

EFFECTS OF CLASSROOM GOAL STRUCTURES ON THE ACADEMIC ACHIEVEMENT IN COMPUTER EDUCATION OF JUNIOR SECONDARY SCHOOL STUDENTS

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Abstract

The study investigated the effects of classroom goal structures on the academic achievement of junior secondary school students in Computer Education. One research question and one hypothesis guided the study. The study adopted a quasi experimental design. The population consisted of all JSS 2 students in the government owned secondary schools in Awka Education zone. Two secondary schools were selected at random for the study. One school was used for control group while the other was used for experimental group. Students in the control group were taught using lecture method while those in the experimental group were taught using cooperative learning strategies. A Computer Education Achievement Test was used for data collection. The experiment lasted for seven weeks of two periods in each week. Mean scores were used to answer the research question while ANCOVA was used to test the hypothesis. Major findings indicated that cooperative classroom goal structure facilitated higher academic achievement in students as there was a significant difference in the mean achievement of the two groups. The study concluded that there was a significant difference in the achievement of students. Based on this conclusion, the researcher recommends that the cooperative classroom goal structure should be an instructional technique at the core of educational curriculum and both cooperative and competitive learning methodology should be modeled.

Introduction

In the last two decades, the quality of education has continued to decline and the level of academic achievement has been persistently low in Nigeria, making it apparent that the predominant teaching approach is inappropriate and ineffective (Adebayo 2009). It therefore becomes necessary to search for more effective strategies which will be suitable and efficient for promoting the level of secondary school students' achievement beyond contemporary limits and to the satisfaction of the current curriculum requirements. In an attempt to achieve these requirements, Adebayo (2009) found that educators developed several organizational practices tagged "innovations in teaching/learning" to be used in schools. Two decades ago, one of such innovations was the emphasis on classroom goal structure. Classroom goal structures are defined by Wolters (2004), as the prevailing instructional policies and procedures within an academic setting, such as a classroom or school which accounts for the physical, verbal and nonverbal interactions between students-students and students-teachers in working towards the accomplishment of instructional goals.

This study is concerned with only cooperative and competitive classroom goal structures. Cooperative learning is an offshoot of constructivism which incorporates the idea that the best learning occurs when students are actively engaged in the learning process and working in collaboration with other students to accomplish a shared goal. Cooperative learning utilizes not only the student's own experience to solidify knowledge, but also uses the experiences of others (Johnson & Johnson, 2004). It emphasizes the importance of interactivity with respect to the design and implementation of lesson plans. Students must work in groups, brainstorm and peer-tutor to complete tasks collectively. Furthermore, the teacher's role changes from giving information to facilitating students' learning.

A competitive goal structure is one in which learners perceive that they will be rewarded based on comparisons with other learners (Roseth, Johnson & Johnson, 2008). Roseth et al (2008) have asserted that competitive environments take advantage of the apparently natural inclination of human beings to develop and enhance their own self-esteem by comparing their own performance to that of others. In a competitive classroom goal structure the mode of learning in this context is the lecture method with an emphasis on competition. The teacher explains all the concepts to be learnt while the students listen and take down notes.

The traditional classroom goal structure used in majority of schools in Nigeria is the competitive goal structure. Of great concern to the investigator, is why educators in Nigeria have continually preferred to use the competitive classroom goal structure despite the fact that researchers (especially in the developed world) over the years have proved cooperative goal structure to be more effective in increasing the academic achievement of students. Therefore, this study focused on finding out if the assertions or conclusions of those studies supporting cooperative goal structure hold true in the Nigerian context by carrying out an empirical study to ascertain which classroom goal structure would facilitate higher academic achievement for the largest number of students since the teacher's primary role is to stimulate, and reinforce academic achievement.

The purpose of the study was to determine the effects of classroom goal structures (competitive and cooperative) on junior secondary school students academic achievements in computer education. One research question and one hypothesis guided the study, which are:

- What are the mean achievement scores of students in Computer Education who were taught in a cooperative classroom goal structure when and those taught in a competitive goal structure?
- There is no significant difference in the mean achievement scores in Computer Education of students taught in a competitive classroom goal structure and those taught in a cooperative classroom goal structure.

Method

The design is a quasi experimental design. Intact classes from two different schools were used. The population of the study comprised all the students in junior secondary school II (JSS2) in the 26 State Government owned Secondary schools

which offer Computer Education in Awka Education Zone of Anambra State in the 2011/2012 academic session. From the 26 schools that offer Computer Education in Awka Education Zone, two schools were randomly selected. One school was used as the experimental group while the other was the control group. The instrument used for data collection was a Computer Education Achievement Test (CEAT). The test was in multiple-choice format containing 30 items. Each question had four options among which one is the correct answer while the others served as distractors. The pre CEAT and the post CEAT contained the same item questions but the item numbers were re-shuffled to make them appear different in the post CEAT. Any score from 15 and above was considered acceptable while scores below 15 were considered not acceptable. The instrument was carefully validated by three experts, two in Educational Psychology and the other in Measurement and Evaluation and its reliability tested on 20 JSS 2 students of Krosa Academy Amawbia, Anambra State. The reliability co-efficient of the CEAT was determined through test-retest method. A value of 0.83 was obtained. The instrument was administered by the regular Computer Education classroom teachers (research assistants) of both schools used for experimental and control groups. The research question was answered using mean while the H_0 was analyzed using ANCOVA at 0.05 level of significance.

Experimental procedure

Both the experimental group and the control group were taught the same instructional content (from the approved curriculum for computer education from the Federal Ministry of Education Nigeria) for the same period of seven weeks of two periods of forty minutes per period each week.

For the experimental group, the cooperative learning strategy was used in teaching the class which consists of heterogeneous groups of five students of mixed ability in each group. A CEAT was administered to the students before instruction began. This was used to determine the initial academic achievement of the students prior to instruction. The class was coordinated by their regular classroom teacher for Computer Education who for each lesson, introduced the topic for the lesson and then broke down the course content of the lesson and assigned each group a section to discuss and come out with a finding. During this discussion, students (in each group) brainstormed and helped each other to clarify and understand the material while the teacher moved around the groups and offered assistance where necessary. At the end of the time stipulated for discussion and findings, a member of each group presented the findings of its group to the class under the supervision of the teacher. The learners were made to understand that their performance depended on the performance of all their group members. At the end of the seven weeks instruction, students achievement was measured by CEAT.

For the control group, the conventional lecture method was employed, encouraging competition. A CEAT was administered to the students before instruction began. The teacher explained all the concepts to be learnt while the students listened and took down notes. Learners were made to understand that reward was based on their comparisons with other learners. The students were made aware of

the price which was used to reward the highest academic achiever. Class work was carried out individually. At the end of the seven weeks' instruction, student's achievement was measured by a CEAT (reshuffled).

Table 1: Mean Scores of Students Achievement in CEAT for the Experimental and Control Groups.

Group	N	Pre-test	Post-test	Mean gain
		-	-	
	x		x	x
Exp. Group	30	15.27	21.87	6.6
Cont. Group	30	17.50	17.63	0.13

Table 1 showed mean scores of 15.27 and 17.50 for the experimental and control groups respectively for the pre-test, and 21.87 and 17.63 for the post-test. The mean gain score for the experimental group was 6.6 while that of the control group was 0.13. This showed that the experimental group had a higher gain score than the control group.

Table 2: Summary of ANCOVA on Cooperative and Competitive Groups' Means Achievement on CEAT.

Source	type III sum of squares	df	Mean	F square	sig.
Corrected model	1348.999	2	674.499	41.851	.000
Intercept	191.125	1	191.125	11.859	.001
Pretest	1054.182	1	1054.182	65.409	.000
Method	565.156	1	565.156	35.066	.000
Error	918.651	57	16.117		
Total	25435.000	60			
Corrected Total	2267.650	59			

a. R Squared .595 (Adjusted R Squared .581)

Table 2 above shows a significance of .000 which is < 0.05 significance level. This means that there is a significant difference in the mean achievement scores of students taught in a cooperative classroom goal structure compared to those taught in a competitive classroom goal structure. The null hypothesis was therefore rejected.

Discussion

The result of the data in table 1 indicated that the students taught in a cooperative classroom goal structure achieved more than those taught in a competitive classroom goal structure as the mean gain of the cooperative class out

weighted that of those in the competitive class. This shows that even though the competitive classroom group performed higher during the pretest, the difference in their achievement score after treatment was outweighed by that of the cooperative classroom. This is because the cooperative classroom treatment improved the academic performance of the students taught with cooperative learning strategies. The result obtained as seen in table 2 indicated a significant difference in the mean achievement of students taught in a cooperative classroom goal structure when compared to those taught in a competitive classroom goal structure after their mean achievement scores were analyzed using ANCOVA statistical method. These findings were consistent with the findings of Pandey and Kishore (2003) who carried out a study to examine the effect of one of the methods of cooperative learning—Students Teams Achievement Division (STAD) on achievement in science in India. Data analyzed through analysis of covariance revealed that STAD was more effective than traditional method for knowledge level.

Also in agreement with this finding is the study of George (1994). George's purpose of the study was to compare selected cooperative learning methods (drill and review dyads, cooperative response techniques, and group grading incentives) with traditional learning methods. On measures of achievement, the cooperative group showed significantly stronger performance than the non cooperative group.

The findings of this study also agree with the study of Kolawole (2008). Kolawole investigated the effects of competitive and cooperative learning strategies on the academic performance of students in mathematics in order to find out which one of them is the more effective learning strategy. The findings revealed that cooperative learning strategy is more effective than competitive learning strategy. Roseth et al (2008) also agree with the findings of this study. They carried out a meta-analysis to review 148 independent studies comparing the relative effectiveness of cooperative, competitive, and individualistic goal structures in promoting early adolescents' achievement and positive peer relationships. These studies represented over 8 decades of research on over 17,000 early adolescents from 11 countries and 4 multinational samples. Results indicated that higher achievements were associated with cooperative rather than competitive or individualistic goal structures.

Educational Implications

This study goes a long way to prove with empirical evidence that a cooperative classroom goal structure is more effective in facilitating higher academic performance for students. As a result, if teachers continue to use the competitive classroom goal structure, performance will remain poor. Cooperation has been found in this study to be a valuable strategy for helping students attain high academic standard as it makes them active participants and in turn increases their interest to learn.

Low achievers working individually in a competitive classroom are likely to give up, however working cooperatively with other more capable peers/classmates will afford them the opportunity to be carried along. This is because the more capable peers who know that the failure of the low achiever will affect his/her own

achievement will try to ensure that the low achiever understands the task thereby improving the academic performance of low achievers. Based on this, cooperative learning should be encouraged.

Since the present day working environment is based on team work, it is important that students begin in school to acquire cooperative skills. Therefore classroom goal structures should be planned to be cooperatively structured so as to instill the qualities needed for a harmonious co-existence in a multi-ethnic and multi-religious society like Nigeria.

Cooperative efforts offer opportunities for students to exert more control over the learning process, which tends to increase their sense of involvement and their dedication to studies, therefore, competition and social comparison in classrooms should be deemphasized. Instead, opportunities for success can be ensured by adapting the difficulty level of the material to the achievement level of the students. This will increase the effort exerted on studies and in turn make students to adopt an internal locus of control.

Conclusion

Evidence from the analysis of data reveals that there was a significant difference in the achievement of students taught in a competitive classroom goal structure and those taught in a cooperative classroom goal structure in Computer education. Empirically, it is shown that a cooperative classroom goal structure enhances students' achievement.

Recommendations

1. Curriculum planners should place the cooperative classroom goal structure as an instructional technique at the core of educational curriculum so as to promote academic achievement and development as curriculum planning and instruction go hand in hand.
2. Administrators in Teacher Training Colleges and Universities should implement cooperative learning methodology. This means that instead of modeling competitive learning, cooperative learning should be modeled in every college class in order to establish this method in the minds of teachers.

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