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IMPACT OF DEMONSTRATION METHOD ON STUDENTS ACADEMIC PERFORMANCE OF SENIOR SECONDARY SCHOOLS COMPUTER SCIENCE IN SHONGOM LOCAL GOVERNMENT AREA OF GOMBE STATE.

Dr. Samuel Alfayo Boh
Department of Educational Foundations
Federal University of Kashere, Gombe State
07037810409
samuelalfayoboh02@gmail.com

Abstract
The research design used for this study was pre-test. Post-test, quasi – experimental and control group design. The population of this study comprise the entire SS II student offering computer in government secondary schools in Shongom LGA, Gombe state, there are fourteen government secondary schools in the local government, and private – owned Institutions, the students under study (computer student) were SS II student with age owned from 18-25 years and have common education background of senior secondary certificate Examination. The SS II student were selected for the study because they were already exposed to computer lessons and achievement test for one year. The SSS III student were not used because they were preparing for their final examination. Four government secondary schools were selected for the study using stratified sampling technique. The sample size was sufficiently large enough for the experimental study. It was recommended that, the use of the Demonstration Teaching method in computer instruction in senior secondary school levels should be encouraged as it is empirically established that it enhances academic performance among students and in- service training should be given to all computer teachers/tutors in senior secondary school level in other to ascertain their capability to carry-out demonstration teaching method instead of lecture method. The data obtained in this study, were analyzed using mean, SD & mean different for research question on the null hypotheses.

Keywords: Impact, Demonstration, Method, Academic Performance, and Computer Science

Introduction:

The art of teaching lies in creating good learning environment and situations, indeed responding creatively to situation as they develop, pupils do not learn at the same rate due to individual differences. Therefore, you need to be critical and discriminatory in making choice of methods to achieve desired patterns of behavior from the pupils. There is no doubt that, whenever you adopt a good and well researched method of teaching, you will be able to stimulate and motivate students to learn.

A method is a way we adopt in doing something. It is an approach which a teacher adopts to explain a subject matter to a group of students. Methods set the guidelines for the pattern of behavior which you expect from the pupils in a learning environment. For your method to be successful, it must relate effectively to the subject matter. In the light of this, you may take a method to mean a special form of procedure of imparting knowledge. Bitrus (2020) has this to say, you cannot take knowledge as something to be poured into an empty can or bucket. A good method, therefore, is the one that

produces an effective result. Ali (2022) stated that the decision to use a good method of teaching any lesson therefore depends on you. In deciding which method is suitable for the lesson, you need to take into consideration the experience, ability and interests of the pupils. It is your duty as a teacher to find out different methods of teaching suitable for use in any classroom situation which will facilitate effective learning. While Fada (2020) stated that, method of teaching is derived from the educational ideas of the great educator, John Dewey, an American. The followers of Dewey later developed his ideas into what is called 'project method.' Method, according to (Ali, 2020) refers to "when a teacher sets the guidelines for the pattern of behaviour which you expect from the pupils in a learning environment". This means that for your methods to be successful, it must relate the teacher and learner effectively to the subject matter. In the light of this, you may take teaching methods to mean a special way or procedure for imparting knowledge.

Caleb (2021), in his study observed that, student's poor performance in English language is due to teachers shying away from activity- oriented teaching methods that are known to be more effective, and relying on teaching methods that are easy but most times inadequate and inappropriate. English language has a dynamic nature which keeps the discipline alive and sometimes makes it controversial. Because of this, the researcher feels that the nature of English language teaching requires a variety of methods and strategies that should be employed in teaching the subject within a given lesson or period.

Man is greatly dependent on science and technology. This is because the future hope for a better scientifically, and technologically developed country lies in science and education not only for attainment of paper qualification but to aid them adjust to such technological devices as may affect their daily lives. Science is a classified body of knowledge, which includes Chemistry, Physics, Biology and soon. A sound knowledge of science education is very important for the management of our natural resources including fishery, provision of adequate food and healthy environment Haruna, (2021). For instance, biological sciences are essential to all forms of life including plants and animals and other living and non – living components. It also plays important role towards achieving self – reliance in the life of individuals, Ali (2022) despite the frantic efforts made by government to enhance teaching of science syllabus. By employing qualified graduate teachers.

Provision of well – equipped. Prompt payment of wages, Promotion of sectors and sponsor of sector to science programs, yet the recent student's result at external examination, shows decline in the performance. James (2019) Therefore, this study is set out to investigate if appropriate teaching method is used in teaching science could yield a better performance. Such teaching methods are discussion and demonstration method. Programmes are sequences of information (verbal, visual or audio), which are designed to elicit predetermined responses. The most common example are programmed textbooks or demonstration prepared for teaching machines or computers. The presentation of information is made through any one medium or combination of media e. g printed words, slides and tapes motion picture sequences, and filmstrips, an active response is required of the learner before new information appears Samuel, (2023).

The learner is informed immediately of his success or failure. He say that instructional media have three unique properties: Instructional media record the present so that they can be used later (fixatives), They can be arranged so that events that are otherwise unobservable to human eye come be seen (manipulative) They can be displayed to a large group or to individuals as often and in as my difference locations as they are needed (distribution). Demonstration is an instructional strategy in which the learner is presented in may small learning frame or pieces of information in logical sequence Onu (2020).

The learner under the system of instruction is expected to respond to items presented in logical sequence. The learner's positive response is immediately reinforced to the learner and is presented to the next frame of work. According to Linus (2022) programmed instruction have a positive effect on student's levels of academic achievement. Certain factors have been attributed to the poor achievements of student's in biology. These include sex, location of the school Onu (2020) over the years' research findings, have shown that male and female students have different classroom experiences because they approach learning differently and technology tend to treat them differently. Expectations for females in some subjects are usually lower as they are declared to be for certain sex, racial ethic groups Bitrus (2020). Demonstrations are instructions written or coded according to the subject area or area of discipline which can be used to disseminate information to students or learners with little assistance from the teachers. It is used by the teacher, which allows individuals to use an instructional material such Computer Aided Instruction (CAI) or Computer Aided Design (CAD). According to Caleb (2021) "a computer can be used demonstration to present the needed skill to be learned in the programmed format, Computers have the ability to contribute to learning tasks in different areas. The programmed format in the computer involves a sequence of didactic presentation; written examples to be undertake by the students, step by step most recently, multimedia instruction is currently being used in a variety of ways across discipline in elementary, secondary and higher education. Zulu (2020) found that students have favorable altitude towards multimedia instructor. Therefore, a classroom environment utilizing the instruction delivery method may be desirable to educators recently, the use of educational methods and classrooms teaching have increase across a variety of discipline. In many cases, the use of media for instructions has been proved to be effective Fada, (2020). Demonstration technique is always accompanied by telling or explaining a concept. A demonstration method is used to show how something works, accurate procedures and operations are shown in models; mock – ups and actual equipment are used to accompanies the successful demonstration: Demonstrations are useful because they provide concrete reference for objects or events. Students relate terms and concepts to those events, which they have observed Fada (2020). According to Numa (2019) Demonstration method has been used extensively in the sciences and to lesser extent in engineering. For instance, Yaya (2023) carried out a study on student's performance in sciences using a demonstration method. In this study, he reported that students were able to identify some difficulties they faced in learning science when they were given problem to solve. Harris, (2023) investigated the effect of two teaching methods on

students' cognitive achievement and problem solving skills in computer. He showed that the treatment groups performed significantly better than the control group, demonstration method have no substitute for laboratory exercise or for learning proper techniques of handling laboratory equipment, but are effective means supplementing and clarifying the material being taught.

Statement of the Problem

Efforts have been made by government to improve student's performance in science such as Establishment of Science Secondary Schools. Technical College of Education, as well as Federal University of Technologies since teachers lack adoption of education methods in teaching sciences, poor performance of students in sciences will be inevitable. Result of studies conducted on computer performance and the deteriorating students' achievement in the subject clearly demonstrate the failure of this teaching methods learning by rote memorization of facts.

Objectives of the Study

The objectives of the study are to

i. Find the different in the mean scores of computer student's taught with demonstration method and those taught with lecture method in Secondary Schools in Shongom LGA of Gombe State.
ii. Determine the different in the means scores of male and female student taught with demonstration method in Secondary Schools in Shongom LGA of Gombe State.
iii. Determine the different in the means scores of male and female students taught with lecture method in Secondary Schools in Shongom LGA of Gombe State.

Research Questions

i. What is the different in the means scores of computer student taught with demonstration method and those taught with lecture method?
ii. What are the different in the means scores of male and female student taught with demonstration method?
iii. How is the difference in the means scores of male and female student taught with lecture method?

Methodology

The research design used for this study was pre-test. Post-test, quasi – experimental and control group design. This design was recommended by Jugde (2018) for a study of this nature. The two groups were pretested. Group A (experimental) was exposed to treatment (i.e. taught using demonstration teaching method) while group B (control) was exposed to lecture method: this lasted for two weeks. Alter the treatment, the two groups were then port tested using (CT) to see if there is any difference (in academic performance) between the two groups. The population of this study comprises the entire SS II student offering computer in government secondary school in Shongom LGA, Gombe state, namely. There are fourteen government secondary schools in the local government, and private – owned Institutions, the students under study (computer student) were SS II student with age owned from 18-25 years and have common education background of senior secondary certificate Examination. The SS II students were selected for the study because they were already exposed to computer lessons and achievement test for one year. The SSS III students were not used because they were preparing for their final examination. Four government secondary schools were selected for the study using stratified. The sample

size was sufficiently large enough for the experimental study. Who recommended minimum number of 30 for an experimental research of this nature the four study group was located at different location far part. This was done in other to avoid student interaction during the treatment and administration of the research instruments which might affect the result of the study. Thus, the student that formed the control group was selected. The instruments that were used for data collection is computer science student performance Test (CSSPT) the CSSPT instrument was developed by the researcher. Prior to the commencement of the research, both the control and the experimental group were pretested to determine their performance in computer for the purpose of comparison and to identify and determine their academic performance level. The two groups were then exposed to computer instruction based on the concepts of Hardware, Software, input and output device, Data, information and Network for at least two weeks using normal lecture method for the control group and demonstration teaching method for the (treatment) experimental group. After the two weeks of instruction, the effect of CSPT was then administered to both control and experimental groups. The administration for the effect of CSPT to both group lasted for 35 minute; the CSPT was scored by the researcher using a carefully prepared and validated marking scheme. The scores were then convert to percentage for the purpose of data analysis. Treatment in this study is demonstration teaching method, used as a mean of instruction, in which computer concepts were taught not only for the purpose of defining or explaining the concepts during or after examinations but for the purpose of application and knowledge transfer, i.e. using an idea or knowledge learned in one field to solve a problem in another field. In this, all types of instructional materials available were used to expand/enhance students understanding and thus, waving out or correcting their effectiveness. For example, designed models, computer in which CDs were run, among others, were used in this method to digest/verify the concepts that were misconceived by the students. The treatment (Demonstration) Approach was delivered using the following step Introduction of the topic: For example, brief explanation of the topic; Hardware, software, etc.

Step 1: This step involved the verbal explanation of the concepts e.g. definition of Hardware,
Examples: Keyboard, monitor printer.
Step I: Use of designed models to differentiate between hardware and software those that ware:
Step II: computer; CD player or projector were used to view the hardware used in and their characteristic i.e. functionality.
Step IV: this involved the summary and conclusion of the lesson- evacuation of the lesson which identifies and measure the level of academic performance of the student follows immediately. The data obtained in this study, were analysed using mean, SD & mean different for research question on the null hypotheses stated, t-test should be used in sing the data. HI: There is no significant different between the performances of students taught using lecture demonstration method and the performance of students taught using lecture method.

Results

Research Question One

What is the different in the means scores of computer student taught with demonstration method and those taught with lecture method?

Table 1: Analysis of the difference in the means scores of computer students taught with demonstration method and those taught with lecture method.

Variable	Number of students	Means scores	Mean difference
Male	40	17.22	4.77
Female	40	12.45	

Table 1: This shows the mean difference 4.77 between male and female students. This means that there is difference in the mean scores of the experimental and control groups in favour of the students in experimental groups, who were taught computer concept using demonstration method.

Research Question Two: What is the difference in the means scores of male and students taught with demonstration method?

Table 2: Analysis of the difference in the means scores of male and female student taught with demonstration.

Variable	Number of students	Means scores	Mean difference
Male	40	17.22	4.77
Female	40	12.45	

From table 4.2 it shows the mean difference of 3.17 between male and female students in favour of the male students. This implies that the male students perform better than the female students when taught with demonstration method.

Research Question Three

What is the difference in the means scores of me and female students taught lecture method?

Table 3: Analysis of the difference in the means scores of male and female students taught with lecture method?

Variable	Number of students	Means scores	Mean difference
Male	40	15.80	
			2.26
Female	40	13.54	

From Table 3: it shows the mean difference o 2.26 between male and female students in favour of the male students. This implies that the male students perform better than the female students when taught with lecture method.

Discussion of Result

This study investigated the effects of Demonstration teaching method on academic performance of senior secondary computer science students. The result obtained were discussed as follows: Hypothesis I was stated to find out if here in any significant difference in the academic performance of the two groups when exposed to demonstration teaching method (for experimental group) and lecture method (for control group). The result from data analyses showed that there is significant difference in the means scores of the two groups in favour of those taught using Demonstration teaching method. Demonstration teaching method was reported in this study to enhance students'

academic performance in the subject as observed in the performance of students after they had been exposed to Demonstration teaching method.

This observation is in line with Victor (2021) who report that Demonstration teaching method is a strong motivation device for students and it was further reported that it can broaden. The scope of the scientific content Thus, Demonstration teaching method is a effective method for both male and female students, particularly in academic performance of computer science. From the analysis of data to test hypothesis I it was empirically shows that Demonstration teaching method significantly effects of Demonstration teaching method on academic performance of senior secondary computer science students. As shows from their higher performance in the mean difference this finding is in line with those of Malin (2022), who agreed that practical experimental activities which are parts of Demonstration teaching method. Leads to a constant interplay between students and teachers which leads to effective leaning.

A significant finding based on the first Hypothesis of this study is that the male students' performance equally well with the female students (in the experimental group) when both were exposed to Demonstration teaching method. The finding of this study is in line with that of Daniel (2019): where no significant difference was observed between the males and female students' academic performance in science.

This research study investigates the impact of the Demonstration method on the academic performance of senior secondary computer science students within Shongom Local government area, Gombe State. The Study addresses the need for effective teaching method to enhance students' leaning experience and outcomes in computer science education. The study is motivated by the recognition of the challenges faced by senior secondary students in grasping complex computer science concept and theories. The Demonstration method, known for is practical and interactive approach, is explored as a potential solution on bridge this gap and promote better comprehension of computer science subjects. Drawing on a comprehensive review of literature, the study contextualizes the role of teaching method in education, emphasizing the significance of adopting innovation techniques to cater to diverse leaning styles. Prior research on teaching method and their effects on academic performance service as a foundation for this investigation.

The finding of the study are as follows:

i. There is a significant difference in academic performance of students when exposed to Demonstration teaching method which implies that Demonstration teaching method is an effective teaching method.
ii. There is a significant difference in the of concept in computer of students after exposure to Demonstration teaching method which shows that Demonstration teaching method is capable of effective teaching method.
iii. There is a significant difference in the performance of male and female students when exposed to demonstration teaching method in the teaching concept of computer studies at senior secondary school level. Thus, demonstration teaching method is gender friendly

Conclusion

On the basis of the finding of the study the following conclusions were drawn:

i. the student that were taught computer concept using demonstration teaching method performance significantly better/higher than those taught the same computer student concepts using the chalk and talk (lecture) method. Thus demonstration teaching method academic performance on senior secondary school level the use of demonstration teaching method in teaching computer students leads to more positive perception and quality of Instruction than the use of lecture method i.e. demonstration teaching method is effective in students' performance.

ii. There was a significant difference in the academic performance of male and female students taught computer concept using demonstration teaching method. Demonstration teaching method. This means demonstration teaching method is gender friendly.

iii. The Use of demonstration teaching method to conventional instruction in computer students' produces higher academic performance than the use of chalk and talk method. That is the use of chalk and talk method should be discouraged in computer lessons, this will help student Overcome the concept in computer and will also help in is learning more effectively.

Recommendations

The following recommendations were made:

i. The use of the Demonstration Teaching method in computer instruction in senior secondary school levels should be encourage as it is empirically established that it enhances academic performance among students.

ii. Since demonstration teaching method requires the use of instructional materials. Senior school should be equipped with modern facilities and instructional packages to enable the teachers/tutors carry out their lesson via demonstration teaching method.

iii. All science teachers and particularly computer teachers should be encouraged or facilitated to use demonstration teaching method. Al science teachers, computer in particular, should learn to used mother instructional materials; models. Media technology, ICT, among others

iv. In -service training should be given to all computer teachers/tutors in senior secondary school level in other to ascertain their capability to carry-out demonstration teaching method instead of lecture method.

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