EFFECTS OF COOPERATIVE LEARNING APPROACH ON THE PERFORMANCE OF PRIMARY SCHOOL PUPILS IN AGRICULTURAL SCIENCE

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ABSTRACT

Students at Primary School level should be given chances to exhibit their talents by actively participating in the class and outside class so as to acquire the basic skills of practical for effective learning. Therefore, this study investigated the “effects of cooperative learning approach on agricultural science performance of primary school pupils” a research question was raised as what is the difference between the Agricultural Science performance of the students exposed to cooperative learning approach and those using conventional learning approach. To determine this, twenty primary school pupils were selected randomly from primary three students of Rijiyar Zaki special primary school and were exposed to cooperative learning approach. T- test was used for the test with the aim of identifying the differences between the performance of pupils exposed to cooperative learning approach and those that were not exposed. The investigation involves pre-test, then the treatment and post-test. The overall result of the study revealed significant differences between the Agricultural Science performance scores of the experimental group before and after the treatments. It is therefore, recommended that teachers at primary school level should endeavor to practice use of cooperative learning approach for effective teaching and learning in Agricultural Science.

Key words: Cooperative Learning, Approaches, Performance.

Introduction

Teachers and parents have been battling with Poor performance among students in primary schools, this has become a major focus and as a matter of importance to all those concerned with the education of young ones in Nigeria. Such an individual requires special attention. He is the one who is most likely to be the source of difficulties in the classroom. He/she cannot be ignored, nor should he/she be merely tolerated. He/she should receive the necessary aid and attention to bring about better adjustment. Poor performance among students disrupts smooth students’ learning and entire academic progress. Many teachers, counsellors, educational psychologists, resource teachers of learning and schools constantly seek out evidence based intervention to reduce poor performance among students. It is obvious that students have been facing problems in the learning of Agricultural Science as seen in the students’ performance (Kolawole 2007). Education sector as one of the most important sectors has been undergoing a series of reforms. There is nothing permanent except change says Heraclites, the pre Aristotelian Greek philosopher. The entire struggle is to have a breakthrough of the most effective teaching approach. With a number of educational options available before the presents generation learners, the newer trends seem to have emerged in the field of education that have entirely changed the facet of traditional system of education. Recent trends, methodologies and developments portray the vital role of education sector in general with its internalization of the education process, stress on quality above quantity, increase in the adaptation of technologies and necessity for professional talent. Cooperative group learning was brought to American when a Lancasterian school was opened in New York City in 1806. John Dewey also promoted the use of cooperative learning approach as part of his famous project method instruction, in late 1970s Joseph Lancaster and Andrew Bell made extensive use of cooperative learning group in England. Cooperative
learning strategies has been studied since then and has been used successfully since the mid of 1980s. Some researchers have studied the effects of cooperative learning on students achievement and accountability (Slavin, 1996), while other focus on students relationship with their peers and classroom behaviour, but this study concern with the effect of cooperative learning strategy on the performance of primary school pupils on agricultural science. Cooperative learning refers to an instructional method in which students at various performance levels work together in small groups toward a common goal. The students are responsible for one another’s learning as well as their own. Thus, the success of one student helps other students to be successful, (Gokhale, 1995).

Cooperative learning requires learners work together to achieve a learning goal. Cooperative learning is an instructional strategy that establishes a relationship among learners and promotes positive interdependence among the grouped learners (Cused, 1990). Dillenbourg (1999) defined cooperative learning as a process by which individuals negotiate and share meanings relevant to the problem-solving task at hand. Cooperative is a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem. Bonwell and Eison (1991) see cooperative learning as a strategy "that involves students in doing things and thinking about the things they are doing, they emphasize the active participation of learners, and this bring to mind the Chinese proverb; “Tell me, and I forget. Show me and I will remember, involve me and I will understand”. Cooperative learning creates an environment where the teacher involves students in doing things and thinking about things they are doing. Cooperative learning encourages active students participation in the learning and every students learns from one another, no student is deprived of the opportunity for making contributions and appreciating the contributions of others. Mayers (1993) describes cooperative learning as “A methods of structuring lessons to ensure that students learn collaboratively within a support system made up of other students”. The students in each team are responsible not only in learning material being taught, but also for helping their team-mates learn. Cooperative learning is the instructional use of small groups so that students work together to maximize their own potentials and each other’s learning. Within cooperative learning groups students discuss the materials to be used and learned with each other, help and assist each other to understand it and encourage each other to work hard. This study therefore will explore the use of cooperative learning in teaching agricultural science among primary school pupils.

Statement of the Problem

Experience has shown that poor performance of primary school pupils in Agriculture is prevalent among students. A critical look at the pupil’s performance, students were prone to it, and that could be attributed to the way pupils are taught in schools. This is because most children who manifest poor performance is telling on the way they were taught which actually plays a significant role, and that why Williams (1993) indicated that the dominant traditional teaching strategies did not produce desired effective results and make it difficult for learners to acquire the level of competency required for success. More than that however, students’ inability to work as a team and share ideas leads to failure in not only Agricultural Science subject, but also in learning in totality. Successive student’s poor performance in Agricultural Science could often be attributed to their low performance in practical aspect. Therefore, there is a dire need to investigate effects of cooperative learning approach so as to salvage the poor performance of students in primary schools with reference to agricultural science. Cooperative learning approach has great role to play reducing poor academic performance of primary school pupils in Agriculture being it a teaching strategy in which students of varying ability meet to work together on a range of activities related to the subject area (Kagan, 1994). The approach is purposely designed and intended to help pupils with poor performance. It is against this background that, the present study explored effects of cooperative learning approach on
the performance of primary school pupils in Agriculture. Reduction of the poor performance among pupils would translate into their normal present, participation and contribution in school/classroom and subsequently academic performance of students would improve, and this can led to sustainable Agricultural educational development

**Cooperative learning Strategies**

Various strategies exist for cooperative learning which help to improve students’ learning, these strategies are classified into several models. The widely used techniques or models of cooperative learning strategies as stated by Ford (2013) include;

1. **Think, pair and share:** This strategy encourage students to participate individually with specific responsibilities cooperatively as they share ideas back with the large group. There are three distinct steps in the think, pair, and share strategy, this include the following:

   **Think** – students are asked to think independently about the question that has been posed, thus forming independent ideas.

   **Pair** – students are grouped with a partner to discuss their ideas and thoughts. This step is critical as it allows students an opportunity to articulate their own ideas as well as consider the ideas of their partner.

   **Share** – students pair then share their ideas on the question or topic with the large group or whole class. This process allows students to clarify their ideas individually, then within a small group before having to present in front of a large audience.

2. **Jigsaw:** This is a method intended to provide cooperative learning environments. It development began in the 70s by Aronson At University of Texas and University of California. Jigsaw is a face-to-face method, without technological support. It emphasizes interaction among workgroup members. It is appropriate for all levels of students and works well with large or small classes. This strategy encourages and reinforces a variety of skills such as listening, engagement and empathy by establishing an independent group where members have both individual and group responsibilities. This strategy also facilitates interaction among all students in the class as they work to accomplish a common goal. It requires higher level of understanding of particular topics, since each student will be required to “teach” their group members what they learned. There are three distinct steps in the Jigsaw strategy.

   I. Establish “Home” groups. This is to divide the material to be covered into approximately four to five topics. The home will consist of the same number of students as you have topics. Each member of the home group will then be assigned to an expert or research group based on your content topics.

   II. Assign topic exploration activities so that each member of the expert group will accurately and thoroughly understand the material assigned to their expert group.

   III. Once the expert groups have a solid understanding of their topic material, they will return to their home group to teach that information to the other members of their home group. Success depends on the determination that all group members understood the required topical concepts.

3. **Buzz Groups:** This cooperative learning strategy is appropriate for most grade levels but is particularly appropriate for college-age students and can easily be adapted for both large and small classes. This strategy requires students to brainstorm ideas as fast as possible within a small group. This encourages critical thinking, but also adds the urgency of time which can be competitively motivating for some students. There also three distinct steps in the Buzz Group strategy:

   I. Allow students to select themselves into small groups of three to five members. Each group should assign one person to serve as the recorder of the ideas generated.
II. Each small group will share some of the ideas with whole group, allowing each group to contribute to the conversation.

III. Once all small groups have presented, any group can present additional ideas that were not previously presented.

4. Standard Teams – Achievement – Divisions (STAD):- This is developed by Slavin in the year 1978 and is considered to be one of the basic approaches of introducing learners to cooperative learning. The use of this method is thought as an effective and efficient way to teach well-defined educational subjects. The rewarding of the best teams motivates the better students in a team to encourage the other members to achieve their mutual goal. The main goals of this model is to motivate students to encourage and help each other, and to accelerate students achievement, the model also helps to facilitate gains in self esteem, liking of class and improve the behaviour of the learners.

5. Critical Debate: - This cooperative learning strategy is appropriate for both small and large classes. This strategy requires students to engage in critical thinking as they research the positives and negatives of a particular topic and reinforces the articulate communication in views of the side for which they are assigned to argue. This strategy also encourages positive competition which can be very engaging for some students. There four distinct steps in the Critical Debate strategy:-

I. Assign debate groups. Group may be small as two or up to four maximum participants. Assign which side of a topic each debate group will argue.

II. Students in each debate group will explore their topic and identify their strongest points to present their view.

III. Members of the debate group will have three to five minutes to present their best arguments to the opposing group, then the opposing group will have three to five minutes also to present the best arguments.

IV. After initial arguments are heard, each group will discuss how to counter the points presented by the opposing group, and then each group will have two minutes to present their points. At the end of that time, remaining members of the class can determine which group had the most convincing arguments on the topic.

6. Johnson and Johnson’s model:-This is another instruction that involves students working in teams to accomplish a common goal, under the following elements, which include positive interdependence, individual accountability, face to face promotive interaction, appropriate use of collaborative skills and grouping processing. In this model, members of the class are grouped into four or five members to work on a common assignment given, and submitted a group report, class work is based on the group work, the teacher’s role was to provide group relationship and encouragement between members of the groups

Objective of the study

The objective of this research is to:-

Find out effects of cooperative learning approach on the performance of primary school pupils in Agricultural Science.

Research Question: What are the effects of cooperative learning approach on the performance of primary school pupils in Agricultural Science?

Hypothesis: There is no significant effect of cooperative learning approach on the performance of primary school pupils in Agricultural Science before and after treatment.

Methodology

The quasi-experimental design involving pretest-posttest control group was adopted in the study aimed at finding the difference between the Agricultural Science performances of the students exposed to
cooperative learning approach and those exposed to conventional learning strategy. The design is widely used primarily for the purpose of comparing groups or measuring changes resulting from experimental treatments (Nwogu, 1991).

Population
A total number of twenty (20) out of 40 primary school students of class one were selected randomly and divided into two groups control and experimental. The experimental group was exposed to cooperative learning strategy after pre-test under their normal conventional learning strategy on Agricultural Science, post-test three weeks after treatment.

Instrument for Data Collection
The instrument used for data collection is the Agricultural science work book of the pupils before and after cooperative learning strategy. The students were assessed before and after the treatment to see the effect of cooperative learning strategies.

Treatment Procedure for Data Collection
The following treatment procedure was followed in collecting data for this study:

Step 1: pre-test was given to respondents in the experimental groups. The researcher selected a topic already treated in the class and asked the students to write on (body building food). The results of pre-test were kept for computation with post-test to ascertain the level of performance of experimental group.

Step 2: the researcher presented a topic for discussing in the class (“body building food”).

Step 3: The researcher paired the students randomly.

Step 4: The researcher allowed individuals to think in silence on the topic

Step 5: The researcher allotted time for the students to write independently on the topic.

Step 6: Students were allowed to compare their work.

Step 7: the researcher allowed the students to discuss and make correction with the teacher intervening

Step 8: post-test was administered to experimental group.

Cooperative learning strategy adopted in the study
Standard Teams – Achievement – Divisions (STAD) was adopted in this study because is considered to be one of the basic approaches of introducing learners to cooperative learning, and primary school pupils are young ones that demand an introductory of any approach not too advance or demanding. The use of this method is thought as an effective and efficient way to teach well-defined educational subjects. Also at the primary school level the rewarding of best teams motivates better students in a team to encourage the other members to achieve their mutual goal. The main goals of this model is to motivate students to encourage and help each other, and to accelerate students achievement, the model also helps to facilitate gains in self esteem, liking of class and improve the behaviour of the learners.

Data Analysis
The data obtained from the study were entered into the software (SPSS 16 version) for statistical analyses; means and standard deviation were used in figure form to answer the research question. Paired sample t-test was used for testing hypothesis. The level of significance adopted for the analysis was at an alpha value P < 0.05.

Results
What are the effects of cooperative learning approach on the performance of primary school pupils in Agricultural Science?
Table 1: Pre-test and post-test mean scores of respondents in the cooperative learning approach treatment group.

<table>
<thead>
<tr>
<th>Sources</th>
<th>Mean</th>
<th>Std. D</th>
<th>d.f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test cooperative leaning</td>
<td>4.67</td>
<td>3.097</td>
<td>18</td>
</tr>
<tr>
<td>Post-test cooperative leaning</td>
<td>9.23</td>
<td>5.355</td>
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The above table 1 shows that the pre-test has the mean scores of 4.67 with the standard deviation 3.097 while post-test has the mean scores of 9.23 with standard deviation 5.355. These pre-test and post-test means and standard deviation scores differ; this indicated that the cooperative learning approach had effect on the performance of primary school pupils, which means the students benefitted from the treatment.

Hypothesis

There is no significant effect of cooperative learning approach on the performance of primary school pupils in Agricultural Science before and after treatment.

Table 2: t-test for paired sample between pre-test and post-test of respondents exposed to cooperative learning approach

<table>
<thead>
<tr>
<th>Sources</th>
<th>Mean</th>
<th>Std.D</th>
<th>d.f</th>
<th>t-Cal</th>
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</thead>
<tbody>
<tr>
<td>Pre-test cooperative leaning</td>
<td>4.67</td>
<td>3.097</td>
<td>18</td>
<td>8.346</td>
<td>2.26</td>
<td>.000</td>
</tr>
<tr>
<td>Post-test cooperative leaning</td>
<td>9.23</td>
<td>5.355</td>
<td></td>
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From the table 2 above, the result of the t-test paired sample of treatment group revealed that the t-calculated value (8.346) is greater than the t-critical value (2.26) at 18 degree of freedom and at 0.05 level of significance. The observed probability level of significance P= (.000) is less than 0.05. This shows that the treatment group of cooperative learning approach benefited from the treatment.
Discussion of Result

The major result of this study revealed that the $t$-calculated value (8.346) is greater than the $t$-critical value (2.26) at 18 degree of freedom and at 0.05 level of significance. The observed probability level of significance $P= (.000)$ is less than 0.05. This shows that the treatment group of cooperative learning approach benefited from the treatment, that is to say cooperative learning approach has significant effects on the pupils higher performance. This study is in support of Williams (1993) study which revealed that cooperative learning approach has significance effect on students academic performance, likewise, study of Kagan, (1994) is in support of this study.

Conclusion

Based on the findings obtained from this study, it is clear that the activities involve in cooperative learning approach such as brainstorming, collaboration, group investigation, self-editing, conferencing and monitoring are effective techniques for enhancing the Agricultural Science performance of primary school pupils. The treatment is effective as proved by qualitative and quantitative data analyzed in the study.

Recommendations

Consequent upon the findings of this study, the following recommendations are made.

1. Teachers should be exposed to training on cooperative learning approach so that they will know the appropriate technique to use in teaching a particular topic to their pupils.

2. Government should ensure that Agricultural Science teachers are well trained to be able to discharge their responsibilities and also they should be given opportunity to attend seminars and workshops to promote their skills.

3. Teachers should encourage pupils to engage in sharing ideas through peer editing and teacher-students conferencing. Teachers should always encourage the students to work as a team as emphasize by cooperative learning approach.

4. Government should provide adequate reading materials such as computers and different text books of Agricultural Science in the classes for students to use as reference materials in order to ensure that active learning is created in the grass root.
References


Cused, J. (1990). Collaborative Learning and College Instruction; Effective use of students Learning Teams. California State University, California University Publishers


