of this study confirmed that the questions and answers method of teaching significantly affects students' academic performance in statistics for political science. Hence, the study concluded that questions and answers, as well as discussion methods, improved students' academic performance in the statistic for political science. Therefore, the study recommends that statistic lecturers should use two or more methods of teaching at a point to improve the students' academic performance.

Keywords: Discussion, Lecture method, Students' performance, Teaching methods.

1. Introduction

Teachers have numerous numbers of techniques or methods to choose from depending on the need and circumstances. Traditionally, teachers tend to dominate the learning process in the class (teachers-centered approach) instead of allowing the students or learners to dominate (learner-centered). Recent teaching methods give more emphasis to learners than teachers (Misra, 2011). There are many teaching methods to be used and the choice of methods is with teachers for the success of their students in the classroom. Despite this, many teachers find it challenging to make the right decision regarding teaching methods, which affects learning massively (Moss, 2017). The concept of teaching method is vast; it comprises the process, whether pedagogical or andragogical. It is

up to the teacher to choose the method that suits them, but whatever method one chooses, one must consider the student's needs, the class size or student number, and the curriculum. The two traditional techniques known which have a number of classes under them are the teachers-centered approach and the students-centered approach (Abdulkadir et al., 2021).

Adunola (2011) posits that teachers need to be conversant with different teaching techniques to make better decisions for better results. According to Ayeni (2011), teaching results can best be assessed by the quality of learners produced and teaching helps learners produce effective results. Transferring knowledge requires teachers to use appropriate methods and pedagogy that best suit the learners' interests as well

as the achievement of the lesson objectives (Joel et al., 2018). This is because pupils' learning outcomes largely depend on the methodology used by teachers. Okoli (2019) asserted that learning outcomes which are most times used interchangeably with academic performance refer to the number of information learners achieved. When learners did not display a substantial level of achievement in a lesson, learning is yet to take place (Boma, 2019; Owolemi, 2020).

Joel et al., (2018) defined teaching methods as various approaches used by educators to achieve objectives of a lesson. Kimweri (2014) views teaching methods as various strategies of organising learners and suitable methods to best promote learning process which are influenced by some determinants like number of learners, objectives of lesson, age and the topic to be taught. According to psychologist, the primary purpose of teaching at any level of education is to bring a fundamental change in the learners' behavior. To facilitate the process of knowledge transmission, teachers should apply appropriate teaching methods that best suit specific objectives and level exit outcomes.

In the traditional approach, many teaching practitioners widely applied teacher-centered methods to impart knowledge to learners in comparative to student-centered methods. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research. Moreover, research on teaching and learning constantly endeavor to examine the extent to which different teaching methods enhance growth in student's learning. Quite remarkably, regular poor academic achievement by majority students is fundamentally linked to application of ineffective teaching methods by teachers to impart knowledge to learners. Substantial research on the effectiveness of teaching methods indicates that the quality of teaching is often reflected

by the academic achievements of learners (Weinfield, 2010).

According to Ogunfowote and Asanre, (2019), teaching is a process that involves bringing about desirable changes in learners so as to achieve specific outcomes. Entwistle (2000) maintains that for teaching and learning to be effective, teachers need to be conversant with numerous teaching strategies/methodologies that take recognition of the magnitude of complexity of the concepts to be covered. Moreover, researches on teaching and learning constantly endeavor to examine the extent to which different teaching methods enhance academic achievement in students' learning.

The poor performance situation is alleged to be as a result of the problems encountered by lecturers and students in the teaching and learning of financial accounting. Some problems are attributed to poor teaching methods, inadequate instructional materials, poor motivation of lecturers and student, negative attitude of students and lecturers among others. There have been persistent calls on teachers by parents to have another look at their teaching approaches with a view to evolving strategies and methods that will stimulate students' interests, attitude, curiosity and reasoning ability, which are all characteristics capable of improving performance (Adunola, 2011).

The main focus of every lecturers to bring about the best and desired change in students. Learning outcomes of students is very vital because it provides the student's with high level of achievement. Hence, effective teaching methods at the University level becomes highly imperative.

Statement of the Problem

Students' performance in statistics for political science has been poor, and one of the reasons cited is the type of methods of teaching/learning used. Majorities of students' have failed in their examination

results. Marikinyo (2003) believes that the falling level of academic performance is attributed to teacher's non-use of verbal reinforcement strategy. Many teachers find it challenging to make the right decision regarding teaching methods, which affects learning massively (Moss, 2017).

Despite this, empirical evidence which revealed that students' academic performance are found to have poor learning outcomes (Weinfield, 2010, Misra, 2011; Kimweri, 2014; Boma, 2019; Owolemi, 2020; Joel et. al., 2018). Previous scholars have made efforts to solve the issue of poor performance of students with focus on others factors not interested in this study. However, much research attention has not been directed to the issue of teaching methods on performance of statistics for political science. This study sought to fill the knowledge gap and it examined the influence of teaching methods on students' academic performance in statistics for political science in Bauchi State University, Gadau

Research Questions

This study answers the following questions:

- (a) Does teaching methods have any influence on students' academic performance in statistic for political science in Bauchi State University, Gadau?
- (b) To what extend did questions and answers methods affect students' academic performance in statistics for political science in Bauchi State University, Gadau?

Research Hypothesis

Hi: There is significance relationship between teaching methods and students' academic performance.

Ho: There is no significance relationship between question and answers method and students' academic performance.

2. Literature Review

Empirical Review on Teaching Methods

A study conducted by Moradeyo (2015), examined the impact of three teaching

methods on the performance of Business Studies students' performance in colleges of education in southwestern Nigeria. A sample of 64 students were selected as study respondents. Inferential statistics was employed to test the hypotheses. The result reveals that guided-discovery teaching strategy has a high impact on teaching principle of accounting, a course under Business Studies in the study area.

Luntungan (2012) explored the effects of teaching methods and students' attitudes on Indonesia's academic performance. The study used 135 participants from an Indonesian university. A comparison was made between teaching a large class and teaching a small group and the result shows that students taught in small groups performed than those in large classroom. In other words, small groups and microteaching strategy is more effective than the conventional method of teaching. In the same vein, Briggs (2019) determined the performance of Business Studies students in Port Harcourt Local Government Area, Rivers State, Nigeria. The study used both qualitative and quantitative technique of research. A total of 100 respondents were drawn from junior secondary school. Two methods of teaching, the lecture and discussion methods, were used to collect the data and inferential statistics was used to analyze the data. The result reveals that there was a high relationship between the two methods used in the study.

Abdulkadir et al., (2021) investigated the impact of teaching method on Geography student's performance in Zaria LGA, Kaduna State, Nigeria. The study findings revealed that the teachers the domination of male teachers and students in the study area over females. The study reveals some worrying information regarding students' perceptions concerning teaching methods as most students did not know the method used by teachers in teaching. The study also reveals the most used method applied by secondary school teachers. It also

highlights the need for the combination of two or more teaching methods as circumstances.

Owolemi, (2020) conducted a study titled teachers' Teaching Methodologies and Attitudes as Correlate of Pupils' Learning Outcomes in Surulere Local Government, Lagos State. The finding of the study revealed that a positive significant relationship exists between primary schools' teachers' attitudes and pupils' learning outcomes in Surulere Local Government Area of Lagos State. There is no doubt about this finding that the teachers covered in study know the implication of negative attitude therefore, they exhibit positive attitudes to ensure that effective teaching and learning take place for pupils to achieve maximally.

Theoretical Framework

Dewey's Theory

The theory was proposed by John Dewey (1938) He concentrated his basic principle with those of traditional education. Dewey's system is organized around several key concepts the central concept is experiment where he said that all education comes about through experience. The central problem of an education based upon experiences is to select the kind of present experiences. The second concept is democracy where Dewey (1938) believes that democratic social arrangements promote a better quality of human experience Dewey (1938). The third concept is continuity which means that every experience takes up something from those which have gone before and modified in some way the quality of those which come after for example growth and development Dewey (1938). The fourth concept is interaction which refers to interpreting experience in its education, force and assigns equal rights to both factors in experience- objective and internal conditions.

The Dewey's theory is applicable to this study due to the following assumptions: Firstly, experience is one of the key

assumptions of the theory because once the course lecturer has a certain experience in teaching statistics it allows the students to perform better. Secondly, democratic is another assumption of the Dewey theory it concentrated on allowing the students' to actively participate in the classroom by asking questions directly to their statistics course lecturer for guide. Thirdly, continuity is another assumption that allow the management or Head of Department (HOD) to directly assign the statistics course to those who are expertise on the subject matter in order to avoid failing the students' unnecessarily. Fourthly, the last assumption is interaction allowing the statistics course lecturer to interact with students' their level of academic performance will be very high.

3. Methodology

Description research design can be defined as a plan for collecting and utilizing information by interviewing or administering a questionnaire to a sample of individuals (Kothari, 2004). This study composed of descriptive survey design which helped to obtain more information about the study

Descriptive research design was used for this study. The population of the level one comprising 200 and two hundred consist of 300 in the Department of Political Science Bauchi State University, Gadau. The sampling technique used for the selection of the respondents was simple random sampling technique. Simple random sampling is a type of probability sampling in which the researcher randomly selects a subset of respondents from the target population. Each respondent of the targeted population has an equal chance of being selected (Mugenda & Mugenda, 2003). This study used sample-size computation formula developed by Krejcie and Morgan (1970) and arrived at 217 as selected from the target population of five hundred (500). The following formula was used to arrive at the sample size as follows.

$$S = \frac{(1.96)^2 \times 500 \times 0.5(1-0.5)}{(0.05)^2(500-1) + (1.96)^2 \times 0.5(1-0.5)}$$

$$S = \frac{3.8416 \times 500 \times 0.25}{0.00025 \times 499 + 3.8416 \times 0.25}$$

$$= \frac{480.2}{2.2079}$$

$$S = 217$$

Data were collected through questionnaire administration and analyzed using simple percentage to answer the research questions

while inferential statistics using Chi square for the hypotheses was tested at 0.05 level of significance

4. Result and Discussion

Table 1: Gender of Respondents

Sex	Frequency	Percentage %
Male	115	80.4%
Female	28	19.6%
Total	143	100%
Current Level		
One hundred level	89	62.2%
Two hundred level	54	37.8%
Total	153	100%

Source: Field Survey (2022)

Table 1 reveals that male students were 115 representing (80.4%) participants against female students 28 representing (19.6%). These results suggest that students from Department of Political Science Bauchi State University, Gadau are dominated by male students. The current educational level reveals that level 89 level one students participated in the study representing 62.2%, while 54 level two students

responded representing 37.8%. These results suggest that students are distributed in both levels with slide differences in participation.

Research Question One: Does teaching method have any influence on student’s academic performance in statistic for political science in Bauchi State University, Gadau?

Table 2: Frequency counts and Percentages of Influence of Teaching Methods on Students’ academic Performance in Statistic for Political Science

Teaching Methods	Strongly Disagreed	Disagreed	Neutral	Agreed	Strongly Agreed
Lecture	3(2.1%)	9(6.3%)	4(2.8%)	85(60.1%)	41(28.7%)
Discussion	1(0.7%)	0(0%)	2(1.4%)	93(65%)	47(32.9)
Participating	0(0%)	3(2.1%)	3(2.1%)	87(60.8%)	50(35%)
Demonstration	3(2.1%)	7(4.9%)	8(5.6%)	41(28.7%)	84(58.7%)

Source: Field Survey (2022)

From Table 2, Discussion method recorded the highest respondents 93 representing about 65% followed by Participating which recorded 87 representing about 60.8%. Lecture method 85 representing 60.1% and the last followed by Demonstration method

84 representing 58.7%. From the forgone, Discussion teaching method seems to be most used a head of others and might be more effective. Further, the result indicates that teaching requires a variety of methods depending on the needs of learners and

circumstance. The above finding corroborates the study of Adunola (2011) who pointed out that teachers were advised to be conversant with different teaching methods.

The above finding contradicts with Sajjad, (2011) who showed that lecture method was rated as the best teaching method, the second teaching method rated as the best

teaching method is group discussion, and other teaching methods rated are individual presentation, seminars, workshops, conferences, brain storming and case study. In brief, this controversy implies that suitable methods of teaching are cultural defendant and general environment of providing education.

Table 3: Calculation of χ^2 show the relationship between teaching method and students' academic performance in Statistics for Political Science

Observed Values (O)	Expected Values (E)	Values	$(O - E)$	$(O - E)^2$	$\frac{(O - E)^2}{E}$
93	87.5	5.5	5.5	30.25	0.3457
47	44.75	2.25	2.25	5.0625	0.1131
0	4.75	-4.75	-4.75	22.5625	4.75
1	1.75	-0.75	-0.75	0.5625	0.3214
2	4.25	-2.25	-2.25	5.0625	1.1912
86	87.5	-1.5	-1.5	2.25	0.0257
41	44.75	-3.75	-3.75	14.0625	0.3142
9	4.75	4.25	4.25	18.0625	3.8026
3	1.75	1.25	1.25	1.5625	0.8929
4	4.25	-0.25	-0.25	0.0625	0.0147
84	87.5	-3.5	-3.5	12.25	0.14
41	44.75	-3.75	-3.75	14.0625	0.3142
7	4.75	2.25	2.25	5.0625	1.0658
3	1.75	1.25	1.25	1.5625	0.8929
8	4.25	3.75	3.75	14.0625	3.3088
87	87.5	-0.5	-0.5	0.25	0.0029
50	44.75	5.25	5.25	27.5625	0.6159
3	4.75	-1.75	-1.75	3.0625	0.6447
0	1.75	-1.75	-1.75	3.0625	1.75
3	4.25	-1.25	-1.25	1.5625	0.3676
Total					$\chi^2 = 20.87$

In table 3 above, it shows that the calculated $\chi^2 = (20.87)$ is less than the critical value (21.03), this implies that there is a no significant relationship between teaching method and students' academic performance in statistics for political science. The alternative hypothesis which states that there is a significant relationship between teaching method and student's

academic performance in statistics for political science is hereby rejected at 0.05 level of significance with 12 degree of freedom.

Research Question Two: To what extend did questions and answer method affect students' academic performance in statistics for political science in Bauchi State University, Gadau?

Table 4: Effectiveness of Questions and Answer Method on Students’ Academic Performance in Statistic for Political Science

Effectiveness	Frequency	Percentage
Effective	68	47.6%
Very effective	64	44.8%
Not effective	11	7.6%
Total	143	100%

From Table 4, 68 of the respondents representing 47.6% say question and answers method is more effective in terms of teaching. This is worrisome considering the large numbers. 64 of the respondents representing 44.8% indicate very effective while 11 of the respondents representing 7.6% confirmed that question and answer is not effective teaching method. This clearly shows that students of statistics for Political Science understand more via questions and answers technique.

The above result corroborate with Samuel (2018) suggests that teachers should use at least three teaching methods one of them should be question and answers because it is the excellent way of teaching and oral testing, stimulating student thinking and learning. These results agree with previous studies Faraday et al., (2011) who showed that at least two teaching methods ought to be used to make teaching effective.

Table 5: Calculation of χ^2 shows there is no relationship between question and answers method and students’ academic performance

Responses	Observed Values (O)	Expected Values (E)	(O – E)	(O – E) ²	$\frac{(O – E)^2}{E}$
Effectiveness	68	47.66	20.34	413.7156	8.6806
Very effective	64	47.66	16.34	266.9956	5.6021
Not effective	11	47.66	-36.66	1343.9556	28.1988
Total		143			

$\chi^2 = 42.48$

In table 5 above, it shows that the calculated $\chi^2 = (42.48)$ is greater than the critical value (5.991), this implies that the null hypothesis is rejected and alternative hypothesis is accepted. Therefore, there is a significant relationship between question and answers method and students’ academic performance in statistics for political science at 0.05 level of significance and 2 degree of freedom.

Research Hypothesis

Hypothesis one: There is significant relationship between teaching methods and students’ academic performance in Statistics for Political Science. The data obtained in Table 3 revealed that there was no significant relationship between

teaching methods and students’ academic performance ($20.87 \chi^2 = > p = 21.03$). The null hypothesis is therefore rejected. Hence, there is no significant relationship between teaching methods strategy and students’ academic performance in Statistics for Political Science. This result contradicts Daluba (2013) who opined that for better performance of students, the use of activity stimulating and student-centered approach like demonstration, participating, questions and answer, and discussion methods instead of depending on the conventional approach like questions and answer method needs to be embraced.

Hypothesis Two: There is a significant relationship between question and answers

method and students' academic performance. Table 4, present Chi-square report on the effectiveness of question-and-answer method on students' academic performance. The table reveals that $\chi^2 = 42.48$ with the significance level of 0.05 and degree of freedom of 2. The Chi-square $\chi^2 = 42.48$ is greater than critical value = 5.991. The Chi-square statistics was also found to be significant. The null hypothesis of no significant relationship between questions and answers method and students' academic performance was therefore, rejected. Hence, the alternative hypothesis is accepted. Therefore, a significance relationship between questions and answers method and students' academic performance in statistic for political science was statistically significance. The above finding corroborates with Samuel (2018) opined that question and answers or combination of strategies are superior teaching methods not only in introducing new concepts but also in revising the taught subject matter (Samuel, 2018).

5. Conclusion and Recommendations

Education is the process of imparting knowledge from one person to another in order to achieve a predetermined objective. The study findings confirmed that teaching methods such as lecture, participating, discussion, and demonstration have no effect on students' academic performance in statistics for political science. Based on the above findings the result disagrees with Isa et al., (2020) who revealed that most of the teaching methods have a great effect on students' academic performance. Moreover, Mundi (2006) opined that demonstration method of teaching is very important in the following ways: it motivate students when carried out by skilled lecturers; it also saves time and facilitate materials economy.

Another finding revealed that question and answers teaching method have great effect on students' academic performance in statistics for political science. The above

finding agrees with Ekwueme et al., (2012) who revealed that innovating approach has been widely used for over decades as a primary method of transmitting information to students. These innovation approach encourages students and motivate their interest in achieving their academics. The finding also agrees with Samuel (2018) who reported that question and answers as well as discussion or combination of these two strategies were selected by students as superior methods that prepare them for assessment either in the tests or examination; it also has positive impact on students' academic performance.

Based on the result of this study, the following recommendations were made:

- (a) Lecturers should use innovative approach in order to help the students to perform better in classroom
- (b) Management should create a very conducive learning atmosphere in order to encourage active participation of students' in teaching/learning process.
- (c) Statistics lecturers should adopt the use questions and answers teaching method in order to facilitate effective teaching/learning.
- (d) Lecturers should use two or more different teaching methods for effective students' classroom participation.

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