Effects of Project and Inquiry Instructional Strategies on Secondary School Students' Academic Achievement in Social Studies in Ekiti State, Nigeria

By

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Abstract

This study examined the effects of project and inquiry instructional strategies on secondary school students' achievement in Social Studies. The study adopted the pre-test, post-test, control group quasi-experimental design. The population for the study comprised all Junior Secondary School Students in Ekiti State and the sample consisted of 270 Junior Secondary School Class II students selected from nine schools in Ekiti State. Simple random sampling was used to select six single-sex schools (3 boys only and 3 girls only) and purposive sampling was used to select three co-educational schools for the study. Stratified random sampling was also used to select 30 students (15 males and 15 females) from each co-educational school and simple random sampling was used to select 30 students from each single-sex school. The instrument used for the study was the Social Studies Achievement Test (SSAT) designed and validated by the researcher and experts in Social Studies. The instrument was made up of 40 multiple-choice items designed to measure the students' achievement in Social Studies. The test-re-test and estimation of internal consistency methods of reliability were adopted and the reliability co-efficient of 0.77 and 0.74 was obtained respectively. Five hypotheses were tested at 0.05level of significance. The data were analysed using t-test and ANCOVA statistical tools. The results showed that there was a significant difference between the achievement of students in the experimental and control groups. There was a significant difference between the pretest mean scores and achievement mean scores of students in the experimental and control groups. There was a significant difference between the achievement mean scores of male students in the experimental and control groups. There was a significant difference between the achievement mean scores of female students in the experimental and control groups and there is no significant difference between the achievement mean scores of male and female students in each of the experimental and control groups. It was found in the study that inquiry strategy was the most effective and project strategy wasmore effective than traditional expository lecture method in improving students' achievement in Social Studies. It was therefore recommended, that teachers should make their lessons more interesting, appealing, practical, lively and friendly to enhance students' achievement in Social Studies. Teachers should make use of inquiry and project strategies that encourage development of life-skills in learners.

Introduction

Social Studies is an aspect of learning that concentrates on how human beings get well with their environment and how to develop those skills, knowledge, attitudes and values which are characteristics of responsible citizens. Social Studies, if properly taught, should assist students to acquire knowledge, skills, master the process of learning and become active citizens that can face the present and future challenges. In support of the above definitions based on the philosophy of education is to transform the individual into a sound and effective citizen (Federal Republic of Nigeria, 2013).

Observations show that most of Nigerian teachers still rely heavily on the traditional lecture method to teach Social Studies in secondary schools. In lecture method, the teacher uses verbal explanations throughout the lesson and renders the students passive. Students cannot even ask questions for clarification of ideas from the teacher. As a result of lack of participation, students may not benefit maximally from the lesson. Adewuya (2003) established that the rate of absorption of students is as low as 20 to 30% as a result of lecture method used to teach them in secondary schools.

Lecture method allows a great deal of authentic information to be passed to learners and favours handling of large classes. In spite of the advantages, it does not stimulate students' innovations, inquiry and scientific attitudes (Abdu-Raheem, 2010). It encourages students to cram facts which are soon forgotten (Okwilagwe, 2003). Jekayinfa (2012) also agreed that lecture method gives room for the teacher to cover the contents of the syllabus and also helps in social facilitation, but it decreases students' attention, leads to fading memories, has poor feedback effects and does not promote meaningful learning.

Lecture method is inappropriate and ineffective for achieving the high objectives of Social Studies programmes (Adeyemi, 2003). Adeyemi (2003) explained further that there is need to search for more effective strategies which are suitable and efficient for promoting the level of secondary school Social Studies achievement beyond contemporary limits and to the satisfaction of the current Social Studies curriculum requirements. Seweje (2010)also agreed that students should be trained to develop both cognitive and affective abilities that can assist them to solve problems to the best of their abilities which is in line with one of the aims of teaching Social Studies.

In his study, Orimogunje (2008) also suggested the need for innovative strategy to correct the mismatch of post-primary Social studies with the traditional lecture method. There are indications that the lecture method of teaching has not been effective enough to enhance the achievement of students in Social Studies. It does not enable students to develop initiatives to discover, identify and attempt solutions to social problems cropping up around them (Abdu-Raheem, 2010). It is, therefore, not out of place to look into other methods such as project and inquiry methods as a way of providing alternatives to the lecture method being used.

Inquiry emphasizes on learners finding out things on their own. It is a major way of developing life-skills in learner. It facilitates the discovery of meaningful concepts, minimizes memorization and stresses the importance of experiment to solve problems and arrive at warranted conclusion. Fadeiye (2005) defined inquiry as a method whereby students find out facts, information, ideas and collect data about opinions, matter or issues. He stresses further that inquiry enables the learners to combine the search of knowledge in a systematic and logical sequence and it also promotes independent thinking and self reliance.

Again, Sola and Ojo (2007) also saw inquiry as a term used in science teaching that refers to a way of questioning, seeking knowledge or information, or finding out about phenomena. It involves investigation, searching, defining a problem, formulating hypothesis, gathering and interpreting data and arriving at a conclusion. They stressed further that inquiry method enables students to learn not only concepts and principles but self-direction, responsibility and social communication. Onah and Ike (2015) also acknowledged that the secondary school curriculum recommends the use of inquiry or discovery approach of teaching which emphasizes practical work and encourages activity-centred or child-centred methods or techniques. They stressed further that lecture method or chalk- talk method which is teacher-centred should be discouraged.

According to Joyce, Well and Calhoun (2000), inquiry is a learning process whereby questions are created or problems developed by the students based on facts and observations logically. Iyamu and Otote (2007) confirmed that inquiry is a whole complex of instructional phenomenon in which the

teacher makes use of a variety of methods and activities that encourage students' active involvement in the generation of their own knowledge. Sotiriou and Bogner (2015) agreed that inquiry-based learning repeatedly claimed to ensure better learning levels. They believed that for effective inquiry method, students should be allowed to ask and research their own questions.

In his own contribution, Kochhar (2012) posited that inquiry provides meaningful learning and it is done with a view to finding some answers or why certain problem exists. He noted that the method involves learners in a quest or search that eventually ends in the acquisition of knowledge. Fadeiye (2005) stated that inquiry method enables students to develop interest and essential skills such as observation, classification, investigation, imagination, questioning and analysis of information. Fadeiye (2005) stressed further that students can use the analysed information as a basis for scientific investigation and decision can be made to analyse information which they can use for generalization. Inquiry permits students to assimilate and accommodate information (Sola and Ojo, 2007).

Again, project method engages students in activities and concrete works which promote initiatives, thinking skills, investigation of ideas, motivation, collation and presentation of ideas from the knowledge acquired. Adewuya (2003) posited that a project may be an experiment, a survey or an investigation but its importance lies in the desire to make in-depth analysis or to acquire more knowledge about something. Nkwocha (2004) noted that project is a product of oriented and field based assignment which is given to an individual or group of individuals to test their ability to produce something using depth mastery skills they have been taught. Sola and Ojo (2007) also agreed that project method of teaching involves assigning a particular work to students or group of students to work on and complete at their spare time and report back to the teacher as when demanded.

In addition, Fadeiye (2005) noted that project method allows students to gainfully employed in searching for information from various sources concerning the project. Ancholonu (2008) observed that project is a means employed by the teacher to develop certain desirable habits, skills, knowledge and appreciations. Kochhar (2012) saw project as a form of concrete activity directed towards the learning of a significant skill or process. He explained further that project has a wide connotation and can be taken to include any activity like drama, model making, maps and charts drawing, collection of pictures, preparing scrap, books, going on historical tours and exhibitions, preparation of Social Studies wall newspaper and organization of debates.

In his own contribution, Adewuya (2003) added that project method can be used for handling nearly all the school subjects as it provides for integrated study and reduce formal instruction to the bearest minimum. Sola and Ojo (2007) explained that project method enable students to have occasion to define the problem, plan their work, find appropriate resources, carry out other plan and draw conclusion. Kochhar (2012) posited that while undertaking a project of Social Studies, it is possible to learn some literature, mathematics and arts because the method transcends the subject-barrier. Onah and Ike (2015) also emphasized that for practical, meaningful and creative teaching and learning, project method is indispensable.

However, Jekayinfa (2012) affirmed that students working under the project

method have more freedom and autonomy to decide on what they deem best. She added that roles of teachers are just guide, advice and discuss with the students. Advantages of project method according to Jekayinfa (2012) are provision of learning environment that encourages intrinsic motivation in students, provision of considerable enjoyment and training of students not only for independent work, but for tact and diplomacy, leadership and decision making. Despite the above mentioned advantages, the method consumes a lot of time and the class may become uncontrollable if not properly handled.

Gender is another important issue to be discussed in relation to this study. Gender according to Jadesola (2002) is socially constructed for the purpose of allocating powers, duties, responsibilities, status and roles in any social context. Jekayinoluwa 2005 affirmed that schools and the nation at large are making profound contributions to the creation of positive learning environment for boys than girls. Owuamanam and Babatunde (2007) posited that gender stereotype is a way of promoting the belief that women should be traditionally feminine and men are to be traditionally masculine. Ogunjimi (2015) asserted that female gender constitute over 50 percent of the population in Nigeria. Ogunjimi (2015) lamented that female are disadvantaged and enjoy few privileges and rights relative to the male gender despite the advantage in terms of population.

Again, Njoku (2001) reported that Primary Science and Technology teachers agreed that they pay more attention to the boys than the girls. Adesoji and Fabusuyi (2001), in their studies, found out that 63% of the girls could not attempt solution to problems based on volumetric analyses. Based on these, they arrived at the conclusion that boys are better problem-solvers. Moss (2007) noted that male adolescent performed significantly than female counterparts in the field of Science and Science subjects. Agbaje and Ogunyebi (2016) also found in their study that there is significant difference between the academic performance of boy and girls in favour of boys in Integrated Science.

In addition, Guriam and Stevens (2006) asserted that boys are superior to girls in numerical ability and problem solving. The intellectual potential of girls is an untapped labour resource for Science and Technology. Average levels of attainment for boys are lower than those of girls at all stages and across almost all areas of the curriculum (Croxford, 2000). A similar picture can be observed in England and Wales (Younger *et al* 2005). Sullivan and Jackson (2006) confirmed that female performed significantly than boys in verbal skills of various types. Hyde, Lindberg, Ellis and Williams (2008) asserted that girls surpassed boys in basic computation and understanding of mathematical concepts while boys exceeded girls in complex problem-solving in the high school years.

However, Adeosun (2002) noted that there is no significant difference in the achievement score between males and females while conducting studies on effects of multimedia packages on students' achievement and retention in Social Studies. Sullivan and Jackson (2006) also agreed that sex differences had little or no effect on students' academic achievement.

Statement of the Problem

The problem of effective teaching and learning of Social Studies in Nigerian secondary schools has become a sensitive issue that needs urgent attention. It has been observed that the issue is affecting the achievement of students in both internal and external examinations adversely. Scholars found that the poor academic achievement of

students is related to the conventional lecture method used to teach them by the teachers. A data collected from the Ministry of Education in Ekiti state indicated that the total numbers of students that sat for Junior Secondary School Final Examinations for five academic sessions, that is, 2003/2004 to 2007/2008 in Ekiti State was 94,848. The total number of students that passed at Credit level was 31,944 which was 33.7% while 62,904 constituting 66.3% either had ordinary passes or failed. This study therefore, experiment the effects of project and inquiry strategies on students' achievement in Social Studies as alternative ways of teaching the subject.

Methodology

This study is a pre-test, post test, control group quasi-experimental design. The population for the study comprised all Junior Secondary School Students in Ekiti state while the sample consisted of 270 students selected from nine Junior Secondary Schools. Simple random sampling was used to select six single-sex schools and purposive sampling was used to select three co-educational schools for the study. Stratified random sampling was also used to select 30 students (15 males and 15 females) from each co-educational school and simple random sampling was used to select 30 students from each single-sex school.

The instrument for the study was a self-designed Social Studies Achievement Test (SSAT) to sort information on Students' achievement in Social Studies. To ensure the validity of the instrument, the face, content and construct validity procedures were employed. The instrument was given to the experts in Social Studies to determine the face value and appropriateness of the instrument in measuring students' achievement in Social Studies. The instrument was found valid and appropriate. The reliability of the instrument was also determined through test-re-test method and estimation of internal consistency. The instrument was first administered on 30 students from 2 schools out of the sampled schools. After 4 weeks, the instrument was re-administered on the same set of students. The scores of the 2 sets of tests were correlated using Pearson Moment Correlation Coefficient. The correlation coefficient of 0.77 was obtained. The Social Studies Achievement Test was also administered again on thirty Junior Secondary School Class Two students in a school that was not used for the study. Cronbach Alpha was applied on the responses of the students for the estimation of internal consistency of the items. The formula yielded a reliability coefficient of 0.74 which is good enough for measuring the differences between the experimental and control groups when large samples are used. The data was analysed using t-test and ANCOVA statistical tools. All the hypotheses were tested at 0.05 level of significance.

This study is a pre-test, post test, control group quasi-experimental design. The pre-test was used to establish the knowledge base-line of the students used for the study while the post-test was used to measure the level of achievement and after the treatment. Simple random sampling was used to assign the groups into experimental and control groups. Two groups (Project and Inquiry) were assigned to treatment while one group is Control that had the lesson with conventional lecture method. All the 3 groups were given a pretest and achievements tests administered on them. All the groups were given a pre-test before the experiment commenced while two experimental groups responded to the achievement test after they had been exposed to different

treatment conditions being tested. The achievement test was also administered on the control group which was not exposed to treatment but the conventional method.

The design for the study is graphically represented as follows:

Experimental Group I = O_1 X_1 O_2 O_3
Experimental Group II = O_4 X_2 O_5 O_6
Control Group = O_7 ___ O_8 O_9
O_1, O_4, O_7 = Measurement (Pre-test)
O_2, O_5, O_8 = Measurement (Post test)/ (Achievement score)
X_1 = Treatment via Inquiry Method
X_2 =Treatment via Project Method
___ = Conventional method

Hypotheses

In view of the foregoing, the following hypotheses were formulated and tested at 0.05 level of significance.

Ho_1. There is no significant main effect of treatment on students' academic achievement in Social Studies in Ekiti State.

Ho_2. There is no significant main effect of gender on students' academic achievement in Social Studies in Ekiti State.

Ho_3. There is no significant interaction effect of gender and treatment on students' academic achievement in Social Studies in Ekiti State.

Results

Hypothesis 1

There is no significant main effect of treatment on students' academic achievement in Social Studies in Ekiti State.

Table 1: ANCOVA Summary of Students' Academic Achievement in Social Studies by Treatment

Source	SS	df	MS	F	Sig.	Partial Eta²
Corrected Model	15876.874	3	5292.291	390.787	.000	.815
Intercept	4989.128	1	4989.128	368.401	.000	.581
Covariate (Pretest)	76.644	1	76.644	5.659*	.018	.021
Group	15859.985	2	7929.993	585.557	.000	.815
Error	3602.345	266	13.543			
Corrected Total	19479.219	269				
Total	193317.000	270				

p<0.05.

The result in Table 1 revealed that there was significant main effect of treatment on students' academic achievement in Social Studies in Ekiti State ($F_{2,266}$=585.557, $p<0.05$). The null hypothesis was rejected. The treatment account for about 82% ($Eta^2 = 0.815$) of the observed variance in students' achievement in Social Studies. The mean difference among the estimated marginal means of the groups, after correcting for the other effects in the model are presented in Tables 2 and 3.

Table 2: Mean scores by treatment

Group	N	Mean	Estimated Marginal Mean
Inquiry	90	32.07	32.15
Project	90	29.39	29.32
Control	90	14.67	14.65

Table 2 showed that students exposed to inquiry method had the highest estimated marginal mean of 32.15, closely followed by project group (29.32) while the subjects in the control had the least adjusted mean score of 14.65.

Table 3: Adjustment for multiple comparisons of estimated marginal means

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
Inquiry	Project	2.829*	.552	.000	1.499	4.160
	Control	17.499*	.550	.000	16.173	18.824
Project	Inquiry	-2.829*	.552	.000	-4.160	-1.499
	Control	14.670*	.549	.000	13.347	15.992
Control	Inquiry	-17.499*	.550	.000	-18.824	-16.173
	Project	-14.670*	.549	.000	-15.992	-13.347

p<0.05.

There was significant difference between the achievement mean scores of students in the inquiry and project, inquiry and control, project and control groups at 0.05 level in each case.

Hypothesis 2

There is no significant main effect of gender on students' academic achievement in Social Studies in Ekiti State.

Table 4: ANCOVA Summary of Students' Academic Achievement in Social Studies by Gender

Source	SS	df	MS	F	Sig.	Partial Eta^2
Corrected Model	37.311	2	18.655	.256	.774	.002
Intercept	4435.050	1	4435.050	60.908	.000	.186
Pretest	18.640	1	18.640	.256	.613	.001
Sex	20.422	1	20.422	.280	.597	.001
Error	19441.908	267	72.816			
Corrected Total	19479.219	269				
Total	193317.000	270				

p>0.05.

Table 4 showed that the main effect of gender on students' achievement in Social Studies in Ekiti State was not statistically significant at 0.05 level ($F_{1,267}$= 0.280, p<0.05). The null hypothesis was not rejected. This implies

that there is no significant main effect of gender on students' academic achievement in Social Studies in Ekiti State.

Hypothesis 3

There is no significant interaction effect of gender and treatment on students' academic achievement in Social Studies in Ekiti State.

Table 5: 2 X 3 ANCOVA of Students' Academic Achievement in Social Studies by Gender and Treatment

Source	SS	df	MS	F	Sig.	Partial Eta^2
Corrected Model	15967.988	6	2661.331	199.340	.000	.820
Intercept	4854.593	1	4854.593	363.621	.000	.580
Pretest	66.281	1	66.281	4.965	.027	.019
Sex	22.120	1	22.120	1.657	.199	.006
Group	15854.447	2	7927.223	593.769	.000	.819
Sex * Group	68.641	2	34.321	2.571	.078	.019
Error	3511.231	263	13.351			
Corrected Total	19479.219	269				
Total	193317.000	270				

p>0.05.

Table 5 showed that there was no significant interaction effect of gender and treatment on students' academic achievement in Social Studies in Ekiti State ($F_{2,263}$=2.571,p>0.05). The null hypothesis was not rejected.

Discussion

The study established that the achievement of students in Social Studies before the treatments were generally low, but the achievement improved drastically in inquiry and project methods after the treatments. The rapid improvement may be as a result of active participation of students in the lessons of experimental groups. This is in line with Sola and Ojo (2007) discovered that project method provides an excellent opportunity for the complete act of thinking by the students.

The study also found that students exposed to inquiry method had the highest followed by the project method and lastly by lecture method. This is an indication that inquiry has the best potency of improving students' achievement followed by project method. The low performance of students in control group may be as a result of treatment given to them with conventional lecture method. This in agreement with Abdu-Raheem (2012) who discovered that traditional expository method is ineffective in bringing about leaning relation, transfer, stimulating thinking in learners and active participation of students in the classroom. Ayodele (2007) also agreed that teachers' methodology is very important in the sense that it may hinder learning, initiative and curiosity; and thereby making self- reliance and self-survival difficult. It may also promote mental activities and can work wonders in making learning effective.

The findings also show that there was no significant main effect of gender on secondary school students' achievement in Social Studies. The study is in agreement with Adeosun (2002) who confirmed that there is no significant difference between the achievement mean scores of male and female students while conducting a study on effects of multimedia packages on students' achievement and retention in social studies. Abdu-Raheem (2012) also agreed that gender has no significant contribution to the achievement of students in Social Studies.

Conclusion

It was concluded in this study that inquiry the inquiry strategy has the best potency in improvement of students' achievement in Social Studies, followed by the project strategy and lastly lecture method. This study also found that there is no significant difference between the achievements means scores of male and female students exposed to the same treatment in Social Studies.

Recommendations

Based on the findings of the study, it was recommended that:

1. Social studies' teachers should as a matter of urgency explore the use of inquiry and project strategies of teaching for better achievements of students in Social Studies.
2. Students should be motivated by the parents and the teachers to engage in inquiry and project works in their immediate environments so as to develop their thinking and analytical skills.
3. Principals should provide necessary enabling environments for the teachers to make them use the strategies effectively for the teaching of Social Studies.
4. Government should enforce, through supervision, the use of inquiry and project strategies to teach Social Studies in secondary schools.
5. Government should give both moral and financial supports to the teachers and the schools generally for them to use the strategies effectively and efficiently to achieve the target objectives.

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