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**EFFECTS OF COMPUTER ASSISTED INSTRUCTION
ON INDIVIDUALIZED AND COOPERATIVE
LEARNING OF SOCIAL STUDIES IN JUNIOR
SECONDARY SCHOOLS IN NIGER STATE, NIGERIA**

By

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Abstract

The study investigated the effects of computer instructional package on individualized and cooperative learning of social studies students in Niger State, Nigeria. Two research questions were raised and two null hypotheses were tested at 0.05 alpha level. Two hundred and seventy (270) students were drawn from three senatorial zones as sample for this study. The design adopted was pretest posttest control group design. The experimental group one was treated with CIPICOLSOS on individualized basis while experimental group two was treated with CIPICOLSOS co-operatively. The control group was treated with traditional lecture method. A 40 items Social Studies Achievement Test (SOSAT) was developed and was validated. Its reliability was found to be 0.78. The ANOVA statistic was used to test the hypotheses. Scheffe's post hoc test was conducted where significant difference existed among more than two groups. The major findings of the study showed that there were significant differences between the groups (individualize and cooperative) and the control groups (F_{crit}).

8573 > F_{crit} 2.26; $P < 0.05$). There are significant differences between the three ability levels of students (high, medium and low) in both experimental groups and control group. Based on the above findings, it was recommended that computer assisted instructional package should be used by teachers of social studies and other social science subjects for teaching in junior secondary schools in Nigeria.

Introduction

Social Studies as a discipline is an integrated, multi-disciplinary and inter-disciplinary subject that focuses on problem-solving, decision-making and active learner participation. Many teachers were themselves not taught to teach the subject so as to bring out the aspect of integration. The teachers' inadequate knowledge of the content and methodology of Social Studies has prevented the development of instruction in the subject as expected.

The subject has been undergoing changes towards improvement as regards its curriculum, procedures of teaching and learning as well as the production of instructional and learning materials. Social Studies has a broad curriculum. When it was first introduced as a new field in Nigeria, not all the states adopted it into their curriculum but as at now, almost all the states offer the course in their schools. Initially teachers teaching Social Studies were trained in subjects such as history, geography, government or political science. According to Dan (2005), the predominant methods of teaching the subject were the traditional expository or lecture methods with the teacher doing most of the talking. He went further to say that outside school community practice, social ceremonies and rituals are part and parcel of social heritage. People grow and harvest crops according to seasons. People who never went to school observe the weather. All these activities are Social Studies activities because they show how human beings relate with their environment. However, since Social Studies was introduced in

the curriculum, its teaching and learning have faced difficulties; the following are some of them.

1. Lack of qualified teachers: In the absence of adequate teacher preparation in Social Studies thinking, teaching and evaluation, teachers have resorted to teaching history, geography and civics as separate subjects while labelling them 'Social Studies'.
2. Lack of adequate teaching resources: Given the post-independence instabilities, frequent change of government and decline in the Nigerian economy, the standard of education has drastically fallen. There is shortage of relevant textbooks or reference materials in schools.
3. Lack of adequate and meaningful teaching materials like computers is one of the problems in teaching and learning in secondary schools in Niger State.
4. Lack of appropriate methods: While in training prospective teachers are taught various teaching methods. However, once they qualify most teachers abandon them and settle for traditional methods of lecture, question and answer or discussion rather than try innovations in their teaching.
5. Ineffective use of appropriate instructional materials: Results of studies (James, 2000; Augustint, 2000; Abimbade, 1990) revealed that ineffective use of appropriate instructional materials in teaching and learning contributes to students' poor performance in any subject. The issue of students' poor performance in Social Studies will no doubt hinder the attainment of citizenship education objectives and technological advancement of Nigeria. This calls for contextually relevant solutions to the intricate problem of teaching and learning of Social Studies at the junior level of education in our schools. James (2000) argues that the major problem relating to the development of Social Studies education at the junior secondary school level of education in Nigeria is lack of appropriate method of teaching as a result of unqualified teachers. Augustine (2000) is of the opinion that poor performance of

students in Social Studies is due to students' poor background at the primary school level of education and lack of exposure, especially schools in the rural areas of the state.

Textbooks used to be the chief instructional material but can no longer be relied upon for an abstract subject like Social Studies, if the subject matter must be effectively communicated to the learners. Thus, the availability and proper use of instructional media (computer in particular) would make the teaching and learning of Social Studies effective. The trend in students' poor performance in Social Studies was noted in the WAEC Chief Examiner's report which had consistently shown that from 2000 up to date, there has not been an appreciable improvement in students' performance in Social Studies in the WAEC and NECO. For example, the percentage passes at credit level and above in Social Studies between 2006 and 2010 fluctuated between 49.49% and 31.37%. It increased from 49.49% in 2006 to 53% in 2007 and decreased again to 50.22% in 2008. Since the subject is one of the core subjects that must be passed at credit level before moving to senior level, it means that only the few students who sat for NECO from 2004 to 2010, were qualified to move to senior class while the remaining students would have to repeat the class.

Computer-Assisted Instruction (CAI) designed for individualized and cooperative learning has been found to be effective. Many researchers have indicated that using computer-assisted instruction for individualized and cooperative learning improves students' learning and increases their academic achievement and problem-solving skills. Jack (2001) observes that putting students in groups during learning is not enough because the group needs a clear cooperative goal structure and students' anxiety in learning Social Studies increases when learning individually.

Cooperative and individualized learning are the umbrella terms for a variety of educational approaches involving joint and personal intellectual efforts by students or students and

teacher together. Usually, students are working in groups of two or more mutually searching for understanding, solution, meaning or creating a product (Rataz, 2001). Students work to attain group goals that cannot be obtained by working individually or by working competitively and so students discuss subject matter, help each other learn, and provide encouragement for members of the group (Frank, 2002).

Research Questions

The study sought answers to the following research questions:

1. Is there any difference in the achievement of students taught Social Studies using computer-assisted instructional package in individualized and cooperative learning settings?
2. Is there a difference in the achievement of male and female students taught Social Studies using computer-assisted instructional package in individualized and cooperative learning settings and those taught using conventional method?

Research Hypotheses

Two null hypotheses were formulated and tested at 0.05 alpha levels.

- HO₁: There is no significant difference in the mean achievement scores of students taught Social Studies using computer-assisted instructional package in individualized and cooperative learning settings.
- HO₂: There is no significant difference in the achievement of male and female students taught Social Studies using computer-assisted instructional package in individualized and cooperative learning and those taught with conventional method.

Methodology

The method adopted for this research was pretest-posttest control group design. A three by three by two factorial design was employed to test 3 hypotheses in the study. Two experimental groups and one control group were involved in the study. The three groups were pretested in the first week to determine their entry equivalence.

The population of the study comprised seven thousand and five hundred (7,500) JSS II students in 450 public Junior Secondary Schools in Niger State.

The sample for the study was two hundred and seventy (270) Junior Secondary Schools students. This sample was selected randomly by hat-draw method from three senatorial zones. Nine Junior Secondary Schools within the three senatorial zones in Niger State for the nine schools selected, five co-educational and four single sex schools were selected using simple random sampling technique. According to Daramola (1995), a simple random sampling technique is a sampling procedure in which each element in the population has equal chance of being selected from three schools from each of the senatorial zones.

Presentation Of Results

Hypothesis One (H₀₁)

There is no significant difference in the mean achievement scores of students taught Social Studies using computer-assisted instructional package in individualized and cooperative learning settings.

ANOVA Comparison of the Posttest Achievement Scores of Individualized, Cooperative and Control Groups.

Sources of Variation	Sum of Square	df	Mean square	F _{cal}	Sign Level
Between Groups	4774.050	1	4774.050	79.243*	0.0001
Within groups	5158.011	178	28.978		
Total	9932.061	179			

* - Significant at 0.05 level of significance.

The table shows the ANOVA comparison of achievement scores of the individualized, cooperative and control groups. From the table, the calculated F value is 79.243 at 0.0001 level of significance ($F_{cal}=79.243$, $df = 2,267$, $P<0.05$). This indicated that there were statistically significant differences among the three groups. Therefore, hypothesis One was rejected.

Summary of Scheffe's Post hoc on Individualized, Cooperative, and Control Groups

Variable (i)	Variable (j)	Mean Diff	Sign Level	Remarks
Exp. Group 1	Exp. Group 2 Control	-10.3000*	0.000	Sig.
Exp. Group 2 Cooperative	Exp. Group 1 Individualized	-6.8889*	0.000	Sig.
Control	Exp. Group 1 (Individualized) Exp. Group 2 (Cooperative)	3.411	0.000	Sig.

There was significant difference in the mean achievement scores of individualized and cooperative learning groups in favour of cooperative. Similarly, there was significant difference in the mean achievement scores of individualized and control in favour of control group. Also, there was significant difference in the mean achievement scores of cooperative and control groups in favour of cooperative group. From table above, the cooperative group performed better than the other groups with a mean difference of -10.3000. Since ANOVA indicated that there were significant differences among the three groups, there was need to carry out the post hoc test in order to find out the direction of the differences.

Means and Standard Deviation of the Post Test Scores of the Experimental and Control Groups

Variable	N	\bar{x}	S. D
Individualized Group	90	73.978	6.534
Cooperative Group	90	84.278	3.906
Control Group (Control)	90	80.867	5.987

The table above shows the means and standard deviation of the individualized and cooperative, and control groups are 73.978, 84.278, 80.867 and 6.534, 3.906, and 5.987 respectively. To find if the differences were statistically significant, the ANOVA statistic was used.

Hypothesis Two (H₀₂)

There is no significant difference in the achievement of male and female students taught Social Studies using computer-assisted instructional package on individualized and cooperative learning and those taught using conventional method.

ANOVA Comparison of the Achievement Scores of Male and Female Students on Individualized, Cooperative and Control Groups on Posttest

Sources of Variation	Sum of Square	df	Mean square	F _{cal}	Sgn Level
Between Groups	5114.863	5	1022.973		
Within groups	8189.022	264	31.019	32.979*	0.0001
Total	13303.885	269			

* - Significant at 0.05 level of significance.

From the table above, the calculated F value is 32.979 at 0.0001 level of significance (F_{cal} = 32.979, df = 5,264; P<0.05). This indicates that there is statistical significant difference among the groups. Therefore, hypothesis two was rejected.

Since ANOVA indicated generally that there was significant difference among the groups, there was need to carry out the post hoc test in order to find out the direction of the differences.

Summary of Scheffe's Post hoc Multiple comparison for male & female Individualized, Cooperative, control groups

Variable (i)	Variable (j)	Mean Diff	Sign Level	Remarks
Male Ind.	Female Ind.	-1.822	0.790	Not Sig.
	Male Coop.	-11.044	0.000	Sig.
	Female Coop	-11.378	0.000	Sig.
	Male Control	-6.844	0.000	Sig.
	Female Control	-8.756	0.000	Sig.
Female Ind.	Male Coop.	-9.222	0.000	Sig.
	Female Coop.	-9.556	0.000	Sig.
	Male Control	-5.022	0.003	Sig.
	Control	-6.933	0.000	Sig.
Male Coop.	Female Coop.	-0.333	1.000	Not Sig.
	Male Control	4.200	0.028	Sig.
	Female Control	2.289	0.579	Not Sig.
Female Coop	Male Control	4.533	0.012	Sig.
	Female Control	2.622	0.420	Not Sig.
Male Control	Female Control	-1.911	0.754	Not Sig.

The summary of Scheffe's posthoc test in the table on the achievement of male and female students in the experimental and control groups shows that there was no statistically significant difference in the mean achievement scores of male students in the individualized learning group and female students in the individualized learning group. However, there was significant difference in the mean achievement scores of male students in the individualized group and male students in the cooperative learning group in favour of the male cooperative learning group. Similarly, there was significant difference in the mean achievement scores of male students in the individualized learning group and female students in the cooperative learning group in favour of female students in the cooperative learning group. Also there was significant difference in the mean achievement scores of male students in the individualized learning group and male students in the control group in favour of males in the control group. Furthermore, there was significant difference in the mean achievement scores of male students in the individualized learning group and female students in the control group. The result also indicated significant difference in the mean achievement scores of female students in the individualized learning group and male students in the cooperative learning group in favour of the male cooperative

learning group.

Similarly, there was significant difference in the mean achievement scores of females in the individualized learning group and females in the cooperative learning group. In the same vein, there was significant difference in the mean achievement scores of females in the individualized learning group and males in the control group in favour of males in the control group. Also there was significant difference in the mean achievement scores of females in the individualized learning group and females in the control group in favour of females in the control group.

The result also indicated no significant difference in the mean achievement scores of males in the cooperative learning group and females in the cooperative learning group. However, there was significant difference in the mean achievement scores of males in the cooperative learning group and males in the control group in favour of males in the cooperative learning group. Furthermore, there was no significant difference in the mean achievement scores of males in the cooperative learning group and females in the control group. There was also significance difference in the mean achievement scores of females in the cooperative and males in the control group in favour of females in the cooperative group. There was no significant difference in the mean achievement scores of females in the cooperative learning group and females in the control group. Finally, there was no significant difference in the mean achievement scores of males and females in the control group.

Means and Standard Deviation of the Post Test Mean Achievement Scores of Male and Female Students in the Experimental and Control Groups

Variables	No. of Samples	Mean	SD
Male Ind.	45	73.067	6.887
Female Ind.	45	74.889	6.102
Male Coop.	45	84.111	4.354
Female Coop. .	45	84.444	3.441
Male Control	45	79.911	6.215
Female Control	45	81.822	5.658

The mean and standard deviation of male and female students in the experimental and control groups. From the table there are differences in mean achievement scores of male and female students in the three groups with the male and female students in the cooperative learning group performing better than the other groups with 84.111 and 84.444 respectively.

Discussion of Results

The results obtained from the test of the first hypothesis show there was significant difference in the mean achievement scores of individualized (77.405) and that of cooperative group (79.243) in favour of the cooperative group. Therefore, hypothesis one (1) was rejected. From the above result it is clear that the cooperative group performed better than the individualized group. It could be as a result of the fact that the cooperative group put their ideas together before answering questions while in the individualized group students gave answers to the questions as they occurred to them.

The result of the comparisons of performance of male and female individualized, cooperative, and Control groups, indicated that there were statistically significant differences among the mean scores of the groups. Therefore, hypothesis 2 was rejected. Further analysis using Scheffe's post hoc test to find out the direction of differences revealed significant differences between male individualized and male and female cooperative in favour of male and female cooperative. There was also significant difference between male individualized and male and female control in favour of male and female control. There was no significant difference between male cooperative and female cooperative, male cooperative and female control, female cooperative and female control and female control. From this result, it could be deduced that gender had no effect on the performance of students. This result confirmed the results obtained for the first hypothesis which indicated that the cooperative group performed better than the individualized

group while the difference between the cooperative group and control was between male cooperative and female control which was statistically significant. Doing the same thing repeatedly enhances students' performances, enabling them to acquire more skills and knowledge. Gender had no effect on the performance of students taught with computer-assisted instructional package. This result is in agreement with the results of James (2003), Gwandu (2005) and Ibrahim (2005). They found that there was no significant difference between the mean achievement scores of male and female History, Government and Biology students respectively taught with the computer-assisted learning strategy. Their results showed that computer-assisted instruction could stimulate male and female students alike and promote their performances.

Conclusion

Conclusion arising from the findings of this study indicates that instructional methods that teachers employ in Social Studies teaching have significant effects on students' achievement. If students are exposed to computer-assisted instruction strategies in which they constructively interact freely. Their performances in Social Studies could be enhanced.

Computer-assisted instructional package has been put to test in individualized and cooperative learning of Social Studies and has been shown to be effective. On the issue of gender which has been a debatable area for some time. The finding of this study seems to confirm earlier findings. Male and female students were affected positively and equally by the use of computer-assisted instructional package in individualized and cooperative learning settings. In other words, the methods appear to be gender friendly.

The use of individualized method of teaching should be greatly minimized especially in Social Studies. This is because the students' achievement when taught using computer-assisted instructional package in individualized learning setting was very

low compared to that of others in the cooperative and those taught using the conventional method.

Recommendations

Based on the major findings of the study, the following recommendations are proffered:

- (1) Computer-assisted instructional package was more effective in the cooperative learning setting than in the individualized teaching and learning setting. It is, therefore, recommended that teachers should expose Social Studies students to computer-assisted instructional packages in cooperative learning method in order to promote and encourage social interaction, active learning, motivation, learning by doing and learning by experience.
- (2) The computer-assisted instruction package in individualized and cooperative learning settings enhanced the performance of high, medium and low achievers equally. Therefore teachers should endeavour to assign students of mixed achievement levels into different learning groups in order to improve performance and social interaction among them.
- (3) Cooperative learning with computer is a new technique of teaching in Nigeria, Social Studies teachers should be provided training in cooperative learning methods. To achieve this, the Federal and State Ministries of Education, educational agencies such as UNICEF, UNESCO, NTI, NERDC, NGOs, and other stakeholders in education, should organize workshops on the use of cooperative learning methods to enhance performance of junior secondary school students.

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