



EFFECT OF HEURISTIC TEACHING APPROACH ON SOCIAL STUDIES ACHIEVEMENT OF UPPER BASIC II STUDENTS IN KARU LGA NASARAWA STATE, NIGERIA

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Abstract

The study investigated the effect of the Heuristic Teaching Approach (HTA) on the Social Studies achievement of upper basic II students in Karu LGA of Nasarawa State, Nigeria. Two (2) research questions and its hypotheses guided the study. Quasi- experimental research design was employed, and upper basic II students were used as sample size of the study. The Social Studies Achievement Test (SOSEAT) was used as a data collection instrument. The SOSEAT was validated which yielding 0.82 validity index and 0.82 reliability index. The SOSEAT was administered and the data generated was analyzed using mean and standard deviation to answer research questions, while ANCOVA to test the null hypotheses at the 0.05 level of significance. The findings revealed that students exposed to HTA performed better than their counterpart students in CTM), and there is a significant difference in the achievement mean scores of males and females students exposed to HTA, and that of counterpart male and female students in CTM. It was concluded that students HTA achieved higher than male and female students in CTM. Based on the findings, it was recommended that Social Studies teachers HTA to teach, and trained on the application of HTA should organize by the authority of schools to improve students' academic progress in the subject.

Keywords: Achievement, Social Studies, Gender, Heuristic Teaching Approach

INTRODUCTION

The word Heuristic is derived from the Greek language that means "to find" or "to discover." Heuristic teaching approach (HTA) is a method of Instruction that encourages students to learn by discovering and exploring the subject matter on their own, rather than by following a fixed

set of rules or procedures. According to Armstrong (2014), HTA aims to develop students' critical thinking, problem solving, and creativity skills, as well as their curiosity and interest in learning. HTA involves five steps: identifying a problem or challenge, forming a question, engaging in research, generating a hypothesis, and evaluating and reflecting on the process. HTA is based on discovery learning. In this approach, the teacher serves as a guide, therefore allowing the students to discover knowledge by themselves instead for the teacher pouring knowledge to the students (Fasasi, 2015).

Social studies as a subject deal with the relationships among people and between people and their environment. It recognizes the challenges and benefits of living in a diverse cultural and ideological society. Social studies is the integrated study of the social sciences and humanities as the subject draws all its contents from such disciplines as sociology, history, Social Studies , anthropology, archaeology, geography, law, philosophy, political science, psychology, religion, as well as appropriate content from mathematics and natural sciences. The students should explore the facts and principles themselves". Which indicates that the students primarily learn through exploring. The task of the educator is that of a guide who corrects errors at the appropriate time. Children learn new things as they work on experiments. Students work as explorers in this method. At first, they are unaware of the experiment. To obtain the necessary information and principles, he must conduct several experiments Armstrong (2014), He must conduct research on the subject to:

- Determination of the problem
- Formation of a plan
- Execution of plan
- Evaluation and Adaptation

According to Mezieobi, Fubara, and Mezieobi (2015) defined social studies as an integrative field of study which probes mans symbiotic relationship with his environment, endows man with the reflective or contemplative capacities, intellectual, affective, social and work skills, to enable him understand his world and its problems and to rationally solve or cope with them for effective living in the society. Kochhar (2012) saw Social Studies as those portions of the Social Sciences selected for instructional purposes applied to include anything pertinent to the immediate purpose of learning and adapting to the level of comprehension of the student achievement.

Achievement as the progress pupils/students make towards the goals and objectives of a curriculum (Galle, 2021). They further added that, achievement is one's ability or the extent of his/her knowledge in a specific content area. Achievement as the result, the successfulness, the extent or ability, the progress in learning educational experiences that the individual indicate in relation with his/her educational learning gender.

Gender is defined as the behavioural, cultural, or psychological traits typically associated with one sex. Ogedengbe (2019) stated that gender is a socially constructed term depicting the system of relations between males and females and designates behaviours, attitudes, roles, status and other processes that govern the relationship among sexes in a given educational, socio-economic and political context.

Conventional Teaching Methods (CTM) also be deemed restricted to some degree. Traditionally, classroom settings are teacher-centred where the teacher often talks at the students instead of encouraging them to interact, ask questions or make them understand and retained the concept thought in the lesson (Galle, 2021). Most classes in Nasarawa state junior secondary schools involve rote learning, where students depend on memorization without having a complete understanding of the subject. Just bypassing the tests, consisting of descriptions, matching and other forms of indicators are all that matter to complete the mathematics curriculum. Too much talking during teaching period and dictations, rote memorization and little interaction in the classroom often leave students less attentive and less engaged and prone to skipping classes and missing lessons altogether.

Despite the efforts of Nigerian government towards improving the teaching and learning of Social Studies in secondary schools, students achievement in the subject remain poor, though other teaching methods have been applied by teachers for the purpose of improving students interest and retention in mathematics, yet little or no reasonable improvements have been recorded. HTA is alien to some Social Studies teachers, thus students have not been able to develop necessary skills that could have helped them to tackle mathematics problems with or without teachers supervision. This has given rise to the problem of low achievement in Social Studies among students. Female students dread Social Studies more than the male students during internal and public examinations.. For instance, BECE social studies 2022-2024 revealed 45-48% passed while 52-56% failed. Hence, the researcher compared use of HTA and CTM to find the interaction effect of upper basic II student's social studies achievement in Karu Local Government Area of Nasarawa State, Nigeria.

Furthermore, several literatures reviews were scholarly discussed such as Nwafor, Okpala, and Oka,(2020) findings revealed that students exposed to Heuristic method of instruction performed better than those taught with conventional method. Also the male students performed significantly better than the female students. Yusuf, Bako, Guga and El-Yakub (2019) findings revealed that: heuristic approach is effective for teaching Social Studies in senior secondary schools in Kano State. Moreover, students taught Social Studies using heuristic approach retained knowledge. Ofori-Kusi (2017) who reported that students that were exposed to heuristic approach performed excellently in mathematics in the post-test better than in the pre-test, and even better than the students in the controlled group. Dimitriou-Hadjichristou (2015),

which concluded that students in the experimental group who received the treatment of heuristic approach, achieved higher in post-test than in the pre-test.

Research Questions

The following research questions guided the study.

1. What is the difference between achievement mean score of students taught Social Studies using HTA and those taught using CTM?
2. What is the difference between achievement mean score of male and female students taught Social Studies using HTA and those taught using CTM?

Hypotheses

The following null hypotheses raised and were tested at 0.05 level of significant.

Ho1: There is no significant difference between achievement mean score of students taught Social Studies using HTA and those taught using CTM,

Ho2: There is no significant difference between achievement mean score of male and female students taught Social Studies using HTA and those taught using CTM.

MATERIAL AND METHODS DESIGN

Design

This utilized quasi-experimental design involved pre-test, post-test control group. The population of the study consisted of all 2,564 students offering Social Studies from ten (10) upper basic II. Moreover, 80 students were used as a sample size from two (2) upper basic II utilizing stratified random sampling. Two (2) schools in Karu LGA were randomized and assigned experimental and control groups respectively. The experimental groups were taught with HTA while the control groups were taught with CTM. The experimental group comprised of 40 male and female students while the control group also comprised of 40 male and female students.

The instrument ‘‘Social Studies Achievement Test (SOSAT)’ contained 30 multiple choice items, each item contained one correct answer and three distractors was used for data collection. The SOSAT was validated yielded 0.82 validity index and 0.82 reliability index. Then, two regular Social Studies teachers were trained one week before the commencement of the study. The training exercise was based on the purpose of the study, the topic being taught, the use of the lesson plans, the use of the SOSAT and the general conduct of the study. Specifically, for the experimental groups, the teacher concerned was asked to use HTA to teach the students while in the control groups, the teacher was advised to use the CTM. The researchers ensured that the extraneous variables such as teacher variable, students’ interaction and pre-test sensitization were controlled throughout the experiment period. The SOSAT was

administered, and the data generated was analyzed using mean to answer research questions, while ANCOVA was used to test hypotheses at the 0.05 level of significance.

RESULTS

Answering Research/Hypotheses

RQ1: What is the difference between achievement mean score of students taught Social Studies using HTA and those taught using CTM?

Table 1: Mean and Std Dev of Students taught Social Studies using HTA and those taught using CTM

Treatment Groups	No	Pre-test		Post-test	Mean Gain	
		Mean	SD	Mean	SD	
Experimental Group (HTA)	40	12.65	1.62	16.02	2.45	3.37
Control Group (CTM)	40	12.34	1.52	14.36	2.08	2.02

Table 1 shows mean achievement mean score of students taught Social Studies using HTA and those taught using CTM. The pretest mean scores of 12.65, 12.34 and standard deviation 1.62, 1.52 and post-test mean scores of 16.02, 14.36 and standard deviation of 2.45, 2.08. The variation between the pre-test and post-test mean scores for experimental group (HTA) is 3.37 and for control group (CTM) 2.02 as their mean gain. To compare the effect HTA and CTM, Ho1 was tested at the 95% confidence level as shown in Table 2.

Ho1: There is no significant difference between achievements mean score of students taught Social Studies using HTA and those taught using CTM

Table 2: ANCOVA Results for Significant Difference between Students taught Social Studies Using HTA and those taught Using CTM

Source of Variation	Type III Sum of Squares	Df	Mean Square	f	P-value	Sig
Corrected model	44304.53	2	22152.27	391.44*	.004	P<0.05
Intercept	620.99	1	620.99	12.71*	.004	P<0.05
Pre-SOSAT scores	6462.22	1	6462.22	126.13*	.003	P0.05
Groups	41308.84	1	41308.84	63.41*	.001	P<0.05
Error	5953.29	76	54.26			
Total	344586.00	78				
Corrected Total	50257.82	80				

Table 2 show results of ANCOVA for significant difference between achievements mean score of students taught Social Studies using HTA and those taught using CTM ($df=1,86$, $f=63.41$, $p<0.05$). The H_01 was not retained hence, there a significant difference between achievements mean score of students taught Social Studies using HTA and those taught using CTM.

RQ2: what is the difference between achievement mean score of male, female students taught Social Studies using HTA, and those taught using CTM?

Table 3: Mean and Std-Dev of Male and Female Students taught Social Studies using HTA and those taught using CTM

Treatment Groups	Gender	No of Cases	Pre-test		Post-test		Mean Gain
			Mean	SD	Mean	SD	
Experimental (HTA)	Male	23	13.43	3.66	17.81	4.10	4.38
	Female	17	13.13	3.62	17.40	4.04	4.27
Control (CTM)	Male	22	12.34	1.52	14.36	2.08	2.02
	Female	18	12.34	1.42	14.26	2.05	2.01

Table 3 shows means and standard deviations for the difference between achievement mean score of male and female students taught Social Studies using HTA exhibited similar achievement as reflected by their relatively closed values of pre-test mean scores of 13.43, 13.13 and standard deviations of 3.66, 3.62, and post-test mean scores of 17.81, 17.40 and standard deviations of 4.10, 4.04. Likewise, male and female students in CTM exhibited similar achievement before and after the treatment as reflected by their relatively closed values of pre-test mean scores of 12.33, 12.23 and standard deviations of 1.52, 1.42, and post-test mean scores of 14.36, 14.26 and standard deviations of 2.02, 2.01.

The result also the mean gain of male is 4.38 and female is 4.27 in HTA, while that of male is 2.08 and female is 2.05. To compare the effect HTA on male and female students and that of CTM, H_02 was tested at the 95% confidence level and the results are shown in Table 4.

H_02 : There is no significant difference between achievement mean score of male and female students taught Social Studies using HTA and those taught using CTM,

Table 4: ANCOVA Results for Significant Difference between Male and Female Students taught Social Studies Using HTA and those taught Using CTM

Source of Variation	Type III Sum of Squares	Df	Mean Square	f	P-value	Sig
Corrected model	44304.53	4	22152.27	391.44*	.004	$P<0.05$
Intercept	620.99	1	620.99	12.71*	.004	$P<0.05$
Pre-SOSAT scores	6462.22	1	6462.22	126.13*	.003	$P0.05$

Groups Gender	41308.84	1	41308.84	63.41*	.001	P<0.05
Error	5953.29	76	54.26			
Total	344586.00	78				
Corrected Total	50257.82	80				

Table 4 show results of ANCOVA for significant difference between achievements mean score of male and female students taught Social Studies using HTA and those taught using CTM ($df=_{1,76}$, $f=63.41$, $p<0.05$). The H_{o2} was not retained hence, there a significant difference between achievements mean score of male students taught Social Studies using HTA and those taught using CTM.

DISCUSSIONS

Table 1 shows mean achievement mean score of students taught Social Studies using HTA and those taught using CTM. The pretest mean scores of 12.65, 12.34 and standard deviation 1.62, 1.52 and post-test mean scores of 16.02, 14.36 and standard deviation of 2.45, 2.08. The variation between the pre-test and post-test mean scores for experimental group (HTA) is 3.37 and for control group (CTM) 2.02 as their mean gain. Drawing inferences from H_{o1} in Table 2 show results of ANCOVA for significant difference between achievements mean score of students taught Social Studies using HTA and those taught using CTM ($df=_{1,76}$, $f=63.41$, $p<0.05$). The H_{o1} was not retained hence, there a significant difference between achievements mean score of students taught Social Studies using HTA and those taught using CTM. This finding agrees with that of Nwafor, Okpala, and Oka,(2020) findings revealed that students exposed to Heuristic method of instruction per formed better than those taught with conventional method.

Also the male students performed significantly better than the female students. Yusuf, Bako, Guga and El-Yakub (2019) findings revealed that heuristic approach is effective for teaching Social Studies in junior secondary schools.

Finally, Table 3 shows means and standard deviations for the difference between achievement mean score of male and female students taught Social Studies using HTA exhibited similar achievement as reflected by their relatively closed values of pre-test mean scores of 13.43, 13.13 and standard deviations of 3.66, 3.62, and post-test mean scores of 17.81, 17.40 and standard deviations of 4.10, 4.04. Likewise, male and female students in CTM exhibited similar achievement before and after the treatment as reflected by their relatively closed values of pre-test mean scores of 12.33, 12.23 and standard deviations of 1.52, 1.42, and post-test mean scores of 14.36, 17.40 and standard deviations of 2.02, 2.01. The result also the mean gain of male is 4.38 and female is 4.27 in HTA, while that of male is 2.08 and female is 2.05. Drawing inferences from H_{o2} in Table 4 shows ANCOVA result for significant difference between achievements mean score of male and female students taught Social Studies using HTA and those taught using CTM ($df=_{1,76}$, $f=63.41$, $p<0.05$). The H_{o2} was not retained hence, there a significant difference between achievements mean score of male students taught Social Studies using HTA and those taught using CTM. This finding corroborated that of Ofori-Kusi (2017) who reported that students that were exposed to heuristic approach performed excellently in mathematics in the post-test better than in the pre-test, and even better than the students as segregated by gender,. Dimitriou-Hadjichristou (2015), which concluded that students in the

experimental group who received the treatment of heuristic approach, achieved higher in post-test than in the pre-test than their counterpart as segregated by gender.

CONCLUSION

Based on the findings of this study, it was conclude that students achievement in Social Studies depends on the approach of the instruction used by the teacher, it is indeed important for Social Studies teachers to use HTA. It was observed that, both male and female student exhibited similar achievement than their counterpart students in CTM. Hence, the use of HTA in teaching Social Studies is significant.

Recommendations

1. HTA should be employ by teacher in teaching Social Studies
2. Social Studies teachers be should be trained on the application of HTA to improve students' academic progress in the subject
3. Nigerian mathematics text book authors should be encouraged by the government to review their books in line with Heuristic Teaching Approach, so that the books will be students' friendly.
4. Social Studies teachers should be given refresher courses in the implementation and use of Heuristics teaching approach in all secondary schools.

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