EFFECT OF CONSTRUCTIVE SIMULATION TEACHING STRATEGY ON STUDENTS ACHIEVEMENT AND RETENTION IN CHRISTIAN RELIGIOUS STUDIES: A CASE STUDY OF SELECTED JUNIOR SECONDARY SCHOOLS IN OHAUKWU LOCAL GOVERNMENT AREA OF EBONYI STATE

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ABSTRACT

This study investigated the effect of teachers' use of constructive simulation on students' achievement and retention in Christian Religious Studies in selected Junior secondary schools in Ohaukwu Local Government Area of Ebonyi State. The achievement and retention ability of students taught with constructive simulation were compared with that of students taught with conventional lecture method. The study was guided by six research questions, and six hypotheses. A quasi-experimental design, specifically, pretest post-test control group design involving four intact classes were employed. The instrument for students' achievement test in Christian Religious Studies (SATCRS) was developed, validated and used for data collection. The reliability of the instrument was determined using Kudder Richardson formula for internal consistency and Pearson Product Movement Correlation Coefficient formula for stability. The reliability value of the instrument was 0.79 and 0.85 respectively. The data collected were analyzed using mean and standard deviation to answer research questions while the hypotheses were tested using analysis of Covariance (ANCOVA) at 0.05level of significance. The results of the study revealed that constructive simulation had significant effect on students' achievement and retention in Christian Religious Studies. It is recommended that government bodies, stakeholders in education, Nigerian Educational Research and Development Council (NERDC) and National Teachers' Institute (NTI) should organize and sponsor workshops, seminars, conferences or in-service training to train and encourage teachers on the use of constructive simulation as an innovative technique.

INTRODUCTION

Background of the study

Christian Religious Studies (CRS) is expected to produce a morally literate citizenry that can perceive the religious dimension of social responsibilities in the home, the school and the entire society. The much desired sound moral education of our nation can be achieved when students acquire basic education in Christian Religious Studies before leaving school. The knowledge obtained through sound Christian Religious education will lead to improvement in the moral quality of individual and society as a whole. Christian Religious Studies is a necessary subject for tolerance, peace, national unity and development of a nation. It is implied that for any meaningful growth and development to be achieved, Christian Religious Studies must be given adequate attention (Achebe, 2005).

It is not only important as a school subject but should be seen as a bedrock of moral living and very vital part of life itself (Oduma, 2007). It appears that the value of Christian Religious Studies in the lives of individuals and the society at large inspired its inclusion in school curriculum at all the levels of educational system in Nigeria. Hence, the Federal Republic of Nigeria (FRN, 2004) stressed the objectives of teaching and learning CRS in basic education under secondary education. Some of the objectives include inspiring students with a desire for self-improvement, raising individuals who can think for themselves, appreciate dignity of labour, societal values, fostering national unity and live as good citizens. The current CRS of today presents the curriculum in themes, as a living guide to individuals. The themes can lead the students and teachers to discover several Biblical topics at the same time as they relate to societal values (Obinna, Qucoopome & Shyllon, 2000 in Onochie, 2005). This implies that the topics bring together as a whole, and relating to societal values is germane to providing learners at junior secondary school level with functional knowledge to meet the aspirations of the society. If this is to be achieved, CRS must be taught by competent teachers who are knowledgeable enough about the subject as presented in themes. Competent teachers implies teachers that have ability to perform well in teaching to enhance students' learning process. Competence in teaching embraces combination of knowledge, skills and attitude that can be developed through training, and which are adequate for achieving some specific tasks. Some of these tasks for teacher include understanding of learners' development,

learning problems, classroom management, adequate knowledge of subject matter, and use of instructional materials (Olaitan & Agusiobo, 1984 in Okonkwo, 2010). This implies that the competency level of a teacher can be determined by how much the learners have gained from instructional process.

In consequence to produce competent teachers for the basic education, the Federal Republic of Nigeria (FRN, 2004) laid emphasis on the training of quality teachers for effective teaching and learning. The federal and state ministries of education in order to implement this policy on the training of teachers made it imperative that quality teachers should be trained. It is regrettable to note that with the emphasis on the training of quality teachers, the results of students on Christian Religious Studies do not give impression that all is well with the teaching method employed by the teachers.

The reports of the Examination Development Centre (EDC), in charge of Basic Education Certificate Examination in Anambra State stressed the high rate of failure in CRS, for five years (2007-2011) especially in the theme containing the Epistles. The reports attributed the cause of students' poor performance to lack of knowledge of subject matter, non commitment and poor methodology on the part of teachers. Alubaleze (2004) posited that poor method of teaching like the conventional method or lecture method is the root factor to students' poor achievement and retention in CRS. Alubaleze (2004) further explained that lecture method is teacher-centered. Lecture method makes instruction boring and the teacher cannot guarantee carrying the boring students (Nwizu & Nwobu, 2003 in Okeke 2007). The implication is that lecture method makes the teacher active and the learner passive listener in the teaching and learning environment. With the poor performance of students in public examinations coupled with societal vices prevalent in the society, especially among the youths, there is need for instruction to be more effective to enhance students' academic achievement and retention in the subject as well as discipline leading to values that will make individuals live as good citizens.

It is expected that with the emphasis on the training of teachers, the level of instruction would improve which invariably would enhance better academic achievement and retention in the subject. Academic achievement is viewed as attainment in a school subject as symbolized by a score or mark on an achievement test (Okoro in Ogbonna 2007). Ogbonna (2007) further explained that academic achievement depends on various factors which include the teacher's instructional methods, learning environment and the learner. The same factors affect retention of

learning. Retention can be defined as learner's ability to recall facts that have been previously learned. Okeke-Okosisi (2012) referred to retention of learning as learner's ability to transfer information earlier learned or learner's ability to repeat performance, or behaviour earlier acquired, elicited after a period of time. It implies that a learner who repeats an acquired information with less error is said to have retained the learned material. Retention of learning is affected by the method of learning, the degree of reinforcement and learners' capacity to learn. This entails that the teaching method is expected to simulate students to learn and equally have ability to enforce learning retention. The implication is that evaluation of students' learning needs to extend beyond post test for a consideration of individual students in terms of their ability to generalize and transfer learning.

Nevertheless, some factors have been identified to account for students' poor achievement and retention in Christian Religious Studies as gender. Gender difference is a very strong issue in Nigerian culture. Among Nigerians, there is a general belief that males are superior to females in terms of physique, cognition, logical reasoning and even superior in academic reasoning (Anigbogu, 2002 in Okafor, 2006). Some factors have been identified as responsible for the differences in male and female academic achievement and invariably in retention ability. The factors include sex-role stereo-typing, masculine image of inability to withstand stress and female socialization process. Sex-role stereo-typing appears to be the origin of the difference between males and females in science and arts education (Okeke-Okosisi 2013). The stereo-types tend to place female students at a disadvantage relative to male students in science subjects. In academic performance, male students tend to perform better than females in science, while female students tend to perform better than male students in liberal arts and social science subjects (Ilojeme, 2012). However, some studies have shown contradictory in students' academic achievement and retention in science and liberal arts / social science subjects which CRS is one. Ibekwe (2005) observed that there was no statistical significant difference in the academic achievement of male and female students in literature in English. The disparity in male and female students' achievement in Social CRS and Arts subjects has revealed that other factors apart from sex role stereo-typing can affect students' academic achievement and retention than gender.

This implies that various factors contributed to students' poor academic achievement and retention in CRS. Opara (2005) posited that though poor academic performance of students in

different school subjects may be related to lack of students' commitment to their studies, lack of interest, inadequate support from their parents and even the government; all that the teacher commonly use is conventional or lecture method, rather than strategies that provide students' active participation

This entails that the teacher ought to engage in self - evaluation regarding the quality of instruction. The teacher is required to reflect on his/ her methodology and students' learning style in order to device a means of making instructional process learner–centred. Hence, any mismatch between teaching and students' perceptual strength results to teacher's poor performance and students' poor academic achievement (Ejide, 2011). It is likely that CRS teachers neither think about the students' academic performance nor evaluate their method of teaching and learning activities through reflection. Olayode (2012) noted that reflective practice in teaching-learning process has to do with how we teach and learn. It fits in the interpretive view of teaching and learning, a move towards critical thinking of the way we teach and learn. Reflective practice in teaching isa kind of teaching strategy which has to be viewed in terms of what teacher can do for himself / herself and for the students to ascertain productivity in teaching and students' learning. In this extent, reflective practice in teaching is a call to combine theory and practice to maintain and sustain teaching profession. Reflective practice in teaching is characterized by its dynamic process that intends to lead through successive cycles. Neil (2004), Sumerville and Keeling (2004), Mamede and Schmidt (2004) highlighted reflective practice skills as: involving self monitoring and reflection; active concern with aims, consequences, means and technical efficiency; and cyclical process in monitoring, evaluating and revising practice continuously. Other skills are competence in methods of evidence-based classroom inquiry to support the progressive development of higher standard of teaching; attitudes of open-mindedness, responsibility and whole heartedness; teacher judgment informed by evidence-based inquiry and insight from other research; collaboration and dialogue with colleagues; and creatively mediating externally and develop frameworks for teaching and learning. The principles imply that a reflective teacher gathers information from classroom activities analyzes and assesses the information. The teacher identifies, explores procedures and compares with those of others, and goes back to the starting point to refine the activities for improvement. Teachers have significant roles to play in the process of teaching and learning to make it meaningful. They are expected to consider immediate aims and consequences of classroom

practices. They are expected to be aware that classroom work cannot be isolated from the influence of the wider society and therefore have to consider both areas. They are principally expected to plan, make provision and execute. They are demanded to monitor, observe learners and collect data on the learners' intentions, actions and feelings. They are also charged to analyze their evidence critically and evaluate it so that they can share and subject it to judgment and decision- making. It may lead them to revise their classroom policies, plans and provision before starting the process again. On this note, they may draw knowledge from colleagues by associating with them, sharing experiences with colleagues and teacher trainees. This may occur in schools, in seminars or tutor-groups and workshops. Bearing in mind reflective practice principles, teachers seem to be more committed to teaching and learning process (Moon, 2004).

It is asserted that reflective practice in teaching rests on constructivism and meta-cognition (Oduma, 2007). It is based on the fundamental principle about sharing authority. Constructivism and meta-cognition motivate the experiences and activities offered to teachers as they review their practices and attempt to change (Okereke, 2010). Constructivism refers to the learning theory which argues that learners generate knowledge and meaning out of their experiences, while meta-cognition refers to the theory that deals with how people think. It suggests that learners build knowledge upon experiences. It tries to explain people's ability to think about what they are doing and think why they are experiencing it. In teaching and learning process, it is ability to reflect on experiences concerning teaching-learning situations and to learn from them. It requires teachers' ability to determine how a lesson is going on, where the pitfalls are and how to regulate teaching behaviour while teaching. Constructivism and meta-cognition are often associated with pedagogic approaches that promote active learning or learning by doing; and a variety of methods are based on them (Okereke, 2010).

The methods that rest upon constructivism are referred to as constructive-oriented methods. Some of the constructive –orient ed methods include simulations, games, project method, co-operative learning method, concept mapping and the like. The Nigerian Educational Research and Development Council (NERDC, 2008 & 2009) suggested that teaching methods should embrace teaching innovations like constructive–oriented met hods to improve teaching and learning. The council pointed out that constructive-oriented methods foster students' active participation in the learning process. Constructive-oriented methods encourage peer interaction and enhance learning rate than the lecture method (Okereke, 2010). The implication is that the

memory of the classroom activities register easily in students' memory as they interact with their peers. Learning is more meaningful when students are active participants and in the use of constructive-oriented methods, students are said to be active participants (Obiekwe, 2008 & Ogbonna, 2007) Different studies have used constructive-oriented methods in a variety of studies but little is known about its usage in CRS. Okereke (2010) used constructive –oriented method i n teaching Biology, while Okeke-Okosisi (2012) used the method in Agricultural Science. This study considers simulation method which is one of the instructional methods that has its bases in constructivism.

Simulation can be defined as the imitation of some things, state of affairs or processes. It is described as a method of teaching whereby learners are engaged in a world of pretence or imitation (Ndu, 2010). Simulation is a concept in educational process which can be used to show the eventual real effect of action.

The basis of simulation instructional model on constructivist learning theory makes it constructive. Hence, the two concepts, constructive and simulation combine to form the term constructive simulation.

Constructive simulation can be referred to as a process of instruction that spur learners to use experiences to imitate real things, abstracts, state of affairs, characters or processes as closely as possible in producing knowledge. Constructive simulation relies on some guided discovery where the teacher avoids most direct instruction; and attempts to guide the students through questions and activities, to discover, discuss, appreciate and verbalize the new knowledge (Walker, 2008 in Okekeokosisi 2012). It implies that constructive simulation is dependent on learning as a guided discovery.

In a constructive simulation classroom environment, students are encouraged for free expression, collaboration and exchange of ideas with their peers. In constructive simulation classroom, the students engage in problem-solving provided with prompts. Homelo-Silver (2006) supports the notion that in the process of utilizing hints, students strive to transform experiences into information meaningful which can lead them to achieve the desired goal. Jong (2005) noted that constructive- oriented methods (which constructive simulation is one of them) are active pedagogies that are learner-centred. This implies that constructive simulation provides opportunity to students to develop creative thinking and skills as well as more positive attitude towards learning experiences than lecture method. Students are more likely to acquire critical

thinking skills and meta-cognitive learning strategies, such as learning how to interact with peers as opposed by listening to lectures (Hmelo-Silver, 2006). In addition, Homelo-Silver (2006) depicted that constructive oriented- methods should result in positive effects on students' achievement and retention of information. Constructive simulation activities involve carefully structured learning activities whereby students are held responsible for their contribution, participation and learning. Students interact and learn from more skilled peers. It is unlike lecture method where students are rendered mere listeners. Thus, constructive simulation appears to be activity-oriented method that tries to simulate students to action.

STATEMENT OF THE PROBLEM

Since the teaching methods employed in CRS seemed to have denied students active participation in the learning process, the question now becomes to what extent would students perform and retain learned materials when taught CRS using constructive simulation? This gap in knowledge underscores the need to investigate effect of teachers' use of constructive simulation on students' achievement and retention in Christian Religious Studies. Hence, a study of achievement and retention in the subject CRS becomes desirable.

PURPOSE OF STUDY

The main purpose of the study is to determine the effect of constructive simulation teaching strategy on student achievement and retention in Christian religious studies. Other specific objectives of the study include;

1. to determine the difference between constructive simulation teaching strategy and other method of teaching and their effect on the academic achievement and retention in Christian Religious Studies in Ohaukwu Local Government Area.
2. to determine the academic achievement and retention of female Christian religious studies students using the constructive simulation teaching strategy.

3. to determine the difference in academic achievement and retention of male and female Christian religious studies students using constructive simulation teaching strategy and other methods of teaching.
4. to proffer possible solution to the problems.

RESEARCH QUESTIONS

1. What is the difference between constructive simulation teaching strategy and other method of teaching and their effect on the academic achievement and retention in Christian religious studies in Ohaukwu L.G.A?
2. What is the academic achievement and retention of female Christian religious studies students using the constructive simulation teaching strategy?
3. What is the difference in academic achievement and retention of male and female Christian religious studies students using constructive simulation teaching strategy and other methods of teaching?
4. What is the way forward to the above problems?

RESEARCH HYPOTHESIS

H_0: there is no variation in the rate of assimilation and retention among student in Christian religious studies under constructive simulation strategy and other method of teaching

H_1: there is variation in the rate of assimilation and retention among student in Christian religious studies under constructive simulation strategy and other method of teaching.

SIGNIFICANCE OF STUDY

The study on a comparative study of the constructive simulation strategy versus other methods

on students' achievement and retention in Christian religious studies will be of immense benefit in the sense that it would allow the teachers of Christian religious studies to use the method of teaching that is best fit for the teaching of Christian religious studies and which would equally be beneficial to both gender. The study will also enable the employer to employ teachers that are sound and are fit to handle Christian religious studies subjects in school. The study will also enable the students to allow themselves to be taught effectively by the teachers and also enable them to participate in which ever method that is used. Finally, the study will contribute to the body of existing literature and knowledge to this field of study and knowledge to this field of study and basis for further research.

SCOPE OF STUDY

The study on a comparative study of the constructive simulation strategy versus demonstration on student's achievement and retention is limited to Christian religious studies in Ohaukw Local Government Area of Ebonyi State.

LIMITATION OF STUDY

Financial constraint- Insufficient fund tends to impede the efficiency of the researcher in sourcing for the relevant materials, literature or information and in the process of data collection (internet, questionnaire and interview).

Time constraint- The researcher will simultaneously engage in this study with other academic

work. This consequently will cut down on the time devoted for the research work.

RESEARCH METHODOLOGY

This chapter is designed to describe the procedures adopted in this research. The procedures involve the following: quasi- experimental research design, comparison group pretest/post test design population of the study, sample and sampling techniques, instrumentation, validation of the instrument, administration of the instrument and data analysis techniques.

RESEARCH DESIGN

This study employed Quasi- experimental research design. This method is also known as the controlled experimental design, the method is adopted because one cannot know the group between lecture and constructive simulation strategy which is the best method of teaching. The study split the students into two groups; viz group 1 and group 2. One group practised demonstration as a method of learning and the other constructive simulation strategy as a method of learning.

POPULATION OF THE STUDY

The population of the study consists of 2,170 JS3 CRS students of 12 State Government co-educational secondary schools in Ohaukwu Local Government Area.

SAMPLE AND SAMPLING TECHNIQUES

A sample of 174 JS3 students distributed in four intact classes, drawn by both purposive and simple random sampling techniques from four co-educational schools took part in the study.

INSTRUMENTATION

The instrument for this study is the score sheet constructed by the researcher; the sheet contained two groups namely group 1 and group 2 to take down the performance scores of student on the two method of learning which are the lecture method and the constructive simulation strategy method.

VALIDATION OF THE INSTRUMENT

The validation was determined by the expert judgment of the supervisor. The judgment were sought to guarantee that each of the items in the instrument measured what it was supposed to measure. The final draft was adjudged valid by project supervisor.

ADMINISTRATION OF THE INSTRUMENT

The score sheet were given to the various supervisors during this period of learning to take down the scores of students based on performance for the two subjects under consideration using the method of demonstration and the method of constructive simulation strategy.

DATA ANALYSIS TECHNIQUES

The data were be analyzed using SPSS to test for the performance difference of the two groups under the two different methods of learning (demonstration and constructive simulation strategy)

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter is devoted to the presentation, analysis and interpretation of the data gathered in the course of this study. The data are based on the number of copies of the questionnaire completed and returned by the respondents. The data are presented in tables and the analysis is done using t-Test. The paired sample t-test was used in the validation of the hypothesis.

Data presentation

Group 1 (demonstration method)	Group 2 (constructive simulation strategy method)
35	67
23	87
31	78
45	98
54	88
21	78
56	75
45	64
67	66
81	76
23	58
43	79
22	81
45	93
44	89
67	67
56	77
67	84
78	56
71	78
45	67
34	83
32	87
21	89
61	93
57	45
62	34

64	**56**
44	**76**
45	**67**

Source: field study, 2019: scores of students in a test under constructive simulation strategy method and Discussion method

Bio-data of the respondents

TABLE 1 GENDER OF RESPONDENTS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	20	50.0	50.0	50.0
	female	20	50.0	50.0	100.0
	Total	40	100.0	100.0	

Source: field survey, May, 2019.

Table1 above shows the gender distribution of the respondents used for this study.

Out of the total number of 40 respondents, 20respondents which represent 50.0percent of the population are male while 20 which represent 50.0 percent of the population are female.

NOTE: from the table above, you see that the numbers of male and female are the same; this means that there is no consideration for gender difference in the study.

Hypothesis 1

H_0: there is no variation in the rate of assimilation and retention among student in christian religious studies under demonstration and constructive simulation strategy

H_1: there is variation in the rate of assimilation and retention among student in Christian religious studies under demonstration and constructive simulation strategy.

Level of significance: 0.05

Decision Rule

Reject the null hypothesis if the p-value is less that the level of significance, accept the null hypothesis if otherwise.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Group 1 (effectiveness of discussion) - Group 2 (constructive simulation strategy method)	-26.567	26.109	4.767	-36.316	-16.817	-5.573	29	.000

Since the p-value (0.000) is less than the level of significance (0.05), we reject the null hypothesis and accept the alternative hypothesis thereby concluding that there is significant difference (26.567) in the rate of assimilation and retention among student in Christian religious studies under demonstration and constructive simulation strategy.

Hypothesis 2

H_0: the level of achievement and retention in Christian religious studies under demonstration and constructive simulation strategy on student is not gender sensitive

H_1: the level of achievement and retention in Christian religious studies under demonstration and constructive simulation strategy on student is gender sensitive

Level of significance: 0.05

Decision Rule

Reject the null hypothesis if the p-value is less that the level of significance, accept the null hypothesis if otherwise.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	GENDER OF THE RESPONDENTS - Group 1 (effectiveness of discussion)	-46.467	17.322	3.163	-52.935	-39.999	-14.693	29	.000
Pair 2	GENDER OF THE RESPONDENTS - Group 2 (constructive simulation strategy method)	-73.033	14.885	2.718	-78.591	-67.475	-26.875	29	.000

Since the p-value (0.000) is less than the level of significance (0.05), we reject the null hypothesis and accept the alternative hypothesis thereby concluding that the level of achievement and retention in Christian religious studies under demonstration and constructive simulation strategy on student is gender sensitive

SUMMARY, CONCLUSION AND RECOMMENDATION

Conclusion

The study found out that the both method of teaching have significant effect on the academic achievement and the level retention of students in learning of Christian religious studies. Although there is a significant different in the academic achievement of students in the learning of Christian religious studies in terms of gender, and teaching method.

Recommendation

The study recommends that:

- The teaching of science in general and Christian religious studies in particular should be done in such a way that students learn effectively and perform to achieve high.
- The use of constructive simulation strategy method seems to be suitable in achieving this goal.
- The use of demonstration methods of teaching has been found in the study not be appropriate with respect to achievement in the learning of CRS.

- Science teachers should therefore exercise caution and expertise in its use so as to avoid a situation where low achievement is the outcome of instruction

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