

Effects of Competitive Learning Strategy on Secondary School Students Learning Outcomes: Implications for Counselling

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Abstract

This study sought to find out the effects of competitive learning strategy on secondary school students learning outcomes in chemistry. Two null hypotheses were formulated to guide the study. The study adopted a quasi-experimental design. There were 337 senior secondary students II (SSS II) purposively selected from eight (8) intact classes in Imo State from 3 boys only and 3 girls only schools. The instrument for data collection was titled “chemistry Achievement Test” designed by the researchers. It was validated before being put into use. The experimental treatment lasted for four weeks and data collected were analyzed using Analysis of Covariance (ANCOVA). The findings showed that competitive learning strategy enhanced students’ learning outcomes in chemistry. Based on the findings, it was recommended that chemistry teachers should inculcate competitive learning strategy in the classrooms. Again, students should be motivated to learn through healthy quiz competitions to enhance their learning outcomes.

Key words: Competitive Learning Strategy, Gender, Learning Outcomes, Teacher Centered Learning Strategies.

INTRODUCTION:

Knowledge is found in the minds and bodies of thinking individuals (Johnson, 2007). Learning, according to Agulanna & Nwachukwu, (2009) is a relatively permanent change in the potential behaviour of an individual as a result of experience. Learning is also the construction of knowledge by individuals as sensory data are given meaning in terms of their prior knowledge. The importance of chemistry to the development of human nature cannot be over-emphasized. No wonder people say it gives a clear idea of how important the elements in our world are helping us to identify the best environment for our health and it makes us entrepreneurs. Some

say that the application of theories in chemistry aids in production of new and better materials, everyday experience at home and in the community. Chemistry has so many uses in our daily lives that we could barely survive without it because the continuous discovery of things makes man comfortable and making everything possible. Okereke (2010) posits that chemistry prepares and stimulates the learner in disciplines, providing the educational background required for future vocations. Considering the necessity of chemistry to human life, this subject was made a vital choice for learners who wish to delve into medicine, engineering, pharmacy, nursing, to mention but a few. That is, it is an important consideration for successful outing in certificate examinations like West African Secondary School Certificate and National Examination Council (NECO) examinations and in placement examinations like the Unified Tertiary Matriculations Examination (UTME) of the Joint Admission and Matriculation Board in Nigeria. From the reports of these bodies, performances of learners in chemistry have not been encouraging, and therefore necessitating the searchlights on teaching strategies, curriculum contents, instructional materials and other factors which they believe may enhance the ability of learners to want to learn more. Pedagogies have adopted different learning strategies in the bid to shore up students performance in chemistry including some teacher centered strategies. The commonest type of teacher centered learning strategy is referred to as conventional learning strategy. In this strategy, students sit and listen to the teacher as he/she dishes out the contents of a day's lesson. Students are allowed to ask few questions when necessary and answer questions from the teacher.

Saunders (1992) contended that learning can only be formed by learners in their own minds using competitive learning strategy. Competitive learning strategy occurs when one student goal is achieved and all others may fail to reach that goal. Competitive learning strategy can be used or applied between individuals or groups, where a group setting is appropriate. This strategy is most appropriate when students are reviewing learned materials.

Typical teaching paradigms consist of individual student's effort characterized by competitive testing to access their competences and create an elevation hierarchy based on grades. This leads to a performance goal as the desired outcome of the educational experience. To Akinbobola, (2006), Nigerian present educational system is based on competition among students for grades, social recognition, scholarships and admissions to higher schools. He continued by saying that in a traditional competitive classroom, students are concerned with their individual grades and their place in grade curve. Based on this fact, competitive learning strategy can be used to teach chemistry in our secondary schools since according to Okereke, (2010), the primary goal of every educational institution is to achieve effective teaching and learning. This can be possible if efforts are put in place to ensure that students actively participate in the learning processes.

Competition exists when there is a scarcity of a desired learning outcome and students are then positioned to vie for the attainment of that outcome (Webster, 2007). Teachers in the schools prepare students for the real world by putting them in artificially constructed competitive situation, this makes them to think about others and treat one another well. The act of using competitive learning strategy in learning creates a sense of external urgency and drama in students. Competitive learning strategy as contented by Johnson and Johnson, (2006), brings a variable into the equation that shifts the participants attention to the cost of their performance

in the task. In teachings if the tasks were to assemble a model of periodic table with a declaration to see the group that could finish the task first, the purpose of the activity moves from the learning goals to efficiency, speed, and the outcome relative to others. Furthermore, introducing competitive learning strategy into the classroom brings a shift in students' attitude. It gives students an air of importance and motivates them to perform better especially when rewards are attached to it (Emmer & Gerwels, 2006). In using competitive learning strategy, the grouped students tend to place increased value on the outcomes of their efforts and tend to decrease their focus on the process. That is, students will increase attention on what it takes to outshine others and decrease attention on learning for its own sake. Competitive element has an effect on a group dynamics because it is often motivated by a competition that develops creativity and problems solving skills.

In this study, the competitive learning strategy used is where students work in sub-groups. Members of each sub-group work strictly on their own, striving to be the best in the sub-group. The competitive learning strategy in teaching chemistry provides a combination of learning opportunities and chance to have fun on the part of students. Students do not fear the potential consequences which is a good indicator that competitive learning strategy initiates social skills and managerial abilities (Johnson, 1989). Competitive learning strategy is about teaching students how to learn without fear of failure or letting their ego's become too involved. Students can access the joy of the moment, involvement, challenge, adventure, and suspense can be fun if students feel free and the situation supports fun over comparison. Fun during this learning strategy occurs when students see that competition as the game, the fleeting reality and the learning relationships, and self-respect as the lasting reality.

The academic performance of public secondary school students studying chemistry has been commented by researchers as poor. This poor academic performance in chemistry according to Okereke (2009) has assumed alarming proportions and has been a source of concern for some time now. Teacher centered learning strategy alone does not bring about high academic performance in students due to lack of student interactivensness, friendless and teamwork. In teacher centered learning, there are students minimal contribution to the instruction (Oloyede, Adebowale & Ojo 2012). Again, there is a lack of interest among students in the public secondary schools in chemistry, which can be deduced from the low turn out on registration of chemistry students in ordinary level examinations. More so, few of the registered students perform poorly in the subject as shown by the West African Senior School Certificate results (WAEC, 2009). The reason for this lack of interest that results in poor learning outcome in chemistry maybe as a result of lack of competitive skills and efforts on the part of students, and the inability to test their ability to stay conscious and intentional in learning situations. Hence, there is need to help students become familiar with feelings and tendencies that can emerge from learning process and take a thoughtful and intentional approach to their participation.

The specific purpose of this study is to determine the difference in mean gain score in the pre-test and post-test scores of students taught chemistry with teacher centered learning strategies and those taught chemistry with competitive learning strategy. There is therefore need to:

1. determine the effect of competitive learning strategy on the learning outcome of secondary school students in chemistry.

2. find out the difference in mean scores of male and female students exposed to competitive learning strategies.

In addition, two null hypotheses were generated for this study thus;

Ho1: There is no significant difference in the mean scores of students exposed to competitive and teacher centered learning strategies at post test period.

Ho2: There is no significant difference between the mean scores of male and female students exposed to the treatment strategy at post test period.

Research Procedure and Design

The research design used for the study is quasi-experimental using the pre-test-posttest with control group design. It involves the manipulation of independent variable (teaching strategies) on the dependent variable (students academic performance in chemistry). The sample consisted of 337 SSS II students purposively sampled from 8 secondary schools with 8 intact classes and were used for this study. In each of the four schools, competitive learning strategies were introduced to the treatment group and teacher centered learning strategies for the control group. The regular chemistry teachers of these schools were the experimenters. They were trained on how to use the strategies using lesson plans prepared by the researchers. Before the treatment, the pretest was given to the participants. Eight lessons of one hour each were taught for four weeks.

The instrument used was a 40 item multiple choice achievement test titled "Chemistry Achievement Test" (CAT), constructed by the researchers. Content validity procedures were under taken by two experienced chemistry education experts and one from Department of Measurement and Evaluation, Imo State University, Owerri to ascertain clarity of expression, readability and appropriateness to the class level. The reliability index of CAT using Kuder Richardson 21 was 0.74.

In the competitive learning strategy group students were divided into two sub-groups of 9 students each. Members of each group were asked to compete with each other and seek to perform better than others in any given task. They were asked to direct their questions to the teacher and that the best student in each sub group will be rewarded. The students were assessed based on their individual contributions and their scores were compared in order to determine the best students.

In the teacher centered learning strategy group, no special treatment was given. Rather the teachers taught the students eight lessons with conventional approach. The teachers talked while students paid attention, contributed minimally and copied the notes given to them. The researchers (with the aid of trained research assistants), supervised the lessons in each of the sub-groups to ensure consistency. At the end of the treatment, a posttest was administered to all the students. Pretest-posttest sensitization was controlled by the shuffling of question items to distract the learners on question items. Data collected were analyzed using ANCOVA.

Results:

Ho1: There is no significant difference in the scores of students exposed to competitive learning and teacher centered strategies at the post test period.

To test this hypothesis, the post test scores of the students in treatment group and the teacher centered group were subjected to a test using ANCOVA.

Table 1: ANCOVA on students' scores in chemistry before and after competitive learning strategy

Sources of variation	Ss	Df	M	F cal	F tab	p> 0.05
Corrected model	13868.18	8	1733.62			
Percept	11922.73	1	11922.73			
Pretest	60.10	1	60.10			
Gender	2109.15	1	2109.15			
Experimental	4565.94	1	4565.94	318.24	3.75	0.05
Residual	4706	328				
Total	174331.02	337				

Table shows that at 0.05 level of significant level, 1 degree of freedom, the f table equals 3.75 while the f calculated equals 318.24 at 0.05 level of significance and 1 degree of freedom. This indicated that f cal is greater than f tab. Therefore, Ho1 is rejected because, there is a significant difference in the scores of students that experienced competitive learning strategies and those in teacher centered learning group. This agrees with the findings of Oloyede, Adebowale and Ojo (2012), that students exposed to competitive learning strategies seem to perform better than those taught with traditional teacher centered strategies. It also agrees with the findings of Qin, Johnson and Johns, (2005) that competition out performs cooperation. H02: There is no significant difference between the scores of male and female chemistry students exposed to the competitive learning strategies.

To test this hypothesis, the scores of students in the experimental group were subjected to ANCOVA to determine if there were differences on the basis of gender, strategy and interaction between gender and learning strategy to predict performance, after controlling for previous knowledge, as in table 2.

Table 2: ANCOVA on the scores of male and female chemistry students exposed to treatment.

Sources of variation	Ss	Df	M	F cal	F tab	P> 0.05
Corrected model	4666.12	4	1166.63			
intercept	13880.38	1	13880.38			
Pretest	112.56	1	112.56			
Gender	2212.63	1	2212.63	94.66	3.83	0.05
Residual	4019.91	172				
Total	129537.00	175				

Table 2, showed that f calculated equals 94.66 at 0.05 level of significance and f tab equals 3.83 at 1 degree of freedom. Therefore, the second null hypothesis is also rejected. The researchers therefore conclude that there is a significant difference in the scores of students exposed to competitive learning strategy by gender. This difference could be as a result of the reward attached which motivated students. This finding is in line with Okoye, (2007) that there was a significant difference in science achievement relative to gender in favour of the male students. Again, the difference in performance may be attributed to unequal science experiences, interest, influence of choice of career and childhood training of males and females.

CONCLUSION

From the findings of the present study, it can therefore be concluded that competitive learning strategies can be used in teaching and learning processes. It is therefore recommended that satisfying the attempts to improve and develop appropriate learning, competitive learning strategy should be used for valuable outcomes which are privileges with substantive impact. Again, competitive learning strategy has to be short. The shorter the life of this strategy the more likely it is to have a beneficial effect. The teacher has to place more emphasis on the process over product for students to feel justified in staying focused on the learning outcome. Finally, students should be motivated to learn by exposing them to quiz competitions that can put their attention into quality learning as the primary goal.

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