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EFFECT OF CONCEPT MAPPING INSTRUCTIONAL STRATEGY ON JUNIOR SECONDARY SCHOOL TWO STUDENTS' ACHIEVEMENT IN SOCIAL STUDIES

Egbai, Julius Michael[1]; Eke Ogbu Eke[2]

[1]Department of Educational Foundations, University of Calabar

Contact: +2348034504311; ***Email:*** juliegbai@gmail.com

[2]Department Of Curriculum& Instruction, Alvan Ikoku Federal College of Education, Owerri

Abstract

The study investigated the effect of Concept mapping instructional strategy on junior secondary school two students' achievement in Social Studies. The study adopted a quasi-experimental control design, specifically the pre-test post-test non-equivalent control group design. Two research questions were posed and one hypothesis was formulated to guide the study which was carried out in 2 schools in Owerri Municipal Council Area in Owerri Educational Zone2 of Imo State. Eighty (80) JSS two students were used for the study. The study is a quasi-experimental study that employed a pretest-posttest control design and a 2x1 factorial design. The instrument used for data collection was Social Studies Achievement Test (SSAT) developed by the researcher. SSAT was validated by three experts and the reliability coefficient using Kuder Richardson (KR-20) was found to be 0.76. Mean and standard deviation was used to answer the research questions while Analysis of covariance (ANCOVA) statistics was used to test the hypothesis at a 0.05 significance level. This result revealed that the method was a significant factor on students' achievement in Social Studies. Thus, it was confirmed that students who taught Social Studies using the Concept mapping instructional strategy performed better than those taught using the lecture method. It was recommended among others things, that efforts should be made by curriculum experts to incorporate Concept mapping teaching strategy into the teaching of Social Studies.

Keywords: Concept mapping, instructional strategy, social studies**.**

1. Introduction

Social Studies could be regarded as a subject primarily concerned with the study of people, their environment, and the society in which they live and the resultant interaction of these three elements. Social Studies touch the very heart of our society. It deals with the important problems of national unity, understanding of global economic development awareness of ethnic differences, and ethnic tolerance. Social Studies is a veritable tool for the successful implementation of our political goals. It provides students with the skills they will require for articulate and informed kinship, participation in political democracy, political literacy, and social responsibility (Chawla & Signgh, 2015). National Council for Social Studies (NCSS 2005), sees Social Studies as the integrated study of the social sciences and humanities to promote civic competence. The primary purpose of Social Studies is to help young people develop the ability to make informed and reasoned decisions for the public

good as citizens of a culturally diverse, democratic society in an interdependent world. An encompassing conception of Social Studies was offered by Shiundu and Ali (2000), they asserted that Social Studies is that part of the school activity that has to do with the teaching and learning of those social significant problems, questions, and topics believed to be relevant to the well-being of our society. And the study helps in the understanding of the failures and successes of man in his attempt to solve problems arising from his environment, and his relationship with his fellow man.

From the above definitions of Social Studies, it is observed that effective teaching and learning of social studies is fundamental for a harmonious society and for cohesive national development. That means that, if Social Studies is effectively taught, it will equip students with prerequisite life skills that will help them in the difficult process of confronting ethical and value-based dilemmas. It will also encourage students to speculate, think critically, and make personal and civic decisions based on information from multiple perspectives. Little wonder, it is a core subject in the junior secondary school system in Nigeria.

Social Studies was introduced into the Nigerian School Curriculum as part of the instrument for achieving national development (National Policy on Education (NPE) 2004). This was what informed its designation as part of the core curriculum at different levels of education in Nigeria. Social Studies curriculum development agencies such as the Nigerian Educational Research and Development Council (NERDC) and other experts identified the goals or purposes of the subject in the school curriculum. The goals of Social Studies include citizenship education, reflective inquiry, and social science education, (Meizeobi, 2005; Olufemi & Salako, 2013) among others. These broadly stated lofty goals which are important could also be attainable if an effective teaching strategy is employed in the teaching of social studies.

Several efforts have been put in place by stakeholders in the educational sector to promote the effective teaching and learning of social studies in secondary schools in Owerri Education Zone 2. Oftentimes, students continue to record poor performance in both internal and external examinations as indicated by the Examination Development Council (EDC, 2017). The report analyzed the performance of students in social studies Junior WAEC in Owerri Education Zone 11 from 2013-2016 the percentages of students with credit passes (A1-C6) in social studies were 50.94%, 36.25%, 27.08%, and 24.26% for each year respectively.

In line with the above report, (Akpochafo,2001 and Filgona, Sababa, Iyasco ,2016) observe that in spite of the immense benefits to be derived from the introduction of Social Studies in the school curriculum, there seems to be poor handling of the subject in the junior secondary schools which may lead to the low achievement of students. Considering the importance of social studies education to secondary school students and in nation-building at large; this ongoing trend if left unchecked may spell doom for the future of social studies in this region and the survival of the Nigerian nation at large.

The teaching of social studies in Nigerian schools and in Owerri Educational Zone2 is not without its challenges. The reasons for poor performance in social studies as identified in the study area could be as a result of the use of the lecture teaching method which is a poor choice of teaching method to be used in teaching social studies, the abstract nature of teaching social studies concepts, lack of qualified teachers, poor infrastructure facilities, overcrowded classroom and non-availability and utilization of instructional materials. One issue that keeps on popping up among the students the researchers interacted with is the issue of teaching methods used by teachers in teaching social studies. The methods used by teachers according to these students were not capable of arousing and sustaining their interest in the subject which

often reflect in their poor performance in external examinations in social studies.

Considering the importance of social studies education to secondary school students and in nation-building at large; this ongoing trend if left unchecked may spell doom for the future of social studies in this region and the survival of the Nigerian nation at large. Confirming the interrelationship between methods used in teaching and students' academic achievement. Nwigwe and Izuagba (2011) asserted that the method used in teaching can stimulate interest and zeal to learn or destroy interest.

Similarly, Ekuri, Egbai, and Ita (2010), opined those social studies teachers have perceived assessment practices' needs in areas of; using the result of assessment to diagnose students' progress, keeping progress report cards, and so on.

Furthermore, Ekuri, Egbai and Ita (2011) asserted that social studies teachers with positive attitudes towards the subject are more knowledgeable in the subject as well as adopt better instructional and assessment practices associated with the subject.

All so, studies have indicated that teachers in Nigerian secondary schools use lecture methods in lesson delivery (Izuagba, 2011 and Ogbu 2018). The lecture method allows a great deal of information to be passed on and is better used in handling large classes. In spite of this advantage, the lecture method does not stimulate students' innovation, critical thinking, inquiry, and scientific attitudes. It encourages students to cram facts that are easily forgotten (Mbakwem, 2005). It could be that appropriate teaching strategy that will make students proficient with the skills for effective social studies learning have not yet been adopted in the teaching of Social Studies in junior secondary schools, this could be the reason for students' poor performance in Social Studies examinations.

There is a recent agitation for a paradigm shift where learning is emphasized and this has given birth to constructivism. Constructivism is a view of learning based on the belief that knowledge is not given by the teacher rather it is constructed by learners through an active and collaborative process. In other words, learners are the builders and creators of meaning and knowledge, and that knowledge is socially constructed. For the constructivist, knowledge is not transmitted from an expert or teacher to a passive recipient, the learner. Rather, it results from a cognitive activity of meaning – construction.

The learner is engaged in the construction of mental representations of the material to which he or she is exposed, and to make sense of it. Knowledge, therefore, results from the activity taken by the learner usually in a problem–solving activity, and from reflections on those actions. The teacher must mediate between the learner's current and emergent understanding. He or she becomes a guide, a coach, and a facilitator, and the emphasis will be on higher-order cognitive skills. Concept mapping teaching strategy stems from the constructivists' approach to learning.

Concepts are the ways by which facts and experiences can be integrated and remain impressed in the mind much longer. According to Chawla and Signgh, 2015 "Helping children learn concepts and teaching them how to learn concepts is a fundamental purpose of schooling. Concept Mapping is a unique way of representing information. There are three features used in creating concept maps: (a) a list of concepts, (b) lines that represent the relational links between these concepts, and (c) labels for these linking relationships.

Well-prepared concept maps facilitate both the teaching and learning process. So, teachers can use these to prepare and organize lessons by sequencing topics within lectures (Novak, 1995). Logical sequencing of topics helps to present instructional materials in a more meaningful way. It is proven that "humans are significantly better able to absorb and retain meaningful learning than rote learning" (Willerman and Mac Harg, 1991). Wang, Cheung, Lee and Kwok (2006) remarked that concept maps have

been widely put to educational uses. They possess a number of appealing features which make them a promising tool for teaching, learning, evaluation, and curriculum planning. It is a pedagogical and metacognitive tool designed to help students. For instance, Marriage---Man---Woman— Husband-----Wife----Father----Mother---Children----Grand Children, etc., there is the possibility that learners may understand it better and their learning could improve.

In addition, Ausubel, 1967 asserted that students learn meaningfully by building knowledge on the basis of what they already know. In other words, new knowledge (or new concepts) acquires its meanings through relationships with existing concepts and meaningful learning occurs when new knowledge is consciously related to relevant concepts which the student already has.

Most researchers on concept mapping ascribe it to having the potential of making learners remember information longer and be able to use it more effectively because the information was moved into long-term memory (Obiageli, 2013, and Udeani & Okafor (2012).

Concept mapping is a powerful but simple way of using diagrams to show information in the same way one thinks. Concept mapping makes it easy to understand, remember, and communicate complex information. Sometimes our brains feel as if they are scrambled because of information overload, overwhelm, or ineffective use of the brain. This leads to:

- inability to solve problems effectively,
- lack of creative thought,
- lack of focus,
- problems organizing one's thoughts,
- poor communication,
- missing out on tasks when planning projects,
- forgetting important information.

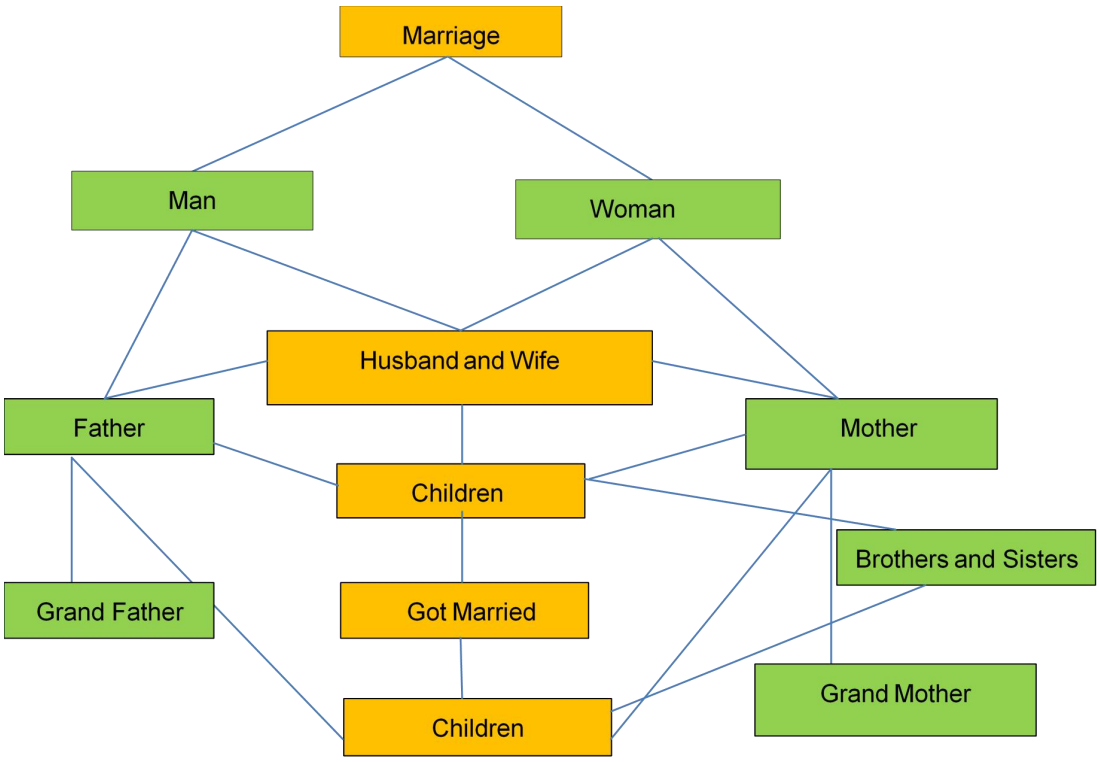

Fig. 1. A concept map showing possible links to the concept of marriage

Studies have shown that students taught by concept mapping strategies performed significantly better than their counterparts taught by the lecture teaching method (Obiageli, 2013). Udeani and Okafor (2012) conducted one hundred and twenty-four biology slow learners with the motive of comparing the effectiveness of the expository and concept mapping instructional strategy of presenting secondary school biology concepts to slow learners. They found that not only students with normal abilities but slow learners also benefitted from Concept Mapping, specifically, female slow learners taught with the Concept Mapping instructional strategy performed significantly better than their male counterparts taught by the same method while results obtained by Cheema and Mirza (2013) showed that male students taught using Concept Mapping performed significantly better than the female students, on the contrary findings of Bello (1997), Bilesanmi-Awoderu (2006), Simon (2007), Okoye and Okechukwu (2010), revealed that there was no gender influence on students' Concept-Mapping ability and their achievement in the subject.

The researcher argues that despite renewed calls for the introduction of more interactive constructivist strategies in teaching like Concept mapping in the teaching and learning process in Nigerian Junior secondary schools, its efficacy in teaching junior secondary school students Social Studies needs to be verified. In adopting Concept mapping

teaching strategy as instructional strategies, other observed factors that can influence the students' participation in the teaching/learning procedure such as academic achievement need to be addressed. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university. It could also be seen as the amount of knowledge/mastery derived from learning (Ogbu, 2018).

The general purpose of the study was to determine the effect of Concept mapping instructional strategy on junior secondary school students' achievement in Social Studies. Specifically, the study intended to determine the effect of Concept mapping instructional strategy on JS2 students' achievement in Social Studies.

Research questions

The following research questions guided the work:

1. What is the difference between Concept mapping strategy and lecture teaching method in junior secondary school two students' post-test achievement scores in Social Studies?

2. What is the difference between the post-test mean of Social Studies scores of male and female junior Secondary two students (on SSAT) taught Social Studies using Concept mapping and Lecture method?

HO1 tested at 0.05 level of significance was formulated for the study;

HO1: There is no significant difference in the Post-test mean achievement scores of junior secondary school two students taught Social Studies using concept mapping and those taught with Lecture methods.

2. Research Method

The study adopted the quasi-experimental design. Specifically, it used a pre-test, post-test, and, non-equivalent control group design. The use of the design was justified by the fact that intact classes that were not equivalent were used.

The population of this study consisted of all the (JSS2) junior secondary schools in Owerri Municipal Council of Imo State, totaling 2,730 students (two thousand, seven hundred and twenty) in the 2017/2018 academic session, (Imo State Universal Basic Education Board,2018).

The sample consists of eighty students, one class from each of the 2 schools purposively selected out of the seventeen (17) government-owned junior secondary schools in Owerri Municipal Council. The classes' population

distribution is 42, and 38. In each school, one intact class was used. The experimental sample (N= 42) while the control sample (N=38).

Social Studies Achievement Test (SSAT) was used for data collection. The (SSAT) is a 20-item multiple test developed by the researcher using EDC junior secondary 2 past question papers and Social Studies textbooks. The content taught in the lessons was derived from JSS2 Social Studies curriculum.

The research instruments along with the purpose of the study, research questions, research hypothesis, and lesson plans were face validated by two experts in the department of measurement and Evaluation and two experts from the Department of Curriculum Studies, School of Education, Michael Okpara University of Agriculture, Umudike. The instrument, Social Studies Achievement Test (SSAT) was subjected to trial testing outside the study area. Kuder Richardson (KR-20) was used to determine the reliability of the Social Studies Achievement Test which was 0.76.

Two instructional approaches were employed for this study. The first approach was the use of Concept mapping teaching strategy while the second was the Lecture method. The two approaches were identical in terms of content coverage, time, and mode of evaluation. The only difference was in instructional activities where the Concept mapping instructional strategy deviated from the Lecture approach by employing constructivist principles and theories during the instructional process.

Concept mapping instructional strategy was used for the experimental (treatment group) while the lecture method was used for the control group. SSAT was administered to the entire group as a pre-test before the treatment commenced and as a post-test at the end of the treatment. The teaching lasted for four weeks. After the completion of the teaching of Social Studies, SSAT was again re-administered (the paper color of the SSAT was changed). The researcher carried out the task of administering the achievement test both at the pretest and posttest.

Social Studies lessons were taught by the researcher to group A based on the lesson format prepared and with the Concept mapping instructional strategy. Group B was also taught by the researcher based on the same Social Studies lesson plans but with the Lecture method. The same JSS two Social Studies scheme of work was used for all the groups. The scores obtained from the pre-test and post-test were analyzed using mean and standard deviation to answer the research questions while analysis of covariance (ANCOVA) was employed for testing the hypothesis.

3. Results

Results obtained from the analyzed data were presented below based on the research questions and hypothesis.

Table 1: Post-test mean scores and Standard deviation scores of Students in Social Studies when taught using Concept mapping strategy and Lecture method.

Teaching Method/Strategy	Number of Students	Types of Test				Mean Gains
		Pre-test		Post-test		
		$\bar{X}$	S.D	$\bar{X}$	S.D	
Concept Map Strategy	42	17.04	5.41	40.31	5.97	22.27
Lecture						

Method	38	16.02	4.10	24.44	4.26	8.42

The data presented in table 1 indicated that students taught Social Studies using the Concept mapping strategy had a mean score of 17.04 and a standard deviation of 5.41 in the pre-test and a mean of 40.31 and a standard deviation of 5.97 in the post-test with a pre-test post-test gain of 22. 27. The data also showed students taught using the Lecture method had a mean score of 16.02 and a standard deviation of 4.10 in the pre-test and a mean score of 24.44 and a standard deviation of 4.20 in the post-test, making a pre-test post-test gain to be 8.42

Table 2: Post-test means achievement score and Standard deviation scores of Students in Social Studies achievement test due to teaching methods and gender.

Teaching method/Strategy	Types of test	Gender						
		Male				Female		
		No. of Student			Mean gain	No. of students		Mean gain
			$\bar{X}$	S.D			$\bar{X}$	S.D	
Concept Map Strategy	Pretest	19	17.46	4.56	22.66	24	17.97	5.44	
	Post-test	19	40.12	4.11		24	40.01	4.87	22.04
Lecture method	Pretest	19	15.67	4.21		24	16.08	4.39	
	Post-test	19	22.87	4.03	7.2	24	21.98	4.03	5.9

The data presented in Table 2 indicated that the male students in the Concept map experimental group had a mean score of 17.46 and a standard deviation of 5.44 in the pre-test while in the post-test, the males scored a mean score of 40.12 and a standard deviation of 4.11 with achievement mean score of 22.66. The result also shows that the female students in the Concept mapping experimental group had a mean score of 17.97 and a standard deviation of 4.03 in the pre-test of the experimental group which is higher than that of male students in the post-test of the experimental group, with achievement mean score of 22.04 which is lower than that of the male students in the post-test score in the Concept mapping experimental group.

The data presented in Table 2 also indicated that male students had a mean score of 15.67 and a standard deviation of 4.21, with an achievement mean score of 7.2 in the pre-test of the control group which was lower than the pre-test of the experimental group, while in the post-test, the male students had a mean score of 22.87 and a standard deviation of 4.03 which was lower than the experimental group. The result also shows that the female students had a mean score of 16.08 and a standard deviation of 4.39 in the pre-test of the control group which is higher than that of the male students score in the pre-test of the control group, while the female students had a mean score of 21.98 and a standard deviation of 4.13 with achievement

gain of 5.03 which is lower than that of the male students in the post-test of the control group.

Table 3: Analysis of covariance (ANCOVA) for Social Studies Test mean achievement scores of students when taught using Concept mapping teaching strategy and lecture teaching method.

Sources of Variation	Type II sum of square	Df.	Mean sum of square	F.	Significance
Correlated model	5952.991a	2	2976.496	132.590	.000
Intercept	3674.011	1	3674.011	163.662	.000
Pre-test	408.541	1	408.541	18.199	.000
Teaching strategy/ method	4886.773	1	4886.773	217.685	.000
Error	1728.559	77	22.449		
Total	86684.000	80			
Corrected total	7681.550				

a. R square = .775 (adjusted R squared = 0.769)

The data in Table 3 shows that the teaching method (Concept mapping and Lecture method) is a significant factor in the mean achievement scores of the students in the Social Studies Achievement Test, this is because the p-value of 0.00 is less than 0.05. This result rejects the null hypotheses which state that there is no significant difference between the mean achievement scores of students in the Social Studies Achievement Test when taught using the Concept mapping and lecture method. Thus, this implies that there was a significant difference between the mean achievement scores of students in the Social Studies Achievement Test when taught using the Concept mapping teaching strategy and Lecture teaching method.

Discussion and Conclusion

The research findings based on the data presented are interpreted and discussed below:

Results from Table 1 showed the effects of teaching methods on students' achievement in Social Studies and that the mean achievement scores of the students in the experimental group were higher than those of the mean achievement scores of students in the control group. This result revealed that the method was a significant factor in students' achievement in Social Studies. Thus, it was confirmed that students taught Social Studies using the Concept

mapping instructional strategy performed better than those taught using the lecture method. The finding of this study seems to support the findings of previous studies (Obiageli 2013; and Udeani & Okafor, 2012) that confirmed that the use of concept mapping teaching strategy leads to students' improved achievement in Biology and Chemistry. This was further confirmed by the result in Table 2, the data revealed that statistically, sex is not a significant factor in the academic achievement of male and female students taught Social Studies with Concept mapping and Lecture method. The finding is inconsistent with Bello, (1997), Simeon, (2007) and Okoye & Okechukwu (2010). They found that gender does not play a significant role in students' academic achievement when taught with a Concept mapping teaching strategy. This may be a result of some of the skills that are incorporated in the Concept mapping strategy like the facilitation of creative thinking through the hierarchical structure that is represented in a good map and the ability to search for and characterize new cross-links. Activating prior knowledge help both genders as logical sequencing of topics helps to present instructional materials in a more meaningful way, and expand ideas beyond the text.

Also, the data in Table 3 shows that the teaching strategy/method (Concept mapping and Lecture method) is a significant factor in the mean achievement scores of the students in the Social Studies Achievement Test. This indicates that we reject the null hypotheses which state that there is no significant difference between the mean achievement scores of students in the Social Studies Achievement Test when taught using the Concept mapping strategy and lecture method. This result is consistent with (Obiageli 2013; and Udeani and Okafor, 2012) earlier argument in Concept map class, that students work together on significant ideas, and this encourages them to connect what they are learning to their prior knowledge and to current issues. Also, to think critically and creatively about learning as it relates to everyday life.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Efforts should be made by curriculum experts to incorporate Concept mapping strategy into teaching in junior secondary schools. There should be a review in the current instructional procedure to accommodate the Concept mapping strategy in the junior secondary teaching syllabus, so as to reduce the poor academic performance of students in Social Studies

2. Teaching with Concept mapping is different from ordinary traditional teaching. As a result of this, junior secondary school teachers should be trained and versed on how best to develop and use a Concept mapping strategy so as to achieve its objective of enhancing achievement.

3. The result of this study underscores the need for Imo State Government through Secondary School Education Management Board (SCMB) to organize workshops for school teachers to acquire and learn more effective teaching methods.

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