



Journal Homepage: - www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI: 10.21474/IJAR01/5607
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/5607>



RESEARCH ARTICLE

CLOSING GENDER GAPS IN ACADEMIC ACHIEVEMENT IN AGRICULTURE AMONG SECONDARY SCHOOL STUDENTS USING CO-OPERATIVE LEARNING APPROACH.

Mary Mwhaki Waiganjo.

Manuscript Info

Manuscript History

Received: 12 August 2017
 Final Accepted: 14 September 2017
 Published: October 2017

Key words:-

Co-operative Learning Approach, male students, female students, Gender, Academic Achievement, Agriculture.

Abstract

In the Sub-Saharan Africa, gender differences in academic achievement have been of concern. The male students tend to score better grades in most of the subjects offered including agriculture. The purpose of this study was to see whether a change in the teaching approach used to teach agriculture can narrow the academic achievement gap between secondary school male and female students. This study aimed at investigating whether there are gender differences in academic achievement among secondary school agriculture students when taught through Co-operative Learning Approach (CLA). A non-equivalent control group design under quasi-experimental research was used. Four schools were randomly selected from the sub-county's co-education schools in Kenya. A Form one class was selected from each school for the study. A total of 154 students were involved. Random assignment was done to place two of the selected schools in the experimental group and two schools in the control group. The instrument used was the Agriculture Achievement Test (AAT) which was pilot-tested and validated before use. The instrument had a reliability coefficient of 0.762. All the selected four classes were taught the topic 'Factors Influencing Agriculture' for four weeks. The teachers who used CLA went through an induction workshop prior to the treatment. The instrument (AAT) was then administered to all. After treatment, the data collected were analyzed using t-test of independent samples. The null hypothesis was tested at 0.05 level of significance. The findings of this study indicate that there is no significant gender difference in academic achievement among agriculture students when cooperative learning approach is used.

Copy Right, IJAR, 2017,. All rights reserved.

Introduction:-

Gender differences in academic achievement have been an area of study for several decades now. In their report OECD (2009) asserts that one reason for studying gender differences is to improve our understanding of how students learn. Several studies have indicated that in the industrialized countries, female students perform better academically than males (Fortin, Oreopoulos & Phipps, 2013; Sparks-Wallace, 2007). However studies done by Sutherland-Addy, (2008) reveals that in Sub-Saharan Africa, the opposite is true where male students perform better academically than female students. According to Endepohls-Ulpe (2012) there are gender stereotypes that can be used to explain why male and female students attain different grades. Males are said to be independent, assertive and initiating while females are caring, emotionally expressive and responsive to others. Weaver-Hightower as cited in

Kang'ahi et.al.(2012) supports this by saying that males and females are different in behaviours, attitudes and values as they enter the educational system. Weaver-Hightower further says that due to their high activity levels and lack of discipline, the male students tend to get more attention from the teachers. This increased interaction between the male students and the teachers, makes the male students to be more involved in the instructional process. Male students are also called upon more often and get more positive feedback by teachers in class than female students. This has been said to lead to the initiative behaviour by the male students.

Sutherland-Addy (2008) arguing from a gender perspective states that in Sub-Saharan Africa, girls are affected more by the physical manifestations of sexual maturity than boys. This gives the boys an easier time going through the teenage than the girls. In addition to these factors, Siater et.al (2007) also concluded from their study that female students generally prefer information presented to them through different approaches. These differences are among those cited as the reason behind the gender disparity in academic achievement. Beyond the traditional gender stereotypes and beliefs, the gender differences in academic achievement should make teachers ask themselves if there is anything they can do to narrow this gap in academic achievement between males and females. The teachers should interrogate themselves to find out if there be any teaching approaches that can make a positive difference in the performance of the female students.

Agriculture subject was introduced in all secondary schools in Kenya when the 8-4-4 education system was implemented in 1985 (Gikungu, Karanja & Thinguri, 2014). This was due to the perceived importance of agriculture in boosting the economy of the Country. Some of the objectives of this education system were 'to develop self-reliance, resourcefulness, problem solving ability and occupational outlook in agriculture' as well as prepare them for further training (Kipkemei, Kipsat, Sulo, Korir & Inyanje, 2012). With this in view, it is therefore prudent to equip the youth, both male and female, with relevant agriculture skills and knowledge to enable them to be productive to self and the society.

In a survey on gender and academic achievement done in Kenya by Kashu (2014), male students got better results than females especially in Mathematics and sciences. Similarly, reports given by Kenya National Examinations Council [KNEC] (2013, 2015) show that male students outperform the females in the national agriculture examination known as the Kenya Certificate of Secondary Education (KCSE). The reports indicate that male students performed significantly better than female students.

The performance in agriculture subject by the students portrays an area that needs to be looked into. According to Newcomb, McCracken, Warmbrod, and Whittington, (2004) marks and grades are meant to serve as measures of students' academic achievement. Kimani, Kara and Njagi (2013) observes that academic achievement is an indicator of the knowledge and skills acquired by the students. It is therefore prudent to seek out and use teaching approaches that will not only improve the academic achievement of students in agriculture but also close the gap in academic achievement between the male and female students.

A study done by Evelia, Mwangi and Obara (2014) in Masaba North Sub-County in Kenya revealed that agriculture teachers often use lecture, question and answer methods and some read from textbooks as students write notes during agriculture lesson. This is also confirmed by Kyule (2017) in a study done in a different County in Kenya that agriculture teachers largely use teacher-centered teaching approaches. According to Engler and Kretzer (2014), learner-centered teaching approaches in teaching agriculture have the advantage of making the students connect what they learn in school with everyday life especially in the rural areas. This in turn has the potential of engaging the youth, both male and female, in more meaningful agricultural economic activities and thereby increasing agricultural productivity.

Cooperative Learning Approach (CLA) is a learner-centered teaching approach where students are organized in small teams of three to five members. Each team member, from the fastest to the slowest learner, has a contribution to make (Sapon-Shevin & Schriedewind, 1990) as they take responsibility for their own learning. Rather than pitting the students against one another in competition for attention and grades, educators can select an appropriate CLA format that effectively complements the conventional teaching styles and addresses their students' needs (Manning & Lucking, 1991). Using CLA as a teaching approach, the students tutor one another and are likely to acquire greater mastery of the material than in the common individual learning. According to Johnson and Johnson (2002), who are some of the earlier proponents of Cooperative learning, the students benefit from this teaching approach in

that it creates peer pressure and support for mastering skills. This study was conducted to investigate whether use of CLA can close the gender gap in academic achievement in agriculture among secondary school students.

Statement of the Problem:-

In Kenya, the Kenya National Examinations Council's report shows that male students' agriculture mean score is consistently higher than the mean score for the female students. Though the overall results have not been impressive, this can be improved by closing the gender gap in performance by ensuring the girls are performing as well as the boys in agriculture. Bearing in mind the gender differences in development, attitudes and behaviours, it may be necessary to approach teaching in a manner that addresses the needs of the learners and more so the female students. A study done by Evelia, Mwangi and Obara (2014) revealed that agriculture teachers in Kenya often use teacher-centered instructional approaches that result in surface learning. This may have contributed to the dismal performance by agriculture students generally but more so by the female students whose learning styles are favoured by the learner-centered teaching approaches. Other studies have indicated that learner-centered teaching approaches like CLA improves the academic achievement of learners in various subjects including agriculture. However, the effect of CLA on closing the gap in gender differences in academic achievement in secondary school agriculture is not well established. This study sought to find out whether male and female students' academic achievement in agriculture is impacted similarly when CLA is used to instruct students in agriculture.

Research Hypothesis:-

Ho: There is no statistically significant gender difference in academic achievement in agriculture by secondary school students who are taught using CLA.

Methodology:-

The study employed a quasi-experimental design and a post-test only non-equivalent control group design was used. The target population was the agriculture students in the co-educational schools in Bahati sub-county, of Nakuru County, Kenya. Four schools were randomly sampled, two schools assigned to the experimental and two schools to the control group. Total number of students involved in the study was 154; the experimental group had 39 male and 37 female students while the group using the conventional teaching approach had 45 male and 33 female students. Table 1 shows the composition of the students in both the experimental and the control groups.

Table 1:- Sample by gender

Treatment	Gender	n	Per cent
Co-operative Learning Approach	Boys	39	25.3
	Girls	37	24.0
Conventional Teaching/Learning Approach	Boys	45	29.2
	Girls	33	21.4
Total		154	100.0

In each sampled school one Form 1 class was co-opted in the study. All the students in those classes were involved since the school authorities may not be willing to allow the class to be dismantled for the purpose of research. The agriculture teachers who were to teach using CLA were inducted on how to conduct a CLA lesson before the experiment began. The instrument to be used to collect data was the Agriculture Achievement Test (AAT) which was piloted to ascertain its reliability. Kuder-Richardson (KR-20) was used to estimate the reliability which gave a reliability coefficient of 0.762. All the four classes were taught the same agriculture topic for four weeks and thereafter the AAT was administered to all students. Analysis of the data was done using t-test of independent samples. The analysis was computed using SPSS.

Results and Discussion:-

Achievement by learning approach and gender:-

Achievement was then analyzed by gender in the various study groups. Table 2 shows the mean scores of the different groups.

Table 2:- Scores in agriculture achievement test by gender by learning approaches

Gender	Treatment	n	Mean	Std. Deviation
Boys	Co-operative Learning Approach	39	49.55	15.71
	Conventional Teaching/Learning Approach	45	36.81	14.83
Girls	Co-operative Learning Approach	37	49.93	17.73
	Conventional Teaching/Learning Approach	33	39.96	18.45

The table indicates that the girls taught under co-operative learning approach had the highest mean score (49.93%) while the boys taught under conventional teaching/learning approaches had the lowest mean score (36.81%). It is also notable that in both groups, girls had a higher mean score than the boys. The greatest improvement in achievement was observed among the boys whose mean difference between those in the experimental and in the control group was 12.74 compared to that of girls, which was 9.97.

Table 3:- T-test results of the post-test agriculture achievement test scores for boys and girls taught through co-operative learning approach

Gender	n	df	Mean	Std Deviation	t	P value
Boys	39	74	49.55	15.71	0.099	0.921
Girls	37		49.93	17.73		

Significance level at $\alpha=0.05$

The results show that there is no statistically significant difference between achievement by boys and girls and therefore the hypothesis is retained. In the KCSE results, the mean for the boys is usually significantly higher than that of the girls. In this study, due to the fact that the students were placed in heterogeneous groups, the teacher was able to give similar attention to both boys and girls and the communication barriers between them were broken. Thus boys and girls were able to interact and this made the performance of girls to be equally good as that of the boys in the study. The girls probably found it easier to seek further explanation from their fellow students within the group than asking questions from the teacher during the lesson. Girls are generally shy, thus refrain from asking questions in a large group but find it more comfortable to do so in a smaller group.

Discussions:-

The results indicate that girls performed better in agriculture when the teacher used the conventional method of teaching. This could probably be explained by the fact that girls are affected more by the physical manifestations of sexual maturity than boys which usual begins when at the age of 14 years, Sutherland-Addy (2008) , when they are past Form one class. This means that the full effect of the physical manifestations of sexual maturity for the female students was not yet. These physical manifestations sometime erode the girls' self-esteem which is likely to affect their participation in the learning process and eventually it is reflected in their academic achievement.

Effect of co-operative learning approach on the achievement by boys and girls in agriculture:-

The results show that there is no statistically significant difference between achievement by boys and girls. In the KCSE results, the mean score for boys is usually significantly higher than that for girls. In this study, due to the fact that the students were placed in heterogeneous groups, the teacher probably was able to give similar attention to both boys and girls and the communication barriers between them was broken. Thus boys and girls were able to interact and this made the performance of girls equally similar to that of the boys in the study. Since the learners were placed in heterogeneous groups, the CLA thus helps the teacher to balance the interaction patterns between boys and girls and this way similar attention is given to both boys and girls. Thus the discrepancy in performance between boys and girls at KCSE agriculture can be addressed using CLA.

References:-

1. Endepohls-Ulpe, M., (2012). Gender stereotypes and their gender specific impact on academic achievement. *Folia Sociological*, 43.
2. Engler, S. & Kretzer, M.M. (2014). Agriculture and education: Agricultural education as an adaptation to food insecurity in Malawi. *Universal Journal of Agricultural Research* 2(6), 224-231 doi:10.13189/ujar.2014.020607
3. Evelia, J.V., Mwangi, J.G., & Obara, J. (2014). The influence of class size on secondary school students' access to the school farm as a facility for teaching and learning practical aspects of agriculture in Masaba North Sub-County, Kenya. *International Journal of Advanced Research* 2(9), 994-1000
4. Fortin, N.M., Oreopoulos, P. & Phipps, S.(2013). *Leaving Boys Behind: Gender Disparities in Higher Academic Achievement*.
5. Gikungu, M.G., Karanja, B. & Thinguri, R., (2014). A critical view of the historical development and concerns of curriculum in Kenya. *International Journal of Education and Research* 2(5), 195-204
6. Johnson, D., & Johnson, R., (2002). Learning together and alone: Overview and meta-analysis. *Asia Pacific Journal of Education* 22, 95-105
7. Kashu, J.N., (2014). Survey on gender and academic performance in secondary schools in Kenya. Masters Thesis. University of Nairobi, Kenya
8. Kenya National Examinations Council, (2013). *The Year 2012 KCSE examination report, Volume 2*. Kenya National Examinations Council, Nairobi, Kenya
9. Kenya National Examinations Council, (2015). *The Year 2014 KCSE examination report, Volume 2*. Kenya National Examinations Council, Nairobi, Kenya
10. Kipkemei, E., Kipsat, M., Sulo, T., Korir, M., & Inyanje L., (2012). The contribution of secondary school agricultural knowledge in farm business management to farmers in Uasin Gishu County, Kenya. *Agriculture and Food Science Research* 1(2), 33-37
11. Kimani, G.N., Kara, A.M. & Njagi, L.W. (2013). Teacher factors influencing students' academic achievement in secondary schools in Nyandarua County, Kenya. *International Journal of Education and Research* 1(3), 1-14.
12. Manning, M.L. & Lucking, R.(1991). The what, why and how of co-operative learning. *Social Studies*, 82(3), 116-120.
13. Newcomb, L. H., McCracken, J.D., Warmbrod J.R., & Whittington M.S. (2004). *Methods of teaching agriculture-3rd edition*. Pearson Prentice Hall.
14. OECD, (2009). Equally prepared for life? How 15-year-old boys and girls perform in school. Found in: <http://www.oecd.org/pisa/pisaproducts/42843625.pdf>
15. Sapon-Shevin, M. & Schriedewind, N., (1990). Selling co-operative learning without selling it short. *Educational Leadership*, 47(4), 63-65.
16. Siater, J.A., Lujan, H.L., & Dicarolo, S.E., (2007). Does gender influence learning style preferences of first-year medical students? *Advanced Physiological Education* 31(4)
17. Sparks-Wallace, O.J., (2007). A study of gender differences in academic performance in rural county in Tennessee. *Electronic Theses and Dissertations Paper 2101* <http://dc.etsu.edu/etd>
18. Sutherland-Addy, E., (2008). *Gender equity in junior and senior secondary education in sub-saharan Africa*. Published by The International Bank for Reconstruction and development/the World Bank.