EFFECT OF SIMULATION METHOD ON SECONDARY SCHOOL STUDENTS' ACHIEVEMENT IN GOVERNMENT

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Abstract

This study sought to investigate the effect of simulation method on secondary school students' achievement in Government. It is a quasi-experimental study of non equivalent group design. Two research questions and two null hypotheses were formulated to guide the study. A sample of 120 students from two randomly selected secondary schools in Ayamelum Local Government Area of Anambra State, Nigeria was used for the study. Government Achievement Test (GAT) was developed, validated and used for data collection. The instrument (GAT) was trial-tested using Kudder-Richardson (K-R20) which established a reliability index of 0.87 which warranted its use for the study. Mean, standard deviation and Analysis of Covariance (ANCOVA) were used for the data analysis. The results revealed that students performed significantly better in Government when exposed to simulation method than conventional lecture method. It was also found that male and female students' achievement using simulation method, do not differ significantly. It concluded that if simulation method is adopted in teaching Government, students would learn practical skills and develop critical thinking ability that will help them survive in the society. The study recommended among others that curriculum designers should recommend simulation method as one of the interactive and participatory approaches to the study of Government and that government teachers adopt it in their teaching.

Introduction

To achieve the goals of any subject, there is need to adopt good teaching methods. Teaching method is the approach and or strategy through which the objective of the instruction or lesson is achieved. Accordingly, Eze (1998:8) opines that, "teaching methods broadly deal with all aspects of what happens in a classroom during a teaching learning session and even some times before and after it, including preparation for and remedial work after". This suggests that when teaching method is well packaged, it takes care of the curriculum questions of what to teach (topic), how to teach it (planning, methods or approaches, skills or strategies); whom to teach (the learner), where to teach and why. These help to sustain classroom interaction, carry out evaluation and obtain feedback for purpose of decision making. Teaching method is the procedure of instruction that is selected to help learners achieve the objectives or to internalize the content and message of the pedagogy (Onyemerekeya, 2003). Teaching method refers to any approach adopted by the teacher towards planning and execution of lesson unit(s) for the achievement of instructional objectives in classroom interaction. It is the ways and/or means of communicating ideas, skills, norms, and values outlined on the objectives of a lesson to the learners for attainment of educational objectives. The teaching methods may include lecture, project, discussion, demonstration, discovery, dramatization and problem solving among others.

Method of teaching government implies the various ways, styles and techniques the government teacher may apply in impartation of knowledge on Government to the students as to foster internalization and understanding (Ojukwu, Mbaebie & Anyabolu, 2005). It refers to ways and/ or means of imparting knowledge of Government concepts, principles and theories on students of Government as a subject.

Government in this discourse is referred to as a discipline or an academic field of study. That is Government as a reading course in the secondary schools, universities and colleges of education (political science). Government as a discipline deals with the study of agencies, political institutions and dynamics of the state (Anyaele, 1994). As a subject it covers the study of basic concepts, principles in Government, institutions, the history of Nigerian government and politics as well as globalization among others. The reasons for inclusion of Government in secondary school curriculum as an elective subject cannot be over emphasized. Its study enables students to understand political process of the country, have knowledge to participate actively in the government of the country as administrative officers, personnel officers, develop spirit of

nationalism and patriotism and understand Nigeria in her relationship with other countries of the World. Given the role of Government as a subject in citizenship and national development, practical method should be adopted in its teaching and learning. Practical methods are guided discovery, guided inquiry, guided expository, simulation and project-based methods. (Onyemerekeya, 2003; Adedoyin, 1990 and Olaitan & Aguisiobo 1986).

The concern of this discourse however is simulation method. Stimulation is a method of teaching that showcases real life situations in a play-like form to foster practical learning and knowledge retention. Anu (2012) defines simulation as the imitation or representation of one act or system by another. According to Obianwu (1999:169) simulation is, "representation of real life with some of real elements for such reasons as safety, unavailability of equipment because of expense and complexity of length of time involved". Pertinent aspects of reality are included in simulation as a simple way of presenting ideas and problems of life in the classroom. Simulation can be seen as educational games that combine the features of game, competition, co-operation, rule and players towards problem solving. Ezeudu, (2003) equally states that simulation allows students to explore systems where reality is too expensive, complex, dangerous, fast or slow. Ezeudu further stresses that it is a working representation of reality. It enriches existing experiments and other classroom activities, to provide experiences which otherwise might be impossible to achieve within the social classroom (Obianwu, 1999); it makes teaching and learning lively, attention sustaining and interesting.

Simulation method helps in problem solving, participatory learning, makes learners happy as they play life roles; grooms students in decision making process and facilitate learner-learner interaction in the classroom setting. It may help students understand human behaviour in the true-to-life settings in which professionals operate. Assuming simulation method is adopted to teach Government contents (topics) like law making or policy formulation, political party and party system, pressure groups, electoral processes, students will have real life experience of the aforementioned topics through role play. This may help them sustain the knowledge acquired instead of rote memorization that is envisaged in the teacher-centered approach to teaching like the lecture method. It can accommodate a range of learners from novices to experts.

Constructivists' theory explains the effect of simulation method on students' achievement in Government. This theory stipulates that learning is an active process and as such learners will learn better if they construct their knowledge by themselves (Orji, 2013). Constructivists recognize

the learner's ownership of the ideas which are to be negotiated in the classroom. According to Eze (2007) the constructivists' framework is not to change the learner's ideas, but to support and enable them to actively change their own ideas in the light of the available evidence. The implication of this is that there is need for use of practical, exploratory and interactive methods of teaching in senior secondary Government instruction to enhance creative and/or productive learning where the teacher will be acting as a coach or guide not a transmitter of intact knowledge.

Simulation method nevertheless, may be reasoned to have some weaknesses which may include time consumption, leading students outside the immediate curriculum setting and being difficult to evaluate. However, it is interactive and participatory approach to instruction as to foster easy internalization of Government subject matter, practical learning, critical thinking and develop manipulative skills and collaborative learning in students. The purpose of any method of teaching is to effectively transmit, translate and transfer knowledge, skills, values and attitudes from one group to another (Ezeudu, 2003). It promotes achievement of set objective(s) in teaching and learning process.

Achievement is the hallmark of any teaching and learning endeavours. Wehmeier (2001) sees it as a thing that somebody has done successfully using his/her efforts and skills. Students' achievement is their own efforts and skills towards acquiring practical knowledge, skills, attitudes, values, manipulative skills and decision making skills through interaction with their teachers and the environment (methods, materials and contents etc). It has been argued that what students learn depends not only on what they are taught but also on how they are taught (Asogwa & Abdurrahman, 2009). They further add that serious attention be paid to the methods chosen for presenting new ideas. The reason for the use of simulation against the conventional lecture method in teaching Government may be explained by the Chinese proverb. Which says, tell me, I forget; show me, I remember; but involve me, I understand (Anu, 2012).

The conventional lecture method of teaching Government seems to be teacher-centered approach where the teacher tells and the learners engage in rote learning of Government contents. This method does not give room for deep learning or students-student interaction or instructor-student interaction, transfer of knowledge, understanding and refining their own thought processes and seeing social processes and social interactions in action (Anu, 2012). The use of the conventional lecture method in teaching Government makes the teacher the only active participant in the classroom while the students remained passive all through the lesson (Asogwa &

Abdurrahman, 2009). There is therefore, need for paradigm shift in the method of teaching Government using exploring teaching method, to enhance active participation of both male and female students in Government instruction.

This study also wants to find out whether gender is a significant factor in the students' achievement in Government. Gender according to Uzoegwu (2004) is varied socially and culturally constructed roles, qualities and behaviour that are ascribed to men and women of different societies. Similarly, Okolo & Ezegbe, (2012) note that it is a cultural construct which relates to various beliefs and ideas about males and females held by members of a particular society. There is common belief that gender as a variable plays some distinct role in people's life endeavours. This is also applicable in teaching and learning process. For example, Ezeudu (2009) in a study titled "interaction of concept maps and gender on achievement of students in selected Organic Chemistry concepts," found out that males perform better than females. On the contrary, some researchers in such related studies (Offorma, 1990; Oluikpe, 2004 and Asogwa & Abdurrahman, 2009) document that gender is not a significant factor in mean achievement of students. However, since these studies are different from the subject matter of the present study, the researchers deemed it necessary to find out whether students' gender, is a factor in the achievement of government students when exposed to simulation method.

Sequel to the above, this study sought to investigate the effect of simulation method on students' achievement in Government. The purpose of the study, therefore, is to find the effect of simulation method on students' achievement in government. Specifically, the study will compare the achievement of students in Government taught with simulation method and those taught with conventional lecture method and determine the effect of simulation method on gender achievement.

The findings of this study will be of great importance to Government teachers and students. For the Government teachers, it will help them achieve the objective(s) of government lesson. It will equally enhance students' understanding of the subject, as it offers room for students' participation in the teaching and learning process.

Methodology

To carry out the study, the following research questions and hypotheses guided the study.

Research questions

(1) What is the effect of simulation method on secondary school students' achievement in Government?

(2) What is the difference between the mean achievement scores of the male and female students taught with simulation method?

Hypotheses:

Ho_1: There is no significant difference in the mean achievement scores of students taught with simulation method and those taught with conventional lecture method.

Ho_2: There is no significant difference between the mean achievement scores of male and female students taught with simulation method**.**

Design

The study adopted a quasi-experimental study of non equivalent design. A pretest, post-test control group design was used for the study. Two groups of students were used. The first group were taught with the simulation method, while the second group were taught using a conventional lecture method.

Area of the study

The study was carried out in Ayamelum Local Government Area of Anambra State.

Population of the study

The population of the study comprised all the senior secondary one (SSI) students in Ayamelum LGA of Anambra state who offered Government in the public secondary schools. There are nine (9) government - owned (public) secondary schools in Ayamelum LGA with an estimated population of six hundred and eight (608) SSI Government students in all.

Sample and sampling techniques

Two out of nine secondary schools in Ayamelum LGA were randomly selected for the study. Two intact classes were formed from SSIA of both schools with a sample size of 120 students which was used for the study.

Instrumentation

The following instruments were used for data collection for the study

- Government lesson plan/note on the topic political parties and party system using the simulation method;
- Government lesson plan/note on the topic political parties and party system in line with the conventional lecture method and
- GAT – Government Achievement Test on the topic political parties and party system. The GAT had a 30 item multiple choice test with four options (ABCD).

Validation of the instruments

Lesson plans/notes on the simulation method; conventional lecture method and Government Achievement Test (GAT) were face validated by three specialists in the Department of Social Science Education, University of Nigeria, Nsukka. Corrections pointed out on the lesson plans/notes were effected accordingly. During the validation exercise, some items on the GAT were restructured, some new ones were added, while some were discarded. After the correction, the number of items used for the study were reduced to 25.

Reliability of the instrument

The corrected instrument was trial tested on subjects other than that of the study to determine the internal consistency and construct validity using Kudder-Richardson (K-R 20). Reliability index of 0.87 was established which was adjudged to be high enough.

Method of data collection

This research was conducted during the third term of 2011/2012 academic session. The two intact classes were made to cover same learning contents. Lesson plans were produced for the simulation method group (experimental group) and conventional lecture method group (control group). The treatment lasted for four weeks. The researcher used the permanent Government teachers who were properly trained during the training programme to teach both the experimental and control groups. The essence is to enable the students not to be affected by teacher variables. Thereafter, the experimental group was subjected to the treatment after which the post test was administered on both groups. The scores of the experimental group in both pre-test and post-test were recorded and compared with the scores gotten by the control group in both tests. Two weeks later, the same post-test was reshuffled and administered again on both groups to assess the achievements of the students. The scores were recorded and compared.

Experimental condition

- **Experimental bias: -** The teaching was done by permanent Government teachers of the participating schools (intact classes – SSIA of both schools) in both experimental and control groups.
- **Teacher variability: -** All the teachers involved were trained and given similar instructions during the training programme by the researchers. This is to avoid invalidity that may arise as a result of teacher variability. The participating teachers were not given the test instrument (GAT) until the time of administration.
- **Students/class interaction: -** The research subjects (students in the intact classes) in both groups were not informed of their involvement in the research process as the same lesson content was taught to both groups. Assignments were not given to the students. This is to prevent any kind of discussion or idea(s) exchange outside the classroom.
- **Initial group differences: -** Intact classes were randomly assigned to treatment conditions. Schools used were not those that use ability in assigning students to classes. Analysis of Covariance (ANCOVA) was used in the analysis to reduce the effect of initial group differences.
- **Effect of pretest, post test: -** The experiment lasted 4 weeks. This is deemed a long period enough as to avoid pre-test effect to post-test achievements.

Experimental procedure

The pretest was first administered before the commencement of treatment. The treatment for the study is simulation method lesson plan (SMLP) based on party system and political parties. The lesson plan incorporated, role play, competition, players (characters) as elements of simulation to encourage practical teaching and easy assimilation of the subject matter. The government topics (SSI topics) taught to both groups comprised party system (meaning) political parties(definition) characteristics, types, functions, merits and demerits of political parties. Types of party system, characteristics, merits and demerits of party system and factors that may aid the electoral success of political parties in Nigeria.

The experimental group was taught 6 lessons with simulation method lesson plan (SMLP) while the control group was taught the same 6 lessons with the conventional lecture method lesson plan (CLMLP). Each lesson lasted for 35 minutes and the teaching of 2-lesson plan a week lasted for one month. At the end of the treatment, a post-test was conducted to both groups with the

Government Achievement Test (GAT); the scores obtained from both groups were compared to determine whether there was significant difference in the mean achievements of the two groups and whether gender affects students' achievement with the use of simulation method. The pretest served as covariates to the post-test. Mean and standard deviation were used to answer the research questions, while Analysis of Covariance (ANCOVA) was used to answer the null hypotheses.

Method of data analysis

The research questions were answered using mean and standard deviation of the test scores, while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

Results

Research Question 1

What is the effect of simulation method on secondary school students' achievement in Government?

Table 1: Mean scores of students taught with simulation method and conventional lecture method

Methods	**Mean**	**Std. Deviation**	**N**
Simulation	23.4500	1.87241	60
Conventional lecture	17.6167	5.03914	60
Total	**20.5333**	**4.78607**	**120**

Table 1 reveals that students taught with simulation method performed better than those taught with conventional lecture method. The post-test mean score of the simulation method was 23.45 with standard deviation of 1.87 while that of conventional lecture method was 17.61 with standard deviation of 5.04.

Research Question 2

What is the difference between the mean achievement scores of the male and female students taught with both simulation and conventional lecture methods?

Table 2: Mean scores of males and females taught with both simulation and conventional lecture methods.

Methods	**Gender**	**Mean**	**Std. Deviation**	**N**
Simulation	Male	23.2750	2.17194	40

	Female	23.8000	1.00525	20
	Total	23.4500	1.87241	60
Conventional	Male	18.8000	3.91637	30
	Female	16.4333	5.78156	30
	Total	17.6167	5.03914	60
Total	Male	21.3571	3.75340	70
	Female	19.3800	5.78489	50
	Total	20.5333	4.78607	120

Table 2 shows that males and females taught with the simulation method have almost the same mean scores of23.27 and 23.80 and standard deviations of 2.17 and 1.00 respectively in their post-test scores. However, males and females taught with lecture method have different mean scores of 18.80 and 16.43 and standard deviations of 3.92 and 5.78 respectively in their post-test scores.

Null hypothesis 1 (Ho_1)

There is no significant difference in the mean achievement scores of students taught with simulation method and those taught with conventional lecture method.

Table 3: Summary of ANCOVA for students taught with simulation method and those taught with conventional lecture method

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected model	1049.568[a]	2	524.784	36.628	.000
Intercept	4149.334	1	4149.334	289.609	.000
Scorpre	28.734	1	28.734	2.006	.159
Methods	1020.833	1	1020.833	71.251	.000
Error	1671.299	117	14.327		
Total	53320.000	120			
Corrected Total	2725.867	190			

Significant (p<.05)

Table 3 above reveals that F.cal (71.25) is significant at level of .000. Since the value is less than .05 the hypothesis was formulated, the null hypothesis is rejected in favour of the alternative hypothesis. Hence, there is significant difference in the mean achievement scores of students

taught with simulation method (23.27 males and 23.80 females) and conventional lecture method (18.80 male and 16.43) in favour of the simulation method.

Null hypothesis 2 (Ho_2)

There is no significant difference between the mean achievement scores of male and female students taught with simulation method

Table 4: Summary of ANCOVA for male and female students taught with simulation method.

Sources	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected model	1663.825[a]	4	290.956	21.421	.000
Intercept	3272.941	1	3272.476	240.959	.000
Scorpre	55.3000	1	55.300	4.071	.046
Methods	954.476	1	954.476	70.270	.000
Gender	51.352	1	51.352	3.781	.054
Method* gender	55.329	1	55.329	4.073	0.46
Error	1562.042	115	13.583		
Total	53320.000	120			
Corrected Total	2725.867	119			

Not significant (p>.05)

A look at table 4 shows that F.cal (3.78) is significant at level of .054, which is greater than .05 the hypothesis was formulated. Hence, the null hypothesis is accepted in disfavour of the alternative. This implies that there is no significant difference in the mean achievement scores of male and female students taught with simulation method.

Discussion of results

Table 1 shows that the mean achievement scores of students taught with simulation method (23.45) was higher than the mean achievement scores of the students taught with the conventional lecture method (17.62). This was further confirmed by the result in table 3, which shows that the method of teaching was a significant factor on students' achievement in Government. Hence, students who were taught with simulation method performed better than those taught with the conventional lecture method. This finding is in line with Asogwa & Abdurrahman (2009) who state that the method of teaching used in Government could produce a differential effect on

students' achievement. Kennedy & Wilson (2008:1) seem to reason in this dimension when they aver that,

> One way to teach students about their government and how laws, bills work is to set up a work trial simulations. These trials can teach the children about the branches of their government… Executive branch, the judicial branch, and the legislative branch; Create or find a law suit or case for the class to rule on and assign roles for the students; Assign students as jury, lawyers, judges, reporters, witnesses and other roles; Have students practice depositions, pre-trial preparations, evidence handling and more. Mock trials can help teach students about the legal practice and how law bills are upheld within the court of law.

This view was further supported by Blecha, (2012) who maintains that students taught with simulation method learned a set of concepts in less time than students taught with a traditional lecture.

Table 2 shows that the mean achievement score of female students taught using simulation method is slightly higher than that of their male counterparts (23.80 and 23.28) respectively using the same method. This was in conformity with the result on table 4, which indicates that gender is not a significant factor in students' achievement in Government when simulation method is used. This finding suggests that simulation is an effective method that can be used in teaching both males and females in Government. This finding is in line with Asogwa & Abdurahman (2009), Metu (2008), Nworgu (1985), Nworgu, 1986, & Ugwu, 1993 who found interaction of gender and method on students' achievement to be statistically significant. However, it disagrees with Ezeudu (2009) who documents that concept maps, even though it helped students to achieve highly, did not help both males and females to achieve equally. Thus, the result of the study negates the seeming wrong belief among some females that Government is a subject for the male and not that of females. Accordingly, there should be no gender stereotypism in the pedagogy. Hence, males and females should be exposed to the same Government concepts and principles for purpose of effect.

Conclusion and Recommendations

Interactive, participatory, and other practical - oriented methods of teaching seem to be better approaches to teaching and learning mostly in this current era of knowledge economy. When Government is taught with practical teaching approaches, students will be able to get in terms with some abstract concepts and principles in Government for easy transfer of learning. The teachers will no more be blamed for students' poor practical knowledge of Government concepts and principles which have been blamed on the use of the conventional lecture method. Conventional lecture encourages rote memorization of concepts and principles of Government. In line with the above findings, the following recommendations were made:

(i) Simulation method should be adopted by the curriculum designers as a participatory approach to teaching and learning of Government in secondary schools in Nigeria.

(ii) Teachers should be trained by the governments on the use of simulation method in the teaching of Government. This if done would provide real life learning of Government which seems to have some abstract concepts and principles.

(iii) The secondary school management should provide costumes and other relevant materials for acting (role playing) some concepts and principles in Government to guarantee practical learning for easy assimilation and subsequently better achievement in Government as a subject.

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