

Effect of Jigsaw on Students' Achievement in Junior Secondary School Social Studies in Nsukka, Nigeria

¹Joseph C. Onuoha, ²N.D. Eneogu, ³Uche D. Asogwa and ³Margaret N. Ngwuchukwu

¹Department of Social Science Education, ²Department of Arts,

³Department of Library and Information Science, University of Nigeria, Nsukka, Nigeria

Abstract: The main purpose of this study is to investigate the effects of Jigsaw on the academic achievement of junior secondary school students in social studies in Nsukka, Nigeria. Specifically, the study investigated the effect of Jigsaw on the academic achievement of students in Social Studies and determined gender differences among students exposed to Jigsaw. Two research questions and one hypothesis guided the study. Social Studies Concept Test (SSCT) was used to collect data. The study is a quasi-experimental study of a non-equivalent design. Four social studies teachers from the schools that were used formed the research assistants. The research assistants were used both in teaching and administration of the instrument. The data that were collected were analyzed using Analysis of Covariance (ANCOVA) to test the hypothesis and mean and standard deviation to answer the research questions. The findings showed no significant difference in the mean achievement of male and female students in social studies.

Key words: Investigate, assistants, administration, standard deviation, Nigeria

INTRODUCTION

It has been observed that students achieve poorly in Junior School Certificate Examinations (JSCE) (Yusuf, 2004; Ukadike, 2005). The reason for the poor achievement according to Okam and Onuoha (2011) and Yusuf (2004) is low quality of teachers and inappropriate medium of instruction used by social studies teachers. In order to address this situation, the Federal Government of Nigeria intervened in various ways. One was the reorganization of the curriculum in a way that adopted thematic approach to content organization in order to present social studies in a holistic manner to students. Major relevant themes were selected and topics were arranged under them across the 9 years of basic education in a spiral manner to sustain the interest of the students and thereby improve their achievement and retention in social studies.

Two was the retraining of social studies teachers in all the states of Nigeria. All these efforts have not shown significant improvement in enhancing the achievement of students in social studies. The reason for the poor returns in the intervention inputs of the government and the organized private sector has been explained by researchers as inadequate or wrong instructional strategies applied by the trainers of such human capacity development projects (Ossai, 2014).

Moreover, the fact that social studies contents are learner activity-packed, involving the near-total control of the learning situation by the learner, de-emphasizes teacher's control of the teaching-learning process. Therefore, it is not all teaching strategies that lend themselves to the effective teaching and learning of social studies. Opara advises that teachers should evolve strategies that involve learners' active participation. Opara argues that such strategies will generate greater achievement and enhance students interest in the social studies.

Social studies education is designed to generate and develop intelligent responsible and self-directing citizens who are expected to positively explore opportunities to develop their own potentialities and to contribute their maximum efforts to the improvement of group living within the societal frame-work of a nation (Okam and Onuoha, 2011). The importance of social studies cannot be underestimated in our society. It strives towards full cordial co-existence and harmonious relationship amongst the citizens as well as better education for her citizenry in terms of achievement at public examination in social studies.

According to Usulor the broad objectives of social studies in Nigeria is to give direction for effective instruction. To develop a capacity to acquire certain basic skills essential for forming sound judgment and to ensure

the acquisition of relevant body of knowledge and information which is an essential pre-requisite to personal development and positive contribution to the betterment of the society as a whole. Teaching children social studies increases the possibility of their becoming more informed and responsible members of the society. Teaching children social studies is necessary if we want a brighter future for our society and increase their chances of adhering to ethical and moral value in life.

Social studies is indeed very important in the society but social studies teachers who are the implementers of the curriculum have been found wanting.

Attempts have been made to improve the students' achievement through the use of some teaching strategies like, concept mapping, projects, etc but the strategies have not yielded significant results. It may be that the class teachers are not competent in the use of those strategies or that the students are not at home with such strategies.

Nevertheless, students' achievement is still low. This implies that other effective pedagogies are required to adequately address the need of activating the learners' cognition, affective and psychomotor skill and thus achieve the objectives of social studies.

Therefore to achieve the goals of social studies and the goals of secondary education as stipulated in the Nigeria policy on Education which include amongst others, to inspire students with a desire for self improvement and achievement of excellence, to raise a generation of people who can think for themselves, respect the views and feelings of others, respect the dignity of labor, appreciate those value specified under our broad national goals and live as good citizens, there is need for an effective instructional strategy.

Thus, in search for an effective instructional strategy, the researchers decided to try Jigsaw. Jigsaw is a cooperative learning technique and has been recorded to be successful. Cooperative learning is an instructional strategy that creates a social climate in the classroom and encourages students to be their brothers and sisters keepers or help each other in the process of learning (Nwafor, 2007).

According to Aronson (2000) Jigsaw assigns a student to a group called home group to specialize in one aspect of a learning unit. Jigsaw learning allows students to be introduced to material and yet maintain a high level of personal responsibility. The purpose of Jigsaw is to develop teamwork and cooperative learning skills within all students. In addition, it helps develop a depth of knowledge not possible if the students were to try and

learn all of the materials on their own. Jigsaw learning often discloses a student's own understanding of a concept as well as reveal any misunderstandings. Thus, each student is essential for the completion and full understanding of the whole concept being taught.

Jigsaw is an efficient way to learn materials. It encourages listening, engagement and empathy by giving each member of the group an essential part to play in the academic activity. Group members must work together as a team to accomplish a common goal; each person depends on all the others. No student can succeed completely unless everyone works well together as a team.

Jigsaw is cooperative by design and cooperativeness facilitates interaction among all students in the class, leading them to value each other as contributors to their common task. According to Aronson (2000), the advantage of Jigsaw learning strategy is that students perform challenging and engaging tasks in their expert groups with enthusiasm since they know they are the only ones with that piece of information in their respective home groups. Before explaining to their home group, it is expected that the student will develop a clear idea of the concept (Mbacho and Changeiywo, 2013). However, there has not been any known research to the knowledge of the researchers on effect of Jigsaw on students' achievement in social studies in Nigeria. This becomes an important issue to the researchers. Will Jigsaw be effective in Nigerian classrooms.

In recent past, researches in education have tried to analyse students' achievement in relation to male and female (gender) performances though inconclusive. Significant researches have indicated that gender plays a part in students' academic achievement. For example, researchers have found significant differences between male and female students in science achievement. In a meta-analysis of 77 studies conducted between 1980 and 1991 among middle and high school students, DeBaz found a significant gender effect favoring males in overall science achievement. In an analysis of data from the National Educational Longitudinal Study (NELS: 88), Lee and Burkam (1996) found a large advantage for males on the physical science subtest and a modest advantage for females on the life science subtest. Maliki *et al.* (2009) found that boys performed more than girls in junior secondary school examination in Bayelsa state of Southern Nigeria. Also, Jabor *et al.* (2011) studied the influence of age and gender on the students' achievement in mathematics. The study compared the mathematics achievement between age groups and gender. The

comparison revealed that there were statistically significant differences in mathematics GPA scores between age groups and gender but the effect sizes were small. Atovigba *et al.* (2012) in their own study found that the male students performed consistently better than their female counter parts in Nigeria. Amatobi and Amatobi (2013) examined the influences of gender and attitude on student's achievement in Mathematics at Comprehensive Secondary School Amurie-Omanze, Imo State in South Eastern Nigeria and found out that the gender difference existed in mathematics achievement in favour of the boys.

However, certain studies indicated that gender differences generally are small or non-existent. Examples of such studies include Hedges and Nowell (1999) who found that in science, boys outperform girls but in reading and writing girls have the advantage.

A study by Meece and Jones (1996) which examined the 5th-and sixth-grade students enrolled in a science class revealed that no gender differences in students' standardized test scores. Coley (2001) studied gender differences within ethnic groups of varying ages and the findings revealed no gender gap in most of the groups.

Also, Peter (2014) investigated the effect of gender on students' academic achievement in secondary school social studies and reported that gender had no significant effect on students' achievement in social studies.

Nevertheless, the reports of many of the research findings reported in this study did not reveal the instructional or learning strategies used and as a result there is still a covering to be unveiled by identifying the instructional or learning technique that can be used/employed by teachers and learners to reduce gender gap in achievement. Hence, the need to find out how Jigsaw will help to reduce the gender gap in students' achievement in social studies.

Therefore, the major problem of this study is therefore a determination of the extent to which classroom exposures of students to Jigsaw will enhance the achievement of male and female students in social studies in Nsukka, Nigeria. Hence, this study anchored on the following problems: how would Jigsaw learning strategy affect the achievement of students in social studies? How would the use of Jigsaw learning strategy affect the achievement of male and female students in social studies. Specifically the study sought to find out:

- The effect of Jigsaw learning strategy on the achievement of students in social studies concepts in Nsukka, Nigeria
- The effect of Jigsaw learning strategy on the achievement of male and female students in social studies concepts in Nsukka, Nigeria

Research question: The following research questions guided the study:

- What is the effect of Jigsaw learning strategy on students' achievement in social studies concepts in Nsukka, Nigeria
- To what extent will gender influence the achievement of students taught social studies with Jigsaw learning strategy in Nsukka, Nigeria

Hypotheses: The following hypotheses will were formulated and tested "there is no significant difference in the mean achievement scores of male and female students taught social studies using Jigsaw in Nsukka, Nigeria".

MATERIALS AND METHODS

Quasi experimental and non equivalent group design of pre-test and post-test was employed in this study. Quasi was used because subjects were not randomly assigned to classes. Mathematically, the design of this study is thus:

$$Q_1 = X \quad Q_2$$

Where:

Q_1 = Pretest

X = Jigsaw treatment

Q_2 = Posttest

The area of the study is Nsukka, Nigeria. Nsukka, was chosen because of the persistent low achievement of students in public examinations in social studies. The target population consists of 3059 Junior Secondary School (JSS) class 2 students. The JSS 2 students were used because they have passed through the first stage of junior secondary social studies and can now understand the subject and can communicate amongst themselves very well. Again, they are not in exam class as school authority will not allow the use of their exam classes.

The sample size for this study is 283 Junior secondary school 2 students. The sample size was based on the fact that intact classes were used. So, the total number of students in those schools used formed the sample size. Simple random sampling was employed to draw 4 schools out of the 37 schools in Nsukka. The four schools were used for the experiment; there was no control group as the researchers deemed it not necessary.

The instrument for data collection is Social Studies Concept Test (SSCT). The SSCT was a 25 itemed instrument option A-D that tested the students' knowledge, comprehension, application and social studies

skills on the objective questions that were set on the following topics, poverty, corruption, drug abuse and drug trafficking. The total score for the instrument was 100 marks. The items were allocated 4 marks each. The instrument (SSCT) was validated by experts and was trial tested. The data collected were used to carry out internal consistency of the instrument using K-R 20 which gave a reliability coefficient of 0.829 implying that the instrument was reliable.

A pre-test was conducted before the commencement of the experiment. This enabled the researchers ascertain entering knowledge of the students before the experiment began and after the experiment a post-test was conducted to determine the students achievement when taught with Jigsaw.

Experimental procedure: social studies teachers in the sampled schools were trained on the Jigsaw technique. These teachers were used as research assistants to teach the social studies lesson. For each of the topics to be taught, the ten steps of creating and using Jigsaw cooperative learning strategy were followed as recommended by Aronson (2000). Each student was assigned to a group (home group) with a specific assignment from the segmented social studies lesson which no other person in that group has access to. The home groups were given time to go through their assignments and afterwards, the students with the same assignment in all the groups formed expert groups where they discussed their common assignment. The students in the expert groups then went back to the home group (initial group) to present their findings and their understanding of the assignment. All these were done with close supervision of the teacher.

The teacher then evaluates the students by asking questions on the assigned assignments. Finally, the SSCT post-test was administered at the end of the experiment. The experiment lasted for 5 weeks. Each topic was taught for 1 week making a total of 4 weeks for the four topics. The 5 week was used to conduct the tests.

Method of data analysis: The research questions were answered using mean and standard deviation while analysis of covariance (ANOVA) at 0.05 level of significance was used to test the hypothesis.

RESULTS AND DISCUSSION

Table 1 shows that the covariate exhibited significant relationship with the corresponding dependent variable (posttest), therefore the assumption of linearity (linear

Table 1: Test of linearity of the dependent variable and covariate

Correlations	Pretest	Post test
Pearson correlation	1	0.387**
Sig. (2-tailed)		0.000
N	282	282
Pearson correlation	0.387**	1
Sig. (2-tailed)	0.000	
N	282	283

**Correlation is significant at the 0.01 level (2-tailed)

Table 2: Test of normality

Gender (post test)	Mean	N	SD	Kurtosis	Skewness	SE
Male	58.67	66	19.168	-0.840	0.212	2.359
Female	56.79	217	18.181	-0.632	0.197	1.234
Total	57.23	283	18.399	-0.685	0.204	1.094

Table 3: Jigsaw mean achievement result of social studies students in Nsukka, Nigeria

Gender	Pretest		Posttest		Mean Diff	Mean Diff (%)
	Mean	SD	Mean	SD		
Male	17.51	6.901	58.67	19.168	41.16	54.02993
Female	18.57	7.270	56.79	18.181	38.22	50.71656
Total	18.32	7.188	57.23	18.399	38.91	51.50232

Table 4: Hypothesis testing

Sources	Type 3 sum of squares	Tests of between-subjects effects			
		df	Mean square	F-values	Sig.
Corrected model	14803.350 ^a	2	7401.675	25.659	0.000
Intercept	57418.034	1	57418.034	199.048	0.000
Pretest	14582.839	1	14582.839	50.554	0.000
Gender	498.525	1	498.525	1.728	0.190
Error	80481.075	279	288.463		
Total	1020416.000	282			
Corrected Total	95284.426	281			

R² = 0.155 (adjusted R² = 0.149); dependent variable: post test

relationship) between the covariate and the dependent variable is satisfied. Also to verify the result of the Pearson correlation, the scatter gram of the points of the subjects' scores in the dependent and independent variables were plotted. The scatter gram show that the relationship is linear since it sloped from top right towards the bottom left.

Table 2 shows that scores of male and female students are symmetry. The table indicates that the absolute value of the skewness for the males (0.212) and females (0.197) are not more than twice the standard error (2.359) meaning that the data are symmetric and therefore normally distributed. Similarly, the absolute value of the kurtosis for the data is not more than twice the standard error indicating that they are normally distributed.

Table 3 shows that social studies students scored an average of 57.23. Also, the table indicates that male students have average achievement score of 58.67 while the female students have average achievement score of 56.79. The table also shows a percentage mean achievement score difference of 54.03 for males and 50.72 for females when posttest scores and compared with the pretest scores.

Table 4 shows p-value of 0.190 for gender indicating no significant difference in the mean scores of male and

female students who learned social studies with Jigsaw. Also the table indicates that pretest is significant even at 0.01 level of significance.

increased the achievement of students in social studies in Nsukka, Nigeria. This finding is in agreement with Akinsola (2002) who opined that gender differences may exist but a good method should be capable of neutralizing the differences.

On the achievement of male and female students, the findings showed no significant difference. This finding agrees with the findings of Awofala and Nneji (2011), Amosun (2011) and Peter (2014) that there is no significant gender difference in the academic achievement of students when exposed to treatment.

This indicated that achievement does not depend on gender rather on instructional technique. However, the finding of this study differs with the findings of Maliki *et al.* (2009), Adeyemi and Ajibade (2011), Atovigba *et al.* (2012), Amatobi and Amatobi (2013) whose studies revealed gender differences either in favor of males or females.

Obviously, the overall mean achievement score was below the expectations of the researchers. This confirms the observations Yusuf (2004) and Ukadike (2005) that students achieve poorly in social studies which according to Okam and Onuoha (2011) and Yusuf (2004) is low quality of teachers and inappropriate medium of instruction used by social studies teachers. However, the conditions of learning in most Nigerian schools are below average. This may have affected the results.

CONCLUSION

Based on the findings of this study, the researchers recommend that teachers and students should employ Jigsaw in the teaching and learning of social studies. In making use of Jigsaw, teachers are expected to make the classroom environment conducive for quality interaction among students. The type of seats and their arrangement should be such that will allow students to easily move around. Also, the students should take their specific materials seriously as their understanding of such will determine the quality of the expert group discussions.

REFERENCES

- Adeyemi, B.A. and Y.A. Ajibade, 2011. The comparative effects of simulation games and brainstorming instructional strategies on junior secondary school students achievement in social studies in Nigeria. *Afr. Res. Rev.*, 5: 64-80.
- Akinsola, M.K., 2002. Instructional methods employed by mathematics teacher: A managerial approach. *Afr. J. Educ. Planning Policy Stud.*, 3: 25-32.
- Amatobi, V.E. and D.A. Amatobi, 2013. The influences of gender and attitude differences to students achievement in mathematics in Nigerian secondary schools: A case study of comprehensive secondary school Amurie-Omanze in South Eastern Nigeria. *Am. J. Res. Commun.*, 1: 1-7.
- Amosun, P.A., 2011. Performance and attitude of male and female students in physical geography in urban and rural schools of Ogun State, Nigeria. *Afr. J. Stud. Educ. Issues.* 4: 195-198.
- Aronson, E., 2000. Nobody left to hate developing the emphatic schoolroom. *Humanist*, 60: 17-21.
- Atovigba, M.V., A.M. Vershima and E. Ijenkeli, 2012. Gender trends in Nigerian secondary school students. *Res. J. Math. Stat.*, 4: 42-44.
- Awofala, A.O. and L.M. Nneji, 2012. Effect of framing and team assisted individualized instructional strategies on students achievement in mathematics. *J. Sci. Teachers Assoc. Nigeria*, 43: 20-28.
- Hedges, L.V. and A. Nowell, 1999. Changes in the black-white gap in achievement test scores. *Sociology Educ.*, 72: 111-135.
- Jabor, K.M., K. Machtmes, K. Kungu, Y. Buntat and M.S. Nordin, 2011. The influence of age and gender on the students achievement in mathematics. *Int. Conf. Soc. Sci. Humanity*, 5: 304-308.
- Lee, V.E. and D.T. Burkam, 1996. Gender differences in middle grade science achievement: Subject domain, ability level and course emphasis. *Sci. Educ.*, 80: 613-650.
- Maliki, A.E., A.N. Ngban and J.E. Ibu, 2009. Analysis of students performance in junior secondary school mathematics examination in Bayelsa state of Nigeria. *Stud. Home Commun. Sci.*, 3: 131-134.
- Mbacho, N.W. and J.M. Changeiywo, 2013. Effects of jigsaw cooperative learning strategy on students achievement by gender differences in secondary school mathematics in laikipia east district, Kenya. *Asian J. Manage. Sci. Educ.*, 2: 177-188.
- Meece, J.L. and M.G. Jones, 1996. Gender differences in motivation and strategy use in science: Are girls rote learners?. *J. Res. Sci. Teach.*, 33: 407-431.
- Nwafor, O.M., 2007. Education Innovation Process and Products. Magnet Business Enterprises Publishers, Enugu, Nigeria.
- Okam C.C. and J.C. Onuoha, 2011. Repositioning social studies education in Nigeria: Issues and challenges. *Nigeria J. Soc. Stud. Civic Educ.*, Vol. 1.

- Ossai, J.N., 2014. Effects of three instructional strategies on academic achievement in junior secondary school. *Niger. J. Soc. Stud. Civic Educ.*, 6: 78-84.
- Peter, O.D., 2014. Effect of gender on students academic achievement in secondary school social studies. *J. Educ. Prac.*, 21: 78-84.
- Ukadike, O.J., 2005. Effects of two Cooperative instructional methods on social studies achievements in JSS. *Agbor J. Arts Soc. Sci.*, 1: 145-150.
- Yusuf, A., 2004. Effect of cooperative instructional strategy on students performance in social studies. *Niger. J. Soc. Stud.*, 8: 23-36.