



Effect of Shadow and Problem-Based Instructional Strategies on Secondary School Students' Learning Outcomes in Environmental and Citizenship Concepts in Social Studies in Ibadan Metropolis

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Abstract. The study examined the effects of shadow and problem-based instructional strategies on secondary school students' learning outcomes in social studies. Study adopted the pre-test, post-test, control group and quasi-experimental design. The population for the study comprised all junior secondary school students in Ibadan Metropolis and the sample consisted of 270 Junior Secondary School class II student selected from nine schools in Ibadan Metropolis. Simple random sampling was used to select six single-sex schools (3boys only and 3girls 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 Learning Outcomes Test (SSLOT) designed and validated by the researchers and experts in Social Studies. The instrument was made up of 40 multiple-choice items designed to measure the students' learning outcomes in Social Studies. The test, re-test estimation of internal consistency method of reliability was adopted and the reliability co-efficient of 0.77 and 0.74 was obtained respectively. Five hypotheses were tested at 0.05 level of significance. The data were analyzed using t-test and ANCOVA statistical tools. The results showed that there was a significant difference between the learning outcomes of students in the experimental and control groups. It was found that shadow strategy was the most

effective, followed by problem-based strategy and traditional expository lecture method in improving students' learning outcomes in Social Studies. It was therefore recommended, that teachers should make their lessons more interesting, appealing, lively and friendly to enhance students' learning outcomes in Social Studies. Teachers should make use of shadow and problem-based strategies that encourage development life-skills in learners.

Keywords: Affective Learning, Life-Skills, Problem-based strategy, Responsible Citizens, Shadow strategy.

1. Introduction

Social Studies is an aspect of learning that deals with human beings in relation to the physical and social environment. It is also the study of science and technology as they affect human beings. A distinctive feature of Social Studies when compared to other school subjects or disciplines is taking the entire external world as the laboratory. This is perhaps why its contents, philosophy, objectives and methodology are geared towards having a better comprehension of human beings, their physical and social environment in and to promote a free society through the production 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. (Ogunjobi, 2010)

It was observed, 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 are always passive thus necessitated their inability to ask questions for clarification of ideas from the teacher. As a result of lack of participation, student cannot benefit maximally from the lesson. Gbadamosi (2002) asserted that student rate of assimilation is as low as 20 to 30% due to lecture method used by the various teachers teaching Social Studies subject in the secondary schools.

Lecture method allows a great deal to 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, reasoning and scientific attitudes (Adeyemi, 2018). Lecture method is inappropriate and ineffective for achieving the high objectives of Social Studies programmes (Adeyemi, 2003).

Hence, there is need to search for more effective strategies which are suitable and efficient for promoting the level of secondary school social studies learning outcomes beyond contemporary limits and to the satisfaction of the current Social Studies curriculum requirement. Seweje (2010) also agreed that students should be trained to develop both computer and effective abilities which is in line with one of the aims of teaching Social Studies. It is, therefore, not out of place to work into other methods such as shadow and problem-based methods as a way of providing alternatives to the lecture method being used.

A shadow strategy is a planned learning experience which involves educational visits to places where students can listen, observe first-hand and study directly in real-life setting. Student prepare before they go, they make notations of their observations and record actual experiences. Teacher may use this to clarify comprehension and stimulate discussion and critical thinking (Ayoade, 2000; Olatolu, 2008; Demoye, 2006). In the work of Meluing (2009) stressed that while children grasp concepts right away, comprehension takes a considerable amount of time or resources to assist individual students in need of specific attention. Shadow education refers to assisted learning or teaching session given to students outside of class. It can range from parental assistance to tutorial programme attendance in an effort to help children better learn the materials.

Olapade and Olajo (2013) stressed that cognitive and affective learning occur as a result of class visit to out-of-school settings. The "success" (achievement of learning goals and outcomes) of a shadow is fundamentally influenced by the structure of the shadow, the novelty of the setting, professional experience prior knowledge and interest of the students, the social context of the visit or programme, teacher agendas, student experiences during the shadow and quality of preparation and follow up.

Student with learning difficulties often experiences challenges in the mainstream school setting and require the guidance of another professional other than the classroom teacher. Shadow teachers, together with the combined team of professional entrusted with the student's welfare, aim to provide additional guidance and support in order for the student to successfully integrate into the mainstream environment (Bolajoko, 2009; Meluing, 2009). The role of shadow teacher is to guide the student to become as independent as possible. They are trained to identify opportunities for the student to learn to adapt to and face the challenges of his/her environment while conscious of situation that require their assistance (Johnson, 2010).

On the other hand, problem-based strategy has been defined in many ways but the cure of its definition lies in connecting learning with the process of working towards the understanding and resolution of a problem. Gbadamosi (2012) stressed that problem-based learning offers students the opportunity to apply the appropriate knowledge to a well-defined problem, allowing students to apply academic problem solving skills to their own real-life problems. Famade (2010) have recognized that numerous benefits which problem-based learning confers on the students, such as requiring the student to constantly put their knowledge to work; promote the means for organizing knowledge around key theoretical and practical ideas, focusing knowledge around key issues which promote true understanding and the provision of requisite intellectual rigor which is more meaningful to both scholarships and the world of affairs than that which could be achieved from memory based learning.

Gender is another important issue to be discussed in relation to the study. Several studies report differences in environmental issues relating to gender and research studies have shown that gender can influence student leaning outcomes in various studies. Akinyode, 2012 support Daniel (2012) findings and revealing that there was no significant main effect of gender on the participants knowledge,

attitude and behaviour towards environmental education, through female participants had better behaviour toward environment and waste management than their male counterpart.

Moreover, Olagunju (2005) and Ogunleye (2003) found no significant effect on gender on students' knowledge and attitudes towards environmental education. Their findings revealed commitment to the environment than males. Ogunjimi (2015) asserted that female gender constitute over 50 percent on the population in Nigeria. She emphasized that female are disheartening and enjoy few privileges and right relative to the male gender despite the advantage in terms of population.

However, Adesanmi (2019) noted that there is no significant difference in the learning outcomes scores between males and females while conducting studies on effects of multimedia packages on students learning outcomes and retention in Social Studies.

2. Statement of the problem

The problem of effective teaching and learning of environmental and citizenship concept in Social Studies in Nigerian secondary schools has become worrisome that needs urgent attention. It has been observed that Nigerian environmental situation today presents serious problems across the length and breadth of the country which have been attributed to widespread ignorance about the importance of environmental resources and peoples' lack of awareness of the implications of their actions resulting from poor environmental education. Scholars in environmental education had experimented with different strategies that can impact positively on the knowledge and attitude of citizens but with little or no results. This has been linked to the conventional lecture method used by the teachers to teach our children in Nigerian secondary schools. Scholars have now canvassed for environmental citizenship strategies that are not only participating but also outdoor and child centered in outlook. Two of such participating community based cum child centred strategies are shadow and problem-based learning. This study therefore, experiment the effects of shadow and problem-based learning strategies on students' learning outcomes in environmental citizenship in Social Studies as an alternative ways of teaching the subject.

3. Hypotheses

In view of the foregoing, the following hypotheses were formulated and tested at 0.05 level of significance.00:

Ho1: There is no significant main effect of treatment on students' learning outcomes in Social Studies in Ibadan Metropolis.

Ho2: There is no significant main effect of gender on students' learning outcomes in Social Studies in Ibadan Metropolis.

Ho3: There is no significant interaction effect of gender and treatment on students' learning outcomes in Social Studies in Ibadan Metropolis.

4. Research Design and Methods

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 Ibadan metropolis, while the sample consisted of 270 students selected from four (4) junior secondary schools. Simple random sampling was used to select six unisex schools and purposive sampling was used to select three co-educational schools for the study.

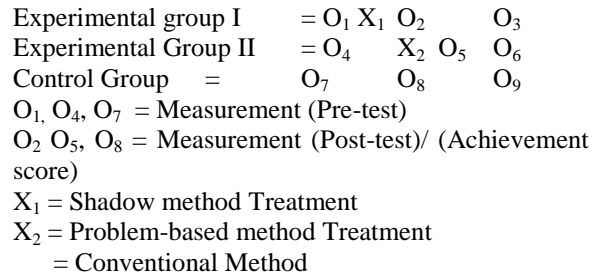
Stratified random sampling was also used to select 30 students (15 males and 15 females) from each of the co-educational school and simple random sampling was used to select 30 students from each unisex school.

The instrument used for the study was a self-designed Social Studies learning outcomes test (SSL0T) to sort information on students' learning outcomes in environmental and citizenship concepts in social studies. To ensure the validity of the instrument, the face content and construct validity procedures were employed. The instrument was given to experts in Social Studies to determine the face value and appropriateness of the instrument in measuring students' learning outcomes in environmental and citizenship concepts in Social Studies. The instrument was found valid and appropriate. The reliability of the instrument was also determined through test-retest 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 077 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 0.074 which is good enough for measuring the differences between the experimental and control groups when large samples are used. The data was analyzed 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 research 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. Two groups (Shadow and Problem-Based) were assigned to treatment while one group is control that had the lesson with

conventional lecture method. All the 3 groups had the pretest and posttest administered on them, with the pre-test given before the commencement of experiment and the posttest administered after they had been exposed to different treatment conditions.

The design for the study is graphically represented as follows:



5. Results

Ho1: There is no significant main effect of treatment on students’ learning outcomes in Social Studies in Ibadan metropolis.

Table 1: ANCOVA Summary of students’ learning outcomes in Social Studies by treatment

Source	SS	df	MS	F	Sig.	Partial Eta ²
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’ learning outcomes in Social Studies in Ibadan metropolis (F_{2,266} = 585.557), p<0.05. The null hypothesis was rejected. The treatment account for about 82% (Eta² = 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 Table 2 and 3.

Table 2: Mean scores by treatment

Group	N	Mean	Estimated Marginal Mean
Shadow	90	32.07	32.15
Problem Based	90	29.39	29.32
Control	90	14.67	14.65

Table 2 showed that students exposed to shadow method had the highest estimated marginal mean of 32.15, closely followed by project by 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
Shadow	Problem	2.829*	.552	.000	1.499	4.160	
	Control	17.499	.550	.000	16.173	18.824	
Problem based	Shadow	-2.829	.552	.000	-4.160	-1.499	
	Problem	14.670	.549	.000	13.347	15.992	
Control	Shadow	-17.499*	.550	.000	-18.824	-16.173	
	Problem	-14.670	.549	.000	-15.992	-13.347	

*p<0.05

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

Ho2: There is no significant main effect of gender on students' learning outcomes in Social Studies in Ibadan Metropolis.

Table 4: ANCOVA Summary of Students' learning outcomes 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' learning outcome in Social Studies in Ibadan Metropolis was not statistically significantly at 0.05 level $F_{2,266} = 585.557$, $p < 0.05$. The null hypothesis was not rejected. This implies that there is no significant main effect of gender on students' learning outcomes in Social Studies in Ibadan metropolis.

Ho3: There is no significant interaction effect of gender and treatment on students' learning outcomes in Social Studies in Ibadan Metropolis.

Table 5: 2 X 3 ANCOVA of students' learning outcomes in Social Sciences 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	15854.447	1	7927.223	593.769	.000	.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' learning outcome in Social Studies in Ibadan metropolis $F_{2,266} = 585.557$, $p < 0.05$). the null hypothesis was not rejected.

6. Discussion

The study revealed that the learning outcomes of students in Social Studies before the treatments were generally low but the learning outcomes improved drastically in shadow and problem-based methods after the treatments. The rapid improvement may be as a result of active participation of students in the lessons of experimental groups. The study also established that students exposed to shadow method had the highest followed by the problem based method and lastly by lecture method. This is an indication that shadow has the best potency of improving students' learning outcomes followed by problem-based method. The low performance of

students in control group may be as a result of treatment given to them with conventional lecture method.

The findings from the study also show that there was no significant main effect of gender on secondary school students' learning outcomes in Social Studies. The study is in line with Gbadamosi (2012) who confirmed that there is no significant difference between the learning outcomes mean scores of male and female students while conducting a study on effects of multimedia packages on students' learning outcomes and retention in Social Studies.

7. Conclusion

In conclusion, shadow strategy has the highest potential in enhancing students' learning outcomes in environmental and citizenship concepts in Social Studies, followed by the problem-based strategy and the conventional lecture method respectively. The

study also concluded that there is no significant difference between the learning outcomes of male and female students exposed to the same treatment in environmental and citizenship concept in Social Studies.

8. Recommendations

Arising from the foregoing findings, it was recommended that:

- Social Studies teachers should embrace as a matter of urgency explore the use of shadow and problem-based strategies of teaching for better learning outcomes in environmental and citizenship concept in Social Studies.
- Students should be motivated by the parents and the teachers to engage in shadow and problem-based methods in their immediate environment so as to develop their thinking and analytical skills.
- Principles should provide necessary enabling environments for the teachers to make them to use the strategies effectively for the teaching of Social Studies.
- Government should enforce through supervision, the use of shadow and problem-based strategies to teach Social Studies in secondary schools.
- Stakeholders 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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