

# THE EFFECTS OF PHYSICAL AND VIRTUAL FIELD TRIP METHODS OF INSTRUCTION ON STUDENTS' SOCIAL STUDIES PERFORMANCE

By

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## Abstract

This study examined the effects of lecture, virtual and physical field trip methods of instruction on the academic achievement of secondary school students in social studies. The design of the study was a 4x3 pre-test, post-test, quasi-experimental study. A sample of one hundred and thirty six JSS3 students participated in the study. Four research questions were answered and four hypotheses tested at 0.05 level of significance. The instruments for pre-treatment data collection were Social Studies Aptitude Test and Social Studies Achievement Test which were validated through the assistance of three experts in social studies. The reliability coefficients of Social Studies Aptitude Test and Social Studies Achievement Test obtained through Kuder Richardson 20 technique are 0.74 and 0.82 respectively. Each instrument was a 30-item multiple choice objective test. The data collected were analyzed using the mean and standard deviation for the research questions. Hypotheses one, two and three were tested using Analysis of Covariance (ANCOVA) while hypothesis four was tested using Analysis of Variance (ANOVA) at 0.05 level of significance. The results of this study showed that virtual field trip as well as physical field trip had significant effects on the academic achievement of the students in social studies. There was a significant difference in the post-test mean scores of students taught with lecture method and those taught with virtual field trip in favour of those taught using virtual field trip. A significant difference also existed in the post-test mean scores of students taught with lecture and those taught with physical field trip in favour of those taught using physical field trip. A significant difference was also found in post-test mean scores of students taught with virtual field trip and those taught using physical field trip in favour of those taught using physical field trip. Based on these findings, it was recommended that, when appropriate, social studies teachers should intersperse traditional methods of instruction with physical field trip to improve the students' learning. Where it not possible to adopt physical field trip to teach a group of students because of cost and safety concerns, more cost effective and safer virtual field trip can be used as a substitute to the physical field trip.

**Keywords:** Physical field trip, Virtual field trip, Talk-chalk/lecture, School tour, Excursion, Instructional method, Academic achievement.

## Introduction

Social Studies has been defined as an integrative field of study which probes man's symbiotic relationships with his environments, 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 (Mezieobi, Fubara & Mezieobi, 2008). Social studies is a veritable tool for transmission of culture. It helps people to understand one another. Social studies

enhances cultural integration among the component units of Nigeria, thus enhancing understanding and peaceful coexistence of the people irrespective of religious, ethnic and political affiliations. It equips the people with the skills to deal decisively with the problems confronting them and to contribute meaningfully to the development of the society (Thomson, 2018). It also equips people with the capacity to develop to their full potentials. Social studies is even needed now more than ever before as the preponderance of societal ills that besiege contemporary Nigerian society makes it very essential. It is needed to curb militancy, kidnapping, killing, hate speech, robbery, electoral and examination malpractices, violence, herdsmen attack, bribery and corruption.

If people should be made to understand through social studies that they are one irrespective of cultural differences, they should love one another as a people bound by one nation and they should work for collective interests rather individual interests, the current wave of political, economic and religious turbulence as witnessed in the country now will be reduced to the barest minimum. Furthermore, if social studies has been given the preeminence it rightly deserves in the Nigerian society, the social problems faced by Nigeria including nepotism, tribalism, parochialism and deliberate mismanagement of the nations resources will be a thing of the past.

Despite the obvious benefits derivable from social studies, not much attention has been devoted to its teaching and learning. Although, it is a teaching subject in primary and secondary schools in

Nigeria, its study still leaves much to be desired. The study of the subject is replete with theory rather than practice (Winike, 2019). The students find it difficult to understand the basic concepts of social studies. Teachers of social studies adopt the traditional expository methods of instruction which are the talk-chalk or lecture methods.

Competent teachers of social studies should adopt appropriate teaching methods for imparting knowledge to the students. This is because an efficient teacher should be invariably good in subject mastery and pedagogy. In other words, he should be good in subject content and methods of instruction for reaching out to the students. It could be that the methods of instruction adopted by the teachers of social studies are not achieving the desired results because they fail to inspire, motivate and sustain the students' interests. Hence, it is high time the teachers reverted to instructional methods that can arouse students' curiosity, motivate them to learn, sustain their interest in learning and help them retain what they have learnt.

The study of social studies requires hands-on experience during which the students experience at first hand the objects of study. One of the disciplines where hands-on experience is greatly needed is social studies. The instructional methods replete with hands-on experiences which are capable of arousing students' curiosity, motivating them to learn, sustaining their interest in learning and helping them retain what they have learnt are physical field trip and virtual field trip. Social studies teachers need to use field trips as part of their pedagogy because students need real

life experiences to augment their classroom studies. Field trip or excursion or school trip/tour is defined by Krepel and Duvall (2018) as a trip arranged by the school and undertaken for educational purposes, in which the students go to places where materials/concepts of interest or instructions may be observed and studied directly in their functional setting. Field trip can also be defined as journey to a site of interest organized by educators under the auspices of a school for the purpose of obtaining first-hand information of the object, people or process under study.

The two main types of field trip include physical field trip and virtual field trip. Physical field trip is the type where students observe directly the materials, processes or people of interest with a resource person giving a background explanation of the materials, places, processes or people under investigation. In this type of field trip, no electronic medium is needed as there is a live observation of materials, places, processes or people of interest. Virtual field trip, on the hand is defined by Foley (2003) as a guided exploration through the world wide web that organizes a collection of pre-screened, thematically based web pages into a structured online learning experience. In virtual field trip, an electronic medium (computer) connected to the internet and through the world wide web, the students can observe the materials, people and processes without leaving the classroom. This study enabled the researchers to compare lecture, physical field trip and virtual field trip as teaching methods and to determine the individual effect of these methods of

instruction on students' academic achievement.

### **Statement of the Problem**

It is the desire of every school to provide a qualitative education to the students which can lead to a change in behaviour of the students. Since the usual lecture method or talk-chalk method brings about little improvement in knowledge especially for students with low abstract thinking ability as we have in our primary and secondary schools, teachers of social studies can adopt field trip to help to improve learning. Where it is not possible to adopt physical field trip due to time and cost constraints, virtual field trip can be considered as an alternative to physical field trip. Inability of teachers to adopt physical and virtual field trips to teach social studies to the students may culminate in students' inability to develop interest in social studies, or retain what they have learnt or reproduce what they have learnt. This study therefore sought to find out whether or not the physical field trip and virtual field trip as instructional methods have greater effects on the academic performance of the students in social studies compared to lecture method. It also investigated the comparative effectiveness of virtual and physical field trips on students' academic performance in social studies.

### **Purpose of the study**

This study was designed to investigate the effects of physical and virtual field trips on students' performance. For this purpose, three research questions and three hypotheses were framed to guide the study.

### **Research Questions**

In this study, the following research questions were answered

1. What is the effect of lecture method of instruction on the academic achievement of students in Social Studies?
2. What is the effect of virtual field trip on the academic achievement of students in Social Studies?
3. What is the effect of physical field trip on the academic achievement of students in Social Studies?
4. What are the comparative post-treatment achievements of students taught using lecture, virtual field trip and physical field trip methods in Social Studies?

### **Research Hypotheses**

The following hypotheses were tested;

1. There is no significant effect of lecture method of instruction on the academic achievement of students in Social Studies.
2. There is no significant effect of virtual field trip on the academic achievement of students in Social Studies
3. Physical field trip has no significant effect on the academic achievement of students in Social Studies.
4. There is no significant difference in the post-treatment mean achievement scores of the students taught using lecture, virtual field trip and physical field trip methods.

### **Design**

This is a pretest-posttest 4x3 quasi-experimental research design. Students in four intact classes were used in the study. Students in one class (class D) served as a

control group as they were not taught the three arms of government (executive, legislature and judiciary), students in a second class (class C) were taught three arms of government using lecture method, students in a third class (class B) were taught three arms of government using physical field trip and students in a fourth class (class A) were taught three arms of government using virtual field trip. Two tests were administered to the students, the first test serving as pretreatment test while the second one serving as a post treatment test.

### **Instrumentation**

One school in Obio/Akpor Local Government Area of Rivers State was selected using purposive sampling technique. Then all the 136 students in Junior Secondary three (JS3) classes were involved. The instruments for data collection are Social Studies Aptitude Test and Social Studies Achievement Test. Social Studies Aptitude Test was used to obtain pretreatment scores of the students in Social Studies while Social Studies Achievement Test was used to obtain post-treatment scores of students. The instruments contain 30 objective items each and each item was scored 2 points. They were validated by three experts in social studies. The reliability coefficients of the instruments as obtained using Kuder Richardson 20 were 0.74 for Social Studies Aptitude Test and 0.82 for Social Studies Achievement Test. Students in group A were 32 in number, those in group B were 35, those in group C were 34 and those in group D were 35 in number. The results of Analysis of Variance (ANOVA) test of the data from Social Studies

Aptitude Test (pretest scores) for the four groups of students showed that there was no significant difference between the mean scores of the four groups.

Then the students in group A were taught three arms of government using virtual field trip, those in group B were taught the same topic using physical field trip, those in group C were taught using lecture method while those in group D (control) were not taught. In physical field trip (group B), the students in this group were taught topics in executive, legislature and judiciary by taking them to government house, House of Assembly and court where they were taken round to observe people and activities taking place in those places before the resource persons took turns to give them lessons on the meaning and functions of the executive or legislature or judiciary.

Those in group A were taught topics in executive, legislature and judiciary by using a computer connected to internet to

show them government house, House of Assembly and court.

They observed people and activities taking place in those places and the resource persons gave them lessons on the executive or legislature or judiciary. The lessons were taught to the students in their classroom in the school. Students in group C were taught through lecture method in their class in the school. Then the Social Studies Achievement Test (post treatment instrument) was administered to the four groups of students. The data generated from the tests were subjected to SPSS analysis and the results of the data analyses presented in the tables below.

### Results

1. What is the effect of lecture method of instruction on the academic achievement of students in Social Studies?

Research question 1 was answered using mean and standard deviation and the results are shown in table 4.1.

**Table 1: Means and standard deviations for students taught using lecture**

Group	Before treatment			After treatment		
	N	$\bar{x}$	Std	N	$\bar{x}$	Std
Control	35	27.80	2.93	35	30.94	5.76
Lecture method	34	28.50	2.77	34	31.88	6.57

Table 4.1 shows that pretreatment mean score for the control group is 27.80 with a standard deviation of 2.93 while pretreatment mean score for the students taught using lecture method is 28.50 with a standard deviation of 2.77. Similarly, the post-treatment mean score for the control group is 30.94 with a standard deviation of 5.76 while post-treatment mean score for

the students taught using lecture method is 31.88 with a standard deviation of 6.57. The difference in post- treatment mean and pretreatment mean score for the students taught using lecture method is 3.38. Hence, lecture method of instruction resulted to 11.86% increase in mean achievement of the students in Social Studies.

**Ho1:** There is no significant effect of lecture method of instruction on the academic achievement of students in Social Studies.

Hypothesis 1 was tested using analysis of covariance (ANCOVA) and the results are as shown in table 2.

**Table 2: ANCOVA results for the effect of lecture method of instruction on students' academic achievement**

	Type III sum of squares	Df	Mean square	F-cal	Sig
Covariate	125.583	1	125.583	3.414	0.069
Group	87.957	1	87.957	2.391	0.127
Error	2427.832	66	36.785		
Total	101723.000	69	Mean square		

Table 2 shows that the mean square covariate is 125.583, mean square group is 87.957 and mean square error is 36.785. The degrees of freedom covariate, group, error and total are 1, 1, 66 and 69 respectively. The calculated f-value for the students taught using lecture method is 2.39 1 which is significant at 0.127 alpha

level but not significant at 0.05 alpha level as 0.127 alpha level is greater than 0.05 alpha level. Since, the calculated f-value is not significant at 0.05 alpha level, the null hypothesis was accepted. This implies that lecture method of instruction has no significant effect on the academic achievement of students in Social Studies.

**RQ2:** What is the effect of virtual field trip on the academic achievement of students in Social Studies?

Research question 2 was answered using mean and standard deviation and the results are as presented in table 3.

Group	Before treatment			After treatment		
	N	$\bar{x}$	Std	N	$\bar{x}$	Std
Control	35	27.80	2.93	35	30.94	5.76
Virtual field	32	26.81	3.65	32	49.19	2.91

Table 3 shows that the pretreatment mean score for the control group is 27.80 with a standard deviation of 2.93. The pretreatment mean score for students taught using virtual field trip method of instruction is 26.81 with a standard deviation of 3.65. The post-treatment mean score for the control group is 30.94 with a standard deviation of 5.76 while the post-

treatment mean score for the students taught using virtual field trip method is 49.19 with a standard deviation of 2.91. The difference between pretreatment mean score and post-treatment mean score for the students taught using virtual field trip method is 22.38. This implies 83.48% gain in achievement score in social studies for students taught using virtual field trip method.

**H02:** There is no significant effect of virtual field trip on the academic achievement of students in Social Studies.

Hypothesis 2 was tested using analysis of covariance (ANCOVA) and the results are shown in table 4.

**Table 4: ANCOVA results for the effect of virtual field trip on students' academic achievement**

	Type III sum of squares	Df	Mean square	F-cal	Sig
Covariate	72.679	1	72.679	3.53	0.065
Group	2324.366	1	2324.366	112.86 0.00	112.86 0.00
Error	1318.082	64	20.595		
Total	126579.000	67			

Table 4 shows that the mean square covariate is 72.679, mean square group is 2324.366 and mean square error is 20.595. The degrees of freedom covariate, group, error and total are 1, 1, 64 and 67 respectively. The calculated f-value for the students taught using virtual field trip method is 112.86 which is significant at 0.00 alpha level and also significant at

0.05 alpha level as 0.00 alpha level is less than 0.05 alpha level. Since, the calculated f-value is significant at 0.05 alpha level, the null hypothesis was rejected. This implies that virtual field trip method of instruction has a significant effect on the academic achievement of students in Social Studies.

**RQ3:** What is the effect of physical field trip on the academic achievement of students in Social Studies?

Research question 3 was answered using mean and standard deviation and the results are presented in table 5

**Table 5: Means and standard deviations for students taught using virtual field trip method**

Group	Before treatment			After treatment		
	N	C	Std	N	$\bar{x}$	Std
Control	35	27.80	2.93	35	30.94	5.76
Physical field trip	35	27.54	2.69	35	54.26	1.88

From table 5, it can be seen that the pretreatment mean score for students taught using physical field trip method is 27.54 with a standard deviation of 2.69 while the post-treatment mean score for students taught using physical field trip method is 54.26 with a standard deviation of 1.88. The difference between

pretreatment mean score and post-treatment mean score for the students taught using physical field trip method is 26.72. This implies 97.02% gain in achievement score in social studies for students taught using physical field trip method.

**H03:** Physical field trip has no significant effect on the academic achievement of students in Social Studies.

Hypothesis 3 was tested using analysis of covariance (ANCOVA) and the results are presented in table 6.

**Table 6: ANCOVA results for the effect of physical field trip on students' academic achievement**

	Type III sum of squares	Df	Mean square	F-cal	Sig
Covariate	90.969	1	90.969	5.265	0.025
Group	5171.247	1	5171.247	299.303	0.00
Error	1157.602	67	17.278		
Total	152050.000	70			

Table 6 shows that the mean square covariate is 90.969. The mean square group is 5171.247 and the mean square error is 17.278. The degree of freedom covariate is 1. The degree of freedom group is 1. That of error is 67 and that of total is 70. The value of f—calculated for students taught using physical field trip is

299.303 which is significant at 0.00 alpha level and also significant at 0.05 alpha level. Since, the calculated f-value is significant at 0.05 alpha level, the null hypothesis was rejected. This implies that physical field trip method of instruction has a significant effect on the academic achievement of students in Social Studies.

**R04:** What are the comparative post-treatment achievements of students taught using lecture, virtual field trip and physical field trip methods in Social Studies?

Research question 4 was answered using mean and standard deviation. The results are shown in table 7.

**Table 7: Means and standard deviations for the comparative achievements for students taught using lecture, virtual field trip method and physical field trip method**

Group	N	$\bar{x}$	Std
Lecture method	34	38.88	6.57
Virtual field trip	32	49.19	2.91
Physical field trip	35	54.26	1.88

From table 7, it can be seen that the students taught using lecture method obtained a post- treatment mean of 38.88 with a standard deviation of 6.57. Those taught using virtual field trip method obtained a mean of 49.19 with a standard deviation of 2.91. Those taught using physical field trip method obtained a mean

of 54.26 with a standard deviation of 1.88. Hence, the students taught using physical field trip method obtained the highest post-treatment mean, followed by those taught using virtual field trip method and those taught using lecture method obtained the least mean.

**H04:** There is no significant difference in the post-treatment mean achievement scores of the students taught using lecture, virtual field trip and physical field trip methods.

Hypothesis 4 was tested using analysis of variance (ANOVA). The results are shown in table 8.

**Table 8: ANCOVA results for the comparative achievements for students taught using lecture, virtual field trip method and physical field trip method**

	Sum of Square	df	Mean Square	F	Sig.
Between Groups	7097.495	3	2365.83	106.33	0.00
Within Group	2936.976	132	22.25		
Total	10034.471	135			

Table 8 shows that the mean square between groups is 2365.83. The mean square within groups is 22.25. The degree of freedom between groups is 3. The degree of freedom within groups is 132 and the degree of freedom total groups is 135. The calculated f-value is 106.33 which is significant at 0.00 alpha level and also significant at 0.05 alpha level. As the calculated f-value is significant at 0.05 alpha level, the null hypothesis is rejected implying that there is a significant difference in the post-treatment mean achievement scores of the students taught using lecture, virtual field trip and physical field trip methods.

A post hoc analysis using Scheffe method shows that the significant differences in mean scores exist between students taught using lecture and virtual field trip methods; lecture and physical field trip methods; virtual field trip physical field trip methods.

### Discussion of findings

It was found that lecture method did not produce a significant effect on the students' academic achievement in social studies. This finding is similar to the

finding of Ejigbo (2017) which reported that traditional methods of instruction such as talk-chalk method or lecture method did not result to a significant gain in the students' academic performance. The finding that lecture method did not produce a significant effect on the students' academic achievement in social studies as made in this study can be explained from the fact that lecture encourages rote learning. It does not concretize learning and it does not encourage internalization of concepts learnt.

It was found that virtual field trip has a significant effect on the students' academic achievement. The finding of significant effect of virtual field trip on the students' academic achievement is not surprising and is in line with the finding of Garner (2014) which revealed that virtual field trip has a significant effect on the academic performance of students in biology. The finding of significant effect of virtual field trip on the students' academic achievement can be explained from the fact that learners have the opportunity to observe the objects of

learning directly with the resource person explaining the concepts. Abstract nature of some concepts is removed using this method of learning. In this way, learning is made internal and permanent.

It was found that physical field trip has a significant effect on the students' academic achievement. The finding of a significant effect of physical field trip on students' academic achievement is not surprising and it is in agreement with the finding of Garner (2014) which revealed that physical field trip has a significant effect on the academic performance of the

students in biology. The finding of a significant effect of physical field trip on students' academic achievement can be explained from the fact that physical field trip provides the learners with firsthand experience. The students have opportunity to observe, feel and ask questions. Field trip method of instruction also helps to remove the abstract nature of some concepts thereby making learning internal and permanent.

It was found that of the three teaching methods used in this study, physical field trip has the greatest effect on students' academic achievement; virtual field trip has the second greatest effect on students' academic achievement while lecture method of instruction has the least effect on students' academic achievement. This finding can be explained from the fact that physical field trip provides the greater first hand experience than the virtual field trip. Lecture method of instruction makes learning uninteresting and encourages rote learning.

## **Conclusion**

Physical and virtual field trip methods of instruction have effects on students' academic achievement, though physical field trip has greater effect on students' academic achievement than the virtual field trip. Students taught using physical and virtual field trip methods make significant gains in academic achievement. The traditional method of instruction (lecture method) does not produce significant gains in students' academic achievement.

## **Recommendations**

Based on the findings of this study, it is recommended that;

1. Teachers should make use of physical and virtual field trip methods of instruction from time to time. The physical and virtual field trip methods of instruction should be used in combination with the usual lecture depending on the topics to be taught.
2. The use of physical and virtual field trip methods of instruction should be done in such a way that much money and time should not be wasted in teaching the students using these methods.
3. Firms and government agencies should try to subsidize students' field trips so that it should not be much of a burden to parents and schools.
4. Government should endeavour to provide computers connected to internets to enable teachers make use of virtual field trip method of instruction.

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