EFFECTS OF COOPERATIVE LEARNING, PROBLEM- SOLVING AND EXPOSITORY TEACHING METHODS ON ACADEMIC ACHIEVEMENT OF BASIC EDUCATION PUPILS IN HOME ECONOMICS IN OWERRI MUNICIPAL COUNCIL

IBEBUIKE, Ursula Obiageli
08037062996, ursulaibebuike3@gmail.com

OBI, Patricia Nneka
08038890973
& URENYERE,
Rachael U.
08037720424

Department of Curriculum/Instruction Alvan Ikoku
Federal College of Education, Owerri
Imo State, Nigeria

Abstract

This study investigated the effects of cooperative learning and problem solving methods on academic achievement of basic education pupils in Home Economics in Owerri Municipal Council. Two research questions and three hypotheses were used. It was a quasi-experimental design. A 50-item Home Economics Achievement Test (HEAT) was administrated to 90 basic six pupils that made up the control and experimental groups. A purposive sampling technique was employed for the study. The instrument was validated and reliability coefficient of r=0.75 was obtained using test-retest method. The data were analyzed using mean, standard deviation and Analysis of Covariance (ANCOVA). The study found that cooperative method enhances the learning of Home Economics. It was recommended among others that Home Economics teachers should endeavour to use cooperative teaching method in the teaching and learning of Home Economics at basic education level.
Keywords: Home Economics, Cooperative Learning, Basic Education

Introduction

Home Economics being one of the subjects offered in both middle basic and upper basic education is primarily concerned with taking care of almost everything about the individual and the environment. It is concerned with helping

the individual live a useful and satisfied life as well as improve his family which will in turn lead to improvement of the society at large. In addition, it provides structure for basic knowledge, skills and attitudes in the various aspects of the subject and exposes them to numerous opportunities in the subject. It also prepares them for further training in Home Economics as well as being successful home makers, managers, and wage earners.

Thus, Home Economics can be seen as a field of study that equips man with the knowledge of how to adapt to his own environment by effectively making use of human and material resources. Home Economics is a field of study that equips its learners with a sense of destiny and purpose that empowers them to effectively apply their expertise to the issues that affect the human life of the day.

Uzoka (2013), opined that Home Economics is an educational discipline that encompasses aspects of social and natural sciences. It includes how individuals progress and function in family, work and community settings and how the rely on their physical, social, emotional and intellectual environment. The teaching of Home Economics begins from the primary school. It can be integrated into the programme of any class in the primary school level. A large number of students taught at this level terminate the acquisition of further training in the course in Junior Secondary and Senior Secondary classes. It is generally regarded as a rigorous subject and the teachers do not appear to know the course, or they give one reason or the other for the poor mastery and the few that are left go into the labour market with little or no skills. Nevertheless, the most important aspect of Home Economics programme is that students do not only learn the subject matters that have relevance to their present lives but it will even continously be of use as they continue to grow, Azunwena (2012). The views of Azunwena (2012) affirm the part of learning giving to basic education pupils mostly at the middle basic education stage, who are being prepared to enter into a secondary level of education. This enables them perform better academically and see things as they are.

Basic education is the education given to pupils between the ages of 0-15 which includes pre-basic 0-4 years, basic 4-6 years, middle basic 6-11 years and upper basic 11-15 years. There is therefore a strong need to prepare students generally with the basic and appropriate teaching methods which would motivate them and which can reinforce their interest towards the learning of Home Economics as well as help them cope with the necessary knowledge and skills for successful living.

Olaitan and Agusiobo (1981:19) identified the aims and objectives of home economics in primary schools as follows:

● To facilitate the cultivation of those domestic skills and industries needed by the individuals to possess a full education.

- To encourage and improve the standard of living, thus promoting health and happiness in the child's pattern of family life as foundation for nation building.
- To help the child to develop a sense of decency in personal habit, appearance and taste.
- To relate Home Economics to other subjects in the primary school curriculum so as to make the school children's education more realistic.

In choosing appropriate methods, the teacher must bear in mind her knowledge of human behaviour, group processes, motivation, communication and human relationships. Home Economics teachers should feel free to be experimental and innovative in their choice and use of teaching methods and techniques. For any teaching method she finally decides to use for her teaching, the Home Economics teacher should endeavour to include as many techniques as possible. The techniques are the various teaching styles open to him/her whose objective is to make him/her an expert teacher. These include group or cooperative learning method, questioning, use of examples, use of various aids, and change in voice level, eye-hand directions, and gesticulations and so on.

Artz and Newman (1990) defined cooperative learning as small groups of learners working together as a team to solve a problem, complete a task, or accomplish a common goal. The cooperative learning requires students' cooperation and interdependence in its task, goal and reward structures. The idea is that lessons are created in such a way that students must cooperate in order to achieve their learning objectives.

Onwuka (1996:329) contended that "cooperative activities can be developed through frequent class discussions as well as where teachers allow pupils to assist one another. They can also be developed where older pupils teach games to the younger ones". He stressed that, pupils who have the opportunity of discussing and solving problems together develop more team spirit than those who always work on their own as individuals.

Mbakwem (2005: 174) observed that "problem solving refers to the application of individual ideals which encompasses a continuum of well integrated, well articulated and meaningful activity which starts with a problem situation and ends with the solution and or checking of that problem".

It is an important method in teaching food and nutrition, clothing, textile and laundry, and home management where students are exposed to the problem to be solved and have independent learning patterns.

In this method, students are allowed to work on their own, through a set of activities and experimentation to find out answers to the problems. They are given opportunities to find out new truths, new rules and new methods of solving

problems. The teachers' task is to select suitable problems which are within their capacity to solve, and in some cases, to suggest methods or procedures or provide suitable materials.

Problem-solving involves the use of concepts and principles to attain a better way of finding solution to a given problem. It is the basis to scientific and technological developments. It is a technique that involves all the domains cognitive, affective, and psychomotor. Pupils are challenged and encouraged to solve problems.

Adeyemi (2008) investigated the effects of cooperative learning and problem- solving strategies on Social Studies students' performance. A total of 50 Social Studies students of Junior Secondary class 3 of the University of Ibadan staff secondary school were used for the study. They were randomly assigned into two groups of study notably, cooperative learning and problem- solving. The instrument used was Social Studies Achievement Test (SSAT).Two research questions and two hypotheses which were tested at 0.05 level of significance guided the study. The data were analysed using mean and Analysis of Covariance (ANCOVA). Result revealed that cooperative learning strategy is the best, followed by problem-solving and conventional strategy in that order.

Nwaba and Igbo (2010:102) did a comparative study of two instructional methods (collaborative and lecture methods) of teaching some selected clothing skills to senior secondary population of the 20 senior secondary students in SS1 University of Benin Demonstration School. The sample size was all 20 clothing and textile students in a class in the selected school in Egor Local Government Area of Edo State. Using random assignment the students were grouped into 2 of 10 students each—collaborative learning and lecture learning. In their finding, it was observed that collaborative learning was a more effective instructional approach for teaching clothing construction than lecture method.

Eze and Okoro (2010) carried out a study on comparative analysis of the performances of male and female students using problem-solving and expository methods of teaching, in Home Economics. A total of 60 students in junior secondary class 2 in Owerri North Local Government Area of Imo State was used for the study. They were assigned into two groups of study: problem- solving and expository and both were used for the experimental groups. The findings revealed that there is a significant difference between the mean scores of male and female students measured by HEAT (Home Economics Achievement Test) at post-test.

Okoro (2011) investigated quality assurance in instruction from the perspective of cooperative learning and problem-solving teaching strategy in primary science. The design was pre-test-treatment-post-test design. Purposive sampling technique was used in choosing one primary school from Owerri municipal. Through random sampling, 30 out of 90 primary six pupils for 2009/2010 were selected as the sample. Result showed that pupils taught with cooperative learning strategy

performed better than those taught with problem-solving strategy. Based on this, the researcher recommended among others that teachers should always utilize cooperative learning strategy during instruction. This will encourage team work among the learners thereby resulting in excellent performance.

Similarly, Udo (2011), carried out a study on the effects of problem-solving, guided-discovery and expository teaching strategies on students' performance in Redox Reactions considering their mathematics ability. It was a quasi- experimental study using non-randomized-pre-test-post-test control group design with expository method as control. Two research questions and two hypotheses were formulated for answering and testing respectively. A sample of 120 SS2 Chemistry students drawn from 3 co-educational public secondary schools in Uyo Local Government Area of Akwa Ibom State was used for the study. Criterion sampling technique was used in selecting the sample. Two researcher developed test – Chemistry Achievement Test (CAT) and Mathematical Ability Test (MAT) with reliability indices of 0.75 and 0.68 respectively, using test-retest method were used in collecting relevant data. After investigations, the result showed that those taught using problem-solving method performed significantly better than those taught with guided-discovery and expository methods.

Statement of the Problem

Conventional teaching methods such as lecture, discussion, demonstration, field trips, guided discovery, laboratory, enquiry and so on, have been dominating the Home Economics classroom for years but there has not been any remarkable change in the outcome, in terms of students' academic achievement. It is therefore doubtful if all the traditional methods are sufficient for use in inculcating the desired behavioural changes in Home Economics skills in the learners. The need for more participatory method therefore arises, hence the cooperative method of teaching Home Economics is being tried to determine its effectiveness in comparison to problem solving and lecture methods of teaching. This calls for more investigation into the contemporary methods, namely cooperative learning and problem-solving which have been tested and adopted in the 21st century learning and found to be effective in the teaching and learning process.

Scope of the Study

The study is limited to basic education pupils in Imo State. It investigated cooperative learning, problem–solving and the use of conventional strategy (expository method) in teaching Home Economics and their effects on the pupils' academic achievement in Home Economics.

Purpose of the Study

The purpose of this study is to determine the effects of cooperative learning and problem-solving methods on academic achievement of basic education pupils in Home Economics in Owerri Municipal Council. Specifically, the study seeks to:

1. Determine if pupils taught with cooperative learning, will perform better than pupils taught Home Economics with problem-solving and traditional (lecture) teaching methods.
2. Ascertain whether gender is a contributory factor to the achievement of Home Economics learning using cooperative learning and problem-solving methods.

Research Questions

The following research questions were posed to guide the study;

1. How was the performance of pupils who were taught Home Economics using cooperative learning, problem-solving and lecture method?
2. How does gender affect achievements in Home Economics teaching using cooperative learning and problem-solving methods?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

Ho1: There is no significant difference between the mean scores of pupils who were taught Home Economics using cooperative learning and those who were taught using the problem-solving method of teaching.

Ho2: There is no significant difference between the mean scores of pupils who were taught Home Economics using cooperative learning and those who were taught using lecture method of teaching.

Ho3: There is no significant difference between the mean scores of male and female pupils who were taught Home Economics using cooperative learning and problem solving.

Research Design

The study is a quasi experimental study, which adopted the pre-test-treatment-post-test-control group design. There are three experimental groups. Groups A and B constitute the experimental group while group C is the control group. The experimental groups were assigned the cooperative and problem-solving methods as a method of instruction and strategies while group C subject was the control group. They (group C subjects) were taught using conventional lecture method.

Area of the Study

The area of the study was Owerri Municipal Council of Imo State which has boundaries in the East with Ngor-Okpala, in the West with Mbaitolu, in the North with Owerri north and in the South with Owerri west Local Government

Areas of Imo State. It is the capital city of Imo state which attracts all people from different works and backgrounds of life especially in education, and has a population of about 127,000 people.

Population of the Study

The population of the study comprised a total number of 56,457 primary six pupils in Imo State in the 2021/2022 academic session using two sample schools in Owerri Municipal which is a representation of 25 schools. Primary six pupils were chosen for the study because, it is the last stage of the middle basic education and whatever learning of sort that did occur while using the teaching methods will affect their future understanding of any concept in Home Economics in the upper basic education.

Sample and Sampling Techniques.

A total of 90 primary six pupils from two selected co-educational primary schools constituted the sample for the study. 8% of the schools which is 2 schools, were selected by random sampling, for Owerri Municipal was divided into two zones. One school was selected from each zone to achieve a geographical spread so that the result of the study will generalizable for the entire council. Using HEAT (pre- test) scores, the researcher classified them into three of 15 pupils per group. The researcher made sure that each group had equal number of 'above average, average and below average' using cluster random sampling technique, thus giving room for consistency and homogeneity.

Development of the Instrument

The instrument employed in carrying out this experiment is Home Economics Achievement Test (HEAT, 50 multiple choice test questions). It was a researcher developed achievement test.

The Home Economics Achievement Test consisted of 50 multiple choice items of five options lettered A to E. This was administered at the beginning of the experiment (pretest) and at the end of the experiment (post-test) to the three groups, classified into three, of 15 pupils per group. These items were developed using a table of specification. These items were scored and the performance of each pupil recorded for computation, to note the differences in their performance. **Validation of the Instrument**

The instrument for data collection was given to two experts in measurement and evaluation, their suggestions, corrections and opinions led to some items being dropped, others modified and more added. This led to the high quality face validation of the instrument used for the study.

Reliability of the Instrument

To ascertain the reliability of the instrument (achievement test), a trial testing of some respondents (50) primary six pupils who were not part of the study sample was done. The achievement test was administered to the 50 pupils and after an interval of two weeks the same test was administered to the same set of pupils.

The scores from these two administrations were correlated using Pearson's Product Moment Correlation Statistic. This yielded a correlation coefficient (index) of 0.75. Therefore, instrument was considered reliable for the study.

Method of Data Analysis

Data collected during pre-test and post-treatment were statistically analyzed, using Analysis of Covariance ANCOVA because of the effectiveness to test the hypotheses at P0.05 level of significance, while the research questions were answered using mean and standard deviation.

Research Question One: How was the performance of pupils who were taught Home Economics using cooperative learning, problem-solving and lecture method? The analysis of data collected in respect of research question 1 is summarized in table 4.1

Table1: Means and standard deviations of data collected in respect of differences of cooperative learning and problem-solving methods and lecture method of teaching at pre-test and post test.

Group	PRE - TEST X	SD	POST -TEST X	SD	N
Group A	21.60	6.44	63.47	13.43	30
Group B	21.00	7.11	56.57	13.16	30
Group C	20.00	6.10	50.87	8.01	30

Table 1 shows that at pre-test all the three groups are not significantly different since their mean scores are respectively. Group A: X = 21.60; Group B: X = 21.00 and group C: X = 20.00 and their standard deviations are respectively 6.44, 7.11 and 6.10. This implies that the groups are equally matched. The table further shows that at post-test Group A had the highest mean of 63.47, Group B had a mean of 56.57 and Group C, 50.87 showing marked difference at post-test. Thus, there is a marked difference in the performances of the pupils taught using different methods.

Research Question Two: How does gender affect the achievement of Home Economics teaching using cooperative learning and problem-solving methods?

The summary of analysis of data collected in respect of gender differences are shown on the table 2.

Table 2: Summary Analysis of means and standard deviations in respect of gender differences.

Source	PRE - TEST		POST - TEST		N
	X	SD	X	SD	
Male	20.53	6.73	57.67	11.67	43
Female	20.64	6.18	56.09	13.48	47

From table 2; it could be observed that at pre-test, the two groups (gender differences) are not significantly different since their mean scores are, male: 20.53, female 20:64 respectively. This indicates that the two groups have no differences. Going further, the table shows that at post-test, male had the higher mean of 57.67 and female 56.09 showing no difference at post-test. Hence, there is no difference in the performances of male and female taught using the different methods.

Hypothesis One (HO1): There is no significant difference between the mean scores of pupils who were taught Home Economics using cooperation learning and those who were taught using the problem-solving methods of teaching. The result of data analysis in respect of hypothesis one is summarized in the table 3.

Table 3: Summary Analysis of analysis of Covariance

Source of Variation	SS	Df	MS	F_{cal}	F_{tab}
B/w sample or Treatment	202.8765	1	202.8765	1.04	4.00
Within Sample (Error)	111223.38946	57	195.147		
Total	**11326.266**	**58**			

$F_{tabulated} = F (0.05; 1, 58) = 4.00$

The table 3 shows that the $F_{calculated}$ is 1.04. This value is less than the tabulated or $F_{critical} = 4.00$ at 0.05 level of significance. Since this value is less than the critical or tabulated F value, there is no reason to reject the null hypothesis (HO1). Hence we conclude that there is no significant difference between mean scores of pupils taught Home Economics using cooperative learning and those who were taught using the problem-solving methods of teaching.

Hypothesis Two (HO2): There is no significant difference between the mean scores of pupils taught Home Economics using cooperative learning and those taught using the traditional method of teaching. The analysis of data collected in relation to null hypothesis two is summarized in table 4.

Table 4: Summary Analysis of Analysis of Covariance in respect of hypothesis two

Source Of Variability	SS	DF	MS	F_{cal}	F_{tab}
B/w Sample or Treatment	232.4153	1	2321.4153		
Within Sample or Error	7337.8117	57	128.734	18.03	
Total	9659.227	58			4.00

$F_{tabulated} = F_{(0.05, 1, 57)} = 4.00$

In table 4, it shows that $F_{calculated} = 18.03$ is greater than $F_{tabulated} = 4.00$, we reject the null hypothesis and accept the alternative. Hence, there is a significant difference between the mean scores of pupils who were taught Home Economics using cooperative learning than those who were taught using traditional methods of teaching.

Hypothesis Three (HO3): There is no significant difference between the mean scores of male and female pupils who were taught Home Economics using cooperative learning and problem-solving methods. The analysis of data collected in relation to null hypothesis three is summarized in table 5.

Table 5: Summary Analysis of Analysis of Covariance in respect of sex differences

Source of variation	SS	DF	MS	F_{cal}	F_{tab}
B/w sample or treatment	75.1215	1	75.1215		
Within sample (Error)	14492.4479	88	164.687	0.456	3.95
Total	**14567.5694**	**89**			

$F_{tabulated} = F_{(0.05; 1, 88)} = 3.95$

Table 5: indicates that $F_{calculated} = 0.456$ is not greater than $F_{tabulated} = 3.95$. The null hypothesis also upholds. Hence, we conclude that there is no significant difference between the mean performance of males and females who were taught Home Economics using cooperative learning and problem-solving methods.

Discussion of Findings

Result of data analysis summarized in table 1 revealed that pupils who were taught using either cooperative methods or problem-solving method performed better than those who were taught using lecture method.

From the analysis of data, it was found that there exists a significant difference in the mean scores of pupils who were taught using cooperative learning than problem-solving and traditional methods at post-test. This finding is in agreement with that of Okoro (2011) which stated that Pupils who were taught using cooperative learning approach will always perform better than those who were

taught using problem-solving approach. This does not agree with the finding of Udo (2011) who found that problem-solving teaching strategy is better than guided-discovery and traditional methods. From this, it could be concluded that cooperative method would be more effective in the teaching of Home Economics. Result of data analysis in table 2 revealed that gender has no influence in the performance of male and female taught Home Economics using cooperative learning and problem solving. Eze and Okoro (2011) asserted that there exists a significant difference between the mean scores of male and female students who were taught Home Economics using problem-solving and expository methods and female performed better in language and arts than male.

The result of data analysis in table 3 indicated that there is no significant difference between the mean scores of pupils who were taught Home Economics using cooperative learning and those who were taught using problem-solving methods.

Adeyemi (2008) investigated the effects of cooperative learning and problem- solving strategies on Social Studies students' performance. Results revealed that cooperative learning strategy is the best, followed by problem-solving and traditional strategy in that order. This is at variance with that of Udo (2011) who asserted that students taught using problem-solving performed better than those taught using guided discovery and expository methods.

The result in table 4 revealed that there exists marked difference between pupils who were taught Home Economics using cooperative learning and those who were taught using traditional method. This is in agreement with the findings of Nwaba and Igbo (2010) which stated that cooperative learning is more effective instructional approach to teaching clothing construction than lecture (traditional) method.

Ajai, Imoko and O'kwu (2013) found that students who were taught with problem-based learning performed better academically than those who were taught with expository method. With these findings, cooperative learning has been proven to be more effective.

The result of the findings in table 5 has it that, there is no significant difference between the mean performances of males and females who were taught Home Economics using cooperative learning and problem- solving methods.

From the findings, it could be seen that there is no significant difference between the mean scores of male and female students who were taught Home Economics using cooperative learning and problem- solving methods. In other words, there is no statistical evidence to claim that male performed better than female after using cooperative learning and problem solving methods of teaching.

In support of this, Eze and Okoro (2010) maintained that male and female perform better when taught with problem-solving than expository method.

In contrast to that, Udo (2011) in the teaching of redox reactions asserted that gender does not affect students' achievement when they were taught using problem-solving, guided-discovery and expository learning. The above findings show that gender is not a contributory factor in the achievement of pupils and that pupils who were taught using cooperative learning and problem-solving methods performed better than those who were taught using expository.

Cooperative learning and problem-solving are learner-centered as well as mastery learning approach that allow pupils to bring out the potentials in them. It creates avenue for pupils' interaction which in turn promotes positive criticism. Hence the uses of both methods, male and female students are highly exposed to better academic achievement.

Conclusion

Based on the findings of this study the researchers concludes as follows:

3. Co-operative learning is an effective teaching method for teaching Home Economics in primary schools.
4. Teaching methods affect the achievement of pupils in Home Economics not gender.

Recommendations

In the light of the above findings, the researchers make the following recommendations.

Teachers should endeavour to use cooperative learning methods in teaching and learning of Home Economics in primary schools.

Lecture teaching method should never be considered as an option in the teaching and learning of Home Economics in primary schools.

Cooperative learning and problem solving are learner-centred and should be encouraged and adopted in primary schools.

Government should always organize seminars and workshops for teachers in order to teach them how to use cooperative teaching method in teaching Home Economics.

Curriculum developers should integrate the use of cooperative learning method in teacher education curriculum so that the pre-service teachers will learn the method before going into the field.

References

Adeyemi, B.A. (2008), Effects of cooperative learning and problem strategies on junior secondary school students achievement in social studies. *Electronic Journal of Research in Educational Psychology*. 6 (16), 691-709.

Artz, A.F., and Newman, C.M. (1990). Cooperative learning. *Mathematics Teacher: 83, 448-449.*

Azunwena, R. N. (2012), Home Economics: An instrument for family sustainability. *Nigeria Journal of Home Economics, 7 (7), 1-11.*

Eze, R.O., and Okoro, I.F. (2010). Comparative analysis of the performance of male and female students using problem solving and expository methods of teaching. *Nigerian Journal of Curriculum Studies* 17 (2) 77-84.

Mbakwem, J.N. (2005). *Curriculum implementation and instructional plan.* Owerri: Upthrust Publishers.

Nwaba, N. I, and Igbo, C.A. (2010). A comparative study on two instructional methods (collaborative and lecture methods) in teaching some selected clothing skills to senior secondary school students in Edo state. *Journal of Home Economics Research.* (12). 102-110.

Okoro, I.F. (2011). Quality assurance in instruction: from the perspective of cooperative learning and problem-solving strategies, using primary science. *Journal of Nigerian Academy of Education,* 8 (2), 131-142.

Olaitan, O.S and Agusiobo, O.N. (1981). *Introduction to the teaching of home economics.* Ibadan: Spectrum Books Ltd.

Onwuka, U. (1996). *Curriculum development for Africa*. Onitsha: Africana Publishers.

Udo, M.E. (2011). Effects of problem-solving, guided-discovery and expository teaching strategies on students performance in redox reactions. *An International Multidisciplinary Journal, Ethopia.* 5 (4). 231-241.

Uzoka, F. A. (2013), Home Economics Methodology for Colleges and Universities. Enugu: Chemus Communication.