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RELATIONSHIP BETWEEN SELECTED SCHOOL FARM FACTORS AND THE ACQUISITION OF AGRICULTURAL SKILLS AMONG SECONDARY SCHOOL STUDENTS IN MALAVA SUB-COUNTY, KAKAMEGA COUNTY, KENYA

(Research article)

Robert Ouko Recha [a] *, Miriam Nthenya Kyule [b], Lydia Nkatha Kinuthia [c]

[a] *Egerton University, P.O Box 536, Egerton, Nakuru 20115, Kenya*
[b] *Egerton University, P.O Box 536, Egerton, Nakuru 20115, Kenya*
[c] *Kirinyaga University, P.O Box 143, Kerugoya 10300, Kenya*

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Abstract

One of the objectives of teaching Agriculture at the secondary school level is to equip learners with practical agricultural skills as it is deemed as one of the most effective solution to unemployment and food insecurity. The school farm facility provides an opportunity for the learners to put into practice the theoretical concepts learned in the classroom. This study aimed at establishing the relationship between selected school farm factors and the acquisition of agricultural skills among secondary school students in Malava Sub-County, Kakamega County, Kenya. The school farm factors were; availability, level of, accessibility, adequacy and utilization. Correlational research design was adopted. A sample size of 180 respondents which comprised of 165 form three Agriculture students and 15 teachers of Agriculture from 15 schools participated in this study. Questionnaires and an observation guide were used as the data collection tools. Chi-square test of independence was used to analyze the findings of this study aided by the Statistical Package for Social Sciences (SPSS) version 26. The study established that among the school farm factors, only level of utilization and level of adequacy have a significant relationship to the level of skill acquisition among the students.

Keywords: Practical agricultural skills; School farm factors; Agriculture; Secondary schools

*Corresponding author: Robert O. Recha. ORCID ID.: https://orcid.org/0000-0000-0000-0000
E-mail: recharobert@gmail.com

1. Introduction

The shift in agricultural production to meet the increasing demand for food can only be achieved sustainably with a strong drive in agricultural education. Agricultural education skills are one of the most important and economically rewarding dexterity in this 21st century (Ojebiyi et al., 2015). Due to the need to equip more individuals with agricultural skills, Chepng and Boit (2015) posit that this calls for greater emphasis on a type of vocational education that can aid the learner in making better decisions related to the best farming techniques to apply so as to improve on food production amidst emerging challenges such as climatic change, scarcity of land and decline in soil fertility.

Many secondary school students, including those who studied Agriculture do not get an opportunity to further their studies due to various issues like financial constraints. Kyule and Konyango (2019) therefore argue that the teaching and learning of Agriculture at the secondary school level should be practical with the aim of equipping the learners with farming skills that are relevant to their ecological areas. This can help in curbing on the rising youth unemployment food insecurity which are currently on the rise. Past study by Manyasi (2019) revealed that farmers who studied Agriculture at the secondary school level generally tend to have higher productivity than their counterparts. The implementation of practical Agriculture for skill acquisition entirely depends on the adequacy and effective use of a wide array of facilities and resources, the school farm being the most crucial.

In countries such as the Australia, Germany and Britain, practical teaching of Agriculture for skill acquisition has been given precedence. Christie (2016) observed that in these countries, active involvement of the learners on the school farm during Agriculture lessons is not a new concept as it was initiated as early as the 19th century with the aim of improving students' psychomotor skills. The rise in unemployment and food insecurity in the wake of the 21st century has pushed many African nations to put in deliberate attempts of improving practical teaching of Agriculture at school level which according to According to (UNESCO, 2016) is a way of equipping learners with skills that can be replicated in the field of work. Jjuuko et al. (2019) posits that there has been change in curricula in some of the African countries aimed at accommodating Agriculture as a core subject.

Data from the Kenya National Examination Council (KNEC, 2019) revealed that despite Agriculture being optional in secondary schools, the student enrolment trend has been on an increase with over 40% of the students opting for the subject. Practical teaching of the subject using the school farm can serve as an opportunity to impart practical agricultural skills to many students. Despite all these prospects, there are still challenges in terms of accessibility, utilization and adequacy of this facility. Research findings from Kyule et al. (2016) revealed that students of Agriculture hardly conduct demonstrations and projects on the school farm which is an indicator of theoretical learning. Sebotsa et al. (2021) affirmed that farming has been reserved for the elderly while the out of school youth opt for white collar jobs due to their shortage of practical agricultural skills. This perhaps explains the high rates rural-urban migrations, youth unemployment and food insecurity in Kenya.

1.1. Relevant scholarship

This section provides an overview of recent research related to the school farm factors which contribute to the acquisition of agricultural skills among students. It has been divided into thematic headings which include; the role of the school farm in the practical teaching of Agriculture, adequacy and accessibility of the school farm.

The school farm and practical teaching of Agriculture

The school farm is one of the most essential facilities required for the practical teaching of Agriculture. Konyango and Asienyo (2015) relate the importance of the school farm when teaching and learning Agriculture to that of a laboratory with the case Science subjects such as Biology, Chemistry and Physics. Iderawumi (2020) outlined the objectives of a functional school farm to include; (i) earning income to the school through the sale of surplus produce (ii) attraction centre to school visitors (iii) providing farming practice to the learners (iv) improving background knowledge (v) solving individual farming problems (vi) Carrying out experimentations. With all these outlined objectives, it can be conclusively judged that the school farm is one of the prerequisites for effective implementation of agriculture curriculum. According to Aholi (2018), it is specifically within the school farm where students carry out hands-on activities that equip them with the necessary skills required in the job market.

Iderawumi et al. (2021) defined the school farm as a piece of land within the school compound that has been specifically allocated to students for the purpose of carrying out hands-on activities in both crop and livestock production. The concept of garden-based learning has been well embraced and is predominant as school farms are used as laboratories for hands-on learning of Science, environmental studies and other subjects. Various international bodies such as the Food and Agriculture Organization (FAO) are advocating for the utilization of school farms not only for purposes of experiential learning but also addressing the nutritional and dietary needs of the learners and teachers (Machisu et al., 2022). Students who have been raised in backgrounds where agriculture is not practiced as an economic activity may lack interest in the subject. Chukwudum and (Ogbuehi, 2013) however point out that exposing such learners to the real farming experiences on the school farm may actually ignite their passion and interest towards the subject. Equipping relevant agricultural skills among the agriculture students who are deemed as the future farmers demands well planned experiential learning experiences on the school farm.

According to the Kenya Institute of Education (KIE, 2006) guidelines, an ideal school farm for the teaching and learning of Agriculture should have four mandatory sections which include; demonstration plots, commercial plot, museum plots and project plots. Each and every section plays its role in the implementation of practical aspects of Agriculture. Demonstration plots provide a site where the teacher can demonstrate to the learners the procedure of carrying out various activities such as pruning. The commercial plot exposes the learners on the economic importance of agriculture therefore enabling learners to perceive the profitability in agriculture. Museum plot is reserved for growing exotic crops that have been discussed in the syllabus but not commonly grown in the particular ecological region. Project plots are reserved for students' project work. As the learners interact with each other during

project activities on the school farm, they also tend to acquire communication, problem solving and critical thinking skills which according to Ekamilasari et al. (2021) are very paramount to the 21st century learners. Besides these sections, farm structures are also important on a school farm as they play various roles such as restraining of livestock when carrying out various management practices as well as storing produce after harvesting. Agriculture entails A study by Bett (2022) suggests that for students to acquire skills in handling livestock, they should be exposed to a variety of animal units. Developed nations such as Finland and the USA have placed more emphasis on practical teaching of Agriculture by making use of the school farm and its associated facilities which according to Muthomi (2017) is meant to maximize on the connection between agricultural practice and education.

According to (FAO, 2015), the incorporation of the school farm as a tool in the practical teaching and learning of school Agriculture is rapidly gaining mileage and thus being included in the national education policies. Despite the zeal and urge shown by the African states in promoting school farming, Schreinemachers et al. (2019) observed that the educational systems in most of the African states failed to envisage and properly plan on how to implement the program. Focus on theory, time limitation on the school timetable, unqualified teachers, shortage of necessary farm tools and equipment and unfavourable school policies remain to be some of the key challenges towards utilization of the school farm in the teaching and learning of Agriculture for skill acquisition in most African nations according to a study by Tapiwa (2021). The frequent use of the school farm as a punishment ground for offenders in most schools makes students to associate it with punishment rather than perceive it as a teaching-learning facility which according to Okiror et al. (2017) significantly contributes to students' negative attitude towards the school farm.

In Kenya, school farming can be traced back to the colonial era when the government promoted the practice in rural primary schools through the 4-K clubs which is an acronym for Kuungana, Kufanya na Kusaidia Kenya, which loosely translates to "get together, act and help Kenya". Foekan and Owuor (2017) pointed out that during this time, school farming had so many benefits to the participants who were mainly the youth such as; equipping them with modern farming skills, equipping them with entrepreneurial skills in agriculture and also improved their leadership skills. The Chavakali pilot project of 1960 proved to be the pinnacle for practical agriculture in Kenyan secondary schools (Maxwell, 1965). After the Chavakali pilot project, the Kenyan government established six pioneer schools where Agriculture was to be offered as a vocational subject. Documentary evidence from (GoK, 1970) shows that in each of the pioneering schools, a minimum of two hectares was reserved mainly for students' projects and demonstrations. Agriculture offered in the pioneering schools was what Saeteurn (2017) described as vocational agriculture and aimed at producing skillful learners. Over time, the various policies and educational reforms have failed to put into consideration the role of the school farm in the teaching and learning of Agriculture. Konyango and Mutisya, (2017) affirm that currently, Agriculture is offered in all Kenyan schools; regardless of whether the school has a farm or not. The Move to reduce the time allocated to Agriculture on the school timetable and the overhauling of double lessons following the 2002 reforms makes it nearly impossible for incorporation of the school farm during the instructional process (Kyule, 2017).

Adequacy of the school farm

The most commonly used variable in establishing the adequacy of facilities in schools is the class size or simply the number of students who the resource or facility is meant to serve during the lesson. Class size does not refer to the dimensional size of the classroom building but rather the maximum number of students allowed to enroll in a class. Teaching effectively takes place when the class size is relatively manageable to the teacher. The recommended student-facility ratio based on the UNESCO standards is 25:1. According to Anekeya (2015), some vital aspects in the teaching-learning process such as class management, lesson preparation, provision of timely feedback to learners and grading of learners are more likely to be achieved in cases where the class size is small. Ong'amo et al. (2017) concurs with these findings and further reiterates that a smaller student- facility ratio enhances skill acquisition especially if the facilities seem scarce since each and every student gets access to the available facilities and resources.

Countries which happen to be members of the Organization for Economic Co-operation and Development (OECD) tend to have made laudable steps in ensuring manageable class sizes. In Finland for example, the average class size is 13:1 which in turn favours practical teaching of resource intensive subjects for acquisition of hands-on skills. In Africa, teaching of Agriculture for skill acquisition is far from reality and this can be directly attributed to the inadequacy and sometimes the lack of the necessary facilities. Tapiwa (2021) observed that majority of African countries have tailored their education systems to accommodate Agriculture as a core subject without necessarily envisaging the adequacy of fundamental facilities such as the school farm that are crucial for the implementation of the practical aspect of the subject. The aftermath of this policy has been a tremendous increase in class size beyond the average standards which has resulted into inadequacy of fundamental facilities such as the school farm. Findings from (UNICEF, 2013) reveals that large class size impedes quality education in majority of the African countries.

In Kenya, there have been various factors which have greatly contributed to significant changes in enrolment and provision of educational resources and facilities in schools. Among these factors, increase in human population and educational reforms remain to be the most outstanding (UNICEF, 2013). It is perceived that over time, there has been a rapid increase in student enrolment in Kenyan schools thus putting pressure on the available resources and facilities. Reports from the Ministry of Education (2017) indicate that the free day secondary school education programme has also led to an increase in student enrolment. With the increase in class sizes, the adequacy of facilities for practical education in subjects like Agriculture should be considered to ensure acquisition of hands-on skills among the learners.

A past study by Waiganjo et al. (2019) established that large class size always tend to impede the practical teaching of Agriculture in many ways. The scholars first pointed out that organizing a large class of over 40 students into smaller groups for project activities may prove to be a challenging task to the tutor. Furthermore the most obvious challenge that the scholars pointed out was the inadequacy of the necessary facilities such as the school farm and farm tools. This findings resonate with those from Evelia (2014) which indicated that due to inadequacy of the school farm, only the form four students are allocated plots to carry out their

project work which begins in late January and ends in September. During this period, the other Agriculture students in the lower forms are hardly exposed to any practical work in Agriculture despite the syllabus providing for practical activities in Agriculture across the different classes. This goes against the objective of school Agriculture of equipping practical skills to the learners.

Level of accessibility to the school farm

In the 21st century, most educational stakeholders are advocating for the teacher-centered approaches in education as opposed to the learner-centered approaches. Resource-based learning is the response to the need to individualize instruction. Ong'amo et al. (2017) attenuates that learning takes place better when learners are presented with concepts in a sequential manner from simple to abstract. The integration of facilities during the instructional process helps achieve this objective by making the learning process begin from known to unknown. The Agriculture concepts tend to be interconnected right from form one to form four. Effective use of the relevant facilities such as the school farm can help the learner to clearly understand these concepts and develop a more positive outlook of the subject.

Agriculture is considered a vocational subject and therefore, Kyule et al. (2016) suggested that it demands for a project approach to teaching to enable the learners acquire the technical skills through experience. Engaging students in project activities on the school farm enhances co-operation and collaboration which in turn promotes communication and inter-personal relations among the learners. Critical thinking, creativity and higher content retention are some of the other benefits students achieve from active engagement on project work the school farm. Soetan et al. (2021) posit that a resourceful teacher should make deliberate attempts to make the available resources and facilities both within the school and the local surrounding community accessible to the students. Making the school farm facility accessible to the students can perhaps enhance the acquisition of practical farming skills among learners.

The secondary school Agriculture syllabus comprises of 33 topics which can be broadly categorized into; livestock production, crop production, agricultural economics and farm power and machinery distributed throughout the four year course (KIE, 2006). At the end of each and every topic, there are suggested learning activities which are supposed to be conducted on the school farm. This therefore implies that for Agriculture to be taught in a practical manner as suggested by the syllabus, students must have maximum access to the school farm especially during the Agriculture lessons.

Theoretical framework

The study is anchored on the pragmatic theory that was postulated by John Dewey (Dewey, 1908). This theory advocates for learning by doing and suggests that learning should be practical rather than theoretical. According to this theory, the school should expose the learner to the real life experiences which according to Elias (2004) awaits the learner after school. Practical teaching of agriculture by making use of the various teaching-learning resources and facilities not only makes learning meaningful but also equips learners with competencies that prepare them for future careers in the agriculture sector. The practical farming skills gained in school enables the learners to be job creators rather than job seekers.

The second theory that guided this study was the Constructivist Learning Theory that was theorized by Mascolo and Fischer (2005). According to this theory, allowing learners to interact with a variety of learning materials helps them to make a discovery of the real world by themselves which leads to experiential learning. The theory was deemed relevant to this study because the interaction between the learner and the various facilities on the school farm during the teaching of Agriculture leads to acquisition of practical skills among the learners.

2. Method

2.1 Research Design

The study adopted correlational research design. Correlational studies help to determine if there is any relationship between the variables under study. Edmonds and Kennedy (2016) pointed out that this research design is appropriate in education related studies since it allows the study of the association between various variables in a study independently. This research design was therefore deemed appropriate for this study because it enabled the researcher to establish how the selected school farm factors; availability, adequacy, accessibility and level of utilization correlate with acquisition of practical agricultural skills among the form three agriculture students.

2.2. Sampling procedures

The school was the sampling unit. There are 50 public secondary schools in Malava Sub-County all which offer Agriculture. Based on the Nassiuma (2000) formula, 15 schools were sampled.

$$n= \frac{NC^2}{C^2+(N-1)e^2}$$

In this case;

n= required number of schools

N= total number of schools (50**)**

C= coefficient of variation (0.2)

e= marginal error (0.05)

$$n= \frac{50\times0.2^2}{0.2^2+(50-1)0.05^2}$$

n=15

Based on data from the Malava Sub-County Education Office (2019), there are 5 Extra-County, 13 County and 32-Sub-County schools. The Sub-County does not have any National school. The proportional sampling formula by Salkind (2014) helped in establishing the number of schools from each category to be included in this study.

$$n_h= n\frac{N_h}{N}$$

And

$$\sum_{h=1}^{H} N_h = n$$

Where;

n_h=Number of schools required from each school category
n= Required number of schools (15)
N_h= Total number of schools belonging to a particular school category
N= Total number of schools (50)

Based on this formula, 9 Sub-County, 4 County and 2 Extra-County schools were sampled. This ensured equal representation of all categories of schools so as to avoid bias.

2.3. Sample size power and precision

Yamane (1967) formula was employed in determining the number of students to participate in this study.

$$n=\frac{N}{1+N(e^2)}$$

For this case;
n= needed sample size
N= Size of the population (4327 form three students)
Allowable error= (0.08)

$$n=\frac{4327}{1+4327\,(0.08^2)}$$

n= 150

Based on the Mugenda and Mugenda (2003) recommendation that a sample size should be increased by ten percent to cater for non-response, 15 more form three Agriculture students were included. This gave a total of 165 students. The total number of form three students of Agriculture from each of the sampled schools was first be determined. Proportionate sampling was then be used such that the school with the highest number of form three students taking Agriculture will contribute the highest number in the sample size.

By use of purposive sampling, one teacher of Agriculture was selected from each of the 15 sampled schools. In schools with more than two teachers of Agriculture, the teacher with more years of experience was selected to participate in the study. The teacher with more experience in teaching Agriculture was selected due to the vast experience in the organization and utilization of the school farm. This gave a total of 180 respondents.

3. Results and Discussion

3.1 Demographic information of the respondents

3.1.1 Gender

Out of the 165 students who participated in this study, 71 (43.03%) were females while 94 (56.97%) were males. A past study by Ongang'a (2016) points out that during subject selection, few females than males tend to opt for the subject with the perception that the subject is considered more masculine. The same trend was also observed with the case of teachers where out of the 15 teachers, 9 (60%) were males while 6 (40%) were females. These

findings resonate with those by Mwikali (2018) which attributed the low preference of the subject among female teachers to its vocational nature which demands for more practical activities outside the classroom. Kyule et al. (2016) observed the same trend and pointed out that it could have negative impact on the female students by denying them role models to emulate in the agriculture sector.

3.1.2 Distribution of the respondents by school category

School category served as a moderator variable and therefore, the respondents were selected from the various school categories. This also avoided bias. For the case of teachers of Agriculture, 9 (60%) were from the Sub-County schools, four (26.67%) were from county schools while two (13.33%) were from the Extra-County schools. The same trend was observed with the students whereby majority (60%) were from the Sub-County schools.

3.2 Availability of School Farm

The first objective of the study aimed at determining the relationship between the availability of the school farm and the acquisition of agricultural skills among the students of Agriculture in Malava Sub-County. The indicator for availability was the physical presence of a school farm as well as the various sections on the school farm such as the project plots, commercial plot, demonstration plots, museum plots and farm structures. Both sets of the respondents were requested to tick on either yes or no with respect to availability of the school farm. Table 1 presents a summary of the results.

Table 1: Availability of the School Farm

Students n=165		**Teachers n=15**					
School farm available		**Response in frequencies and percentages**					
		Teachers' response			**Students' response**		
		Yes	**No**	**Total**	**Yes**	**No**	**Total**
	Freq	15	0	15	165	0	165
	%	100	0	100	100	0	100

The results from both the students and teachers showed that all the sampled schools had a school farm. A functional school farm should have various facilities such as demonstration plots, project plots, museum plots, farm structures and the commercial farm (KIE, 2006). All these sections are crucial in the teaching and learning of various aspects of practical Agriculture and therefore Karani et al. (2021) considers a school farm without these sections as a playground. Both set of respondents were then asked to indicate the various facilities found on their school farms. Museum plot is a section on the school farm where exotic varieties of crops that have been discussed in the Agriculture syllabus are grown. It is however surprising that majority of the students (86.1 %) reported that their school farms lack this vital facility. Findings from the teachers was in-line with those of the students as 12 teachers (80%) agreed that their school farms lack the museum plots.

Concerning the availability of demonstration plots, responses from the teachers slightly contradicted those from the students as eight teachers (53.33%) reported that the facility exists on their school farms while majority of the students (60%) reported of the non-existence of this section. Affirmation from the observation guide revealed that eight schools had demonstration plots as indicated by the teachers. The difference in opinion between the two sets of respondents can be attributed to the fact that the section is hardly put into use and therefore students in some of the schools were unaware of its existence.

Regarding the availability of farm structures, 52.7% of the student respondents who were the majority noted that the facility does not exist on their school farms while 47.3% agreed that the facility exists on their school farms. This contradicts the results from the teachers as majority of the teachers (60%) indicated the existence of the facility with 40% indicating the non-existence of the facility. Based on the observation guide, farm structures existed in majority of the schools (60%) but had been left in a state of disuse and therefore the learners never knew of their existence.

Project plots were available in all the schools. This could be explained by the fact that the Kenya National Examinations Council (KNEC) requires each school offering Agriculture to allocate project plots to students at form four for carrying out projects specified by the KNEC as part of their Kenya Certificate of Secondary Education (KCSE) exam. Majority of the students (63%) reported that their school farms had the commercial farm. Affirmations from the teachers were in line with that from the students as nine teachers (60%) agreed to the existence of the commercial section. This is quite surprising since some sections that are deemed vital for the implementation of practical agriculture such as museum plots lack in most of these school farms. These findings conform to those by Waiganjo (2021) in Nakuru County which established that school principals perceive the school farm as an income generating unit and therefore tend to commercialize a larger portion of the school farm. This completely violates the objective of teaching Agriculture for skill acquisition in secondary schools.

The chi-square test value was .634 which revealed that the relationship between availability of the school farm and level of acquisition of agricultural skills was not statistically significant at .05 level of significance since $p>.05$. This implies that the mere availability of the school farm does not guarantee agricultural skill acquisition among the students. These findings resonate with those from Dhakal (2017) which established that skills are acquired from experiential learning which can only be achieved when the learners actively interact with resources and facilities.

3.3 Level of Accessibility of the School Farm

Location of the farm and as well as its associated facilities may likely determine the frequency of visits students make when monitoring their projects during their free time or during the Agriculture lesson time. From the findings, all the school farms in the sampled schools were located approximately less than one kilometre from the schools. Majority (43 percent) of the students indicated that they visit the school farm on a daily.

When asked to specify when they access the school farm, it was quite surprising that 16.4 % of the students never access and another 70.3% rarely access the school farm during the Agriculture lessons despite having the school farms located in close proximity to the schools. Tea breaks, lunch breaks, morning and evening sessions were most commonly used to access the school farm. Findings from the teachers also closely echoed those from their students as only 13.3 percent of the teachers indicated that their students access the school farms during the Agriculture lessons. These findings resonate with those from Konyango and Asienyo (2015) which pointed out that the urge for early syllabus completion coupled with academic competition among schools have pushed schools to entirely focus on academic performance thereby paying very less focus on accessing resources and facilities such as the school farm during the instructional process.

To determine the relationship between level of accessibility of the school farm and the level of acquisition of agricultural skills, chi-square test for independence was used. The p value of the test was .057. Since the value was greater than .05, it indicted that there is no relationship between level of accessibility of the school farm and the acquisition of agricultural skills. This indicates that majority of students frequently access the school farm during tea break, lunch break, evening, morning and weekends for other purposes besides learning of Agriculture.

3.4 Level of Adequacy to the School Farm

Having established the availability status of the various facilities on the school farm in the sampled schools, the study further sought to determine the level of adequacy of these facilities. Class size was used as an indicator. Figure 1 presents the summary of results on class size.

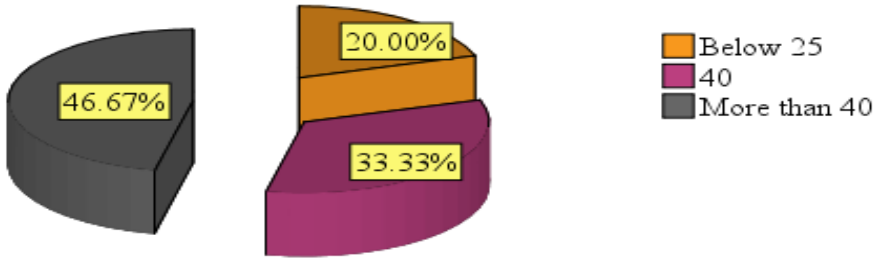

Figure 1: Class size

According to the Ministry of Education, Science and Technology (2014) specifications, class size of more than 40 students is technically considered to be large, that comprising of 40 students is considered to be average while that of less than 25 students is considered to be a small. While doing the class observations, the researcher came across a

form three class in one of the Sub-County schools with ninety three students being taught in one classroom by one teacher. It was obvious that with such large class sizes, practical teaching of Agriculture may be nearly impossible. With reference to class size, the students were requested to note how often they are allocated plots to work on either individually or in groups. Over 75.2 percent of the respondents reported that they had never been allocated plots. This was a clear indication of minimal exposure to project activities which is quite contrary to what the syllabus recommends. This clearly brings out the much emphasis that have been placed on early syllabus completion and academic excellence at the expense of practical teaching and learning of Agriculture for skill acquisition in the Sub-County.

Chi-square test of relationship was used to ascertain the relationship between the independent variable (level of adequacy of the school farm) and the dependent variable (level of acquisition of agricultural skills). The chi-square value was .025. The value being less than .05 denoted that there is a relationship between level of adequacy of the school farm and the acquisition of agricultural skills.

3.5. Utilization of the School Farm

The fourth objective sought to establish the relationship between the level of utilization of the school farm and acquisition of agricultural skills among form three students of Agriculture in Malava Sub-County. Level of utilization was measured in terms of frequencies of practical activities conducted on the school farm. In order to establish whether school farms are utilized for instructional purposes, the respondents were asked to indicate by ticking yes in case they make use of the school farm during Agriculture lessons or indicate no in case they do not. Figure 2 gives the summary of the results

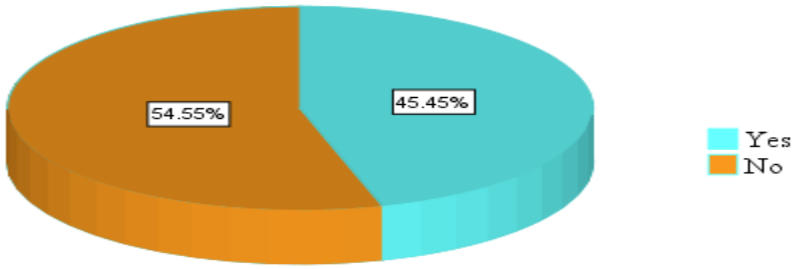

Figure 2: Utilization of the School Farm for Instructional Purposes

90 students (54.5%) noted that they do not use the school farm for instructional purposes while 75 students (45.5%) noted that they do use the school farm for instructional purposes. The 75 students were further asked to indicate how frequently they made use of the school farm for carrying out various agricultural activities such as demonstrations, student projects, growing crops for sale, crop museum and livestock production. The results are summarily presented in Table 2.

Table 2: Frequency of Utilization of the School Farm for Various Agricultural Activities

Agricultural activity		Frequency of utilization						
		Never	**Annually**	**Termly**	**Monthly**	**Weekly**	**Daily**	**Total**
Demonstrations	Freq	26	9	3	25	0	0	75
	%	34.7	12.0	4.0	33.3	0	0	100
Projects	Freq	0	64	11	0	0	0	75
	%	0	85.3	14.7	0	0	0	100
Growing crops for sale	Freq	58	9	8	0	0	0	75
	%	77.3	12.0	10.7	0	0	0	100
Crop museum	Freq	50	14	11	0	0	0	75
	%	66.6	18.7	14.7	0	0	0	100
Livestock production	Freq	0	0	30	45		0	75
	%	0	0	40.0	60.0	0	0	100
Any other use (Specify)	Freq	28	0	0	0	0	0	75
	%	100	0	0	0	0	0	100

From the results, it is generally evident that majority of the form Three Students of Agriculture in Malava Sub-County hardly make use of the school farm for conducting various agricultural activities as recommended in the syllabus. Kahuria et al. (2018) stipulate that the form three Agriculture syllabus aims at exposing students to the basic principles of Agriculture that can be put into practice for the benefit of the individual and the community in general with majority of students (85.3%) reporting that they get involved in projects only once in a year, achieving this aim may prove futile.

It is also evident that majority of the students (77.3%) are never given an opportunity to use the commercial farm for instructional purposes. According to the Kenya Institute of Education (2006), secondary school Agriculture aims at enabling students to perceive agriculture as a dignified and profitable venture. Yayé et al. (2017) affirm that agribusiness is rapidly becoming a very profitable venture that the youth especially in Africa should embrace. Denying students an opportunity to make use of the commercial farm for instructional purposes, especially those from backgrounds where agriculture is not practiced as an economic activity denies them the opportunity to perceive the profitability in farming. Majority of the students (66.6%) reported that they never make use of the crop museum. This facility should expose a student to the agronomy of certain exotic crops such as coffee that are not commonly grown in Malava Sub-County for skill acquisition.

As far as students' utilization of the school farm for livestock production is concerned, 40% reported that they utilize the school farm for this purpose on a termly basis while another 60% on a monthly basis. Exposing students to livestock production equips them with necessary skills on carrying out various management practices involved in rearing various

species of livestock. Many counties in Kenya are arid and semi-arid, which according to Boulanger et al. (2018) is very suitable for livestock production.

Chi-square test of relationship was used to determine the relationship between the independent variable (level of utilization of the school farm) and the dependent variable (level of acquisition of agricultural skills). The chi-square value of the test was .032. Being less than .05, it denoted a significant relationship between the level of utilization the school farm and the level of acquisition of agricultural skills. Similar findings were arrived at by Edokpolor and Dumbiri (2019) which affirmed that skill acquisition in vocational education which encompasses agricultural education depends upon the extent to which the teachers as the facilitators avail and put into use the available resources and facilities.

4. Conclusions and recommendations

This study concluded that:

a) All the schools in the Sub-County had school farms though most of the school farms lacked the fundamental facilities necessary for practical Agriculture implementation for the acquisition of agricultural skills.
b) Due to the close proximity, students regularly access the school farm but not with the aim of engaging in practical activities that promote the acquisition of agricultural skills.
c) Commercialization of the school farms has led to the in-availability and inadequacy of the other facilities such as crop museums which are fundamental for the practical teaching of agriculture for skill acquisition
d) Students are not exposed to the agronomic practices on the commercial farms for the acquisition of agricultural skills.
e) The access to and utilization of the school farm during Agriculture lessons is very low partly due to more focus on theoretical aspects of the syllabus.

The study recommends;

a) Considering the vocational nature of Agriculture, the Kenyan Government through the Ministry of Education should allocate more time for the subject on the timetable to enable implementation of both practical and theoretical aspects of the subject.
b) The Kenya National Examination Council should adjust their grading criteria such that the marks awarded to the project examination (Agriculture paper 3) carries equal or even more weight to that of the theory examinations (Agriculture paper 1 and 2) as it is the case with Science subjects such as Biology. This might induce teachers to embrace a practical approach to teaching of Agriculture.
c) The Kenya National Examination Council should re-introduce the sitting practical examination as it was back in 1969 under the East African Examination Council. This might ensure active involvement of learners in practical agriculture on the school farm thus leading to increased levels of skill acquisition.

d) The Ministry of Education through the County directors and Sub-County directors should enforce policies that regulate the commercialization of school farms by school principals.
e) To reduce on class size in Agriculture especially in the Sub-County schools, more options among the technical subjects should be availed to the learners.

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Declaration of Conflicting Interests and Ethics

The authors of this article do hereby declare to have no conflict of interest.

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