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Enhancing Qualitative Health Education Achievement Among Secondary School Students in Anambra State Through Cooperative Learning Method

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Abstract: Quality teaching and learning of Health Education depends partly on use of a teaching method whose activities target most learning senses. This study sought to examine how the co-operative learning method (CL) affects students' achievement In Health education. The study was guided by four null hypotheses. Using a non-equivalent control group design with 160 randomly selected students, the study found that CL method facilitated students' Health Education Achievement more than regular methods. Gender did not affect achievement. Since CL method benefited students irrespective of gender, education authorities should encourage Health Education teachers to use it and teacher educators to make it part of the teacher-training curriculum.

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INTRODUCTION

Enhancing qualitative improvements in students' academic achievements in health education is an important concern for several reasons, two of which centre on the expenditures of public funds on education and the beneficial effects that health education has on the well being of both individual students and society. According to Imogie (1994) Health Education is a process by which individuals, or group of people acquire knowledge, attitude and behaviour that can assist in the promotion of health by taking useful decisions for personal, family and community problems. Ogbalu (2000) stated that Health Education is any combination of learning experiences designed to facilitate voluntary adaptations of behaviour conducive to health. It provides a systematic programme for the development in the field of individual and community health. It is a school subject through which the society tries to inculcate in the learners the knowledge, skills, attitudes and behaviours that could make them understand, adopt and sustain health practices. It is also a field of study that deals with how man can cope with his health and the best method to use in solving his health related problems.

Over the past few years, studies have shown that all is not well with the teaching and learning of health education in secondary schools in Anambra State. For instance, reports from the Anambra State Education Commission (2007) stated that secondary school students in Anambra State: have persistently scored below an average of 60% in Health Education at the Junior Secondary Certificate Examinations (JSC) for the past three years. There is also serious lack of motivation and interest to learn health education as only few students chose the subject at the senior secondary school level (Ogbalu, 2000). The Forum for African Women Educationists (FAWE, 1999) noted that Boys are seen as superior to girls in science subjects including health education. Some teachers assumed, for instance, that girls could not answer certain questions or perform certain tasks. They made remarks that indicated their biased beliefs or feelings that girls were unintelligent and lazy while using positive reinforcement more on boys than on girls. Hence, there is gender disparity in science achievement (Longbap & Nok, 2008). Akinbobola (2006) opined that the methods and materials that teachers and learners use during classroom instruction are not ideally suited to arouse and sustain students' interest and achievement. Imogie (1994) noted that health education science is naturally an interesting subject, but that factors which centre mostly on the instructional technique is responsible for learners' apparent lack of interest and poor achievement in the subject. To improve students' academic achievement, teachers are being urged to use cooperative teaching methods in teaching.

Cooperative learning is a comprehensive approach to teaching that derives from a theory of education and encompasses key assumptions about what students should learn and how they learn (Duke, 1990). It is a method in which learners interact with one another through communication and co-operative effort. The teacher in this method acts as an organiser and a facilitator of learning (Slavin 1990). Lessons in the cooperative learning strategy are arranged so that each student, ranging from the fastest to the

slowest learner, has a contribution to make (Waihenya, 2000; Sogomo, 2001). Unlike the traditional teaching methods in which teachers explain all the information that students must learn, cooperative learning helps students to take responsibility for their learning, emphasizes high-level thinking, focuses on intrinsic rather than extrinsic motivation, and helps the students remember important information (Modumogu, 2005).

Because the students, in this approach, tutor one another, they are likely to acquire greater mastery of the material than in the common individual study with recitation pattern. Co-operative learning also allows students of mixed ability levels to work together and learn from one another (Akinbobola, 2006). Furthermore, the shared responsibility and interaction are likely to generate better inter-group relations, individual accountability, group processing and result in better self-image for students with histories of poor achievement (Ogbuanya & Fdkorede, 2008). Positive interdependence between male and female students is critical to successful application of the CL teaching method. It benefits both the weak and bright students because group memberships and interpersonal interaction are not, in themselves, sufficient to produce higher achievement and productivity (FAWE, 1999). Given the persistent low achievement of health education students in Antmibra State, it \-s crucial to empirically determine whether CL would lead to qualitative improvements in health education more than the regular methods that health education teachers use. Hence this study,

Statement of the Problem

Persistent low academic achievement of students suggests that effective instructional strategies are not being used to motivate learners and boost their academic achievement. Poor academic achievements in health education are capable of hindering future life careers and may be a major reason why \o\ enrolment in health education is on the increase. Studies have recommended use of cooperative learning as an innovative instructional technique to improve students' academic achievement in school subjects (Modumogu, 2005, Akinbobola, 2006). However, much research is needed to confirm or disprove the claimed benefits of CL on students' academic achievement in health education. The problem of the study is therefore, what are the effects of the use of co-operative learning in the academic achievement in health education of secondary school pupils in Onitsha Education Zone of Anambra State?

Purpose of the Study

The study sought to investigate how CL method affected students' achievement, to ascertain whether the achievement of students taught through CL was statistically different from that of students taught through regular teaching (RTj) methods, and to examine whether gender affected students' achievement in CL.

Null Hypotheses

The following hypotheses were tested at 0.05 a-level. Ho1 There is no statistically significant difference between the achievement of students exposed to CL and those who

are not so exposed. Ho2 There is no statistically significant difference in achievement scores male students who are exposed to CL and those not so exposed. Ho3 There is no statistically significant difference in achievement scores between female students who are exposed to CL and those not so exposed Ho4 There is no significant difference between the mean achievement scores of male and female students in CL groups in health education achievement test.

METHOD

Research Design

This study was quasi-experimental because classroom grouping, rigid time-tabling and the location of the schools made it impossible for the researcher to randomly assign subjects to experimental and control groups. The non-equivalent control design group involving four intact streams of classes was adopted.

Population

The population for this study was the entire junior secondary III students in 33 state government owned co-educational secondary schools in Anambra State. This population comprised about 2080 male and female students enrolled for the 2007/2008 academic sessions.

Sample and Sampling Technique

Multi Stage Cluster Sampling was used to select subjects for this study. According to Gay & Airasian (2000) cluster sampling is sampling in which groups or units not individuals are randomly selected. Such groups 01 units can be classrooms, schools, or even larger clusters provided that all the subjects in the unit are studied. Out of the education Zones in Anambra State, 2 were randomly selected using the sampling with replacement method. The two zones selected had 11 co-educational schools. From the list of the 11 co-educational schools, four were randomly selected. Using simple random sampling, 1 intact class was selected from each of the 4 schools, thus yielding 4 intact classes These classes were randomly assigned to 2 groups of 2 classes each. Using a flip of a coin, one of the groups was chosen as the experimental group and the other, the control group. The experimental group had intact class sizes of 40 and 39 students, while the control group had 41 and 40 students respectively. Thus, 160 subjects participated in this study, 79 in the experimental group and 81 in the control group.

Instrument for Data Collection

Two parallel Health Education Achievement Test (HEAT) was constructed by the researcher and used for this study. The tests were labelled Form A and Form B While Form A was used for the pretest, Form B was used for the post test. Each of the tests contained 40 multiple choice items with 10 items each on the excretory system, muscular system,

circulatory system, and digestive system. Each item has 2.5 marks making the total marks obtainable for the total test to be 100 marks.

Validation of Instrument

The tests were presented to four secondary school health education teachers for face and content validation. The teachers affirmed that the content are relevant and appropriate for JSS III students. The tests were also presented 10 two experts in measurement and evaluation. They identified 2 items that contained more of distracters. These items were completely thrown and substituted with suitable ones.

Pilot Testing and Reliability of the Instrument

Before administration, the HEAT was pilot tested with 20 male and 20 female students in a co-educational school that was not part of the study but with similar characteristics. After marking their scripts, the scores were analysed using Kud^r-Richardson (K-R20) reliability method. The KR-20s obtained for the Tests in the pretest was .82 while that of the post test was .00. These were above the 0.70 threshold for acceptable reliability (Fraenkel & Warren, 1990) and were considered satisfactory for the use of the instrument in the present study.

Control of Sources of Invalidation

This non-equivalent control group design controlled all major threats to internal validity except those associated with interactions of selection and history, selection and maturation, and selection and instrumentation (Gay & Airasian, 2000; To control for teachers' gender, training and experience as sources of internal invalidity, only female teachers of equivalent training and experience were chosen. JSS three students of approximately the same age were used to avoid the threat of maturity to internal validity. Randomly assigning the classes to the experimental and control groups controlled interaction between selection and maturation when interaction between selection and instrumentation was controlled by ensuring that administration of the instruments across schools was kept as similar as possible.

Experimental Procedure

A pretest was administered on both groups to check initial group achievement and to help control non-randomization effect, a potential threat to internal validity with this design. Then the study lasted five weeks using the normal school timetable. Health Education, regular class teachers trained students in the experimental groups for eight weeks using cooperative learning.

Each week during the five-week treatment period had one lesson of 80 minutes in which the teachers taught the students and one of 40 minutes in which the students discussed with one another on the topics, used peer teaching and performed additional experiments. Students in the control groups were taught through regular methods that involved teacher teaching and demonstrations. Throughout the study, the same subject

matter was covered and both groups used the same text books. Academic objectives were the same for both groups and the same homework was given. A post-test was given to both groups soon after the treatment ended supervised by one of the researcher.

Method of Data Analysis

Analysis of covariance (ANCOVA) and t-test were used for data analysis. ANCOVA was used to compare the pre and post test as well as control initial differences in the treatment and control groups, t-test was used to estimate differences between the pre-test and post test scores of students, t-test was used because of its superior power in detecting differences between two means

RESULTS AND DISCUSSION

Presentation of Results

The results obtained from data are presented in tables 1 to 5 based on the null hypotheses used for the study.

Table 1.
Analysis of Covariance for the Pre test and Post Test Scores CL and RT Groups
(P / . 0.01)

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-CAL	F-Crit	P
Covariates	153799.60	1	153799.60			
Pretest	153799.60	1	153799.60	0.98	3.91	0.05
Treatment	101571840.43	1	101571840.43	10.53	3.91	0.05
Main Effect	24765306.4	158	156742.41,			
Residual	1523577578.68	158	9642896.06			
Total	1625149.49	160				

With 1,158 degrees of freedom, the difference between the mean pretest scores of the treatment groups (0.98) is less than the tab!,- value of 3.91. This indicates that there is no significant difference between the mean pretest scores of students in the cooperative learning group and those in the regular teaching group. Therefore, the sample is comparable and appropriate for the study.

When it comes to a comparison of the posttest scores of the participating groups, the table indicates that with 1 and 158 degrees of freedom, the F obtained (10.53) is appreciably greater than II,a critical value of 3.91. And as such the null hypothesis of no difference in the two group means is rejected That means that there was a significant difference between the mean post- test scores of the groups.

Since there is significant difference among the two group means, the next step is to identify where the difference lay. The researcher then applied Scheffe test (which is the test after the F test). Gay & Afrasian (2000) noted that this is one of the post hoc comparisons of means done to find out which experimental conditions contributed to the significant difference. The test result is as shown in Table 2.

Table 2.
Scheffe Test of the significant difference between groups.

Groups	Mean	Group Comparison	F Ratio	F Critical	Decision
CL	58,51	1 and 2	2.91	2.64	Significant
RT	53.51	2 and 1	0.24	2.64	Not Significant

Table 2 reveals that though there is some difference among the mean scores of students in the CL group, while there is no significant difference in the mean scores of students in the RT groups. This Comparison reveals that the CL enhanced achievement more than the RT.

Table 3.
T-Test Between the Mean Achievement Scores of Rule Students in CL Group and Those in RT Group

Group	N	Mean	Std. Dev.	0/F	t-cal	t-Crit	P
CL	40	61.65	10.12	a	2.88	1.98	0.05
RT	40	55.37	9.42				

The t-test presented in table 3 reveals that with 78 degrees of freedom, the difference between the mean achievement score of male students in CL and those in RT is greater than the table value of 1.98. The null hypothesis is rejected. This indicates that there is a significant difference between the mean achievement scores of male students in the CL group and those in RT group on HEAT.

Table 4.
T-Test Between the Mean Achievement Score* of Female Students in CL and Those in RT Groups in Health Education Achievement Test

Group	N	Mean	Std. Dev.	D/F	t-cal	t-Crit	p
CL	40	60.84	9.82			78	2.18
RT	40	56.08	9.72			1.98	0.05

In table 4 reveals that with 78 degrees of freedom, the difference between the mean achievement scores of female students in the CL group and those female students in the RT group (2.18) is greater than the table value of 1.98. The null hypothesis is rejected. Therefore, there is a significant difference between the mean achievement scores of female students in CL and RT group in health education achievement test.

Table 5.
T-Test Between the Mean Achievement Scores of Male and Female Students in CL Groups in Health Education Achievement Test

Source of Variation	N	Mean	Std. Dev.	Df	t-cal	t-Crit	P
Male students	80	61.65	10.12			158	0.51
Female student	80	60.84	9.82			1.96	0.05

Table 5 reveals that with 158 degrees of freedom, the difference between the mean achievement scores of male and female students in the CL (0.15) is less than the table value of 1.96. The null hypothesis is accepted. Therefore there is no significant difference between the mean achievement scores of male and female students in CL groups in health education achievement test.

Discussion of Findings

Students taught through the CL method performed significantly better those taught through the RT methods. This implies that the CL method enhance students' achievement more than the RT method did. This finding agrees with previous findings of Waihenya (2000), Sogorno (2001) and Modumogu (2005) that cooperative learning enhanced achievement better than the lecture method. In this study, the students in the experimental groups were sufficiently exposed to the characteristics of cooperative learning. This was done bearing in mind that Johnson & Johnson (1990) stated that students need sufficient time to develop the confidence and social skills necessary for effective participation in a cooperative-learning class. The teachers' role in the

experiments were that of mentors and facilitators, they did not leave the students unsupervised. Slavin (1990) cautions teachers who believe students can simply be placed in-groups, given interesting Materials or problems to solve and allowed to discover information or skills. Successful cooperative learning should always include direct instruction because cooperative activities supplement but do not replace, direct instruction. However, they involve individual accountability because group success depends on members' contribution to a team task. This study was done with these issues in mind and the results show that use of CL method leads to better students' achievement than the RT methods.

There was no significant difference in achievement between boys and girls exposed to CL method but both performed significantly better than those taught through RT methods. Longbap & Nok (2008) found that that science achievement for girls in Anambra State was lower than for boys partly due to their poor attitudes towards science and discouragement by their teachers. But when CL is used, teacher attitudinal factors are diminished. The CL method helped health education teachers to balance classroom interaction between boys and girls enabling them to give similar attention to both sexes, which led to improved achievement by both. In a cooperative group, students irrespective of gender see one another as resources and are valued by team-mates. It could be used to reduce gender disparity in achievement at JSCE health education examination.

CONCLUSION

The CL method facilitates qualitative improvements in students' health education achievement more than the RT method do. While using this method, gender does not affect students' health education achievement. Students taught through the CL method performed better than those taught through the RT methods irrespective of gender, implying that the CL method would be suitable for teaching both male and female students. Therefore, any determined effort to address the problem of improving qualitative health education teaching-learning ought also to focus on the use of cooperative learning.

Recommendations

Based on the findings of the study, the following recommendations have been made:

1. The State Ministry of Education and the Universal Basic Education Board (ASUBEB) should through workshops and seminars create awareness of and sensitize the teachers on the need for and the facilitative effects of the use of Cooperative learning in health education.
2. Over dependence on textbooks by both teachers and their students in teaching-learning exercise should be checked. The teachers should to supplement their teaching efforts with cooperative learning activities to stimulate and sustain students' interest and achievement in health education.

3. Education authorities in Anambra State should encourage Health Education teachers to use this method and teacher education institution^ should make it part of their teacher training curriculum content.

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