

**EFFECT OF INQUIRY-BASED TEACHING TECHNIQUE
AND GENDER ON STUDENTS' ACHIEVEMENT IN
SELECTED CONCEPTS IN SOCIAL STUDIES,
IN BAYELSA STATE, NIGERIA**

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Abstract

This paper investigates the effect of inquiry-based teaching technique and gender on students' achievement in selected concepts in Social Studies in Bayelsa State, Nigeria. The pre-test-post-test non-equivalent control group design which is a type of quasi-experimental design was adopted for this study. The population of this study comprised all the 14,192 students in the 33 Public Secondary Schools in Yenagoa Local Government Area of Bayelsa State. The sample of this study is comprised of 170 students drawn from only co-educational schools. The proportionate stratified random sampling technique was used for this study. Three research questions were raised and three hypotheses were formulated and tested in this study. The instrument for data collection is the Social Studies Achievement Test (SSAT). The face and content validity of the instrument was ascertained by experts in the Department of Curriculum & Instructional

Technology, Faculty of Education, University of Benin. The SSAT was trial tested with 20 J. S. S. 3 students and the split-half reliability technique was used to split the scores into two halves using even and odd numbers. The two sets of scores were correlated using the Pearson Product Moment Correlation Coefficient. The Spearman Brown formula was used to obtain the internal consistency of the instrument at 0.787. The data collected were analyzed using t-test and ANCOVA at 0.05 level of significance. The study revealed that inquiry-based teaching technique have a significant effect on Social Studies students' achievement. Based on the findings of the study, it was recommended amongst others that teachers of Social Studies be encouraged to undergo training and re-training on the use of inquiry-based teaching techniques during classroom instruction.

Keywords: Inquiry-based teaching technique, Gender, Achievement, Social Studies Education.

Introduction

Nigeria as a developing nation like other nations in the African continent and West African sub-region has been making deliberate and concerted efforts toward developing various sectors of her economy. This, the government does through various policy drives and initiatives directed at bringing about development in all sectors of the economy. One of such policy initiatives is found in the national policy on education (Federal Republic of Nigeria, 2013) in which the Federal Government of Nigeria categorically stated that education is an instrument for development and social change. The policy document further stressed that education is compulsory and a right of every Nigerian irrespective of gender, social status, religion, colour, ethnic background and any peculiar individual challenges and that it shall be qualitative, comprehensive, functional and relevant to the needs of the society.

The nature of Social Studies in Nigeria cannot be farfetched

from its rich potentials of developing the individual to be responsive to the problems and challenges of his environment. During its introduction in the early 1960s, the nature of Social Studies in Nigeria and Africa indeed, aimed at educational decolonization and correcting the mistakes of the colonial period (Fadeyiye, 2004). No wonder Ireyefoju and Ireyefoju (2010) state that the nature of Social Studies curriculum is designed to resolve and solve issues and problems encountered by youths around the world so that they can confront their challenges as individuals and citizens. The nature of Social Studies is characterised by positive values, skills, beliefs, ideas, attitudes, and so on that will enable the individual to diagnose and appreciate the problems (physical, social, economic, political, cultural etc) confronting man and society, and attempt to proffer lasting and permanent solutions to them.

Like its nature, the scope of Social Studies cannot be limited by date, time or space. The central stage of Social Studies is occupied by the activities of man and how he relates with his physical, social and scientific environments and proffering solutions to problems as they arise. According to Fan, Usoroh, and Umoetok (2012), Social Studies exposes the child to the problems he lives with. The trio further identified some of the major problems in Nigeria to include corruption, food shortage, unemployment, indiscipline, ethnicity, inflation, pollution, urban migration, abortion, prostitution, rape and armed robbery. As the range of problems and challenges increase and widens, so does the scope, level, coverage, quantity and quality of content in Social Studies vary depending on the level one wants to consider. The scope is made possible by Social Studies through a rich knowledge base of concepts, theories, principles and contents derived and synthesized from other sister subject areas especially in the social sciences.

So far, the lecture/conventional teaching technique is the most utilized and has dominated teaching and learning at all levels of our educational system over the years. Although it is a preferred method by teachers, it seems to have failed to transfer knowledge from the teacher to the learner. No one can deny the fact that schools are becoming diverse in terms of students' backgrounds and abilities, and teachers are being ever more challenged to find effective ways

to meet the diverse needs of their students (Olatoye & Adekoya, 2010). Critiques of this method of teaching have argued that lecturing is just mostly one-way method of communication that does not involve significant audience participation (Onotai, Tabansi & Asuquo, 2012). The traditional instructional strategy is teacher dominated and allows the students to be passive note-takers, listeners and recipients of facts and knowledge in the teaching and learning process.

The inquiry teaching technique is an off-shoot of constructivism. Constructivism as a theory believes that knowledge is constructed by learners through an active mental process of development. In this approach, according to Birisci and Metin (2010), the teaching and learning paradigm has shifted from traditional classrooms where a teacher is at the centre of the classroom. The teacher plays the role of a guide and helps students to connect their prior knowledge with new information. Inquiry-based teaching and learning is a replication of authentic scientific investigation and a means of channelling natural human curiosity towards specific learning outcomes (Nadine & Laurie, 2013). It follows a fairly standard process that involves starting with what the learner knows, asking intriguing questions about what is not known, investigating the answers, constructing new understandings and communicating to share those understandings with others (Barbara, 2003). It is a versatile activity that involves making observations, posing questions, examining books and other sources of information to see what is already known; planning investigation; reviewing what is already known in light of the student's experimental evidence; using tools to gather, analyse and interpret data; proposing answers, explanation, predictions and communicating the results (Hussain, Azeem & Shakoor, 2011).

Gender, according to Santos, Ursini, Ramirez and Sanchezi (2006), is a sociocultural construct, a category that sorts and organizes social relationships between human males and females. It is the outcome of a social, historic and cultural process that develops through practices, symbols, representations, social standards and values that determine appropriate roles for men and women – all of this based on sex differentiation. Sex on the other

hand refers to anatomical and physiological characteristics deriving from biology. Sex takes into consideration biological and anatomical differences between males and females while gender takes into consideration culturally and socially constructed differences between females and males (Tantengco, 2014). While gender deals with culturally assigned roles, duties, responsibilities and functions between males and females with varying degrees from culture to culture, sex has to do with physiological and biological differences that differentiate boys and girls, males and females, from birth through puberty to adulthood and old age.

Several studies have shown that gender plays a part in students' academic achievement. In a study in Delta and Edo States, Dania (2014) found that males achieve higher than their female counterparts. The study further revealed that males achieved more than the females in the simulation and the control groups, while the females did better in brainstorming. Also in Western Australia, Tusha (2011) and found no significant differences between the effectiveness of a traditional course delivery method and a blended one based on student perception, satisfaction, learning resources, quality of teaching, motivation, learning experience utilization, feedback, and assessment.

Social Studies instruction in Nigeria and Bayelsa State in particular has been characterised by the perpetual and continuous use of the conventional teaching technique by teachers. This situation seems to have led to students' manifesting low, unstable and poor achievement, especially in Social Studies examinations. The inquiry-based instructional technique is student-centred and could improve students' achievement, especially in Social Studies. Although this technique has long been touted as an effective pedagogy, its application and utilisation by Social Studies teachers has been problematic (Nadine & Laurie, 2013). Also, Social Studies teachers have continually shied away from utilising it in the teaching and learning process. The question that comes to mind is why? Scholars and Social Studies educators have identified several factors that could also be responsible for this situation to include teachers choice of the instructional technique, teachers' use and none use of instructional materials, poor infrastructure, students'

ability levels and study habits, students' gender or sex, and so on (Onotai et al, 2012; Ogundola, 2014).

Although all these factors could have various degrees of influence on students' achievement, gender and teachers' choice of instructional technique are of interest in this study. Several studies have been carried out by scholars in an attempt to proffer solution to the problem of poor students' achievement (Edinyang & Ubi, 2012; Gegbe & Koroma, 2014; Onweh & Akpan, 2014), but none of these studies have been carried out in Bayelsa State. It is on this note, that this study investigated the effect of inquiry-based teaching technique and gender on students' achievement in selected concepts in Social Studies in Bayelsa State, Nigeria.

Purpose of the Study

The purpose of this study is to ascertain the effect of inquiry-based teaching technique and gender on students' achievement in selected concepts in Social Studies in Bayelsa State. Specifically, this study is to:

- i. ascertain the difference in achievement of males and females taught with inquiry teaching technique in Social Studies in Basic Schools in Bayelsa State;
- ii. find out the effect of inquiry and traditional teaching techniques on Basic School students' academic achievement in Social Studies in Bayelsa State; and
- iii. determine the interaction effect of instructional strategy and gender on the post-test mean achievement of students taught Social Studies using inquiry and conventional teaching techniques.

Hypotheses

Ho₁: There is no significant difference in achievement of males and females taught with inquiry teaching technique in Social Studies in basic schools in Bayelsa State.

Ho₂: There is no significant effect of inquiry and traditional teaching techniques on Basic School students' academic achievement in

Social Studies in Bayelsa State.

Ho₃: There is no significant interaction effect of instructional strategy and gender on the post-test mean achievement of students taught Social Studies using inquiry and conventional teaching techniques.

Methods

The pre-test-post-test non-equivalent control group design which is a type of quasi-experimental design was adopted for this study. The population of this study comprised all the 14,192 students in the 33 public secondary schools in Yenagoa Local Government Area of Bayelsa State. The sample of this study comprised 170 students drawn from only co-educational schools. The proportionate stratified random sampling technique was used for this study. The schools were grouped according to the 3 zones (Yenagoa, Okodia/Zarama, and Okolobiri) in Yenagoa metropolis with each zone having 11 schools. Two of the zones were randomly selected and one school from each of the zones was picked. Two intact J. S. S. 3 classes were further selected and used for the study. The study collected data for this research with the aid of Social Studies Achievement Test (SSAT). The SSAT comprised 26 multiple choice objective questions designed by the researcher. Each of the items has five options lettered A – E. The content and face validity of the instrument was ascertained by experts in the Department of Curriculum and Instructional Technology, University of Benin. The reliability of the instrument was obtained using the split-half reliability technique. The SSAT was administered to 20 B. J. S. S. 3 students who are not part of the sample of the study; but are of the same category as the sample schools. The scores were split into two equal halves with the same item and content difficulty level. Both halves were correlated using the Pearson Product Moment Correlation Coefficient. The Spearman Brown formula was used to obtain the internal consistency of the instrument at 0.787.

Results

Ho₁: There is no significant difference in achievement of males and

females taught with inquiry teaching technique in Social Studies in basic schools in Bayelsa State.

Table 1: t-test Analysis of Male and Female Students' Achievement in Social Studies Post-test Taught With Inquiry Teaching Technique

Teaching Technique	Gender	N	Mean (\bar{X})	Standard Deviation	df	t_{cal}	Sig (2-tailed)	Decision
Inquiry Teaching Technique	Male	47	17.3	4.21	78	5.29	0.11	Reject Null Hypothesis
	Female	33	19.8	3.95				

Table 1 shows that the male students had a mean score of 17.3 and a standard deviation score of 4.21, while the female students got a mean of 19.8 and a standard deviation of 3.95. With a degree of freedom of 78, a calculated t-value of 5.29 and a sig value of 0.11 that is statistically greater than the critical sig value of 0.05, the result showed a significant difference. This implies that the null hypothesis which states that there is no significant difference between males and females taught with inquiry teaching technique is rejected.

H_{02} : There is no significant effect of inquiry and traditional teaching techniques on Basic School students' academic achievement in Social Studies in Bayelsa State.

Table 2: t-test of Independent Samples of Students' Post-test Mean Scores Achievement of Social Studies by Inquiry and Traditional Teaching Techniques

Teaching methods	N	Mean (\bar{X})	Standard Deviation	df	t_{cal}	Sig (2-tailed)	Decision
Inquiry method	80	18.3	4.2	168	4.7	0.04	Reject Null Hypothesis
Traditional method	90	16.8	5.8				

Table 2 reveals that the inquiry group got a mean score of 18.3, a standard deviation of 4.2, while the conventional group got a mean score of 16.8 and a standard deviation of 5.8, with a degree of freedom of 168, a t-calculated of 4.7 and a sig value of 0.04 at

0.05 level of significance. The sig. value of 0.04 is statistically less than critical sig value of 0.05. This means that the null hypothesis which states that there is no significant effect of inquiry teaching technique on basic school students' academic achievement in Social Studies is rejected. That is, there is a statistically significant effect of inquiry teaching technique on students' academic achievement in Social Studies.

Ho₃: There is no significant interaction effect of instructional strategy and gender on the post-test mean achievement of students taught Social Studies using inquiry and conventional teaching techniques.

Table 3: Summary Analysis of Covariate (ANCOVA) Showing Interaction Effect of Instructional Strategy and Gender on the Pre and Post-test mean Achievement of Students Taught Social Studies Using Inquiry and Conventional Teaching Techniques in Bayelsa State

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	264.139 ^a	4	66.035	2.540	.042	.058
Intercept	5875.319	1	5875.319	225.955	.000	.578
Pre-test (Covariate)	.644	1	.644	.025	.875	.000
Gender	10.660	1	10.660	.410	.523	.002
Strategy	112.601	1	112.601	4.330	.039	.026
Gender * Strategy	148.468	1	148.468	5.710	.018	.033
Error	4290.361	165	26.002			
Total	56617.000	170				
Corrected Total	4554.500	169				

a. R Squared = .058 (Adjusted R Squared = .035) $\alpha = 0.05$

Table 3 shows the ANCOVA analysis of the interaction effect of instructional strategy and gender on pre and post-test mean achievement of students taught Social Studies using inquiry and conventional teaching techniques in Bayelsa State. The results showed that $F_{(1,165)} = 5.710$, $p = 0.18$, $p > 0.05$, partial et squared = .033. Since the sig value is greater than the alpha level of significance, the null hypothesis is retained. This means that there is no significant interaction effect of gender and strategy on students'

achievement in Social Studies taught using inquiry and conventional teaching techniques in Bayelsa State.

Discussions

The findings in Table 1 revealed that the calculated sig value is less than the critical sig value at 0.05 level of significance. Therefore, the null hypothesis of no significant difference in achievement of males and females taught with inquiry teaching technique in Social Studies in basic schools in Bayelsa State is rejected. This means that inquiry teaching technique has a statistically significant effect on achievement of Social Studies students by gender. This finding is in alignment with the findings of Ezeudu, Olaowei, and Umeifekwem (2014) and Abdi (2014), who found in their separate studies that there is a significant difference between the mean scores of students taught with inquiry instructional technique and those taught with the conventional lecture method.

Table 2 results revealed that the calculated sig value is less than critical sig value when inquiry and traditional teaching techniques on Basic School students' academic achievement in Social Studies in Bayelsa State are considered. This means that the null hypothesis of no significant difference is rejected. There is a significant difference in achievement of students in Social Studies taught with inquiry and traditional techniques. This finding corroborates the finding of Edinyang and Ubi (2012) that there is a significant difference in the performance of students taught Social Studies using inquiry teaching technique compared to those taught with expository method. This finding further contradicts the findings of Dania (2014), Alao and Abubakar (2010) and Santos et al (2006), who in their separate studies found that there is no significant difference in the achievement of students in Social Studies, Physics/Computer Science and Mathematics respectively. Table 3 showed no significant interaction effect between instructional strategies and gender on students' achievement in Social Studies in the area of study. This finding is in support of the finding of Udo and Udofia (2014) who find no significant interaction effect among teaching methods used, students' gender and interest.

Recommendations

The following recommendations are made based on the findings of the study: first is that teachers of Social Studies should be encouraged to undergo training and re-training on how to use inquiry during classroom instruction. Such trainings should be on-the-job, through seminars, workshops, and conferences to regularly update them on new ideas in the teaching profession. Secondly, school administrators should endeavour to allocate more time to Social Studies lessons to allow or enable teachers adopt inquiry based teaching methods. Finally, the continuous use of traditional lesson delivery method should be done along with other student-centred ones like inquiry amongst Social Studies teachers.

Conclusion

The study has shown that teachers' choice of instructional method have a significant and direct effect on Social Studies students' academic achievement. The choice of the inquiry based teaching method improved the achievement of Social Studies students more than the conventional method at the junior secondary school level. This study, contrary to reviewed literature, shows a significant difference when gender is taken into consideration. This may be attributed to individual differences and other factors not considered in this study. Finally, when males in both inquiry and traditional groups are considered, the result shows no significant difference while when females in both groups are considered, there is a significant difference. This is an indication that Social Studies teachers cannot overrule any factor within the classroom learning environment that can affect learning outcomes. This study has also shown that teaching techniques do not significantly interact with gender on students' achievement in Social Studies.

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