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Full Length Research Paper

Influence of instructional resources in learning agriculture in secondary school on employment creation in Vihiga County, Kenya

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The purpose of this study was to determine the influence of instructional resources in learning agriculture in secondary school on employment creation in Vihiga County, Kenya. The study was conducted in Emuhaya Constituency, and it adopted qualitative research design using descriptive survey method. The target population was the youth who learnt agriculture in secondary schools. The study purposively sampled 150 youth out of total population of 2,736 youth who sat for Kenya Certificate of Secondary Education (KCSE) in Emuhaya Constituency between 2010 to 2012. Data were collected using structured questionnaire. The instrument was validated by Academic experts from the Department of Agricultural Education and Extension. The instrument had Cronbach's Alpha reliability coefficient of 0.814. The data was analyzed using the Statistical Package for Social Sciences, version 20, based on the objectives and research questions. The relationship between the secondary school Instructional resources and employment creation was tested using Pearson Correlation. Frequency tables and percentages summarized the results. The study established that teaching agriculture in secondary school using agricultural instructional resources was positively related to employment creation for out of school youth in Emuhaya Constituency of Vihiga County. The study recommended formulation of policies that promote harmonization between teaching agriculture and employment creation. It recommended youth to take up agricultural activities for employment, and recommended replication of similar studies in other levels of education such as primary and university.

Key words: Agricultural policy, employment creation, learning resources, students attitude, agricultural education.

INTRODUCTION

This study was aimed at determining instructional resources used in schools for teaching agriculture that may help the youth in employment creation. As well, financing the students for field trips and visit agricultural institutions or research stations where the learners can have tangible experience of the facilities and resources

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as well as in agricultural society of Kenya Shows, which are normally held in various Counties in the Country.

Provision of instructional resources has been identified as a key factor in the implementation of agriculture in secondary school curriculum. The initial level of instructional resource provision in the first schools to teach agriculture included; a laboratory, agriculture workshop equipped with metal and woodworking tools, gas and electric welders, power generators, fuel storage tank, tractors, cultivators, combined harvester, science laboratory facilities, the school farm, a departmental vehicle and funds for running the department (Konyango and Asienyo, 2015). Instructional resources provide a base upon which teachers can guide students in the learning process.

However, an analysis on how the resources were supplied and put into use reveals that the level at which the vocational agriculture project was started was beyond sustainability in a secondary school in terms of costs and level of competence of teachers. Wide range of resources such as machinery and laboratory equipment went into disuse because the teachers could neither service nor repair (Konyango and Asienyo, 2015).

The Kenya vocational agriculture programme in which instructional resources and facilities are provided to implement the teaching of agriculture in a practical manner with a mission to transform and promote rural development dates back to 1959 (Bennell, 2007; Maxwell, 1965) when agriculture was first introduced in the Secondary School curriculum. The aim of linking the resources and facilities to the curriculum and syllabus was in a way a move to implement the teaching of agriculture in a practical manner.

Developing rural economy to reduce poverty levels and create job opportunities for rural youth, the provision of the resources was a direct injection of investment in agriculture, hence an investment for rural development and transformation. Appropriate tools and resources would facilitate innovations in agriculture. This would multiply employment opportunities; equally, the financial support to agriculture school programme would promote additional value on agricultural products besides stimulating physical output. Among the provided instructional facilities was the agriculture workshop which was the most expensive resource in the secondary agriculture school programme. This was a facility for promoting practical teaching of the subject. Despite this magnitude of expense, the study revealed that most of the workshops were later modified by schools for uses other than the teaching of the subject (Konyango et al., 2015).

The discourse of resource availability in the teaching of agriculture in secondary school is the nerve of sustainable agricultural development as a stimulus for employment creation whereas the youth are the players being trained through the resources to implement job creation through sustainable agricultural application. The main aim of this study was to determine the influence of instructional resources in learning agriculture in secondary school on employment creation in Vihiga County, Kenya.

The main question that the study intended to answer was: what is the relationship between agriculture instructional resources in secondary school and employment creation for out of school youth? The burning issue is, there is increase in crime and other social vices such as drug and substance abuse amongst the youth due to most of these youth being idle spending the better part of their day along roads and shopping centers; while farms are uncultivated yet the ecological conditions in Vihiga County are favorable for agricultural production.

LITERATURE REVIEW

Nwabuisi (1993) in a study on resources for teaching and learning agriculture science in Lagos State Junior secondary schools reported a low teacher/student ratio of 1:60. Amadi (2011) also reported a low teacher/student ratio of 1:158, which is just a marginal improvement on Nwabuisi (1993). Though as reported by Amadi (2011) there are more qualified teachers of agriculture these days, from a study conducted in Nigeria. The imbalance stems from the population explosion since every student is expected to offer the subject.

Instructional resources are all materials and equipment used to enhance effective learning (Ongeti, 2008). A teacher selects, develops and reorganizes teaching – learning resources for effective teaching. A teacher is therefore the most important teaching – learning resource. UNESCO (1999) observed that lack of financial resources hindered the expansion of facilities that led to specific problems in vocational subjects like agriculture. Lack of funds prevents schools from developing their farms. It is upon this background that that study aimed at finding out the challenges facing teaching and learning of agriculture in secondary schools. Classroom curriculum and laboratory exercises provide students with fundamental knowledge in agricultural practices, preparing them for careers in food, fiber and natural resource industries.

Kabugi (2013) found that school farm, agricultural tools and agriculture classes were inadequate. The study further found that livestock units/tools and agricultural laboratories were not available in most of the schools. From the findings of the study, it can be said that inadequacy of teaching and learning resources in secondary schools in Kakuyuni division poses a challenge to teaching and learning of agriculture. The findings are in line with the findings of a study done by Temu and Kitalyi (2002) who found that teachers are

poorly equipped to deal with some of the challenges that the system poses such as the reality of large class size, unavailability of didactic materials and gender disparities. Kabugi (2013) further found that inadequacy of resources such as school farms, agricultural tools and agriculture classrooms posed challenges to teaching and learning of agriculture. Some topics such as agriculture economic, farm power and machineries seemed very difficult to the learners.

The government, parent teacher association (PTA) and other stakeholders should help in providing the needed resources such as school garden, animal farm, demonstration plots, well equipped laboratories among others to facilitate the teaching and learning of Agricultural Science in the schools. The agriculture science subject involves a lot of practical activities. Therefore, lack of funds to acquire the needed teaching and learning resources for practical work will impede the effective teaching and learning of the subject. According to Konyango (2010), lack of textbooks, poor management, and poor funding are among the factors that impede the teaching and learning of agricultural science. Similarly, Ssekamwa (2009) posits that lack of funds and inadequate funds to run practical education have reduced the effectiveness of undertaking practical education in subjects like agriculture.

Owino et al. (2015) posit that the availability of teaching-learning resources enhances the effectiveness of schools as these are the basic things that can bring about good academic performance in students. According to Cheplogoi (2011), the level of availability of agricultural science facilities in the school has significant influence on students' attitudes towards the subject. Mutai (2006) asserts that learning is strengthened when there are enough reference materials such as text books, exercise books, teaching aids and classrooms. Lack of required resources as observed in the Senior High could have a great toll on the students' overall performance in agricultural science.

Again, the findings agree with an assertion by Amuah (2009) that common challenges bedeviling the agricultural practical lessons in developing country include: inadequate facilities, low professional and efficiency levels of teachers, poor attitudes of teachers, poor funding, poor attitude of school administrators and parents towards agricultural education, and political lapses. Moreover, the findings of this study compare well with findings of a study conducted by Kidane and Worth (2013) that the teaching and learning of Agricultural Science was greatly impeded by lack of fields for practical experience, laboratories, and libraries to facilitate learning.

The availability and utilization of instructional materials during agricultural science lessons positively influenced the students' attitudes towards the subject. A recent study conducted by Darko et al. (2015) revealed among others that frequent use of lecture method in teaching, inadequate teaching and learning materials and their availability, and difficulty in planning field trips were the challenges to effective teaching and learning of Agricultural Science in the Senior High Schools.

Muchena (2013) observes that agriculture subject involves a variety of tools which are categorized as livestock tools, workshop tools farm tools and farm machinery. From the list mentioned by the students, most schools are able to provide simple farm tools which are a small fraction of agriculture resources. The researcher also observed that the teaching aids in the schools are partially available and not enough. All schools had few agricultural charts and teachers drawings on the blackboard. The students also used the drawings in the textbooks as illustrations. Schools A, B, C, and E did not have agriculture club reports meaning that the clubs do not exist or are inactive. Similarly, Ngesa (2006) observed that agricultural clubs in secondary schools are critical ingredient of qualified agriculture school in Kenya, but many students are not engaged in club activities apart from agricultural shows.

A study by Muchena (2013) established that land was not enough in most schools as the available land was used for form four Kenya Certificate of Secondary Education (KCSE) examination projects. This was a clear indication that other agriculture students apart from form fours do not do practical in the field. The tools and equipment are not enough in all the five schools as the researcher observed that all the schools had simple tools and equipment like jembes, pangas, spade, wheelbarrow and forked jembes. No school had an agriculture laboratory except the agriculture stores where the equipment is kept. The findings in this study concurred with Ngesa (2006) where he stated that most secondary schools lack primary basic crop production tools and equipment, livestock tools and farm machinery tools. These schools should find ways of providing students with basic tools to make the subject more interesting.

METHODOLOGY

Research design

This study adopted qualitative research design using descriptive survey method. The study was conducted from May to July 2015. The target population consisted of 2,736 youth who studied agriculture up to form four in 32 secondary schools in Emuhaya Constituency between 2010 and 2012, according to the Emuhaya sub-county KCSE Examination.

Study area

The study was conducted in Emuhaya Constituency located in the Vihiga County of Kenya, adjacent to Maseno University and bordering Kisumu City. The constituency covers an area of 94.50km^2 with a population of 95,064 people (KNBS, 2010). The

constituency receives a bimodal type of rainfall. The average annual rainfall range is 1500 to 2000 mm per annum. The long rains starts from March and ends in May while short rains season starts in October and ends in December. The rainfall pattern is convectional with lightning and at times hailstorms. Rainfall is well-distributed and approximately 85% reliable, with an altitude of 250 to 2000 m above sea level and a temperature of 20.50°C (GOK, 2009). The average farm holding is about 2 ha. Mixed farming is mainly practiced on small scale. Farmers keep cattle, sheep, goats, poultry, and also plant crops such as maize, beans, sorghum, millet, groundnuts, cowpeas and sweet potatoes (MOA, 2011). Weaving of baskets, ropes and mats is also done from sisal and papyrus reeds. Agribusiness is mainly done in Luanda Town being a major market, along the Kisumu-Busia highway.

Sampling procedure

The sample size was 150 respondents of the target population, and their employment is in agriculture related activities. Three wards in the constituency were randomly selected, and 50 respondents were picked from the wards represented in the sample. These employment activities included crop production, livestock production, marketing, value addition and transportation of agricultural products. Snowball method was used to reach the other out of school youth who learned agriculture in secondary school. One hundred and fifty youth were stratified because their population did not constitute a homogeneous group. Thus, the aim was to stratify them into male and female population. They were then sampled by simple random sampling, fifty youth from every ward were sampled and this was the criteria of selection.

Instrument for data collection

The study used structured questionnaire and entitled: 'A questionnaire for out of school youth on influence of instructional resources in agriculture learning on employment creation', developed by the researcher and was administered to the respondents. The questionnaire was divided into 5 sections numbered A to E. Section A of the questionnaire dealt with the bio data which mainly consisted of closed ended questions. The section mainly described the respondents in terms of their characteristics. Section B of the questionnaire dealt with influence of agriculture instructional resources in secondary school and employment creation for the out of school youth. This section consisted of statements which the respondent chose a statement that is most applicable to him or her, and a five point Likert-type scale in which the respondents were required to respond to given statements. Section C of the questionnaire required the respondents to give their views or comments about school agriculture instructional resources in relation to employment creation after school. Opinions in this section were not subjected to statistical tests but rather were analyzed and presented in discussion form. Section D dealt with agricultural activities youth engaged in using instructional resources used in their schools for employment after school. Section E of the questionnaire dealt with the challenges faced by the youth while practising agriculture using instructional resources they learned in secondary school for employment.

Method of data analysis

Quantitative data were coded and analyzed using Statistical Package for Social Sciences (SPSS) Version 20. Frequency tables and percentages were used to summarize and present the result of the data. Data on influence of instructional resources on employment creation were measured as an index generated from respondents rating of five statements, each with a maximum of five. The maximum score was 5, implying that the higher the score, the higher the influence of the instructional resources on employment creation. The influence of instructional resources in secondary agriculture learning and employment creation in Emuhaya Constituency, Vihiga County was established using Pearson Correlation where the independent variables were school farm and farm buildings, and dependent variable was employment creation. In order to establish the agriculture teaching resources that contributed more to employment creation, regression analysis model below was used.

$$Y = \beta 0 + \beta 1\, X1 + \beta 2 X2 + \varepsilon$$

Where;

Y = Employment creation
$\beta 0$ = Constant Term
$X1$ = Independent Variable 1 (school farm)
$X2$ = Independent Variable 2 (farm structures)
$B1 - \beta 2$ = Regression Coefficient for each independent term
ε = Random or Stochastic Term

The model assumes that:

(1) There is little or no multicollinearity in the data. Multicollinearity occurs when the independent variables are not independent from each other.
(2) The error of the mean will be independent from the independent variables.

RESULTS AND DISCUSSION

Use of teaching resources in agriculture's contribution to employment creation

This section presents data related to the objective of this study, which was stated as to identify the relationship between agriculture instructional resources in secondary school and employment creation for out of school youth. The key variables analyzed in this section include: instructional facilities and resources mostly used in learning agriculture, how the schools used the facilities/resources, and how the facilities/resources influenced students for purposes of job creation.

Toskar (2001) states that planning for material resources involves the identification of the resource requirements, assessing quality in terms of the needs, establishing criteria for standards, determining the cost per unit and the use of the materials by individuals or groups. Table 1 shows that majority of respondents (90.5%) said that the school farm was mostly used in learning agriculture compared to 9.5% who said they used farm structures.

This finding indicates that secondary schools in Vihiga County used the school farm as the main instructional resource for teaching agriculture with few schools that

Table 1. Facilities/resources used for teaching agriculture in secondary schools in Vihiga County.

Facility/Resource	Frequency	Percentage
The school farm	124	90.5
Farm structures	13	9.5
Total	137	100.0

Source: Field data (2015).

Table 2. Appreciation of agriculture as employment creation by students.

Response	Frequency	Percentage
Yes	122	89.1
No	15	10.9
Total	137	100.0

Source: Field data (2015).

Table 3. Area of agriculture QAS used for job creation.

Activity	Frequency	Percentage
Crop production	103	75.2
Livestock production	14	10.2
Processing of agricultural products	7	5.1
Transportation of agricultural products	10	7.3
Marketing of agricultural products	3	2.2
Total	137	100.0

Source: Field data (2015).

used farm structures. Respondents also reported that the school farms were used by the schools to grow crops and keep livestock for the purposes of income generation by the schools. Farm structures were used to house livestock and store the harvested crops and farm inputs.

Table 2 above that majority of respondents (89.1%) agreed that agriculture was an important subject for employment creation compared to 10.9% who did not agree. Some of the reasons, respondents gave included: students practicing crop farming after finishing school, other students practicing livestock production after school, others observed that some students started agricultural value addition enterprises. This finding is in line with Mwiria (2005) who found that schools that do well in a given vocational subject in the KCSE tend to show more interest, and to set aside more resources for their teaching. In the rural areas, the most important resource available for most youth at their disposal is the farm. Once the rural youth acquire appropriate knowledge and skills on agriculture, they will be able to utilize the farm adequately.

Table 3 shows that majority of respondents (75.2%) observed that crop production was mostly used for job creation, followed by 10.2% who used livestock production, 7.3% used transportation of agricultural products in job creation, 5.1% used value addition and 2.2% used marketing of agricultural products to create jobs. Table 4 shows that majority of respondents (58.4%) observed that crop production was most used for job creation, followed by 27.7% who used livestock production, 2.2% used transportation of agricultural products in job creation, 9.5% used value addition and 2.2% used marketing of agricultural products to create jobs.

Table 5 shows that majority of respondents (48.9%) observed that crop production was most used for job creation, followed by 34.3% who used livestock production, 2.2% used transportation of agricultural products in job creation, 9.5% used value addition and 5.1% used marketing of agricultural products to create jobs. Table 6 shows that majority of respondents (68.6%) observed that crop production was mostly used for job

Table 4. Agricultural skills applicable for employment creation.

Activity	Frequency	Percentage
Crop production	80	58.4
Livestock production	38	27.7
Processing of agricultural products	13	9.5
Transportation of agricultural products	3	2.2
Marketing of agricultural products	3	2.2
Total	137	100.0

Source: Field data (2015).

Table 5. Agricultural activity mostly practiced for income generating activity.

Activity	Frequency	Percentage
Crop production	67	48.9
Livestock production	47	34.3
Processing of agricultural products	13	9.5
Transportation of agricultural products	3	2.2
Marketing of agricultural products	7	5.1
Total	137	100.0

Source: Field data (2015).

Table 6. Agricultural activity out of school students willing to continue practicing for future employment.

Activity	Frequency	Percentage
Crop production	94	68.6
Livestock production	13	9.5
Transportation of agricultural products	4	2.9
Marketing of agricultural products	26	19.0
Total	137	100.0

Source: Field data (2015).

creation, 9.5% for livestock production, and 2.9% for transportation of agricultural products in job creation and 19.0% for marketing of agricultural products to create jobs. This finding reveals that out of school students were willing to apply knowledge, apply skills, apply agricultural principles and continue with crop farming activity for purposes of employment creation. Activities like livestock production, agricultural products value addition, transportation of agricultural products and marketing of agricultural products as activities were not favorably used by out of school youths in employment creation.

Relationship between use of resources in agriculture and employment creation

This section presents inferential analysis which tests whether there is relationship between use of resources in teaching agriculture and employment creation. The study used Pearson Correlation analysis to test existence of any relationship between use of resources in teaching agriculture and employment creation, and further analysis used regression analysis to test which element of agricultural resources and facilities contributed more to employment creation among the youth in Vihiga County.

Table 7 shows the study established a strong positive correlation of 0.237 ($p= 0.005<0.05$) between school farm as a resource used in teaching agriculture and employment creation. This finding reveals that school farm as resource in teaching agriculture contributed much to employment creation among the youths in Vihiga County. This finding supports the expectation of EAEC (1976), which states that agriculture was taught in schools mainly to impart knowledge to students and

Table 7. Relationship between resources used in teaching agriculture and employment creation.

Correlations	Employment creation	School farm	Farm structures
Employment creation	1	0.237	0.206
	-	0.005	0.016
School farm	0.237	1	-0.095
	0.005	-	0.267
Farm structures	0.206	0.144	1
	0.016	0.093	-

Source: Field data (2015).

Table 8. Model summary.

R	R Square	Adjusted R square	Std. Error of the estimate
0.253	0.064	0.050	0.305

Table 9. Full regression model.

Variable	Unstandardized coefficients		Standardized coefficients	T	Sig (p).
	B	Std. Error	Beta		
Constant	0.925	0.106	-	8.758	0.000
School farm	-0.045	0.026	-0.153	-1.776	0.078
School structures	0.258	0.092	0.242	2.810	0.006

a. Dependent variable: Employment creation.

inculcate in them a positive attitude towards agriculture as a dignified and profitable occupation.

The study also established a positive strong correlation of 0.206 (P=0.016<0.05) between the farm structures, facilities used in the secondary schools to teach agriculture and employment creation. Table 8 shows that the R^2 value indicates how much of the dependent variable, "employment creation", was explained by the independent variables, "school farm and farm structures facilities". In this case, the R Squared is 0.064 indicating that 6.4% of the variation in employment creation was explained by the independent variables. The difference, that is, 93.6% of the variation in employment creation was explained by factors that are not included in this study. As indicated in Table 9, from the non-standardized coefficients, the following equation was developed:

$y = 0.925-0.045x_1+0.258x_2+\varepsilon$

From the full regression model, the standardized coefficients indicate that school farm structures as agriculture instructional facilities had p=0.006 which is lesser than the acceptable significance level of 0.05 hence significance had positive influence on agriculture as a source of employment creation compared to school farm as a resource which had p=0.078 which is greater than the acceptable significance level of 0.05 hence no significance had a negative influence. In conclusion, therefore, the research question that is, “what is the relationship between agriculture teaching resources in secondary school and employment creation for out of school youth?”, was confirmed that school farm structures as agriculture teaching facilities had positive influence on agriculture as a source of employment creation compared to school farm as a resource which had negative influence.

MAJOR FINDINGS

(1) Majority of respondents (90.5%) said that the school farm was mostly used in learning agriculture compared to

9.5% who said, the use of farm building.
(2) Majority of respondents (89.1%) agreed that agriculture was an important subject for employment creation compared to 10.9% who did not agree.
(3) Majority of respondents (75.2%) observed that crop production was mostly used for job creation, followed by 10.2% who used livestock production, 7.3% used transportation of agricultural products in job creation, 5.1% used value addition and 2.2% used marketing of agricultural products to create jobs.
(4) $y= 0.925-0.045x_1+0.258x_2+\varepsilon$ from the full regression model, the standardized coefficients indicate that school farm structures as agriculture teaching facilities had positive influence on agriculture as a source of employment creation compared to school farm as a resource which had negative influence.

Conclusion

The main aim of the study was to determine the influence of instructional resources in learning agriculture in secondary school on employment creation in Emuhaya Constituency, Vihiga County, Kenya in answering the research question, "what is the relationship between agriculture instructional resources in secondary school and employment creation for out of school youth? School farm structures as agriculture teaching facilities had positive influence on agriculture as a source of employment creation compared to school farm as a resource that had negative influence. Use of school farm as agriculture learning resource seemed to have reminded students of the bad aspect of agriculture such as being used for punishments and therefore negatively influenced agriculture as source of employment.

RECOMMENDATIONS

The study recommended the following;

(1) Formulation of policies by stakeholders and other interested parties in agriculture that promote harmonization between the agriculture instructional resources in secondary school and employment creation.
(2) Out of school youth should take up on agricultural activities for employment after school by utilizing available agricultural resources for generating income.
(3) Encouraging other youth to develop positive mindset on farming as an occupation to reduce rural –urban migration for white-collar jobs and utilize the available land using advanced technologies for more food production.
(4) Similar studies to be conducted to other levels of education like Primary Schools, Colleges and Universities.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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