GENDER DIFFERENCES IN MOTIVATION TO LEARN AGRICULTURE IN SECONDARY SCHOOLS IN THARAKA NITHI COUNTY, KENYA

Dr. Joyline Mugero Muchiri
mugambijoyline@yahoo.com
Department of Agricultural Economics,
Agribusiness and Agricultural Education and Extension, Chuka University
P.O Box 109 – 60400, Chuka

Abstract
Motivation is necessary in learning. If students are motivated to learn, they approach learning willingly because they view it as personally sufficient. Boys and girls differ in the motivation to learn depending on the subject under study. If gender differences in motivation become apparent, they are likely to accompany gender differences in learning. There is limited information on motivation to learn agriculture in relation to gender. The purpose of the present study was to investigate the gender differences in motivation to learn agriculture in secondary schools. The study employed Solomon Four-Quasi-experimental design. The study was conducted in eight county secondary schools in Tharaka Nithi county, Kenya. Stratified random sampling technique was used in selecting participating schools. A sample of 327 Form One students participated in the study. The research instrument was Motivation Towards Agriculture (MTA) questionnaire with a reliability coefficient of 0.78. Descriptive statistics (means and standard deviation) and inferential statistics (t-test) were used for data analysis. Statistical significant values were accepted at α level of 0.05. Findings from study indicated that motivation towards agriculture learning for male and female students was not equivalent. Male students had significantly higher mean scores on motivation than female students. The study concluded that male students are motivated to learn agriculture better than their female counterparts. The study recommended that agriculture teachers should explore methods of motivating students so as to minimize this gender disparity in motivation to learn agriculture.

Key Words: Agriculture Subject, Learning, Motivation, Gender

Introduction

Agriculture is an important subject because of the role it plays. Agricultural education is intended to provide students with knowledge and skills for increased agricultural production (World Bank, 2004). It is also intended to provide students with skills needed to obtain employment and earn income. Sufficient quality food to a nation depends on a critical mass of individuals who are adequately educated in agriculture. According to Blum (1996) a link exists between success in modern agriculture and formal education in agriculture. For farmers to absorb and effectively use the complex agricultural technology from research bodies, they need to have acquired a broad range of knowledge in agriculture.

Agriculture as a subject in secondary schools in Kenya plays several core educational and economic roles which are geared towards improvement of human welfare (Vandenbosch, 2006). The aim of teaching the subject is to ensure that learners are exposed to basic principles, necessary for agricultural production in the country. Teaching the subject is expected to promote the acquisition of skills for self reliance in agriculture (Mwiria, 2002). Agriculture is offered as an optional subject at secondary school level (KIE, 2006; Vandenbosch, 2006). Taking into account that agriculture is the backbone of Kenya's economy, as many students as possible should be encouraged to study the subject. The subject should be popular with the students. This is only possible if they have motivation to learn the subject.

Motivation is necessary in learning. Motivation to learn is characterized by long term, quality involvement in learning and commitment to the process of learning (Ames, 1990). In a motivating classroom, students approach learning willingly because they view it as personally sufficient. Intrinsic motivation plays a role in determining academic success (Wilson & Corpus, 2005). Therefore agriculture teachers should strive to cultivate and enhance motivation of students.

Studies have shown gender differences in motivation to learn. Holden (2002) suggested that girls and boys have gender based learning preferences. According to Wigfield, Battle, Keller and Eccles (2002) boys are inclined to like the theoretical and competitive learning environments while girls on the other hand prefer creativity and cooperative learning. A study conducted by Mcteer (1986) showed a significant relationship between gender and subject area. These findings were also echoed by Lightbody, Siann, Stocks and Walsh (1996) on the study on liking school subjects. These

findings indicate that boys and girls differ in motivation to learn depending on the subject under study. There is limited information on motivation to learn agriculture in relation to gender. The present study investigated the gender differences in motivation to learn agriculture.

Purpose of the Study

The purpose of the study was to investigate the gender differences in motivation to learn agriculture in secondary schools.

Objective of the Study

To determine whether there is gender difference in motivation to learn agriculture.

Hypothesis of the Study

The following null hypothesis guided the study.

$H_0$1: There is no statistically significant gender difference in motivation to learn agriculture.

Method and Materials

Research Design

The study used quasi-experimental research design and in particular Solomon Four Group design. Quasi-experimental design uses natural assembled groups such as classes in research. The design allows the researcher to randomly select a sample from the population without the random assignment of individual cases to comparison groups. According to Ogunniyi (1992), Solomon Four-Group design is the most rigorous design that can be used in quantitative studies since it uses two control groups in comparison to other experimental designs. The design assesses the homogeneity of the groups before administration of treatment (Borg & Gall, 1996). Solomon Four-Group design is as follows:

Group I (E1)	O_1	X	O_2
Group II (C1)	O_3		O_4
Group III (E2)		X	O_5
Group IV (C2)			O_6

Key: O_1 and O_3 are pretests; O_2, O_4, O_5 and O_6 are posttests; X is the treatment.

Group I was the experimental group (E1) which received the pretest (O_1), the treatment (X) and the posttest (O_2). Group II was the control group (C1) which received a pretest (O_3), no treatment and the posttest (O_4). Group III was another experimental group (E2) which received treatment (X) and

the posttest (O_5) but did not receive the pretest. Group IV was another control (C2) that received the posttest (O_6) only. Group 1 and III were exposed to CAT strategy. Group II and Group IV were taught agriculture using the conventional teaching strategy.

The design controls major threats to internal validity except those associated with interaction of: maturity and history, selection and maturation and selection and instrumentation (Cook & Campbell, 1979). Random assignment of schools to experimental and control groups controlled selection and maturation. To control interaction between selection and instrumentation, the conditions under which the instruments were administered were kept as similar as possible across the schools.

Data Collection and Analysis

The target population for the study was the 1,779, 876 students in secondary schools in Kenya. The study was carried out in Tharaka Nithi County, Kenya. The county has a total of 136 secondary schools comprising of 2 national, 14 extra-county, 29 county and 91 sub-county secondary schools. County secondary schools in possession of computers for teaching purposes were considered for this study. The accessible population was the 8,140 form one students in secondary schools in the county. Form ones were selected because the topic on Livestock Production I (Common livestock breeds) is taught at this level (KIE, 2006).

Stratified random sampling technique was used to select 4 girls' and 4 boys' secondary schools. A total of 163 boys and 164 girls participated in the study. Simple random sampling technique was used to select a particular stream for data analysis in cases where there was more than one stream in a participating school. However, for schools in the experimental groups, treatment was administered to all the streams.

Data was collected by a Motivation Towards Agriculture (MTA) questionnaire. Items on motivation were adopted from the scale developed by Vallerand, Petelleir, Blais, Bere, Senecal and Vallieres (1992) on measurement of intrinsic academic motivation. These items were slightly modified to suit agriculture. The MTA questionnaire had 34 items based on a 5 point Likert scale where students were required to state whether they Strongly Agree(SA), Agree(A), Undecided(U), Disagree(D) or

Strongly Disagree(SD) with the given statements. To ascertain the reliability of the questionnaire, a pilot study was carried out in a school in the neighbouring Embu county. Cronbach's Coefficient alpha was used to estimate reliability of the MTA. A reliability coefficient of 0.7 and above was accepted. The MTA yielded a coefficient of 0.78, hence was suitable for the study.

Form one agriculture teachers in the experimental groups were trained for one day on the use of CAT strategy in teaching. Teachers in the experimental groups taught agriculture by use CAT strategy while their counterparts in the control groups taught agriculture by use of Conventional Teaching (CT) strategy. The topic of instruction was Livestock Production I (Common livestock breeds). All the teachers in the sampled schools used a common implementation schedule which was prepared by the researcher. Before commencement of the study, groups I and II were given a pretest. This was followed by a three weeks intervention of the CAT strategy for groups I and III. After the intervention, MTA was administered to all the groups. Students' pretest and posttest responses were scored to generate data for analysis. Data was analysed using descriptive and inferential statistics.

Results and Discussion

The study sought to determine whether there was a gender difference in motivation to learn agriculture. In this study, motivation referred to the desire, readiness and interest that students had to learn agriculture. In order to measure motivation to learn agriculture, students were asked to respond to items in the MTA questionnaire. The MTA had 34 items based on four dimensions namely: perceived competence (6), perceived interest (14), perceived importance (8) and perceived choice in learning agriculture (6). Each item in the questionnaire was rated on a five point Likert scale ranging from: Strongly Agree (SA) = 5, Agree (A)=4, Undecided (U)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. Negatively stated items were scored in the reverse order. The mean rating score for all the responses was used to calculate the mean score for a particular group and each dimension separately.

Results on Motivation to Learn Agriculture by Gender

For the purpose of assessing the level of motivation to learn agriculture before intervention, scores from MTA questionnaire were analysed along the four dimensions namely, interest, competence,

choice and importance of agriculture. Table 1 shows the mean scores on interest to learn agriculture on the basis of gender.

Table 1

Mean Scores Obtained by Students on Interest by Gender

Gender	N	Mean	Standard Deviation
Male	40	4.22	.47
Female	42	3.94	.44

Results in Table 1, show that male students had a mean score of 4.22 and female students had a mean score of 3.94. To determine whether the means were significantly different, an independent t-test was performed. Results of the test are presented in Table 2.

Table 2

The t-test of the Mean Scores on Interest by Gender

	t	df	Sig. (2-tailed)
Equal variances assumed	2.769	80	.007
Equal variances not assumed	2.764	78.849	.007

Results in Table 2 show that the difference between the MTA mean scores for male and female students were statistically significant, t (80) =2.769, P<0.05. This implies that the level of interest to learn agriculture for the two groups was different in favour of the male students who had a higher mean score. Males generally tend to engage in heavy duties like digging creating a notion that such jobs are meant for men and this may explain the male students' interest in agriculture. It has also been noted that gender is a major factor that influences career choice and subject interest of students (Ezeude & Obi, 2013). Table 3 shows the mean scores on competence in agriculture on the basis of gender.

Table 3

Mean Scores Obtained by Students on Competence by Gender

Gender	N	Mean	Standard Deviation
Male	40	3.97	.67
Female	42	3.34	.62

Results in Table 3, show that the mean score for male and female students was 3.97 and 3.34 respectively. To determine whether there was a significant difference in the mean scores, an independent t-test was run. Table 4 shows the results from the t-test.

Table 4

The t-test Mean Scores on Competence by Gender

	t	df	Sig. (2-tailed)
Equal variances assumed	4.437	80	.000
Equal variances not assumed	4.429	78.827	.000

Results in Table 4 show that there was a significant difference between the two groups, t (80) =4.437, $p<0.05$. This implies that male students differ from female students in the perceived competence in agriculture with male students having a better perception about their competence in agriculture than the female students. According to Umoh (2003), the more difficult works are reserved for the males while light duties are assumed to be a preserve for females. Agricultural practices are presumed to be tedious therefore girls are often shielded from participating in such activities (FAO, 2005). This probably explains the differences in perceived competence in agriculture between male and female students. Therefore, the traditional views on which activity is appropriate for a boy and a girl may have influenced boys to have a better perception on competence in agriculture which is a practical subject and involves tedious activities. Table 5 shows the mean scores on choice in agriculture.

Table 5

Mean Scores Obtained by Students on Choice by Gender

Gender	N	Mean	Standard Deviation
Male	40	3.71	.82
Female	42	3.67	.63

Results presented in Table 5 show the mean score for male and female students was 3.71 and 3.67, respectively. To determine whether a significant difference existed on the mean scores, an independent t-test was performed. Table 6 shows the results of the t-test.

Table 6

The t-test Mean Scores on Choice by Gender

	t	df	Sig. (2-tailed)
Equal variances assumed	.258	80	.797
Equal variances not assumed	.257	73.177	.798

Results in Table 6 showed no significant difference on choice to learn agriculture between male and female students, t (80) =.258, p>0.05. The results suggest that the level of perceived choice in agriculture for male and female students was the same .Table 37 shows the mean scores on the importance of agriculture based on gender.

Table 7

Mean Scores on Importance by Gender

Gender	N	Mean	Standard Deviation
Male	40	4.00	.67
Female	43	3.81	.59

Results in Table 7 show male and female students had mean scores of 4.00 and 3.81, respectively. To compare the mean scores and determine whether there was a significant difference, an independent t-test was run. Table 8 shows the results of the t-test.

Table 8

The t-test of Mean Scores on Importance by Gender

	t	df	Sig. (2-tailed)
Equal variances assumed	1.346	80	.182
Equal variances not assumed	1.342	77.700	.182

Results in Table 8 show no significant difference on the importance of agriculture for the male and female students, t (80) =1.346 p>0.05. This implies that the level of male and female students' perceived importance of agriculture was similar.

The overall pretest mean scores on MTA were calculated. The mean scores reflected motivation of the two groups towards agriculture learning .Table 9 shows the mean and standard deviations of the two groups on motivation towards agriculture learning.

Table 9

Mean Scores Obtained by Students on MTA by gender

Gender	N	Mean	Standard Deviation
Male	40	3.97	.53
Female	42	3.69	.41

Results in Table 9 show the mean score for male students was 3.97 and that of female students was 3.69. In order to determine whether there was a significant difference in the two means, an independent t-test was performed. Results from the t-test are shown in Table 10.

Table 10

The t-test of Mean Scores on MTA by Gender

	t	df	Sig. (2-tailed)
Equal variances assumed	2.744	80	.007
Equal variances not assumed	2.727	73.356	.008

Results presented in Table 10 shows a significant difference on motivation towards agriculture learning for the two groups, t (80) =2.744, $p<0.05$. This indicates that motivation towards agriculture learning for male and female students was not equivalent. Male students had significantly higher mean scores than females. This therefore led to the rejection of the null hypothesis ($H_0 1$) which stated that there is no significant gender difference in motivation to learn agriculture. A study by Ayodapo (2013), on the of attitudes of female students towards farm activities in tertiary institutions of Ogun State in Nigeria, observed that more boys than girls favoured the choice of agricultural science as a subject of study in senior secondary school. This probably explains why male students had a better motivation to learn agriculture than female students.

Conclusion and Recommendation

The present study revealed a significant difference existed towards motivation to learn agriculture between male and female students in favour of the male students. Therefore, male students are better motivated to learn agriculture than female students. Agriculture teachers should explore methods of motivating students so as to minimize this gender disparity in motivation to learn agriculture. This may be by way of varying the teaching strategies.

REFERENCES

Ames, C. A. (1990). Motivation: What Teachers Need to know. *Teachers College Record,* 9(3), 409 – 421.

Ayodapo, O. G. (2013). Attitudes of Female Students Towards Farming Activities in Tertiary Institutions of Ogun State, Southwest Nigeria. *International Journal of Social and Behavioural Sciences,* 1(3), 77-84.

Borg, W. R & Gall, M. D. (1996). *Educational Research*: *An Introduction*. New York: Longman.

Blum A. (1996). *Teaching and Learning in Agriculture: A Guide for Agricultural Educators*. FAO, Rome.

Cook ,T. D. & Campbell, D. T. (1979). *Quasi-experiment: Design and Analysis Issues for Field Settings*. New York: Rand McNally.

Ezeude, F. O. & Obi, T. N. (2013). Effect of Gender and Location on Students' Achievement in Chemistry in Secondary Schools in Nsukka Local Government area of Enugu state, Nigeria. *Research on Humanities and Social Sciences,* 3(15), 50-55.

FAO, (2005). *Higher Agricultural Education and Opportunities in Rural Development for Women*. Natural Resources Management and Environment Department. Rome: FAO.

Holden, C. (2002). Contributing to Debate: The Perspectives of Children on Gender, Achievement and Literacy. *Journal of Educational Inquiry,* 3(1), 97-100.

Kenya Institute of Education, (2006). *Secondary Education, Agriculture Teachers Handbook*. Nairobi: KIE.

Lightbody, P., Siann, G., Stocks, R. & Walsh, D. (1996). Motivation and Attribution at Secondary School: The Role of Gender. *Educational studies,* 22(1), 13-25.

McTeer, J. H. (1986). Gender Differences in Relationship to Likes and Dislikes of Four Subject Areas. *The University of North Carolina press*, 69(4), 260-263.

Mwiria, K. (2002). *Vocationalization of Secondary Education*: Kenya Case Study: Kimkam Development Consultant (Africa) Ltd.

Ogunniyi, B. M. (1992). *Understanding Research in Social Science.* Nigeria: Ibadan University Press.

Umoh, C. G. (2003). A Theoretical Analysis of the Effects of Gender and Family Education on Human Resources Development. *Journal of Curriculum Organisation of Nigeria,* 10(1), 1-4.

Vallerand, R. J. & Bissonnette, R. (1992). Intrinsic, Extrinsic and Amotivational Styles as Predictors of Behaviour. A prospective study. *Journal of personality,* 60(3), 599-620.

Vandenbosch, T. (2006). *Post-Primary Education and Training in Sub-Saharan Africa: Adapting Supply to Changing Demand.* Unpublished manuscript, Nairobi Kenya: World Agro Forestry Centre.

Wigfield, A., Battle, A., Keller, L.B. & Eccles, J. S. (2002). Sex Differences in Motivation, Self-concept, Career Aspirations and Career Choice: Implications for Cognitive Development. In A. V. McGillicuddy-De Lisi & R. Delisi (Eds.), *Biology, Sociology and Behaviour: The Development of Sex Differences in Cognition* (pp 93-124). Westport, CT: Ablex.

Wilson, L. & Corpus, D. (2005). The Effects of Reward System on Academic Performance. *Middle School Journal Research Articles.* Retrieved on 13th February 2005 from http:/www.nmsa.org/research/re_articlessept2001.htm.

World Bank, (2004). *Skills Development in Mozambique: Issues and Options*. Report No. 294992-MZ. World Bank, Washington, USA.