

**COOPERATIVE AND INDIVIDUALISTIC TEACHING APPROACHES:
IMPLICATIONS FOR DEVELOPING ENTREPRENEURSHIP FOR PARTNERSHIP
AMONG SECONDARY SCHOOL AGRICULTURAL SCIENCE STUDENTS.**

BY

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Abstract

This study focused on enhancing entrepreneurship for partnership among senior secondary school agricultural science students using cooperative and individualistic teaching approaches. Two null hypotheses guided the study. A total of 200 senior secondary two (SS II) agricultural science students drawn from four intact classes in four secondary schools in Ogoja Local Government Area of Cross River State constituted the sample for the study. A non-randomized pre-test-post-test control group experimental design was used for the study. An Agricultural Science Achievement Test (ASAT) validated by two instructional material experts and two agricultural educators in the University of Calabar was used for data collection. A reliability index of 0.77 was achieved for the instrument (ASAT) using Kuder-Richardson formula 21 (KR-21) after a pilot test. The data collected were analyzed using Analysis of Covariance (ANCOVA) and Multiple Classification Analysis (MCA). The findings revealed that cooperative teaching approach was more effective in enhancing entrepreneurship among agricultural science students than individualistic approach. The result also showed that gender had no significant influence on entrepreneurship creation when agricultural science students were taught using cooperative approach, except when they were taught with individualistic approach. Based on the findings, it was recommended among others that agricultural science teachers should adopt cooperative approach in their instructional delivery as this would enhance the performance of students without gender bias.

Key words: Entrepreneurship Development, Partnership, Agricultural Science Students, Teaching Approaches

Introduction

With the unprecedented level of unemployment in Nigeria, it has become necessary for the youths to begin to think of what they can do for themselves in order to earn a useful and meaningful living. This is evidence in the September, 2000 declaration of leaders from 189 nations resulted in eight Millennium Development Goals (MDG), aimed primarily at reducing or eradicating extreme poverty amongst others by 2015 (Akpanobong, Idorenyin & Veronica, 2013). Disappointingly, poverty is still stirring at the faces of Nigerians with its attendant consequences of social vices. The MDGs may remain elusive, unless adequate attention is given by all stakeholders to entrepreneurship development of youths in

agriculture, with focus on secondary agricultural science students.

According to Akpanobong *et al.* (2013), entrepreneurial education right from secondary school level will provide the right approaches required to fast-track the process of achieving the MDGs for sustainable economic development. Entrepreneurship, which is a state of independence, can be developed in people who are willing to acquire knowledge, skills and competences in chosen occupations through formal or informal training. Formal training in agricultural occupations is one sure way through which entrepreneurship can be developed for self-reliance and economic sustainability. Entrepreneurship in agriculture as explained by Ekong in Ekong, Ibe and Ikutal (2009), covers a series of enterprise dexterity,

proficiency, competence, adaptability, prowess of creativity, taking and bearing risks of the agricultural enterprise, managing, innovating and manipulating conditionality to derive sustained benefit from a specific agricultural occupation. This can only be visible through partnership among students. Partnership here refers to collaborations for the purpose of achieving set objectives.

Agricultural curricula at senior secondary school level in Nigeria is vocational oriented and designated for directed instructions, purposely to turn out skilled vocational agriculture practitioners for sustained engagement in agriculture enterprise of choice as means of livelihood. Unfortunately, instructions in agricultural science have failed to achieve this lofty objective, but rather turn out unskilled, unproductive and disillusioned youths who parade the streets, looking for white collar jobs (Ekong, Ikutal & Ibe, 2009). This situation, according to Ikutal and Egaga (2014), may be due to the use of ineffective teaching approaches by the teachers in instructional delivery.

Individualistic teaching approach which is commonly adopted by agricultural science teachers is an instructional process that results in the learning or achievement of one student, separate and independent of the achievement and learning of other students in the class. In this situation, students work alone and are not expected to be interrupted by other students, while the teachers provide expert information. Nwokocha (2006), reported that to be successful in this approach, learning resources and materials need to be organized such that each student can have immediate access to the appropriate materials while seating as far from each other as space permits. To Perkins (2004), this approach is teacher-centered; as he/she is seen as the expert that provides all the major information, assistance, criticisms and feedback, while students remain as passive listeners. Ikutal, Ntui and Ben (2013), have reported that teacher-centered instructions, lack practical and interactive orientation and as such, retention of ideas, facts and principles for

immediate recall and application to new and related situations become difficult if not impossible. According to the authors, individualistic instructions do not improve learners' motor skills that are required for effective internalization of experiences. It does not facilitate quick exchange of information between the brain and the hands. Slavin (2003), is also of the opinion that individualistic approach does not significantly improve students' achievement, inter-group relations, self-esteem and does not accommodate academically handicapped classmates.

Cooperative instructional approach, according to Ikutal (2010), is a learner centered and activity based interactive instruction that relies more on discussion and sharing of ideas among participants, thus, providing learners with opportunity to react to ideas, experience, insight and knowledge of the teacher or of peer learners and to generate alternative ways of thinking and feeling without gender bias. The teacher guides and directs all activities. In support of this, Johnson and Johnson (2004), stated that cooperative instructional approach is an active approach that makes use of small groups so that students can work together to maximize their own learning and the learning of others. To Streeter (2006), it covers a broad range of instructional methods in which students work together to learn academic content. The author explained further that students are divided into heterogeneous groups of 3-6 members who work toward achieving a common goal. According to Johnson and Johnson in Ikutal (2010), cooperative instruction as a pedagogy provides opportunity for students to develop needed entrepreneurial skills in group interactions and in working with others. They noted that cooperative learning experiences promote more positive attitude toward instructional process than competitive or individualistic approaches.

Similarly, MCkeachie (2000), observed that students are more likely to acquire critical thinking skills and meta-learning abilities such as learning to learn in small groups in

cooperative settings, which are entrepreneurial competencies.

In a typical cooperative instructional situation, students work on a problem in groups of 3-6. They exchange views, discuss different approaches and solutions, and persuade each other on the superiority of their arguments. By explaining their ideas to others, students clarify their reasoning, order their thoughts, revise their strategies and expand their conceptual understanding as well as enterprise dexterity (Slavin, 2003). From this, it is clear that cooperative instruction seems to be gender stable.

Furthermore, this study intends to determine the influence of gender on entrepreneurship development of agricultural science students when they are exposed to the two teaching approaches under study (cooperative and individualistic). There are different views on sex disparity and intellectual ability, just as there are different authors. While some schools of thought agree that sex difference has a significant influence on academic achievement, others disagree. Kelly (2000), noted that sex differences and intellectual abilities can be a result of sex role stereotype. To the author, sex difference in examination cannot be assumed to be due to inherent biological differences between the sexes, even if there exists. In the view of Lovell and White (2002), the theory of innate sex difference in ability which might be used to account for sex differences in examination performance has weak evidence and that in many psychological areas, it is virtually impossible to separate the innate from the acquired. Black (2003), documented that sex is a strong predictor of human conduct and that there are many differences between males and females in attitude, behaviour and achievement. The author noted that academic performance differs between boys and girls in basic subjects, both in primary and secondary school levels.

Boldberg and Levis (2000), in their study of "Early Sex Difference" of American pupils and students discovered that on the average, the

American boys perform better than girls in all sciences and mathematics related subjects. Seewald and Engelra (2001), in their study of sex difference in instruction, also found out that boys do better than girls in mathematics tests while girls outweigh them in reading tests. Reporting on sex role, Angrist (2003), explained that girls perform better on verbal test and obtained higher grades than boys while boys excel in mathematics and in all science related subjects. Okeke (2005), on the other hand, found no significant difference between boys and girls in understanding biological concepts which are related to agricultural science.

In support of sex role stereotype, as a source of superiority of males over females in science and science based subjects, Johnson in Ikutal (2010), stated that stereotype of certain subjects as male subjects makes male students to show higher cognitive achievement in those subjects that their female counterparts who often give up easily. Babikan in Ekong, Ikutal and Ibe (2009), on his own part explained that irrespective of the method used in teaching science and science based subjects, boys usually achieved significantly better than girls. Contrary to Babikan's position, Ekong, *et-al.*, (2009), who studied the effectiveness of demonstration, field trip and expository teaching strategies in implementing the senior secondary agricultural science curriculum, using three (3) intact classes in three(3) different schools, with a sample of 140 SSII students, comprising 66 males and 74 females, found out that, of the three teaching strategies experimented, there was no significant difference between the performance of male and female students. This finding is however, contrary to the earlier position of Galadima (2003), who opined that women by nature lack the strength, vigour and clarity of mind to withstand the occupational stress inherent in the subjects or disciplines that have been classified as properly belonging to men, such as agricultural science, which is why there are more male entrepreneurs in such disciplines than females.

Given these remarks made about instructional approaches, the researchers' worries are: which instructional approach should agricultural science teachers adopt in teaching the subject? Will such an approach if any, be better than the traditional individualistic approach? With these puzzles in mind, the researchers conducted an experiment with cooperative instructional approach, using individualistic approach as control with the intension of determining the extent to which they vary in their ability to enhance entrepreneurship development among agricultural science students.

Purpose of the Study

The major purpose of this study was to determine the extent to which entrepreneurship for partnership can be developed among agricultural science students when they are taught, using cooperative and individualistic teaching approaches.

Specifically, the study sought to;

1. Examine the performance of senior secondary agricultural science students taught, using cooperative and individualistic teaching approaches.
2. Determine the influence of gender (male and female) on entrepreneurship development of agricultural science students when they are taught using cooperative and individualistic teaching approaches.

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Research Hypotheses

The following null hypotheses were tested statistically in this study at 0.05 level of significance.

1. There is no significant difference in the performance of agricultural science students taught using cooperative and individualistic teaching approaches.
2. There is no significant difference between the performance of male and female agricultural science students taught using cooperative and individualistic teaching approaches.

Methodology

Research Design

A non-randomized pre-test-post-test control group experimental design with a 2x2 factorial arrangement was adopted for the study.

Population of the Study

The target population for this study was all Senior Secondary two (SS II) agricultural science students in all the nineteen (19) co-educational public secondary schools in Ogoja Local Government Area of Cross River State. The size of the population was 1,380 SSII agricultural science students.

Sample and Sampling Technique

The sample for the study consisted of 200 SSII agricultural science students (103 males and 97 females). This sample was drawn from four (4) intact classes in four (4) selected secondary schools in the study area, using a "hat- and-draw" method. Criterion sampling technique was used to select the four schools from the nineteen (19) co-educational secondary schools assigned to treatment and control status as shown in Table 1.

The four intact classes in the four selected schools were randomly that met set criteria.

Table 1: Distribution of study sample to treatment and control groups

S/N	School/Status	Teaching approach	Gender		Total
			Male	Female	
1	A (Treatment)	Cooperative	27	24	51
2	B (Treatment)	Cooperative	26	23	49
3	C (Control)	Individualistic	25	23	48
4	D (Control)	Individualistic	25	27	52
Total			103	97	200

Instrument and Validation

The instrument used for data collection in this study was Agricultural Science Achievement

Test (ASAT). This researcher-made instrument consisted of 50 multiple-choice items on routine poultry management practices made up of four options (one correct answer and three distracters). Two agricultural educators and two instructional material experts ascertained the validity of the instrument. The instrument was trial tested and the data collected were subjected to Kuder- Richardson formular 21 (KR-21). This achieved a reliability index of 0.77.

Research Procedure

Both the experimental and control groups were pre-tested for 40 minutes each with ASAT. The research assistants (class teachers) gave treatment to the experimental groups, i.e. the experimental groups were taught by their class teachers, using cooperative teaching approach guided by well-articulated lesson plans

developed by the researchers for three weeks. The control classes were exposed to individualistic teaching approach for the same period of time by the research assistants, also guided by well-articulated lesson plans developed by the researchers. The lesson packages used for treatment and control were developed by the researchers based on the same routine poultry management practices in order to standardize the treatment. After three weeks of treatment and control, a post-test (ASAT) was administered to the groups.

Method of Data Analysis

The data collected were analyzed using Analysis of Covariance (ANCOVA) and Multiple Classification Analysis (MCA). All the hypotheses were tested at .05 level of significance.

Results

H₀₁: There is no significant difference in the performance of agricultural science students taught using cooperative and individualistic teaching approaches.

Table 2: One-way Analysis of Covariance (ANCOVA) of post-test scores of students taught with cooperative and individualistic teaching approaches

Source of Variation	Sum of Squares	df	Mean Square	F-cal.	F-crit.	Decision
Pre-test	16595.63	1	16595.63	221.05	3.89	*
Main effect	1320.07	1	1320.07	18.71	3.04	*
Explain	16915.70	2	8452.85	119.88	2.65	*
Residual	19402.17	197	98.42			
Total	37317.87	199	182.50			

* Significant at $P < .05$ alpha level

Table 2 shows that the teaching approaches main effect was significant at $P < .05$ alpha level. The calculated F-value of 18.71 was greater than the critical F-value of 3.04, therefore, the null hypothesis was rejected. This implied that the two teaching approaches (cooperative and individualistic) differ significantly in their enhancement of the performance of agricultural science students.

Consequent upon the observed significant difference in the teaching approaches, Multiple Classification Analysis (MCA) was employed to determine the index of relationship and also to determine variance of the dependent variable (performance in agricultural science) that is attributable to the influence of the independent variable (teaching approaches) as shown in Table 3

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Table 3: Multiple Classification Analysis (MCA) of the post-test scores of students taught with cooperative and individualistic teaching approaches. Grand Mean = 38.85

Variable and Category	N	Unadjusted Dev'n	Eta	Adjusted for Independent Covariate Dev'n	Variable and Eta
Teaching Approach			0.63		0.30
Cooperative	100	8.32		4.12	
Individualistic	100	2.42		-2.12	
Multiple R = 0.69					
Multiple R ² = 0.47					

As shown in Table 3, the teaching approaches (cooperative and individualistic) have a high index of relationship of 0.09 (0.30²), which shows that the teaching approaches had a high significant relationship of 0.09 (beta value of 0.30²) with students' performance in agricultural science. Table 3 also indicated a

multiple regression index (R) of 0.69 with a multiple regression squared index (R²) of 0.47. This implied that 47% of the total variance in the performance of agricultural science students was due to the influence of the teaching approaches.

H_{02(i)}: There is no significant difference between the performance of male and female agricultural science students when they are taught with cooperative teaching approach.

Table 4: One-way Analysis of Covariance (ANCOVA) of the post-test scores of male and female agricultural science students taught with cooperative teaching approach using pretest score covariates.

Source of Variation	Sum of Squares	df	Mean Square	F-cal.	F-crit.	Decision at P<.05
Pre-test	7745.93	1	7745.93	224.49	3.84	*
Main effect	348.82	1	348.82	3.01	3.81	NS
Explain	8094.75	2	2047.37	114.45	2.99	*
Residual	1620.30	97	79.00			
Total	9714.04	99	199.43			

* = Significant at P<.05 alpha level. NS = Not significant at P<.05 alpha level

Data in Table 4 revealed that gender main effect was not significant at P<.05 alpha level. The calculated F-value of 3.01 was less than the critical F-value of 3.81; therefore, the null

hypothesis was retained. This implied that gender had no influence on students' performance in agricultural science when they are taught with cooperative teaching approach.

H_{02(ii)}: There is no significant difference between the performance of male and female agricultural science students taught with individualistic teaching approach.

Table 5: One-way Analysis of Covariance (ANCOVA) of the post-test scores of male and female agricultural science student taught with individualistic teaching approach using pre-test scores as covariates

Source of Variation	Sum of Square	df	Mean Square	F-cal.	F-crit.	Decision at P<.05
Pre-test	5722.12	1	5722.12	103.66	3.89	*
Main effect	1013.03	1	1013.03	18.35	3.81	*
Explain	6435.14	2	3367.57	61.01	2.65	*
Residual	7742.52	97	55.20			
Total	14177.66	99	79.12			

* = Significant at P<.05 alpha level

Results in Table 5 showed that gender main effect was significant at $P < 0.05$ alpha level. The calculated F-value of 18.35 was higher than the critical F-value of 3.81; therefore, the null hypothesis was rejected. This implied that gender significantly influenced the performance of agricultural science students when exposed to individualistic teaching

approach. Consequent upon the significant difference in the influence of gender on students' performance, Multiple Classification Analysis (MCA) was considered to determine the index of relationship as well as the variance of performance in agricultural science that is attributable to the influence of gender. This is shown in Table 6.

Table 6: Multiple Classification Analysis (MCA) of the post-test scores of male and female agricultural science students taught using individualistic teaching approach. Grand Mean = 39.50

Variables and Categories	N	Unadjusted		Adjusted For Independent Variable And Covariate	
		Dev'n	Eta	Dev'n	Eta
Gender			0.58		0.40
Male	50	8.68		6.33	
Female	50	-8.78		-7.40	
Multiple R = 0.55					
Multiple R ² = 0.31					

The data presented in Table 6 revealed that gender had a high index of relationship of 0.16 (0.40²). This implied that gender had significant relationship with students' performance in agricultural science when they were taught with individualistic teaching approach.

Table 6 also indicated that the deviation of the adjusted performance scores of male students from the grand mean of 39.50 was 6.33 while the deviation of the adjusted performance scores of female students from grand mean of 39.50 was -7.40. This implied that male students learnt the concepts better through individualistic approach than their female counterparts.

It was also shown in Table 6 that the Multiple Regression Index (R) was 0.55 and the Multiple Regression Squared Index (R²) was 0.31. This implied that 31% of the total variance in the performance of agricultural science students was due to influence of gender after being exposed to individualistic teaching approach.

Discussion of Results

The main purpose of this study was to determine the extent to which entrepreneurship can be created among agricultural science

students using cooperative and individualistic teaching approaches. The result of the study revealed that there was significant difference between agricultural science students taught with cooperative and individualistic teaching approaches. Agricultural science students taught with cooperative approach perform better than those taught with individualistic approach. This finding supports the position of Johnson and Johnson in Ikutal (2010), who posited that cooperative approach as pedagogy provides opportunity for students to develop entrepreneurial skills in group interactions and in working together. They noted that cooperative learning experiences promote more positive attitude towards instructional process than individualistic. The superiority of cooperative approach over individualistic agrees with the position of Slavin (2003), that individualistic approach does not significantly improve students' achievement, inter-group relations, self-esteem and does not accommodate handicapped classmates. In support of this, Perkins (2004), explained that this approach is teacher-centered; as the teacher is the expert that provides all the major information, assistance, criticisms and feedback while students remain as passive listeners. This is in line with the position of

Ikutal, Ntui and Ben (2015) that teacher-centered instructions such as individualistic approach lack practical and interactive orientation and as such, retention of ideas, facts and principles for immediate recall and application to new and related situations may be difficult if not impossible.

The similarity in the performance of male and female agricultural science students observed when they were taught with cooperative teaching approach supports the position of Ikutal (2010), that cooperative approach is a learner centered instructional approach that relies more on discussion and sharing of ideas among participants, thus, providing learners with opportunity to react to ideas, experiences, insight and knowledge of the teacher or of peer learners and to generate alternative ways of thinking and feeling without gender bias, while the teacher guides and directs all activities. This implies that cooperative approach is a better instructional approach that is capable of developing equal entrepreneurship in both male and female agricultural science students. This finding supports the position of Okeke (2005), who found no significant difference between the performance of boys and girls in understanding biological concepts which are related to agricultural science. It is also in agreement with Ekong, *et-al.*, (2009), who found no significant difference in the performance of male and female agricultural science students when demonstration, field trip and expository teaching strategies were studied.

However, the superiority observed in the performance of male agricultural science students over their female counterpart when they were taught with individualistic approach may be due to the inherent weakness in the approach. This weakness as expressed in enhancing the performance of male agricultural science students better than that of their female counterpart makes it inferior to cooperative approach. This finding is in line with the separate positions of Kelly (2000), Lovell and White (2002), Black (2003), and Ikutal (2010) that males perform better than females most

especially in science and science based subjects. Some of these authorities attributed the difference observed to sex role stereotype while others attributed it to the inherent biological differences between the sexes. This study has however revealed empirically that the quality of an instructional approach, strategy or method has ability to suppress every other factor inherent in gender, thus, equating the performance of male and female students in a teaching-learning process.

The implication of the findings of this study for developing entrepreneurship for partnership among secondary agricultural science students is to the extent that when cooperative instructional approach is adopted in the teaching and learning of the subject, entrepreneurship development is better enhanced. This is in line with the position of MCKeache (2000), who observed that when cooperative instructional approach is used, students are more likely to acquire critical thinking skills and meta-learning abilities such as learning to learn in small groups which are entrepreneurial competencies. It also supports the observation of Slavin (2003), who posited that by explaining their ideas to others in a cooperative instructional situation, students clarify their reasoning, order their thoughts, revise their strategies and expand their conceptual understanding as well as enterprise dexterity. It agrees with the position of Johnson and Johnson in Ikutal (2010), that cooperative instruction as a pedagogy provides opportunity for students to develop needed entrepreneurial skills in group interaction and in working with others.

Conclusion

Based on the findings, it was concluded that cooperative teaching approach enhances entrepreneurship creation among agricultural science students' better than individualistic approach. It was also concluded that gender has no influence on agricultural science students' entrepreneurship development when they are taught with cooperative teaching approach except when they are taught using individualistic approach.

Recommendations

The following recommendations were made based on the results;

1. Agricultural science teachers should adopt cooperative approach in the teaching-learning process for effective enhancement of students' performance so that entrepreneurship can be created among students for partnership.
2. Cooperative instructional approach should be publicized through seminars, conferences and in-service training so that stake holders can be aware of its effectiveness as an instructional tool for creating entrepreneurship among agricultural science students for partnership.

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