# Effect of Analogy Model of Instruction on Students' Achievement in Christian Religious Studies in Udi Education Zone of Enugu State, Nigeria

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## ABSTRACT

This study examined the effect of analogy model of instruction on students' achievement in Christian Religious Studies in Udi Education Zone, Enugu State, Nigeria. The design of the study was quasi-experimental, pre-test, post-test, 2 x 1factorial design. Three research questions and three null hypotheses guided the study. Four co-educational secondary schools were selected for the study using stratified random sampling technique. A sample of 160 SS 1 students from four intact classes was selected from the four co-educational secondary schools in Udi Education Zone of Enugu State, and were assigned to experimental group and control group, respectively. Christian Religious Studies Achievement Test (CRSAT) was used for data collection. A reliability co-efficient of 0.91 was obtained for the CRSAT using Kuder-Richardson's formula 20 (K-R 20). Mean and Standard Deviation were used to answer the research questions while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. Findings of the study indicated that: students taught CRS using analogy model of instruction performed better than their counterparts taught using lecture method; there is significant difference in the mean achievement scores of male and female students taught CRS using analogy model of Instruction in favour of the male students; and the interaction effect of model and gender on students' achievement in CRS is not statistically significant. It was recommended that CRS teachers should employ analogy model of instruction for instructional delivery.

**Key words**: Achievement, Analogy model of instruction, Christian Religious Studies, Gender, Lecture method.

## INTRODUCTION

Christian Religious Studies is one of the subjects taught in secondary schools in Nigeria. The teaching of Christian Religious Studies (CRS) dates back to the 19th century with the pioneers of education in Nigeria (Njoku & Njoku, 2015). It is one of the major subjects bequeathed to Nigerian educational system at the establishment of schools by the early missionaries. The subject was known as Bible Knowledge at that time but now Christian Religious Studies. CRS is a subject that bases its teaching on the life and teachings of Jesus Christ. As a teaching subject, it is not only geared towards converting people to Christianity, but it is necessary for value formation, orientation and reorientation as well as spiritual upliftment of the student. Igbaji (2017) observed that CRS is a subject which aims at developing and fostering in the lives of the

students Christian attitudes and values such as respect to life, obedience to constituted authority, self-responsibility; and selfless service to God and humanity. To the author, CRS is seen as an academic discipline that is designed to provide the learner with moral and spiritual transformation. Therefore, an appraisal of CRS curriculum contents showed that the subject has the potential required to build one's moral character for self-actualization (Igbaji, 2017).

The major aims of inclusion of CRS in the Nigerian education curriculum is to raise a generation of people who can think for themselves, respect the views and feelings of other people, appreciate dignity of labour and those moral values specified in the broader national aims as good citizens. In line with the current efforts to instill discipline and enhance empowerment in the Nigerian youths, the CRS Curriculum is expected not only to impact the content of the Bible but also moral lessons and instructions (Federal Republic of Nigeria, [FRN], 2013). Religion provides the moral foundation of every society. At the secondary school level the subject is meant to prepare learners for useful living within the society through inculcation of Christian attitudes and values, and to prepare learners for higher education (FRN, 2013).To this effect, CRS curriculum is designed to achieve many goals in the lives of the students ranging from teaching the students about God to the teaching of moral values, tolerance and peaceful co-existence, among other things, which are geared towards shaping human behaviour. These values are embedded in the stories and events recorded in the Bible (drawn from the life of Christians and the Old Testament Patriarchs and Prophets).

CRS as a subject taught in secondary schools in Nigeria takes a central position in ensuring moral and spiritual wellbeing of individuals in the society. However, the high level of moral decadence and insurgencies in Nigeria would seem to suggest that there is poor teaching of Christian Religious Studies (CRS) in the secondary school system. Njoku(as cited in Isukpa, 2014) adduced that students' poor achievement in CRS could be attributed to teachers' instructional delivery system. Supporting this view, the WAEC Chief Examiner's report of 2015 emphasized that the major reason for students' poor results in CRS was because of methods of instruction adopted by the teachers. Abdulhamid (2010) rightly observed that lessons delivered through expository method, based on teachers' exclusive control will not gain effectiveness. The author added that the use of lecture method set the teacher as the only active participant in the class while the students are complete observers or admirers throughout the lesson. But, the theory of constructivism sees learning as active participation in various activities within and outside the classroom (Isukpa, 2014). Inability of teachers to use methods that encourage students' active participation could lead students to laziness and rote memorization which could kill their interest and attitudes towards the learning of CRS. The resultant effect would be low achievement and poor retention of knowledge in CRS. Teaching is, therefore, currently moving towards the 4 Cs, namely, critical thinking, collaboration, communication and creativity. Thus, employing good and innovative methods of teaching like Analogy Model of Instruction could improve students' achievement in CRS in senior secondary schools. This is because it could enhance students' participation in the classroom activities and offer them the opportunity to think for themselves, improve their creativity and help them achieve highly in CRS.

Achievement is the ability to attain the stated objectives of a programme of education. It is the degree or level of success attained at the end of an academic endeavour (Offorma, 2016). The yardstick for measuring one's level of academic achievement is by assessing the academic performance of the individual through test and observation. Omebe (as cited in Isukpa, 2014) further explained that academic achievement has three dimensions, namely, high, average and low academic achievement. Academic achievement helps in proper evaluation of students and identification of their strengths and weaknesses. However, in the context of this study, academic achievement is the relative positive change in behaviour of students as a result of effective teaching and learning of CRS in secondary schools.

The issue of high and low academic achievement of secondary school students in CRS has been attributed to

some factors such as good and innovative teaching method, the school environment, peer influence, the family dynamics, and so on (Ekeh & Njoku, 2013). The underachievement in the results of students was attributed to poor methods of teaching used by teachers in teaching CRS and some other factors that inhibit students from learning CRS very effectively and creatively (WEAC, 2015). But, of all these factors, the researchers feel that Analogy Model of Instruction could play key role in relation to students' academic achievement in CRS. The trend of academic achievement in CRS among secondary school students in recent years has not been encouraging. It is in recognition of this that the Chief Examiner's report of the West African Examinations Council (WAEC) in 2015 revealed that the percentage pass in the subject at credit level in the Senior School Certificate Examination (SSCE) has been following a downward trend. The continuous poor achievement of secondary school students in CRS over the decades could be attributed to poor methods of teaching. In fact, the Chief Examiner's report in 2015 emphasized that the major reason for students' poor results in CRS was because of methods of instruction adopted by the teachers. Thus, employing good and innovative methods of teaching could improve students' achievement in CRS in senior secondary schools. It may be relevant to mention that low achievement by students in senior secondary school CRS may not be properly addressed if a better method of teaching CRS is not devised. The researcher, therefore, wants to investigate whether analogy model of instruction will provide solution to poor achievement in CRS in secondary schools.

Analogy is a comparison between two things that are similar in some way, often used to help explain something or make it easier to understand. In this way, it is similar to simile and metaphor. We use analogies all the time informally. In conversation, when we compare one situation to another, we are using an analogy. Beyond the conversational analogy, there are formal academic analogies. Academic analogies are useful for teaching and learning because they require students to analyze a thing (or things), and then transfer that analysis to another thing (Heick, 2014). This kind of transfer requires at least some kind of conceptual grasp or understanding. Analogy Model of Instruction has been in use in advanced countries but new in Nigeria. However, there is scarcity of research work in Nigeria conducted on the effect of analogy model of instruction on students' achievement in Christian Religious Studies. The adoption of the model by CRS teachers in Nigeria will rely entirely on the degree to which this model could prove its competence in ensuring effective CRS achievement of secondary school students.

Students' achievement especially at secondary school level is not only a pointer to the effectiveness or otherwise of schools but a major determinant of the future of the youth in particular and nature in general. The medium through which the attainment of individual and the nation's educational goals can be achieved is learning. Learning outcomes have become phenomenon of interest to all and this account for the reason why scholars have been working hard to unravel factors that militate against good academic achievement. One of the discovered factors that could influence academic achievement is students' gender. So, there is need to discover whether gender will exert any influence onsenior secondary school Class One (SS 1) students' achievement in CRS when analogy model of instruction is used in teaching the subject.

At the onset of an activity, students differ in learning as a function of their prior experiences, personal qualities and social support. Personal qualities deal with gender differences. Gender issue has become a major talk in today's educational circle. The trend of gender discrimination in education seems to be changing in the recent past because such is no more obvious in Nigerian educational system. Gender is one of the personal variables that have been related to differences found in motivational functioning and academic achievement. Gender is regarded as a social attribute designated to an individual as male or female. It is a social construct that deals with capacities and attributes assigned by the culture of the people (Offorma, 2016). These assigned capacities and responsibilities, according to Offorma are dependent on the sex of the individual. Gender role is a set of expectations that prescribes how females or males should think, act, and feel. The concept of gender-role classification involves a personality-trait-like categorization of a person (Suneetha & Mayuri, 2010). The importance of considering gender in this context is nowhere more

apparent than when examining what is culturally prescribed behaviour for males and females in different countries around the world.

Gender issues have been linked with academic achievement or performance of students in academic tasks in several studies. Some studies revealed that male students performed better than the females in arts subjects (Okonkwo, 2015) while others revealed that female students are better off than males (Agbaje & Alake, 2014). Asogwa and Echemazu (2011) found that the effect of gender on students' academic achievement is statistically significant. Gender is a very important variable in this study because personal orientation and thinking style of male and female students could play vital role in their achievement in school. In this study, gender refers to different learning abilities exhibited by male and female students and how it affects their achievement in CRS in secondary schools in Udi Education Zone of Enugu State, Nigeria. Effort was intensified in the study to examine whether differences in students' gender could determine their achievement in Christian Religious Studies in secondary schoolsin Udi Education Zone of Enugu Zone of Enugu State, Nigeria, when taught with Analogy model of instruction.

# STATEMENT OF THE PROBLEM

Despite the importance of Christian Religious Studies as articulated in the background to this study, the persistent poor achievement of students in the subject as revealed by the WAEC Chief Examiners' reports calls for concern especially for teachers of CRS in Nigeria. This worrisome scenario has been to a large extent blamed on poor and ineffective instructional models such as Expository Model of Instruction (Lecture Method), adopted by CRS teachers which is teacher-centred, and does not address the difficulties that students experience during the course of learning some concepts or topics in CRS. This could also lead to degeneration of already existing moral decadency among the youth today and in future if poor teaching of CRS continues unaddressed.

Consequently, there is a felt need for a paradigm shift to improve on the teaching and learning of CRS by exploring the use of some innovative learner-centred model of instruction, since it is believed that meaningful learning may be as a result of active participation by students. Such models of instruction could enable students retain more knowledge so as to achieve better result in CRS. This calls for the trial of another teaching/learning method such as Analogy Model of Instruction (ANOMI). Hence, the study was set to find an answer to the main question: What is the effect of Analogy Model of Instruction (ANOMI) on students' achievement in Christian Religious Studies? Gender is also studied as a moderating variable which can influence students' achievement when analogy model of instruction is used in teaching CRS in secondary schools in Udi Education Zone of Enugu State, Nigeria.

**Purpose of the Study**

The general purpose of the study was to determine the effect Analogy Model of Instruction on students' achievement in CRS in Secondary Schools in Udi Education Zone of Enugu State. Specifically, the study aimed at determining the:

(1) mean achievement scores of SS 1 students taught CRS using analogy model of instruction and those taught CRS using lecture method.

(2) effect of gender on the mean achievement scores of SS 1 students taught CRS using analogy model of instruction.

(3) interaction effect of model and gender on SS 1 students' achievement in CRS.

**Research Questions**

The following research questions guided the study:

(1) What are the mean achievement scores of students taught CRS using analogy model of instruction and those taught using lecture method?

(2) What are the mean achievement scores of male and female students taught CRS using analogy model of instruction?

(3) What is the interaction effect of model and gender on SS 1 students' achievement in CRS?

**Hypothesis**

The following null hypotheses (Ho) were formulated to guide the study and were tested at 0.05 level of significance:

**Ho1:** There is no significant difference in the mean achievement scores of SS 1 students taught CRS using analogy model of instruction and those taught using lecture method.

**Ho2:** There is no significant difference in the mean achievement scores of male and female students taught CRS using analogy model of instruction.

**Ho3:** There is no significant interaction effect of model and gender on SS 1 students' achievement in CRS.

# LITERATURE REVIEW

Most times teaching in the secondary schools utilize verbal techniques where the teacher does most of the talking,leaving the student to play passive rules in the class.The issue of high and low academic achievement of secondary school students in CRS has been attributed to some factors. One of such factors, according to Ekeh and Njoku (2013) is a teaching method which could make learning an active process, where the learner is totally immersed in learning activities which interest and appeal to him/her. Students therefore approach the new concepts to be learnt with a spirit of inquiry, competition and interest, instead of simple memorization of the concepts. This is in agreement with the views of Ugwu (2010), Jiya (2011), and Ugur, Dilber, Senpolat and Duzgun (2012) whose separate studies found that teaching with analogy model of instruction improves students' achievement in various subjects in secondary schools.

Research reports are not explicit on the effect of gender on achievement. Asogwa and Nwangwu (2010) found that there is no significant difference in the mean achievement scores of male and female students taught using the same teaching method. This view was supported by Ekwe (2013), Okonkwo (2014) and Okonkwo (2015). However, Asogwa and Echemazu (2011) found that there is significant difference in the mean achievement scores of male and female students taught using the same teaching method in various subjects. This was in line with the separate studies by Akabogu and Ajiwoju (2015), and Okoro and Ekpo (2016). Though there are conflicting research reports as they are, it is necessary to note that none of the reported studies used analogy model of instruction; hence the necessity of this study.

# METHODS

The study employed a quasi-experimental design. Quasi-experimental design was employed because intact classes were used and there was no randomization of subjects to treatment and control groups. The specific

design is non-equivalent control group or pre-test post-test 2 x 1 factorial design. In effect, the experimental group was exposed to analogy model of instruction while the control group was exposed to lecture method.

The population of the study comprised 2,340 male and female SS 1 students in all the 54 government-owned secondary schools in Udi Education Zone. Co-educational secondary schools were used for the study. This is because the study treated gender as a variable. The sample size for the study was 160 SS 1 students (71 males and 89 females) in four intact classes from four co-educational secondary schools that were sampled from the area of the study. The four schools were selected from the co-educational secondary schools in the two Local Government Areas that make up Udi Education Zone using stratified random sampling technique (two schools from each of the two Local Government Areas). From the four schools selected, simple random sampling technique (balloting) was used to select four intact classes from SS 1 that formed the experimental and control groups. For analogy model of instruction (ANOMI) group, a total of 78 out of 160 SS 1 students were used (36 males and 42 females) while the lecture method group consisted of 82 out of 160 SS 1 students (35 males and 47 females) all together.

The instrument that was used for data collection was Christian Religious Studies Achievement  Test (CRSAT) developed by the researcher. The instrument was in two sections. Section A covered students' personal data while Section B contained the CRSAT. The CRSAT contained 30 items made up of multiple choice questions/items with four responses/options A – D, divided into the four content areas. The multiple choice test was developed from the unit of the senior secondary 1 (SS 1) CRS national curriculum.

A pilot test was conducted using the CRSAT on 20 students in another area which is not part of the area of the study. The reliability of the instrument was determined by subjecting the students' responses to Kudder-Richardson (KR-20) formula to determine the internal consistency. This is because the items were scored dichotomously (that is, right or wrong). The students' responses were analyzed which yielded a reliability index of 0.91.

To accomplish the purpose of the study, the following procedure was followed: Before the treatment, the subjects were given a pre-test (pre-CRSAT). The test was administered by regular CRS teachers in the sampled schools who have undergone a week training organized by the researcher in an agreed venue. The teachers were taught the rules of the experiment and how to teach with analogy model of instruction lesson plan. The training was necessary to get the teachers acquainted with the innovative teaching  method (Analogy Model of Instruction), which was not familiar to them. It also helped to establish a common instructional standard among the CRS teachers. The scripts were marked by the researcher. The pre-test was used to:

- Determine the students' prior knowledge of the materials they would learn later,
- Determine the comparability of the two groups (experimental and control) with respect to their achievement in the pre-test scores.

After the pre-test, the experiment commenced. The experiment lasted for four weeks with one lesson period for each week. The normal school periods were used. The classes were taught by the regular CRS teachers while the researcher provided the rules, instructions and materials for the analogy model of instruction activities. The main treatment for the study wasthe teaching of the Unit, "Jesus' Teachings about Himself" to the senior secondary 1 (SS 1) students, using the two teaching methods [Analogy Model of Instruction and Expository Model (Lecture Method)]. The experimental group was taught using analogy model of instruction with the lesson plan prepared for the method while the control group was taught using the expository model (lecture method). After the treatment, the researcher gave a period of one week before the post-CRSAT was administered to the subjects (both the control and experimental groups). The scripts were collected, marked by the researcher and the students' scores were recorded. The test items in the pre-test and post-test were scored one mark each. The maximum mark was thirty marks (30) while the lowest mark was

zero (0). The data were analyzed based on the scores.

The researcher used mean and standard deviation to analyze the data obtained and provide answers to the research questions. Analysis of Covariance (ANCOVA) was used to test the hypotheses formulated for the study at 0.05 level of significance. ANCOVA was used to eliminate the error of non-equivalence due to non-randomization of the research subjects and to correct the error of initial differences in ability levels among the research subjects. In non-equivalent design, the problem of male students greater than female students or female students greater than male students in each intact class is treated. The pre-test was used as covariate.

## RESULTS

**Research Question 1:** What is the mean achievement score of students taught CRS using Analogy Model of Instruction and those taught using lecture method?

Table 1: Mean and Standard Deviation of achievement scores of students taught CRS using analogy model of instruction and those taught using Lecture Method

| Groups | n | Pre-CRSAT | | Post-CRSAT | | Gai Score |
|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | |
| Experimental Group | 78 | 13.86 | 4.49 | 22.95 | 4.08 | 9.09 |
| Control Group | 82 | 13.61 | 4.68 | 18.66 | 4.32 | 5.05 |
| Total | 160 | | | | | |

Table 1 shows that the experimental group obtained a mean achievement score of (M = 13.86, SD = 4.49) in the pre-CRSAT and a mean achievement score of (M = 22.95, SD = 4.08) in the post-CRSAT with a gain score of 9.09. The table also indicates that the control group obtained a mean achievement score of (M = 13.61, SD = 4.68) in the pre-CRSAT and a mean achievement score of (M = 18.66, SD = 4.32) in the post-CRSAT with a gain score of 5.05. This indicates that experimental group achieved higher than the control group after instructional treatment. It also implies that the instructional treatment with Analogy model of instruction proved very effective in the teaching CRS.

**Research Question 2:** What are the mean achievement scores of male and female students taught CRS using Analogy Model of Instruction?

Table 2: Mean and standard deviation achievement scores of male and female students taught CRS using Analogy Model of Instruction

| Model | Gender | n | Mean | SD | Mean Diff. |
|---|---|---|---|---|---|
| ANOMI | Male | 36 | 23.06 | 4.45 | |
| | Female | 42 | 22.86 | 3.79 | 0.20 |
| | **Total** | 78 | | | |

Table 2 indicates that post-CRSAT mean achievement score for male students in experimental group is (M = 23.06, SD = 4.45) and that of female students in experimental group is (M = 22.86, SD = 3.79), with mean difference of 0.20. The result above indicates that after the instructional treatment, male students achieved slightly higher than their female counterparts in the experimental group. This means that Analogy Model of Instruction favoured the male students than their female counterparts.

**Research Question 3:** What is the interaction effect of Model of Instruction and gender on students' mean

achievement scores in CRS?

Table 3: Interaction effects of model and gender on students' mean achievement scores

| Experimental Group Control Group | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Models | Gender | n | Mean | SD | Mean Diff. | n | Mean | SD | Mean Diff. |
| Pre-CRSAT | Male | 36 | 15.08 | 4.96 | 7.98 | 35 | 14.94 | 4.56 | 4.03 |
| Post-CRSAT | Male | 36 | 23.06 | 4.45 | | 35 | 18.97 | 4.79 | |
| Pre-CRSAT | Female | 42 | 12.81 | 3.78 | 10.05 | 47 | 12.62 | 4.56 | 5.80 |
| Post-CRSAT | Female | 42 | 22.86 | 3.79 | | 47 | 18.42 | 3.98 | |
| Total | | 78 | | | | 82 | | | |

Table 3 shows that pre-CRSAT mean achievement score of male students in the experimental group is (M = 15.08, SD = 4.96) and that of female students in the same group is (M = 12.81, SD = 3.78). For male students in the control group, pre-CRSAT mean achievement score is (M = 14.94, SD = 4.56) and that of female students in the same group is (M = 12.62, SD = 4.56). It could be seen that male and female students in both groups exist almost in the same achievement baseline before instructional treatment. Also, the post-CRSAT mean achievement score of male students in the experimental group is (M = 23.06, SD = 4.45), whereas female students in the same group obtained mean achievement score of (M = 22.86, SD = 3.79). Male students in the control group obtained the mean achievement score of (M = 18.97, SD = 4.79), whereas female students in the same group obtained the mean achievement score of (M = 18.42, SD = 3.98). The implications of the result are that mean differences exist between female students in experimental and control groups and same exist between male students in both groups. This indicates that there is interaction effect between instructional treatment and gender; showing that Analogy Model of Instruction and gender together brings about academic achievement.

**Hypothesis 1:** There is no significant difference between the mean achievement scores of students taught CRS using analogy model of instruction and those students taught using lecture method.

Table 4: ANCOVA of Students' Achievement Scores by Models

| **Tests of Between-Subjects Effects** | | | | | | |
|---|---|---|---|---|---|---|
| Dependent Variable: Post-CRSAT | | | | | | |
| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
| Corrected Model | 2152.495[a] | 4 | 538.124 | 64.824 | .000 | .626 |
| Intercept | 1881.209 | 1 | 1881.209 | 226.617 | .000 | .594 |
| Pre-CRSAT | 1507.153 | 1 | 1507.153 | 181.557 | .000 | .539 |
| Models | 593.180 | 1 | 593.180 | 71.456 | .000 | .316 |
| Gender | 67.141 | 1 | 67.141 | 8.088 | .005 | .050 |
| Models * Gender | .050 | 1 | .050 | .006 | .938 | .000 |
| Error | 1286.699 | 155 | 8.301 | | | |
| Total | 73287.000 | 160 | | | | |
| Corrected Total | 3439.194 | 159 | | | | |
| a. R Squared = .626 (Adjusted R Squared = .616) | | | | | | |

Table 4 indicates that the F value by Models is $F(1,155) = 71.456$, $p = .000 < .05$. This means that the F

value is significant at 0.05. Therefore, the null hypothesis which stated that there is no significant difference between the mean achievement scores of students taught CRS using Analogy Model of Instruction and those taught using lecture method is not accepted. This means that there is a significant difference in the mean achievement scores of students taught CRS using Analogy Model of Instruction and those taught using Lecture Method in favour of the group taught CRS using Analogy Model of Instruction.

**Hypothesis 2:** There is no significant difference in the mean achievement scores of male and female students taught CRS.

Table 5: ANCOVA of students' mean achievement by models and gender

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 2847.797[a] | 8 | 355.975 | 78.562 | .000 |
| Intercept | 1715.488 | 1 | 1715.488 | 378.599 | .000 |
| Pre-CRSAT | 678.102 | 1 | 678.102 | 149.653 | .000 |
| Models | 136.014 | 1 | 136.014 | 30.017 | .000 |
| Gender | 27.473 | 1 | 27.473 | 6.063 | .015 |
| Retention | 335.029 | 1 | 335.029 | 73.939 | .000 |
| Models * Gender | 1.640 | 1 | 1.640 | .362 | .548 |
| Models * Retention | 25.618 | 1 | 25.618 | 5.654 | .019 |
| Gender * Retention | 6.398 | 1 | 6.398 | 1.412 | .237 |
| Models * Gender * Retention | 8.238 | 1 | 8.238 | 1.818 | .180 |
| Error | 684.203 | 151 | 4.531 | | |
| Total | 72422.000 | 160 | | | |
| Corrected Total | 3532.000 | 159 | | | |

Table 5 also shows that the F value by Gender is $F(1,151) = 6.063$, $p = .015 < .05$. This means that the F value is significant at 0.05. Therefore, there is significant difference in the mean achievement scores of male and female students in the experimental group after instructional treatment. This implies that the null hypothesis which stated that there is no significant difference in the mean achievement scores of male and female students taught CRS using Analogy model of instruction is not accepted. In other words, there is significant difference in the mean achievement scores of male and female students taught CRS using Analogy model of instruction.

**Hypothesis 3:** There is no significant interaction effect of model and gender on SS 1 students' achievement in CRS.

Table 5 also shows that the F value by Models*Gender is $F(1,151) = .362$, $p = .548 > .05$. This implies that F value is not significant at 0.05. Therefore, there is no significant interaction effect of Models and gender on students' achievement in CRS. This means that the null hypothesis which stated that the interaction effect of Models and gender on students' achievement in CRS is not statistically significant is not rejected.

## DISCUSSION

The finding of research question 1 on models of instruction and students' achievement in CRS revealed that the students taught CRS using Analogy Model of Instruction achieved higher than those taught using Lecture method after instructional treatment. The result of hypothesis 1 also indicated that there is significant difference in the mean achievement scores of students taught CRS using Analogy Model of

Instruction and those taught using lecture method. This implies that the method for presenting CRS contents to the learner has a lot to do with students' achievement in CRS in secondary schools. The issue of high and low academic achievement of secondary school students in CRS has been attributed to some factors. One of such factors, according to Ekeh and Njoku (2013) is a teaching method which could make learning an active process, where the learner is totally immersed in learning activities which interest and appeal to him/her. Students therefore approach the new concepts to be learnt with a spirit of inquiry, competition and interest, instead of simple memorization of the concepts. This finding is in agreement with the findings of Ugwu (2010), Jiya (2011), and Ugur, et al.(2012) whose separate studies found that teaching with Analogy Model of Instruction improves students' achievement in various subjects in secondary schools.

The finding in research question 2 on models of instruction based on gender and students' achievement in CRS showed that Analogy Model of Instruction favoured the male students more than the female students. The finding of hypothesis 2 indicated that there is significant difference in the mean achievement scores of male and female students taught CRS in favour of the male students. This means that gender is significant on students' achievement in CRS. The finding contradicts the findings in separate studies by Asogwa and Nwangwu (2010), Ekwe (2013), Okonkwo (2014) and Okonkwo (2015) which indicated no significant difference in the mean achievement scores of male and female students taught using the same teaching method. However, the finding was in line with the findings of Asogwa and Echemazu (2011), Akabogu and Ajiwoju (2015), and Okoro and Ekpo (2016) which indicated that there is significant difference in the mean achievement scores of male and female students taught using the same teaching method.

The finding of hypothesis 3 on interaction effect of Models and gender on students' achievement showed that the interaction effect of Models and gender on students' achievement is not statistically significant. This implies that no particular model of instruction was influenced by gender to bring about the academic achievement of the students in CRS. This is in line with the null hypothesis which stated that the interaction effect of Models of Instruction and gender on students' mean achievement scores in CRS is not statistically significant. The implication of this is that Analogy Model of Instruction and Expository Model of Instruction benefited both gender equally. It also means that the achievement of both male and female students in either the experimental group or control group was not influenced by gender. This finding supported the findings of Asogwa and Echemazu (2011), Akabogu and Ajiwoju (2015), and Okoro and Ekpo (2016) which reported no significant interaction effect of teaching methods and gender on students' achievement.

## CONCLUSION

Based upon the findings of this study, it was concluded that analogy model of instruction proved a better teaching method than lecture method in teaching CRS in secondary schools. Gender had significant effect on students'academic achievement in CRS using analogy model of instruction. This implies that there is distinguishing cognitive skill achievement of students in respect of gender. The mean achievement score of male students was found to be slightly higher than that of their female counterparts. Analogy model of instruction was therefore found to be gender sensitive. The use of analogy model of instruction has,therefore, proved to be a very efficient way to enhance achievement in CRS. However, more research needs to be carried out, and the model of instruction varied in ways that both male and female students receive the maximum benefit that the model can offer.

## RECOMMENDATIONS

In line with the findings of the study, the researcher made the following recommendations:

1. Teachers should employ analogy model of instruction for teaching CRS in secondary schools for

better achievement in the subject.

2. Curriculum planners should incorporate and emphasize on the use of analogy model of instruction for teaching CRS in secondary schools.

3. Teachers of CRS should endeavour to note that gender does not account for students' achievement rather the method used by teachers in teaching a particular subject. Therefore, teachers should often change their method of teaching in order to enhance students' achievement in CRS in Nigerian secondary schools.

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