INFLUENCE OF PRACTICAL APPROACHES OF TEACHING AGRICULTURE ON ACADEMIC PERFOMANCE IN HIGH SCHOOLS IN KISII COUNTY, KENYA

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A THESIS SUBMITTED TO THE BOARD OF POST-GRADUATE STUDIESIN PARTIAL FULFILLMENT OF THE REQUIREMENTS FORTHE AWARD OF A DEGREE OF MASTER OF SCIENCE IN AGRICULTURE SUBJECTOF THE SCHOOL OF AGRICULTURE AND NATURAL RESOURCE MANAGEMENT, KISII UNIVERSITY

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DEDICATION

I commit this study to my beloved husband Bwana Bob John Rayori, my children Sheila, Edmond, and Barack, as well as to them for their support and appreciation of my work.

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ABSTRACT

The goal of teaching agriculture using practical methods is to give students the general and specialized abilities they need to carry out practical scientific tasks and to improve their practical instrument handling proficiency. These provide students a sense of self-worth, which inspires them to work hard. Therefore, the goal of this study was to ascertain how academic performance in secondary schools, specifically in Kisii County, was influenced by practical agricultural teaching approaches. The study's specific goals were to: establish methods other schools use to teach practicals in agriculture subject; to determine contraints encountered in implemention of various practical methods of teaching the subject and also to found out the relationship between practical approaches of teaching agriculture and academic perfomance. Before beginning the fieldwork, piloting was conducted in a few chosen schools to determine the accuracy and dependability of the research tool. A sample of 304 respondents was chosen from a target population of 756 people using multi-stage stratified random sampling and purposive sampling procedures. Both primary and secondary data were intended to be gathered using questionnaires with a five-point Likert scale. The reliability of the research instruments was determined using the test-retest coefficient using the Cronbach Alpha Coefficient, and the validity of the questionnaires was determined using the Content Valid Index coefficient. Descriptive and inferential analyses of the data were performed. The associations between the investigated variables (indipendants) and the subject's academic performance were determine using ANOVA. Bar graphs and tabular tables were used to display the results. The results showed that there was no statistically significant difference between students' average scores in agriculture and the application of display as a useful teaching strategy. Project methodologies and experimentation, however, revealed a favorable but shaky relationship. The R^2 of 0.235 explained the proportion of the variability. Accordingly, the factors like the project methods, field trips, experiments and demonstrations may dictate only 23.5percent of academic success in the subject under study, whereas the other factors not included in the model can command 76.5percent of the performance. Based on ANOVA analysis, the regression model significantly predicts academic achievement in the subject with 23.324 F-ratio and a $p \geq 0.000$. This suggested that using a practical approach to teach agriculture is important and, to a certain extent, enhances academic performance. According to the study's recommendations, the study's findings should help people better understand how various do-it-yourself approaches might boost agricultural students' academic achievement. This would make it easier for the school's administration and other stakeholders to plan and distribute the resources that instructors and students need to improve their academic performance.

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LIST OF ACRONYMS

ANOVA	Analysis of Variance
CVI	Content Valid Index
NACOSTI	National Commission of Science Technology and Innovation
SPSS	Statistical Package for Social Sciences
SD	Standard Deviation
PBL	Project Based Learning

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The goal of using practical teaching methods in agriculture classes is to give students the ability to conduct scientific experiments and improve their equipment handling skills. These provide students a sense of self-worth, which inspires them to work hard. Agriculture is frequently taught using hands-on activities like projects, experiments, and demonstrations. Practical procedures are an essential part of scientific research processes because they provide a realistic basis for the development and evaluation of theories and standards for setting predictions (Chan, 2009). This kind of instruction makes sure that students not only learn scientific principles but also how to apply them. Hypotheses testing that have been applied to create theories of validation is a part of the goal of agricultural practical instruction.

Evidence suggests that, compared to other science courses, students typically find practical methods to be relatively entertaining and helpful. A poll of more than 1,400 students from various age groups found that 71percent of the students thought that conducting experiments in class was a more interesting way to learn about and teach agriculture. 38percent of respondents, a little lower percentage, chose it as one of the approaches to learning and teaching agriculture that they thought was more beneficial and effective (Cerini, Murray, & Reiss, 2003). In a typical classroom setting, students are exposed to practical design and methods before being asked to complete a variety of practical-oriented tasks while being supported and given advice.

In a typical classroom setting, learners are subjected to practical design and procedures before being asked to complete a variety of practical-oriented tasks by following a clear set of provided instructions. Support and guidance are then given to any struggling students. Kizlik (2015), students are expected to carefully construct the hypotheses under investigation using the provided practical design, collect data, analyze data, interpret results, and summarize and assess the written report. Teachers occasionally plan practical tasks that students develop to improve the learning process. It is the job of the student to create hypotheses that are consistent with the material they have been studying in class. Before testing hypotheses, students must create a proposal and present it to their teachers outlining how they plan to create and test the hypotheses. Teachers evaluate the suggestion to make sure it is succinct, clear, tested, and replicable (Ghaderi and Dastjerdi 2013). Teachers typically provide input on the suitability of the methodology and design, as well as suggestions for how students may enhance their designs. Students are then free to test their hypotheses.

Many graduates with agricultural training accept teaching offers from secondary schools as a stepping stone to greater careers, claims Ghonji (2012). Many secondary school teachers lack the necessary professional training, which affects pupils' performance. In addition to possessing suitable teaching strategies linked to agriculture, one needs technical training in agriculture to be a qualified teacher in that subject. Additionally, Kidane & Worth (2012) emphasized in their study that teaching agriculture is an important part of educating students about agricultural issues. At the primary and secondary school levels, agricultural science is the instruction and study of constituent sciences. The training and dissemination of agricultural knowledge to students is what an agriculture teacher does. In the contemporary world, farming has been transformed into a profession involving numerous scientific procedures. Farming has evolved into a highly specialized, mechanized, and organized industry for increased productivity and efficiency. According to Alfred (2009), as production

and management methods advance, farming issues get more complex, while farmer competitiveness spurs the development of cutting-edge farming p

Professional educators should help students develop the skills needed to analyze problems and take prompt action to solve them. Asgari & Mahjub Moadab (2010) found that student learning and effective teaching in agriculture was crucial factors in the evaluation of high-caliber academic performance in agriculture. The process of teaching involves interactions between the teacher and his environment as well as personal development. Student achievement in higher science education is influenced by efficient organization and thorough instruction. According to Hoveida & Moulavi (2008), effectiveness of scientific board members' instruction affects student development in the field of agriculture. Students who received excellent instruction in their academics showed greater depths of understanding. Teachers must encourage learning and high-quality instruction by creating an atmosphere of fascination.

In the demonstration method of teaching agriculture, the teacher serves as the main actor while the pupils watch or participate independently, according to Mundi (2006) and Daluba, Noah, and Ekiyi (2013). Here, the teacher performs the task that the students are supposed to complete at the end of the lesson by demonstrating to them how to do it step-by-step and by referring to it as an exhibition or display that the teacher typically performs while the students observe intently in the interest of understanding. Theresa (2013) describes the conventional lecture approach as also known as the "talk and chalk" method or the "textbook method" as a popular teaching strategy. When employing the approach, the teacher predominates in their instruction, with little involvement from the students. Here, the teacher is seen as the repository of all knowledge, and the students are only passive recipients of the information that the teacher (instructor) imparts to them during the course of learning.

According to Theresa (2013), the traditional lecture style, commonly referred to as the "talk and chalk" method or the "textbook method," is a well-liked teaching tactic. When using the method, the teacher instructs primarily on their own, involving the pupils only minimally. Here, the teacher (instruction) is viewed as the fount of all knowledge, with the pupils serving as merely passive receptacles of the knowledge that is passed on to them during the course of learning.

1.2. Statement of the Problem

The advantages of teaching agriculture in high schools through practical methods include fostering independence and self-reliance in pupils while also allowing them to develop general and specialized scientific abilities. On the relationship between various practical approaches to teaching agriculture and student performance, there is, however, little information. This is the area that this study's research aims to cover. There has been a lot of research on the numerous aspects that affect students' academic performance in agriculture, but little has been written about how diverse practical teaching approaches affects the performance of the student perticully agriculture. .

1.3. Objectives of the Study

1.3.1. General Objective

The main aim of this study was to establish the influence of practical approaches of teaching agriculture on academic perfomance in high schools in Kisii County, Kenya

1.3.2. Specific Objectives

i) To establish how various schools use practical methods of teaching agriculture.

ii) To determine the constaints encountered in the implemention of various practical approaches in teaching the subject in high schools.

iii) To find out the linkage between practical approaches of teaching agriculture and the academic performance.

1.3.3. Research Questions

i) How do various schools use practical approaches in teaching agriculture?

ii) What are the constraints encounted in the implemention various practical approaches in teaching the subject in high schools?

iii) What is the linkage between practical approaches of teaching agriculture and the academic performance of the subject?

1.4. Significance of the Study

The study’s results will help the administrators of the school and other interested parties identify numerous effective strategies for teaching the subject of interest in high secondary schools. The results of this study will be very helpful in determining how different practical techniques affect students' academic achievement, particularly in agriculture. This will talk about some of the difficulties teachers run into when using various practical approaches and how they might be used to boost performance. This would highlight the significance of allocating sufficient cash and resources to obtain the tools and equipment necessary to implement these practical solutions..

1.5. The Studys’ Limitations

One of the major limitations was denied access to important academc information and access to school compound expecially the national schools.

1.6. Assumptions

Before preceded to the field, the study arrived at the following assumptions in the course of the study:

i) That, accurate inforomation would be collected frorm the participants.
ii) That, the respondent must be agricultural student
iii) That, methods used in teaching agriculture subject would lead to good performance in the study subject.

1.7. Scope of the Study

This study will only evaluate the effective techniques of teaching agriculture in secondary schools and how they affect the learnes achievement in the studied subject in the study area.

1.8. Conceptual Framework

The conceptual framework that follows presents the diagrammatic relationships between the study's variables. Figure 1 illustrates the relationship between the independent variable, practical methods used in teaching agriculture, and the dependent variable, academic success in the agriculture topic.

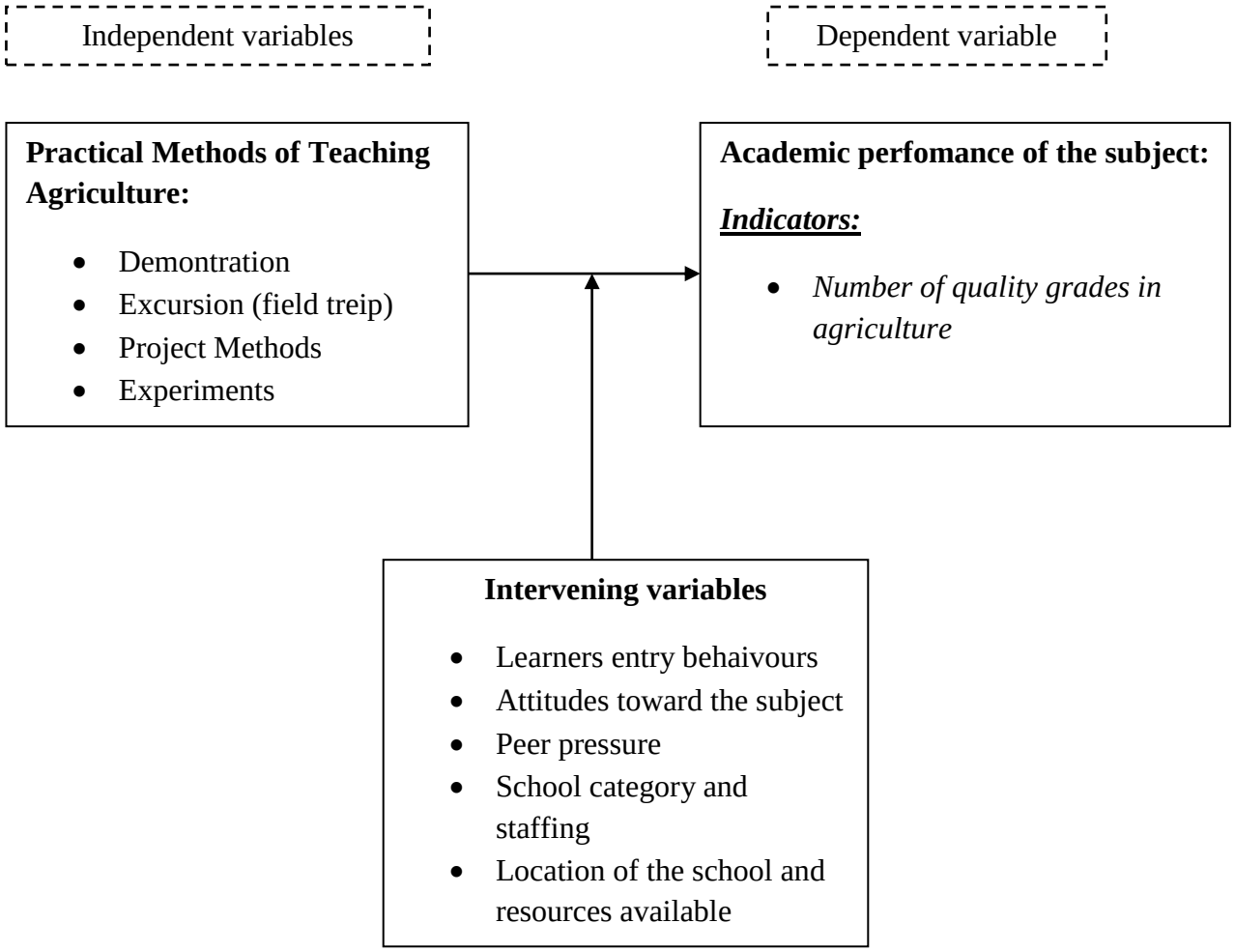

Figure 1: Conceptual Framework

The practical methods of teaching agriculture subjects involve observing the techniques that were employed, manipulating variables like the types of fertilizer used and the crops in question and demonstrating the steps to be taken for various laboratory activities experiments, like soil science, excursions, and project methods. The secondary school academic achievement served as the dependent variable. Two metrics would be used to assess this achievement: the number of students receiving high-caliber grades in agriculture classes, and agriculture's performance relative to other courses over the previous three years. Even though they are not directly related to the study, some intervening variables do have an

impact on the dependent variable. These factors included the learner's capacity for understanding

1.9. Theoretical Framework

The study's foundation was a paradigm that promotes the notion that teaching is an integrated process involving several aspects (Mabonga, 2019). Teachers, students, their relationships, and the outcomes of those relationships are among the variables. Dunkin and Biddle (1974) added four additional significant critical elements to this model which include: predict context, process, and product. Teacher personality, planning, general teacher traits, background, strengths and limits, and teaching experiences are all part of the predict variable. Student personalities, school environments, and experiences are discussed in context (Mabonga, 2013). Process variables show how teachers and students interact while learning is happening. Every activity in the classroom serves to ensure that learning is taking place (Williams & Baker 2004). Instruction and the relationships between teachers and students produce product variables (Mabonga, 2013). The foretell variables are seen to be the most crucial if the instructor is to fully comprehend classroom issues. The learning environment, teacher-student relationships, and the manner a teacher instructs learning are all impacted by the availability and sufficiency of teaching and learning resources. The learning process may also be impacted by outside elements, such as bad weather, which may change

1.10. Defination of Terms

Academic performance- This is the typical grade received in agriculture when practical instruction began in classrooms.

Demonstration: In this kind of instruction, the teacher scaffolds the action being taught. The teacher applies a scientific principles or skills while the learners keep watch and take notes on the steps being taken.

Field trip/Exercusion - With this approach, students are given the freedom to learn new concepts outside of their usual classroom setting.

Experiments- These are exercises designed to improve the development of students' unique scientific skills through practical work with varied techniques and equipment.

Attitude - This speaks to how pupils feel about a particular subject, in this example, agriculture.

Quality Grade - The minimum requirement for a particular rank, quality, level of expertise, or value as established by a particular criterion.

Performance – This is the capacity of students to meet predetermined requirements based on prior instruction or learning experiences. Performance generally refers to the capacity to carry out specific commitments as outlined in the agreement.

Practical Methods – These instructional methods give students the chance to participate in practical activities by observing or manipulating instruments.

Efficiency - the proportion of valuable work completed or produced during a procedure to the total input anticipated.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

The theoretical and empirical literature from earlier investigations of the practical technique of teaching agriculture review is analyzed in this chapter. It would also examine how different practical approaches affected academic performance. Finding research gaps that would enable a researcher to have a clear understanding of the issue under investigation is the goal of the literature review.

2.2. Practical Methods

According to Hodson (2012), students examine, monitor, or control materials in practical approaches, or they watch a teacher carry out various tasks or procedures. Asgari & Mahjub Moadab (2010) noted that student learning and the efficient utilization of practical teaching in agriculture subjects are crucial factors for assessments of the caliber of performance in agriculture. Hoveida & Moulavi (2008) noted that the effectiveness of scientific board members' instruction has an impact on students' development in the field of agriculture.

Students can demonstrate and show case their abilities in ways they can complete some tasks unguided when agriculture is taught to them using practical techniques (Kizlik, 2015). Ghonji (2012) asserts that practical teaching techniques give instructors the chance to gauge their pupils' proficiency in these areas. Additionally, they create a connection between theory and practice, assisting students in learning scientific methods including taking notes, observing, analyzing, and interpreting data. Kidane and Worth (2012) go on to say that one approach to provide practical experience for textbooks and lectures is through farm practicals. Typically,

practical approaches are tested through practical exams that include hands-on work, a set of instructions, and interesting inquiries about particular ideas (Paterson & Arends, 2008).

Practical teachings and learning is an all-encompassing strategy that derives from a theory of education and include significant presumptions about what students should learn and how they should be taught. The cooperative teaching method arranges the lessons so that every learner, from the quick learner to the slow learner, can contribute. Since the students are teaching one another under this technique, they are more likely to have a stronger understanding of the subject matter than they would in the typical solitary study with recitation pattern. Additionally, the shared responsibilities and interactions are expected to foster and strengthen intergroup relationships, leading to improved self-images for students with a history of low accomplishment (Wachanga & Mwangi) (2004).

The teacher must give adequate attention to the students' academic performance when teaching agricultural subjects, especially in the selection of hands-on activities that are suitable for instilling concepts, knowledge and skills into the students to aid in appropriate understanding of the topic. Although a teacher may use a variety of teaching techniques, none of them can be universally described as the most effective. The pattern of communication from the instructor to the learners will be undirectional if the teaching roles do not include student activities. In this situation, the students will primarily act as passive listeners. What we have in the class when the lecturer applies this way of learning and adequately manages the class

About 71percent of the students polled in a survey of over 1,400 students of various ages felt conducting a practical or experiment in class to be one of the practical ways approach to teaching farm science to be "more pleasant." While just 38percent chose it as the practical

method that they deemed "most successful and valuable" for teaching agriculture and learning science (Abrahams & Millar, 2008), a smaller percentage chose it.

Regardless of the extensive application of practical techniques as learning and teaching approaches in schools and the general consensus that increasing their quantity will improve academic performance, some scientific teachers have expressed doubts about their efficacy. For instance, Hodson (2012) asserts that practical techniques are wrongly conceived, muddled, and unproductive as practiced in the majority of schools." Many students find that laboratory exercises have less of an impact on their understanding of science topics. Dyer & Osborne (1996) advocated a range of variation to practical procedures from a similar vantage point. It is "time for a reconsideration of the duties of practical approaches in learning and teaching of science subject," according to Wellington's (1998) study.

In Kenya, some instructional techniques are rarely employed to instruct students. Additionally, some techniques are alien, out of step with Kenyan culture, and only partially adapted from Eurocentric society (Achor et al., 2009). One of the drawbacks of overly relying on foreign methods for teaching agriculture is possibly a lack of fundamental scientific principles, which might lead to poor agricultural performance and low learning, as may be the case in Kenya right now. The need for teachers to develop practical, project-based solutions that will ensure students' active engagement has arisen as a result of efforts to solve this issue (Uloko, 2006).

When the practical exercise can support one prediction while rejecting the other, it can be more successful if the learners' predictions have been made known in advance. The practical work is given more significance thanks to the predict-observe structure. Otherwise, unless the activity itself is especially memorable, a practical assignment designed to let the learners see work done practically might easily become rather uninspiring and demotivating.

Fundamentally, predictions are only important if they are more than just educated guesses and are based on theories about the learning context.

Researchers, academics, and curriculum designers have consistently noted the drawbacks of the lecture mode of instruction. This technique of instruction has been described as one that leaves students in the role of passive "spectators" in the classroom for extended periods of continuous teacher-centered, expository speech (Williams and McClure, 2010). Students' attention spans may wane and their capacity to remember information may drop if they are forced to sit passively in class. Young et al. (2009) discovered that when the presentation is altered, the attention decrease is avoided; however, this is not specifically related to interactive involvement strategies. Since common culture is included in presentations, a new lecture style arises and interactive participation is not always required, serving as viable ways of mitigating a drop in concentration.

When such practical techniques don't produce the intended learning outcomes, the task design has primarily neglected the domain of ideas. The practical assignments of this kind that are most suitable are those that contain innovative tactics for getting students to consider the explanatory concepts included in the learning system, rather than just the observables. If the students have a strong theoretical grasp of the topic at hand and are able to generate testable predictions, the predict-observe-explain structure (White and Gunstone, 1992) outlined above is especially helpful. In a POE task, students are asked to write down their best guess for the task's possible outcome in the given environment. This is followed by a practical in which they must make observations and then provide an explanation of what they have learned (which may or may not be what they imagined). There are other methods available as well. For instance, a teaching technique for imparting concepts about crop production using compost manure at high school level is described by Tiberghien (1997). This sort of fertilizer,

sometimes referred to as "organic manure," is less expensive and good to the environment since it employs resources that are plentiful and locally accessible. The pupils initially find collecting the items to be not just tiresome, difficult, and involving, but also unclean. Presenting and discussing an order to which observations and preparations may be directly connected is another tactic. Learners might be especially encouraged to tie their observations to a specified order e of growth behavior in crops, identifying where the changes are brought about by the application of compost manure. For instance, when learning about the behavior of development in crops. This is consistent with what the process would have you believe, and it's also in keeping with

The goal of all strategies for enhancing practical activity designed to advance students' scientific understanding is to get them to think as well as act. Effective assignments need students to use both their hands and minds (Duckworth, 1990). To increase their prevalence, teachers must first become knowledgeable about how to establish connections between the observables and the range of tasks and ideas. They must then work with students to create practical tasks that more fully and meaningfully take into account this demand. This eventually calls for teachers to more carefully consider the goals of the practical activities they are to do and get to know the cognitive weaknesses of their students. The starting point for improving practical work is therefore to help teachers be considerably clearer on the learning goals of the practical approaches they are using. There is evidence that when compared to other teaching and learning techniques, students find practical methods of teaching agriculture to be more engaging, inspiring, and fun.

Although practical teaching and learning methods are widely used in the field of agriculture, and it is generally believed that extending their use would improve the subject, some agricultural specialists have expressed concerns about their efficacy. According to Hodson

(2012), for instance, "practical work" is poorly planned, unclear, and fruitless as it is now practiced in many schools. For a lot of kids, learning about agriculture doesn't come much from what happens in the real world. According to Osborne (1993) examined that, a variety of alternatives to practical employment based on a similar perception. It is "time for a reconsideration of the importance of practical activity in the teaching and learning of agriculture," according to Wellington (1998). The value of practical experience in enhancing students'

The majority of pupils were effectively able to "create the phenomena" with the aid of the offered objects thanks in large part to the practical work that was observed. This was influenced by a number of variables, especially the growing adoption of "recipe style" jobs (Abrahams & Millar., 2008). The majority of the classes I have observed, instructor presents focused on making sure that the learners get to understand the process they needed to follow. If the students were able to create the intended occurrences and make the required observations, the teacher was likely to consider the practical work often the focus of a lesson—to have been successful. In the survey, many teachers especially those instructing students in subjects other than their areas of expertise explained their decision a departmental work schedule, as shown in the following sample, might be used to explain the practical task seen.

Some instructors justified their use of "recipe style" tasks by arguing that, in their opinion, there simply wasn't enough time in a typical 1-hour practical lesson to feel confident that most students would successfully design and set up the apparatus, produce a specific phenomenon, and record and analyze the results. "I think people need to come in, be instructed how to do it, and receive a result," said Kepwick. In a similar vein, Mr. Normanby said, "The practicals are frequently made to be student-friendly. To ensure that they will see,

at least the majority of them, what you desire during your double [period] lesson. From the lessons that were observed, it was clear that teachers place a great importance on ensuring that the majority of their pupils are able to create the required effords and gather the desired data. This is understandable given that a practical task's effectiveness determines how well it performs in all other cells of Table 1. However, if this becomes the main objective and no longer just a priority then, learning potential of practical labor is severely constrained.

Several authors have noted that practical work in agriculture is a broad category that includes activities of a variety of forms and with substantially divergent goals and objectives (Millar, Le Maréchal, and Tiberghien, 2000). Asking whether practical labor is a successful teaching and learning method in general is therefore pointless. Instead, we must take into account the efficacy of particular practical work examples or particular practical tasks. The current study began with a model of the procedures involved in developing and assessing a practical job put out by Millar et al (1999) in order to construct an analytical framework.

2.2.1. Demonstration and Observations

One of the fundermental subject taught in Kenya's high schools is agriculture. The central government has mandated that it be taught as a course in our schools and tertiary levels of education due to its potential for fostering independence through the availability of chances for self-emploment, production of basic food for the population and supply of raw materials for the agro-allied industries.

In the demonstration method of teaching agriculture, the teacher serves as the main actor while the pupils watch or observe with the intention of taking action afterwards. Here, the teacher performs the task that the learner are required to complete tha assignmen following lesson, demonstrating to them how to do it step-by-step by referring to it as an exhibition or

display that the teacher typically performs while the students observe intently in order to learn well (Mundi., 2006; Daluba, Noah, and Ekiyi) (2013).

One of the more popular ways that speakers, trainers, and teachers deliver information and concepts is through demonstrations. While those who participate in the work, including the audience, are thought to be familiar with the methodology. Depending on the ability to complete the tasks, the manner in which the information is distributed, and the overwhelmingness and discouraging nature of the presentation, a demonstration can be both instructive and demoralizing. The lecture technique typically promotes one-way communication and offers little to no audience participation. These lead to audience confusion, communication failure, and poor memory retention. There is evidence from a number of areas that teaching via lectures to huge classes of passive listeners has very little effect on actual learning (Veselinovska, 2011)

Modernizing teaching strategies is necessary to reflect the functioning, critically focused, and decision-making learners required by today's society. For the teaching and learning processes to be successful, selecting an effective teaching approach is crucial. To be a good, teachers need select from among a wide range of instructional techniques. Demonstration, discussion experiments, and project-based learning are the best teaching strategies for a subject like agricultural science that emphasizes application in agreement with Abraham & Millar (2008), the demonstration approach may be particularly useful for illuminating concepts in class, making it typically effective in the teaching of science, math, and mechanics as well as subjects in vocational and technical education. Whereas, some agricultural teachers have endorsed and advocated the discussion technique as an effective way to teach agriculture (Phipps, 2013). The primary aspect of the discussion-based learning approach is interaction (Abdulhamid., 2013). Students actively participate in the learning process during the discussion session by offering problems, delving into the underlying causes of the problems,

coming up with potential solutions, putting the solution(s) into practice, and assessing the results.

A demonstration is a teaching strategy in which lecturers employ scientific methods while students carefully observe and take notes. This training method uses a variety of instructional materials to help the trainer illustrate the job being taught. The instructor performs a scientific procedure as the students pay close attention and take notes on the steps completed (Ndirangu, 2013). When practicing observation, students are asked to watch an instructor objectively demonstrate a certain approach while taking notes in order to use them later on in the same work.

Additionally, there is a prevalent perception among Kenyan students that agricultural science is a practical study intended mostly for pupils with low intelligence levels (Adah, 2011). The way that teachers apply instructional approaches in any learning environment does not pique learners' interest; as a result, pupils have a poor opinion of the course. These could cause students to lose interest in the material and perform poorly in the course. Instead of relying just on the traditional technique, it is necessary to apply actively influencing and learners-centered approaches like the demonstration method to reduce students' concentration, excitement, and need to brag about their accomplishments. The demonstration method is a kind of instruction where the teacher uses the demonstration method is a style of instruction in which the teacher serves as the primary playerr and the learners as observant with intend to join in later. In this instance, the teacher completes all of the tasks that the students are required to complete at the conclusion of the course by instructing them on how to do it and walking them through each stage of the procedure (Daluba, Noah, & Ekiyi) (2013).

Mundi (2006) claims that it usually involves the teacher putting on a show or demonstration while the pupils pay close attention. He continues by demonstrating that it entails giving examples of how something operates or the steps involved in a process. According to Mundi (2006), this approach has some benefits, including the following: - no time is wasted, and resource usage is improved; the method grabs students' attention and acts as a powerful motivator for teaching. Students are more motivated to learn when they are taught by their peers because they obtain an instant response from their materials, a real-world context for their course of study and technical know-how in real-life settings.

In his study, Adah (2011) suggested that there is a prevalent perception among average Nigerian students of agricultural science that it is a topic that is predominately taught practically and is primarily intended for students who are academically disabled. Because of the unimpressive instructional tactics used by the teachers throughout the learning and teaching process, both outside of the classroom and inside, it is clear from how and in what ways learners perceived the subject. This results in the students' lack of interest and poor performance. Instead than depending solely on the traditional technique, use stimulating activities and student-centered approaches like the practical demonstration method to capture learners' attention, pique their curiosity, and improve their performance.

Even while the teaching and learning process involves ongoing human interaction and all it entails, it prevents us from using many of the customary adopting processes that we use in regular human interaction. Students may react negatively as a result of the teaching process and interactions with the learners since these factors have an emotional and psychological impact on them. When regular people connect, for instance with their family and friends, we can probably let off steam by being angry or crying! The teacher must have the distance to see past these problems and behave professionally; none of the above are permitted.

Regardless of whether they like a student, teachers should always act impartially toward them. They must evaluate students based on their aptitude as interested learners rather than their intrinsic capacity for agriculture. Teachers need to understand that they may need to change their personalities, embrace an activity, or manage their characteristics in order to perform praiseworthy work in real-world scenarios.

Some instructors could come off as haughty to students. Professionally, they ought to be aware of this and take proactive measures to mitigate its impacts on their students. Some people have a tendency to forget important events like meetings, deadlines, and things they swore not to. When it comes to the teaching profession, it is not affordable. Some of us who work as teachers are harsh and dismissive of those who learn more slowly than we do. Additionally, such behavior should not occur in a classroom setting and must be dishonest; even if we are not worried about our students, it is much better to act as though we are. Respecting your students and being the essential human elements of the skill of teaching and learning process is unquestionably (Krantz's (1999) "Guiding principles." Our personalities, frailties as people, and emotions don't really matter in our routine calculations; they can even be a privilege.

In order to handle a challenging task for those academics who are forgetful and absentminded, they may need to focus intensely. With only their own narrow perspective, arrogant professors bravely walk into the unknown in search of truly essential solutions. The issue and the solution are always crucial, but they are the same in all of the aforementioned situations. They are also not the tiniest component that is impacted by your personality and emotions. When you restore your calm, the problem will still be present if being impatient causes you to lose sight of your calculations out of scorn. This isn't the situation for your pupils, though, as they might be negatively impacted by your actions and you might find it

challenging to facilitate their effective learning as a result. In this situation, a mess could change the issue and ruin any possibility of receiving response. Therefore, you can have a strong positive impact on your students' learning if you find it right and establish a close rapport with them. In most cases, this will demonstrate your professional and technical skills.

According to the study by Abrahams and Millar (2008), pupils who were taught using demonstrative and experimental approaches outperformed those who were taught using traditional lecture methods (control group). The results also show that students who were taught agricultural subjects using practical approaches outperformed those who were subjected to the simlar subject with different methodology. Adenyika & Mutula (2006), Daluba & Audu (2005) Both Adenyika & Mutula (2006) and Daluba, Noah & Ekeyi (2013) pointed out that there were differences between how well male and female students performed academically in science topics, including agriculture.

The instructor has long been seen as a source of knowledge for the students. With the development of new options and instructional tools, this function has quickly altered. Team teaching, individualized education, programmed learning, new structures, television equipment, electronic learning laboratories, computer-assisted terminal learning, and dial-access retrieval systems are some of the novel ideas included in this list (Asman, 2014). These possibilities have greatly expanded a teacher's range of options for achieving specified learning outcomes.

Any pupil can become bored at any time, which limits what they can understand at any given time, even if you employ a rudimentary teaching method like the "tape recorder" model of learning. The pace of instruction and learning should begin at a point where it is well within the range for the majority of the class's students. The demotivating and harmful effects of

intellectual overload on learning are well documented, even though this may not be the case Siau, Sheng, & Fiona (2006).

To be in a position to carry the necessary load, we need a thorough evalution of the student's starting position because teachers frequently lack clear knowledge about the students' backgrounds, which usually results in failure on their part. However, if necessary, we can produce the results, which may involve questioning the pupils in class or through casual chat. The concept of assessing learners' prior knowledge before teaching from it is frequently referred to as "Ausubel's principle." However, in reality, Adhakari, K. (2010) contends that it predates this, forms the basis for Socratic dialogue, and is almost certainly applied automatically by any reasonable caveperson passing on the art of hunting to the next generation. However, the lecturer today faces a situation where the learning environment requires much more ability due to the wide variety of disparities in learner backgrounds.

According to (Kidane and Worth, 2012), these advancements bring new problems for individual learners since they must deal with novel information-presentation strategies. The roles of instructors have been quickly changing; formerly, they served as directors, but now they are seen as facilitators of the learning process. The instructor now has new options to choose educational approaches that are more suited to the kind of students they are working with. Additionally, it has been stated numerous times that this is undeniably true in all fields (Siau, Sheng, & Fiona (2006). Only the first step of internalizing the information is completed by any learner. The students adjust both the input and what they already know in order to make sense of it. This becomes material in an internal dialogue. In order to help them, the teacher can offer more than just message delivery. By providing relevant tasks and problems, interfering with external manifestations of the internal debate, assisting motivation, offering advice on successful involvement, and clearly explaining, they can assist the students

as they creat the internal discussion. This rigorous, high integrity and self-critical is something that students can adjust to in order with our assistance. Simply said, we provide them a lot of drills to complete not just to combine different tactics but also to teach them in internalizing their inquiries.

Some school science practical assignments focus solely or primarily on the observables domain, while others combine the two domains. The analytical framework is produced by combining the two-level model of effectiveness with this two-domain model of knowledge. This approach is equally applicable to assignments that need students to learn useful scientific information or specific methods for conducting scientific research (Rowlands et al., 2011).

2.2.2. Excursion/Field Trips

With this approach, students are free to explore new concepts outside of their usual learning context. When students visit a model farmer, the learning opportunities are as numerous as their curiosities (Hodson, 2012). The chances for hands-on, experiential learning that come with a farm setting help students advance academically. They can learn about alternative energy, veggies, maple, cows, chickens, and much more on a farm. According to Mbajiorgu (2014), kids also learn about math, physics, art, music, history, and health, all of which are important topics covered in the classroom. By connecting schools with farmers, it is possible to foster vital linkage between learners and the progressive farmers, learners and the land, farmers and the schools where some agricultural goods may be sold. Such connections aid in the development of the following generation of community members. Field trips improve students' overall comprehension of the community food busket, starting with production of food and eating healthy as well as having piece of mind of place in the neighborhood (Chan, 2009).

Farmers must establish the necessary policies and procedures well in advance for these excursions to be successful in order to guarantee their safety and high efficacy. He can get help from an agriculture instructor to make sure the children are held to high standards that are also realistic. The tour will be less formal if there are no restrictions, which will expose kids to risky scenarios that could endanger the farm or them. The regulations should be reviewed in class and when the students arrive at the farm to ensure they are properly observed. Phipps (2013) contends that in order to ensure a productive learning environment, pupils should be divided into manageable groups. The institution should make arrangements to have enough adults working with each group to offer leadership. The school needs to make arrangements to have enough adults working with each group to give leadership and direction. Each group will be given access to various activities and locations on the farm.

In order to internationalize learning and teaching in a way that recognizes, values, and effectively incorporates the ethnic and cultural diversity of learners, curriculum developers have been analyzing learning environments and various activities for a long time. Agricultural techniques and teamwork skills, such the ability to go on an excursion, are practically used to assist internationalized teaching and learning in this situation (Leask, 2004). Due to the way that teaching and learning methods are becoming more international, elite educational institutions are now acknowledging the worth of trip techniques. The capacity of excursions to promote collaborative learning and activity among students, and teachers (Collins & Hide, 2010).

Its evident capacity to help the demonstration and observation is another frequently mentioned benefit. Other examples include field trips that many students use to complete a task for their classmates, their community, and also for people around the world (Bukvova et al., 2010). Other aspects of practical methods include the efforts to discuss unasked questions in a less formal setting, developing a strong voice through practical skills technology, and locating a venue to discuss concerns in an open, task-doing style (Kirkup, 2010). Scholarly observation, which differs from demonstration in that it makes use of the sense of sight that comes along with performing a task, has demonstrated its popularity, especially in academic conferences (Ross, 2000).

Although employing practical approaches in academia has demonstrated significant benefits, there are also drawbacks and issues. The prospect of spending a lot of time on social networking sites while neglecting other vital aspects is said to be the most detrimental part of utilizing them, according to scientific studies (Rowlands et al., 2011). The key to choosing demonstration and observation to aid learning in teachings is becouse of their well-stated understanding that acknowledges the good and bad sure that everything learners are involved in is directed toward obtaining the educational benefits of the practical techniques (Rutherford, 2010). Institutions of higher learning that adjust their use of excursions to a specific level typically acquire the prospective benefit (Donelan & Kear., 2018). Even if the use of excursions is expanding more quickly, many educational institutions have not developed strategies for doing so; this poses a risk and needs to be reconsidered. (Chretien and others, 2009)

Older system learning abilities may impede the class's ability to communicate effectively, which is likely to improve farm results (Cotner et al., 2008). Less class time, rigid seating arrangements, and students' hesitations to enroll in school are all additional hurdles for class

demonstration and trip (Draper & Brown, 2004) Although newer technology have altered how students demonstrate in the classroom and outside of it (on excursions), this also brings new options to enhance practical work. Supporting practical teaching strategies is crucial since they result in positive and even more effective learning and may be a key strategy for achieving greater academic success Siau, Sheng, and Fiona (2006) as well as Chou (2003) One of the most effective teaching strategies in the field of study at first, reserved for higher classes and technology-related skills. When a specific task is completed during a learning event, students are encouraged to understand and comprehend the ideas taught. They are also more aware, active, and open to sharing ideas with other students. As a result, effective teaching techniques improve student learning outcomes (Erickson & Siau, 2003; Haseman et al., 2002; Al-rahmi & Othman, 2013). Although the concept of incorporating may be important, how commuting students incorporate might vary drastically from those who live on campus to those who do not, with socio-academic areas presumably being more important for the two-year learner (Deil-Amen, 2011).

2.2.3. Project Method

A work carried out in its natural setting is referred to as a project (Phillip, 2013). Students are exposed to real-world issues through project activities. Teachers use this method, and pupils complete it with the sole goal of producing something concrete. Through the project-related activities, the teacher hopes to guarantee that the students get particular abilities. The project technique should be used with other teaching strategies to ensure that students learn well. The project method is a key element of the triadic educational model used in the field of agriculture education. How widely the project method may be used as a teaching method is unclear. Initial approaches to project execution in the area of agriculture required a series of actions that were taken. Over the years, the primary goal of employing projects in agricultural

classes has moved beyond students learning farming skills to encompass other jobs in agricultural sector (Roberts, 2006).

It was established that, project-based learning is one of the best approaches of learning techniques. Giving students the chance to create artifacts is essential for their ability to generate knowledge. Additionally, project-based learning puts students in actual, equiped with problem-solving skills. Projects sometimes can be used to close gaps between an event that occur in the classroom and real-world situations (Parr & Edwards, 2009).

The active participation of students' diligent effort over an extended period is required for project-based learning. Projects can be adopted by various learner types in various learning situations. PBL is a teaching style in which students learn specialized skills by working on real projects. Students use their ingenuity and fundamental academic skills to find solutions to uncommon difficulties in practical settings.Students use a wide range of tools, and their final projects are visible, observable artifacts that serve as evidence of the lessons they have learned. PBL artifacts include student-created work such as reports, photographs, videos, models built from scratch, actual live performances, plans of action, and silos and other livestock constructions. The constructivist learning theory, on which project-based learning is founded, argues that learning is detailed and significant when students are actively constructing their knowledge. Within the required content framework, learners are given the option of selecting a topic that appeals to them, after which they are free to develop their project plan. The teacher's function in project-based learning is that of an academic advisor, mentor, motivator, taskmaster, and analyst (Parr & Edwards, 2009).

Teaching and learning through projects may be engaging pursuits. It may be demonstrated that agriculture is essential to the advancement of our civilization since it is incorporated into modern technology and because studying agriculture develops critical thinking skills and a

grasp of other sciences. Future employment markets will only hire those with technological expertise in natural sciences. Agriculture serves as the foundation for all kinds of analytical thinking and practical action. A comprehensive teaching resource for project-based teaching and learning in agriculture, complete with project instructions, will soon be available (Al-rahmi & Othman, 2013).

"Supervised agricultural experience" is a word that Roberts (2006) uses to refer to project-based learning in agriculture education globally. According to Parr & Edwards (2009), the goal of knowledge development in a variety of agricultural occupations is "guided agricultural experience." The purpose of project-based learning in agriculture education has grown more in recent years. For instance, it is claimed that supervised agricultural experience enhances learning results, student personal growth, and career development. The six functions of "supervised experience" are acquisition of experience, development of skills personel development and equiping employability skills, which aid in fostering student interest in agriculture and enhancing skills for managing finances, (Wells, Scott, and Rank (2018).

By this, we mean the technical skills that a learner uses to implement, adjust, and continue their learning processes. In other words, we need to help kids learn how to learn. This does not refer to typical study techniques but rather a critical assessment of their learning as it develops. For instance, students need to know when to use their seriousness and strength, gauge the gravity of a situation, or assess their progress during the teaching process. The untrained agriculture learners take such things for granted, but the inexperienced person may need proactive help to develop such techniques. This is now even more crucial, especially for first-year learners. Learners now report there using the type of school-level assessment that having some higher-level technical experience and being accustomed to simple,

straightforward exercises that call for little more than memorization and recall, followed by routine tasks (Roberts, 2006). Teachers must help students understand that agriculture (or any other form of study) entails more than just this and aid them in developing the more advanced abilities they need. Additionally, we must help kids develop the skills to know when they need a specific skill and how to approach acquiring it on their own. Even the finest students require training from teachers in research techniques and idea communication

2.2.4. Experiments

Students' abilities to handle scientific methods and their aptitude for controlling and manipulating various instruments are mostly improved by professors conducting experiments for their classes. Experiments are necessary in scientific investigations if results are to be taken as reliable; they are a necessary step in the research process and serve as the foundation for empirical findings that help establish and evaluate principles. Additianary, this enable the learners to gain not just scientific knowledge but as well as approaches and techniques utilized to get the knowledge (Musa, 2007).

The instructors can then create various nature activities and experiences to support the learners' learning of agriculture using the ideas about how learners' best learn. Ideally, this incorporates typical activities like teaching, tutoring, and evaluating. Such things require extensive technical knowledge, which is acquired through training programs, experience, and other means. But after focusing on everything, we believe that the teacher needs to keep in mind three main concepts. We need to pay close attention to how we explain events and involve the students in profitable activities for studying agriculture, and how we foster excitement and motivation in the students in our lectures, tutorials, and assessments as well as in the materials we prepare for them. These concepts don't require as much explanation

because most experienced practitioners don't take ideas seriously, but there is still plenty of evidence in the literature to back them up if necessary.

The validity of a certain set of hypotheses that have been developed based on various theories is verified through experiments (Adah, 2011). In most cases, experiments with pre-established methods that students must precisely follow in order to obtain results that are significant are given to them. Adults with experience frequently offer assistance during experiments to ensure that few mistakes are made. Students' primary responsibilities include drawing conclusions about hypotheses that are being validated, gathering, analyzing, and interpreting data, and then creating a report for assessment.

Dodo & Oladimeji (2012) pointed out that teachers may set up practical exercises created by students in their classrooms. It is the role of the student in this type of arrangement to develop hypotheses that are consistent with the material they have been learning in class. Before doing hypothesis testing, students are typically required to create and present a proposal to their teachers outlining how they plan to create and conduct the hypotheses. Teachers evaluate the proposal for its clarity, replicability, testability, and conciseness to ensure that students conduct high-quality experiments. Teachers typically provide input on the suitability of the methodology and design, as well as suggestions for how students may enhance their designs. Students are then free to test their hypotheses.

Abrahams and Millar (2008) claim that because the experimental students were taught using the demonstration method, which is a more hands-on teaching approach than traditional lecture methods, they achieved higher academic success grades. Unlike their peers who were taught using traditional lecture and classroom methods and were not exposed to the activity-based method, students who were exposed to the practical method of teaching agriculture were able to provide more pertinent answers to the questions. In a learning environment that

is conducive to learning, Musa (2007) found that good thought-provoking teaching techniques help agriculture students learn and grasp the information more effectively.

2.3. Influences of Practical Teching of Agriculture

According to Mbajiorgu (2014), the fundamental goal of organizing practical learning for students is to strengthen students' capacity for managing scientific procedures and their management and manipulation abilities for a variety of scientific activities and equipment. Experiments are necessary in scientific investigations if results are to be taken as reliable; they are a necessary step in the research process and serve as the foundation for empirical findings that help establish and evaluate theories. This makes it even more certain that students not only learn scientific principles and techniques but also the means by which those principles and techniques are derived.

According to Armstrong (2012)'s research, the goal of practical instruction is to verify the veracity of developed hypotheses. Typically, practical designs with clear instructions on how to carry out the practical are given to students. Students are guided and assisted while they do the practical assignments, but they must routinely and carefully adhere to the directions. The student is in charge of determining the hypothesis being explored, accurately gathering data, analyzing and interpreting the findings, and finally documenting reports for assessment.

In certain circumstances, teachers may opt to plan learners-designed practical tasks that require learners to create testable hypotheses based on the material they have studied in class. Learners must present and design their proposal to their teachers before they can test their hypotheses. The teachers will then evaluate it for plausibility, ambiguity, clarity, and repeatability (Koller, 2012). Teachers must evaluate the plans and provide constructive criticism to help them be improved before being implemented.

2.4. Research Gaps

The literature review on the many hands-on ways of teaching agriculture has advantages that include helping students to learn general and specific scientific abilities, gaining competency in utilizing practical equipment and tools, and building self-reliance. Students can learn data gathering, recording, and agricultural techniques in addition to broad and specialized scientific abilities. The experiments give the students a chance to practice using tools like test tubes, beakers, and Bunsen burners. Additionally, after the projects are finished, the kids will be able to rely on themselves and be self-motivated. Despite the advantages listed above, there is little information available regarding the effects of the various practical approaches of teaching agriculture on students' performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

According to (Mugenda & Mugenda 1999), a survey research design was used for the study. Research is vital, and surveys are helpful in defining a population being studied in an effort to explain why things are the way they are (Kathuri & Pals, 1993, Mohammed, 2013). They allow one to draw conclusions about levels of causation and effect and are economical and exploratory (O'Connor, 2002). Due to its ability to obtain the necessary qualitative and quantitative data without including the manipulation of variables, a survey was chosen as the best design to utilize in the study. In order to ascertain the practical techniques of teaching agriculture and their influence, a survey was utilized to look at some of the dynamics and distinctive characteristics of the units under study with a view of providing necessary information about the established objectives, on academic performance in agriculture topic in secondary school in Kisii County.

3.2. Study Area

Southwest Kenya's Kisii County was the site of the study. Latitude 00' and 100' South and Longitude 340' and 350' East are the geographic coordinates of the County. It is around 300 kilometers northwest of Nairobi, the country's capital. With Nyamira County to the north-east, Narok County to the south, Homabay and Migori County to the west, it has shared borders. It has a 1323 km2 total area. The majority of the large, historic schools still survive, and the county has seen the opening of numerous new campuses, schools, and colleges as a result of the population growth. National schools, extra-county schools, county schools, and private schools were among the types of schools in the research region.

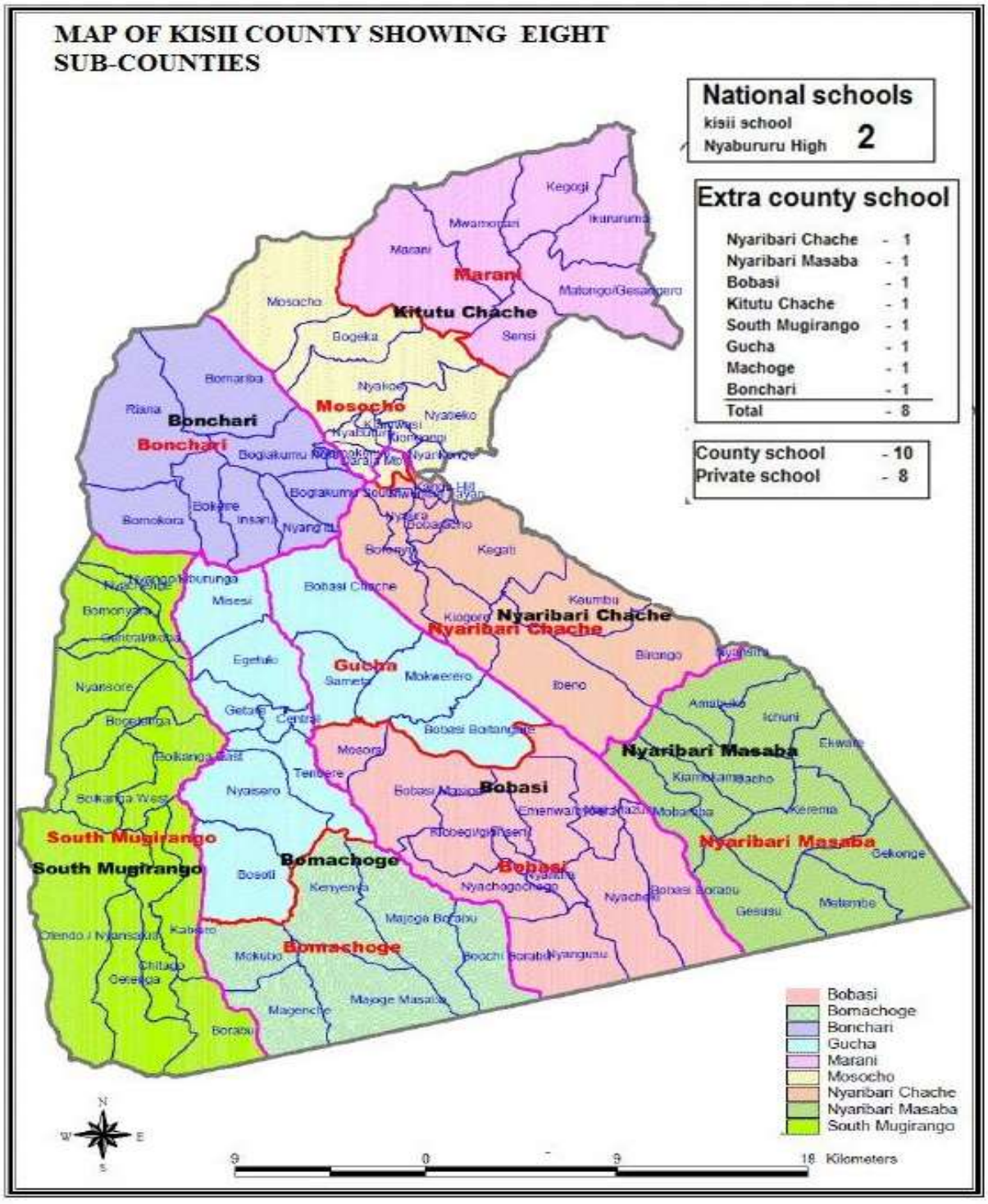

Figure 2: A Map of Kisii County

3.3. Target Population

A population is defined as a whole group or full collection of individuals, events, situations, or things that share certain common observable features, according to Mugenda & Mugenda (1999). The principals of chosen schools, teachers of agriculture and students doing agriculture classes in public schools, extra-county schools, county schools, and lastly private schools were the study's target demographics.

Table 1 below provides the lists of 756 respondents from the survey, who were among the 700 agricultural students, 28 principals, and 28 agriculture teachers who were the study's target group.

Table 1: Target Population per Category

SCHOOL CATEGORY	PRINCIPALS	AGRICULTURE TEACHERS	AGRICULTURE STUDENTS
Nationals	2.0	2.0	160.0
Extra Countys	8.0	8.0	240.0
Countys	10.0	10.0	200.0
Privates	8.0	8.0	100.0
TOTAL	**28.0**	**28.0**	**700.0**

3.4. Sampling and Sample Size Determination

Stratified random sampling and purposive sampling techniques were applied, the data was obtained from selected sample population obtained from four strata obtained through

stratified random samplingmethodfrom the targeted population that is, Kisii county schools. The respondents were then selected purposively from the each cluster on the ground of who meet the criterio at its best on the said subject. Proportionate distribution of sample was used to select the sample for each stratum using the following formula:

$n = \frac{Z^2 pq}{\ell^2}$ (Mugenda & Mugenda, 2003) to give almost near sample size

Where:

n = Ideal sample size.

Z = The norma standard deviation at level of confidence 1.96

p = Estimated proportion of variables being studied at 50percent will be applied

q= Estimated proportion that do not have variables being investigated.

ℓ = Margin of error or the precision level expressed as 5percent will be used.

The sample size of 384 will be obtained when the variables are substituting using the above formula

$$n = \frac{1.96^2 x0.5x(1-0.5)}{0.05^2}$$

$$n = \frac{1.96^2 x0.5x0.5)}{0.0025}$$

$$n = \frac{3.8416x0.25}{0.0025}$$

$$n = \frac{0.9604}{0.0025}$$

$n = 384$ Respondents

Given that the target population (756) was less than 10,000, the following formulas were applied to the result in order to determine the minimum sample size needed using a modified version of the Fisher et al model (Mugenda & Mugenda, 1999).

$$n_f = \frac{n}{1 + \frac{n-1}{N}}$$

Where:

n_f= Ideal sample size for a population of less than ten thousands

n = Ideal sample size for a population of more than ten thousands

N = Population size estimation

By inserting in the values gotten above in the formulae below to get:

$$n_f = \frac{384}{1 + \frac{384-1}{700}}$$

$$n_f = \frac{384}{1 + \frac{383}{700}}$$

$$n_f = \frac{384}{1 + 0.54714}$$

$$n_f = \frac{384}{1.54714}$$

$n_f = 248$ Agriculture students

The required sample size was therefore 56 principals and agriculture teachers, 248 agriculture learnes, giving a sample of 304 responders. The agriculture teachers and th principals and were purposefully chosen, giving a total of 56.

3.5. Data Collection

Both quantitative and qualitative data were collected from both primary and secondary data sources.

3.5.1. Data Types and Source

These responses from the survey participants served as the main sources of data. Data types included demographic information, instructional techniques for teaching agriculture, the impact of these techniques, and institutional variables that could affect students' academic success in agriculture as a topic. Some of the secondary data source include, unpublished and published materials, journal, newletters and reports.

3.5.2. Data Collection Tools

Principals, agricultural teachers, and students taking agriculture courses completed a five-point Likert scale pre-tested questionnaire to gather the primary data for this study. All of the factors under investigation were included in the instrument's design.

3.6.3. Validity of the Instrument

According to Kothari (2003), the researcher used the Content Valid Index (CVI), a scale created by computing or rating the pertinent items in the instrument or questionnaire by examining their clarity and meaningfulness in relation to all stated objectives, then dividing by the total number of items. Following is a description of the validity:

$$\text{CVI} = \frac{\text{Relevant Items}}{\text{Total Number of Items}}$$

The instrument was deemed to be invalid below the CVI level, which was taken to be 0.7. The CVI for the current study was found to be 0.83, validating the research tool.

3.6.4. Reliability of the Tool

The degree to which results remain constant over time is known as reliability. The reliability of an instrument is determined by whether the findings of a study can be replicated using a similar approach (Mugenda & Mugenda, 2003). The test-retest was applied in the piloted area. It was used to pre-test the dependability of the research instruments. The evaluation of the questionnaire instrument's suitability and/or need for future improvement will be aided by the instrument's piloting. The reliability coefficient was calculated using Cronbach's Alpha and the outcomes of the pilot research. According to Fraenkel and Wallen (2000), a good dependability value of 0.70 or higher indicates that the instrument components are consistently measuring the same thing. The minmum reliability for any study to be deemed good is 0.7. In my case the reliability study was foud to be 0.874 which is higher than the normal set.

3.6.5. Research Instrument Administration

While secondary data was gained from reviews of already published and unpublished papers, internet search, books. The quantintative data from primary sources was collected by use of closed and open ended questionnaire. The researcher first obtained permit from the Kisii university as well as a from the national commission of science, technology, and innovation (NACOSTI), as needed by law, before going to the field for data collecting. The information gathered through the questionnaires was coded. The closed-ended items made up the coded data. Since the majority of the open-ended questions tended to solicit opinions and suggestions from the respondents, the responses to these questions were recorded as reported responses.

3.6. Data Analysis and Presentation

The statistical software for social sciences was used for all calculations (SPSS). The field data were coded before being entered into an SPSS worksheet. After being screened to remove outliers and missing values, descriptive statistics were used to examine the data. In order to evaluate the effectiveness of practical agricultural teaching methods and their impact on the academic performance of the students in Kisii County, descriptive statistics were used to calculate percentages and weighted averages. It was shown that there was a correlation between academic achievement in the subjects and the various practical techniques of teaching agriculture utilizing inferential statistics, including ANOVA and regression analysis. The following model, as given by the authors, was used to analyze the data with a 95percent confidence level (Mohammed, 2013).

$$\boldsymbol{PERFOMANCE = a_0 + X_1 DEM + X_2 PRJ + X_3 TRP + X_4 EXP + \varepsilon}$$

Model description

The students' mean grades in the agriculture topic were used to compare academic performance in this case before and after the applying of practical approaches.

$a_0 =$ Constant term

$x_1 =$ Demonstration coefficient

$x_2 =$ Projec coefficient

$x_3 =$ Field trips coefficient

$x_4 =$ Experiments coefficient

ε = error term (normal distribution)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Introduction

The study's results are presented in this chapter. With the help of the Statistical Package for Social Sciences (SPSS) software (version 22) and the Microsoft Excel computer program, the data collected was coded, keyed in into the system and cleaned and analyzed. The analyzed data were presented in form frequences, standard devietions and percentages in the form of inferential and descriptive statistics.

4.2. Return Rate of the Respondenses

From a total of 304 research questionnaires that were given out to the respondends, of which 248 were given to the agricultural students and the remaining 28 were given to the principals, agricultural teachers, and agricultural students. About 96.1 percent of the 292 questionnaires that were returend from the field had responses, which was more than enough for this study. According to Moore et al., (2010) noted that if 75 percent of response rate is attained, then, the study is ok. The higher response rate was achieved since the method used to collect data was by one on one interview with the respondents at schools level.

4.3. Respondents’ Demographic Information

In order to better comprehend the type of respondent with whom he or she is dealing, this section concentrated on the following demographic data: gender, age, and the principals' and agriculture teachers' prior teaching experience.

4.3.1. Respondents' Gender

The survey found that of the 292 respondents who took part in the study, 189 were men, or 64.7 percent of the total, and 103 were women, or 35.3 percent of the total as indicated in Table 2 below.

Table 2: Gender Distribution of the Respondents

Respondent's Gender	Frequency	Percent
Man	189	64.7
Woman	103	35.3
Total	**292**	**100.0**

The results showed that female students participated less in the study than their male counterparts. The analysis rejects the claim made by GFRA (2012) that farm labor is typically performed by female laborers in African nations. In addition, the study disputes the assertion made by Migika (2013) that women in African nations are primarily responsible for subsistence agriculture rather than commercial farming. The sort of crops farmed and the type of training provided, according to Swanson (2005), are two factors that prevent women from participating in agriculture. The women's everyday domestic responsibilities are also too taxing, preventing them from working in agriculture.

4.3.2. Respondent's Age

According to the results, the majority of those surveyed (80.8 percent) were under the age of 20, followed by those between the ages of 41 and 50 (11.3 percent), 31 to 40 (4.8 percent), and over 50 (1.4 percent), as shown in Table 3. Those between the ages of 21 and 30 (1.4percent) and over 50 (1.7 percent) were also represented by 1.4 percent and 1.7 percent, respectively.

Table 3: Age Distribution of the Respondents

Respondent's Age Blacket	Frequency	Percent
< 20 years	236.0	80.8
21-30 years	4.0	1.4
31-40 years	14.0	4.8
41-50 years	33.0	11.3
Over 50 years	5.0	1.7
Total	**292.0**	**100.0**

The results support those of Abrahams & Millar (2008) who found that 71 percent of the students interviewed preferred to complete a practical in class setup as one of the practical approach of teaching the subject under study and found to be "more enjoyable." Their survey involved responses from over 1,400 students of various ages (Cerini, Murray, & Reiss, 2003). While just 38percent chose it as the practical methods approach to teaching agriculture they felt to be "most successful and beneficial,"

4.3.3. Teaching Experience of the Respondents

The respondents' teaching experience was requested in order to obtain detailed information on the length of time the teachers had worked in their field; this would dictate the type of data that would be gathered. The results showed that 80.8 percent of the students, who were the main study units, did not respond to the question about work experience because it did not apply to them. Table 4 also shows that 9.2 percent of teachers had work experience ranging from 21 to 30 years, while 5.5 percent and 4.5 percent of the respondents had work experience ranging from 11 to 20 years and as low as 10 years, respectively.

Table 4: Respondent's Teaching Experience

Length of Teaching	Frequency	Percent
< 20 years	13.0	4.5
11-20 years	16.0	5.5
21-30 years	27.0	9.2
No response	236.0	80.8
Total	**292.0**	**100.0**

The length of time a person worked is significant since it affects the caliber of the data gathered. Additionally, experience speeds up the flow of information and encourages people to look into all available avenues for learning about a certain topic (Ersado, 2001).

4.4. Application of Different Practical Methods inSchools

4.4.1. Application of Practical Methods in Schools

According to the results in Table 5 below, 84.6 percent of respondents said their school uses hands-on techniques to teach agriculture, 7.9 percent said otherwise, and roughly 7.5 percent did not respond. This offers solid proof that practical procedures were applied effectively in the majority of Kisii County schools.

Table 5: Distribution Table for Practical Approaches Application

Practical Approaches	Frequency	Percent
Schools use Practical Aproaches	247.0	84.6
Did not Schools use Practical Aproaches	23.0	7.9
Did not Respond to that Question	22.0	7.5
Total	**292.0**	**100.0**

Asgari and Mahjub Moadab (2010), noted that efficient utilization of practical teaching in agriculture subject and student learning are crucial factors for evaluation of the quality of academic perfomance in agriculture. Hoveida & Moulavi (2008) found that learnes progress in the subject of agriculture is influenced by the quality of instruction provided by qualified teachers.

4.4.2. Various Practical Approaches applied in Schools

The study's conclusions showed that the majority of strategies were frequently employed. In most schools, demonstrations are frequently utilized as one of the practical methods of learning, according to about 51.7 percent of respondents, followed by field excursions at 45.2 percent and project methods at 42.8 percent. Although some respondents claimed that other practical methods, like ICT, where documented and utilized, represented by 85.9 percent but was confined to other schools due to the lack of ICT computer labs in their schools, experiments were occasionally employed in schools at 34.6 percent (Table 6). This suggests that there was no favored practical way of teaching agricultural students in the majority of Kisii County schools.

Table 6: Analysis of Practical Approaches Applied

Practical Appraoch	Level of Usage				
	Always	**Often**	**Sometimes**	**Rarely**	**Never**
Demonstrations	21.9	51.7	26.4	-	-
Project methods	26.7	42.8	30.5	-	-
Field trips	6.5	45.2	32.9	15.4	-
Experiments	14.4	32.2	34.6	18.8	-
Any other methods	10.9	1.6	85.9	1.6	-

4.4.3. Efficacy of the Practical Methods

The results are consistent with those of Kizlik (2015), who found that when practical teachers and demonstrators are used to give the students the skills they need, they offer advice on their practical techniques. About 55.1 percent of the respondents indicated that demonstrations were highly effective as a practical method of teaching. He added that unlike free-response or multiple-choice questions, agricultural practical education enables students to independently exhibit and practice their knowledge and abilities of how to accomplish something in action, as well as to meet learning objectives. Experiments came next with 44.6 percent, project methods with 43.2 percent, and field excursions with 39.4 percent, respectively. In order to help students develop their practical abilities, teachers may incorporate student-designed experiments into their lessons, according to Idodo & Oladimeji (2012). Although the respondents identified additional approaches, such as using ICT to research recorded practical applications made elsewhere in the world, the degree of efficiency was too low and was assessed at 44.9 percent inefficiency (Table 7) below.

Table 7: Efficacy of Practical Appraches Distribution Table

Practical Approaches	Level of Efficiency				
	Highly Efficiency	**Moderate Efficiency**	**Efficiency**	**Inefficiency**	**Highly Inefficiency**
Demonstrations	55.1	33.6	9.6	1.7	-
Project methods	40.8	43.2	16.1	-	-
Field trips	22.6	39.4	30.1	7.9	-
Experiments	32.9	21.4	44.6	1.1	-
Any other methods	13.0	2.9	37.7	44.9	1.4

4.5. Contraints Experienced in Implementing Practical Approaches

4.5.1. Analysis of Contraints Experienced in Applying Practical Methods in Schools

In contrast, some respondents (42.1 percent, 43.5 percent, and 23.3 percent, respectively) agreed that insufficient skills, insufficient resources and insufficient information in that order affected practical methods of teaching, as shown in Table 8 below. About 46.2percent of respondents believed that attitude strongly affected practical method of teaching in most schools.

Table 8: Constraints of applying Practical Approaches

Constraints	Level of Agreement				
	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Attitude	46.2	42.1	1.7	9.9	-
Insufficient information	13.0	23.3	16.1	20.9	26.7
Insufficient resources	31.2	43.5	8.9	16.4	-
Insufficient skills	13.0	42.1	7.5	18.5	18.8

4.5.2. Uncontrolable Factors Affecting learners' Performance

About 78.4 percent of the students strongly agreed that a student's background potential influences their academic achievement in the subject in most schools, followed by staffing of and nature or type of the school, peer pressure, and parents at 68.5 percent, 60.6 percent, and 56.2 percent, respectively. Almost half of the respondents, or 48.4 percent, agreed that the location and kind of the school have an impact on students' success in the agriculture topic as indicated in Table 9 below.

Table 9 Uncontrolable Factors Affecting learners Performance

	Level of Agreement				
Factors	**Strongly Agree**	**Agree**	**Neither**	**Disagree**	**Strongly Disagree**
Student background Potential	78.4	21.6	-	-	-
The Parent	25.7	56.2	18.2	-	-
Peer pressure	39.4	60.6	-	-	-
School type & staffing	15.1	68.5	14.4	1.4	0.7
Location & category	-	48.4	25.6	20.1	5.9

4.5.3. Other Variables that Affecting Practical Approaches Implementation

An open-ended questionnaire was created to collect data pertaining issues that affect the implementation of practical techniques in order to identify the obstacles preventing schools from completely implementing the use of practical methods in teaching the subject. This was accomplished by gaurging the frequencies of each variables, assigning weights to them, adding them all together, and then providing the results as a score. Weights 4, 3, 2, and 1 were classified as mostly, occasionally, infrequently, and never in that respect. To calculate the scores for each factor, the weights were then multiplied by the corresponding percentage of their frequencies and then summed up altogether. The more the score, the higher the variable impacts the process of implementing practical approaches of teaching the subject undr study in schools (Icheria, 2012, Maxwell et al., 2008).

The results showed that there was insufficient funding for practical lessons in schools, which was ranked as the most detrimental variable with the highest score of 352.5. This was followed by the lack of adequate agricultural instructors in most schools at 335.1, and the third factor that prevents the use of the practical approaches of teaching agriculture in schools financial constraints came in at 288.6. These results support the assertion made by (Olubandwaet al., 2011; Ajani & Igbokwe, 2011) that a shortage of funding may translate into insufficient working capital, which prevents schools from implementing effective approaches in their particular settings. According to these scores, which are 253.8, 235.2, 197.5, 171.3, 168.9, 167.9, and 153.6, respectively, additional factors include ineffective land in the school compound for agricultural practice, inadequate farm tools and equipment in the schools, a lack of agricultural textbooks, a lack of parental motivation for their children's studies, and a negative attitude toward the subject (Table 10).

Table 10: Other Factors that Affect the Implementationof Practical Methods

Other factors affecting practical methods in schools	Relative Frequency percent								Total relative Weight	Rank
	Mostly		Sometimes		Rarely		Never			
	Wgt	percent	Wgt	percent	Wgt	percent	Wgt	percent		
Inadequate resources for practical teachings	4	60.7	3	32.8	2	4.8	1	1.7	352.5	1
Inadequate agricultural teachers in most schools	4	48.5	3	42.4	2	4.8	1	4.3	335.1	2
Financial constraints to implement practical methods	4	21.4	3	55.2	2	14	1	9.4	288.6	3
Inefficient lands in schools to carry out field operations	4	9.7	3	49.2	2	26.3	1	14.8	253.8	4
Inadequate farm tools and equipment to be used	4	5.6	3	51.5	2	15.4	1	27.5	235.2	5
Lack of enough agricultural textbook in most school	4	3.5	3	22.9	2	41.2	1	32.4	197.5	6
Lack of motivation from parents and teachers to students	4	1.6	3	10.2	2	46.1	1	42.1	171.3	7
Poor students attitude towards agriculture subject	4	1.5	3	12.5	2	39.4	1	46.6	168.9	8
Limited agricultural practical materials in schools	4	1.4	3	13.5	2	36.7	1	48.4	167.9	9
Inadequate time to carry out the field operations	4	0.4	3	12.4	2	27.6	1	59.6	153.6	10

4.6. Linkage Between Practical Approaches the Performance

4.6.1. Subject achievement Before and After the Practical Approaches

The questionnaires were created to collect performance data, specifically for agriculture subjects before and after the introduction of the practical techniques, in order to ascertain whether practical ways of teaching agriculture had a substantial impact on academic performance. The results showed that before the use of practical approaches, the average mean score was 4.58, which is (C-). The mean score for the most recent five years, from 2011 to 2015, increased dramatically after the practical technique was introduced. The study also showed that, following the adoption of practical techniques, the mean average score for schools in Kisii County was 7.51, which is (B-). This is a blatant indicator that the practical approach to classroom instruction makes a significant contribution to improved academic achievement in schools, as demonstrated in figure 3 below.

These results are at odds with a research by Abrahams and Millar (2008), which found that when students use experimental methods, their grades improve because they were taught using the demonstration method, which is more activity-focused than traditional lecture methods. The practical approach to teaching agriculture subjects involves activities, which helps students respond to questions in a more relevant way than their peers who were only exposed to traditional lecture and classroom approaches. The findings are similarly analogous to those made by Musa (2007), who found that using effective teaching strategies in a supportive setting helps agriculture students learn and grasp the topic more effectively.

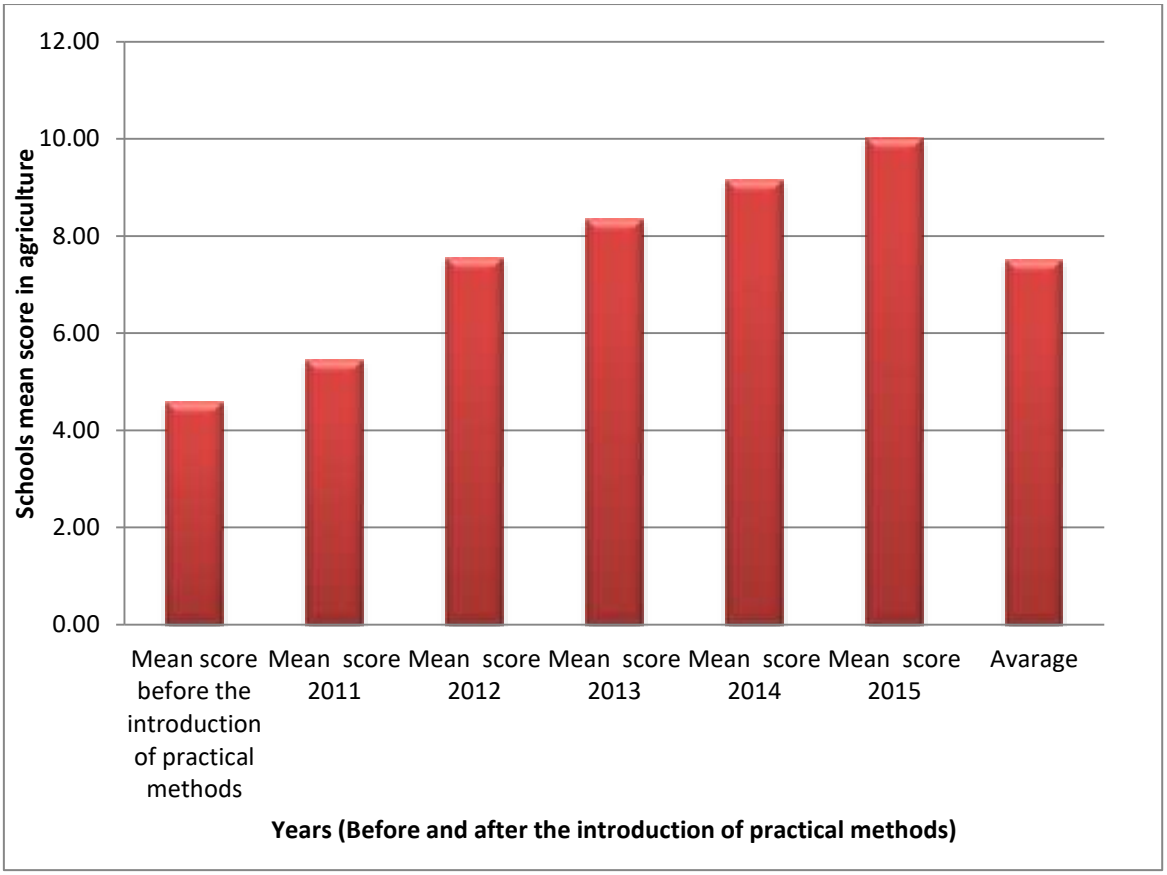

Figure 3: Bar Graph Presentation before and after the practical Approaches

4.6.2. Effects of Project Approaches, Field Trips, Demonstrations and Experiments on Performance in the subject

Although the respondents felt that demonstrations were very effective, at 55.1percent, experiments came in second, followed by project methods and field visits at 44.6percent. According to the study's findings utilizing the correlation coefficient, there was no significant association between students' academic achievement in the agriculture topic (mean score) and the use of display as a practical teaching approach (r= 0.29 at p=0.618). A good but shaky link was nevertheless found by the project method and trials, with r=0.366 at p=0.000 and r=0.113 at p=0.053, respectively. As said by Ghonji (2012) pointed out that using practical approaches helps students' academic achievement while also giving teachers a strong tool for evaluating students' proficiency in manual skills. Additionally, they create a connection

between theory and practice, assisting students in developing the scientific abilities of collecting and accurately and patiently interpreting data. The results also showed that field trips had an inverse relationship with academic performance of r= -0.173 at p=0.003, which can be interpreted as meaning that the number of field trips students take will also have an impact on the school's overall mean score. It could as well be interpreted as meaning that more field trips would only add value to agriculture as a subject and not all subjects, which would result in poor performance in those subjects (Table 11)

Table 11: Correlation Coefficient of Agriculture achievement

Correlations		**Use of Demonstration method**	**Use of project methods**	**Use of field trips method**	**Use of the experimental method**
Academic performance	Pearson Correlation	.029	.366	-.173	.113
	Sig. (2-tailed)	.618	.000	.003	.053
	N	292	292	292	292

4.6.3. Empirical Findings using Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) was also employed to confirm the findings in order to meet the study's goals. Both descriptive and inferential statistics were applied to the data. The was then analyzed descriptively using the Mean weight as illustrated using this formulae = $\sum w_i f_i / \Sigma f_i$

Where:

$\sum$ = Means total Sum

w_i = weight

f_i = frequency.

4.6.4. Practical Approaches of Teaching Agriculture

To address the study's third goal, which was to ascertain the impact of practical agricultural education in qualitative schools on students' academic achievement in agricultural-related courses. The respondents were asked to select the response that, on the basis of the following scale, best reflected the degree to which practical approaches in their institutions affected the academic achievement of agricultural students. 5 = Mostly, 4 = Occasionally, 3 = Rarly, 2 = Not at all, and 1 = Unknown. The analysis and results are displayed in Table 12 below.

In Table 12 below, the findings reveal that the project method, which had a weighted mean of 3.962 and was followed by a demonstration with a weighted mean of 3.955, was assessed as having the greatest influence on academic performance among the practical teaching techniques used in high schools. With a weighed mean of 3.421, the experiment's methodology received the lowest rating. This showed that the experiment was thought to have less of an impact on academic advancement in the agriculture field. When it comes to the academic performance of students studying agriculture, on average, 8.6 percent of students said that the practical approache's use in high schools in Kisii County had no effect at all; 31.1 percent said that it rarely had an impact; 43.0 percent, the majority, said that it occasionally had an impact; and 17.4 percent said that it had a more significant impact. Demonstrations had the lowest standard deviation (SD), which indicated that respondents'

replies were closely correlated, at 0.695, followed by the project approach, field excursions, and experiments, which came in at 0.757, 0.828, and 0.955, in that order.

Table 12: Practical Approach of Teaching Agriculture

Practical Approach	**5**	**4**	**3**	**2**	**1**	**Σ*fi***	**Σ*wifi***	**Σ*wifi*/Σ*f***	**Standard Deviation**
Demonstration	64.0	151.0	77.0	-	-	**292**	**1155**	**3.9555**	**.695**
Project approach	78	125	89	-	-	**292**	**1157**	**3.9623**	**.757**
Field trips	19	132	96	45	-	**292**	**1001**	**3.4281**	**.828**
Experiments	42	94	101	55	-	**292**	**999**	**3.4212**	**.955**
Average	**50.8**	**125.5**	**90.8**	**25.0**	**0.0**	**292.0**	**1078.0**	**3.7**	**-**
Percentage	**17.4**	**43.0**	**31.1**	**8.6**	**0.0**	**100.0**	**-**	**-**	**-**

4.7. Inferential Analysis of Paired Sample Statistics

The data were analyzed inferentially using, paired sample t-test, ANOVA and linear regression. The four practical ways of teaching the subjects that were determined for the paired sample testing statistics were demonstrations (DEM), project techniques (PRJ), field excursions (TRP), and experiments (EXP), as stated in the Table 13.

Table 13: Paired Sample

Paired Samples		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ACADEMIC PERFORMANCE	9.20	292	2.284	.134
	DEM	3.96	292	.695	.041
Pair 2	ACADEMIC PERFORMANCE	9.20	292	2.284	.134
	PRJ	3.96	292	.757	.044
Pair 3	ACADEMIC PERFORMANCE	9.20	292	2.284	.134
	TRP	3.43	292	.828	.048
Pair 4	ACADEMIC PERFORMANCE	9.20	292	2.284	.134
	EXP	3.42	292	.955	.056

**ACADEMIC PERFORMANCE-Was determined by learners' mean grade in the subject of interest after the introduction of practical approaches*

4.7.1. Linkage Between Practical approaches and Academic Performance

In general, the study intended to ascertain the relationship between the academic performance of the agriculture topic and the practical techniques of teaching agriculture in secondary schools. The identified independent variables that were established for this study's regression equations were field excursions (TRP), experiments (DEM), project techniques (PRJ) and (EXPE) on academic performance (PERFORMANCE)

There is little correction between the dependent and independent variable of demonstration, project methods, field trips and experients as shown by the absolute value (0.245) of the correction coefficient for the model summery on the relationship between practical methods and acdemic perfomance as indicated in Table 14. The summary model's R Square, which measures how well the variability is explained, is 0.235. This means that only 23.5 percent of the dependent factors of academic performance in the subject can be controlled by the variables of the application of project approach, experiments, demonstrations and the field trips while the remaining 76.5 percent can be controlled by the variables that are not included in the model.

Table 14: Model Summary on Practical approaches the Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	-.495[a]	0.245	0.235	01.998

a. Independent variable (Predictors): (Constant), DEM, PRJ, TRP, EXP.

b. Dependent Variable: PERFORMANCE

The results of the analysis of variance (ANOVA) show that the linear regression model successfully and significantly predicts academic performance in agriculture, with an F-ratio of 23.324 and a p-value of p = 0.000 showing that the results of the regression model were significant (Table 15). This suggested that a practical approach to teaching agriculture is important and improves academic performance because it allows students to connect the theoretical to the practical.

Table 15: ANOVA test for Practical approaches and the Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	372.369	4	93.092	23.324	.000[b]
	Residual	1145.504	287	3.991		
	Total	1517.873	291			

a. Dependent Variable: ACADEMIC PERFORMANCE

b. Independent variable (Predictors): (Constant), DEM, PRJ, TRP, EXP.

The linear model (regression) was arrived at:

$$\boldsymbol{PERFORMANCE = a_0 + x_1 DEM + x_2 PRJ + x_3 TRP + x_4 EXP + \varepsilon}$$

Where:

The learner's mean score in the subject (agriculture) before and after using of practical approaches were used to compare the academic performance in this example.

$a_0 =$ Constant term

$x_1 =$ Demonstration coefficient

$x_2 =$ Projec coefficient

$x_3 =$ Field trips coefficient

$x_4 =$ Experiments coefficient

ε = error term (normal distribution)

By inserting in the value of the coefficientin obtained in Table 16 to the formulae above, the following regression model was arrieved as:

$$\boldsymbol{PERFORMANCE} = 6.846 - 0.836*\boldsymbol{DEM} + 1.34*\boldsymbol{PRJ} - 0.774*\boldsymbol{TRP} + 0.878*\boldsymbol{EXP} + \varepsilon$$

The results showed that the constant term was 6.846; the demonstration coefficient was discovered to be negative -0.836; the project method coefficient was found to be 1.34; the field trip coefficient was negative -0.774; while the experiment coefficient was at 0.878. The project approach (PRJ), field excursions (TRP), experiments (EXP), and demonstration (DEM) all have p-values of 0.000. As indicated in Table 16, the project's techniques and experiments exhibited a strong and positive correlation of $p \leq 0.000$ r= 8.231 at r=5.677 at $p \leq 0.000$, in that order, whereas the demonstrations and field visits revealed a weak but negative correlation of $p \leq 0.000$ r= -4.040 at and $p \leq 0.000$ r= -5.019 . This suggests that each of the four highlighted practical approaches has a major impact on how well students in agriculture classes perform academically.

These results are consistent with the findings of Abrahams & Millar (2008) which demonstrated how learners performed better when taught via demonstration and experimentation approaches than traditional lecture methods (control group). The results also show that students who were taught agricultural using practical appraches outperformed those who were taught without. The results also were in support of Adenyika & Mutula (2006), Virpi, Kirsti & Sari (2004) and that of Daluba & Audu (2005) whose research found that there were differences in how well male and female students performed academically in science disciplines, including agriculture.

Table 16: Regression of Practical Approaches and the Performance

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	**Std. Error**	**Beta**		
1	**(Constant)**	6.846	1.022		6.699	.000
	DEM	-.836	.207	-.254	-4.040	.000
	PRJ	1.340	.163	.444	8.231	.000
	TRP	-.774	.154	-.281	-5.019	.000
	EXP	.878	.155	.367	5.677	.000

a. Dependent Variable: ACADEMIC PERFORMANCE

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter summarizes the study's results, draws conclusions, makes recommendations, and makes ideas for additional research that should be conducted.

5.2. Findings

The goal of this study was to ascertain the impact of practical methods on high school students' performance in Kisii County, Kenya. The specific goals were to: ascertain the challenges associated with implementing various practical teaching approaches in teaching agriculture in high schools; ascertain how varius schools apply practical appraches of teaching the subject as well as establishing the association between practical apprach of teaching agriculture and performance of the subject.

As per the findings, the primary goal, the results showed that 84.6 percent of respondents said their institution uses hands-on methods to teach agriculture and other disciplines, while 7.9 percent said otherwise and roughly 7.5 percent did not respond. This offers compelling proof that practical methods are effectively applied in the majority of Kisii County schools.

In most schools, demonstrations are frequently utilized as practical methods of learning, according to about 51.7percent of respondents, then field excursions at 45.2 percent and project approach at 42.8 percent. Despite of some students claimed that other practical approaches, like use of ICT, where field practical documented were utilized by 85.9 percent but was confined to other schools due to the lack of ICT computer labs, experiments were

occasionally employed in schools at 34.6percent. This suggests that the majority of the research area lacked a preferred practical teaching strategy for agriculture students.

Although the respondents felt that demonstrations were very effective, at 55.1 percent, experiments came in second, followed by project methods and field visits at 44.6 percent. According to the study's findings utilizing the correlation coefficient, there is no association between students' academic achievement in the agriculture topic and the use of display as a practical teaching approach ($p \leq 0.618$ $r = 0.29$ at). However, the project's techniques and experiments found a weak but positive link, with $p \leq 0.053$ $r=0.113$ at and $p \leq 0.000$ $r=0.366$ at, respectively. The results also showed that field trips had an adverse association with academic performance ($p \leq 0.003$ $r = -0.173$ at), means that the more field trips students take, the more that relationship will damage the school's overall mean score it might also be taken to mean that more field visits would only help the agriculture subject and not the other subjects, leading to low performance in those disciplines.

The second goal was to identify the difficulties in implementing various practical teaching strategies for agriculture in high schools. According to the results, 46.2 percent of students said that attitudes strongly influenced practical teaching in most high schools, while 43.5 percent, 42.1 percent, and 23.3 percent of the respondents accepted that schools resources, skills, and information issues respectively had an impact on practical teaching. The majority of respondents (78.4 percent) strongly agreed that students background potential play a major role in boosting students' performance in agriculture in most schools, then closely by school category, staffing, peer pressure, and parents at 68.5 percent, 60.6 percent, and 56.2 percent, in that sequence. The researcher also looked at the factors beyond control that affect student performance in agriculture. It is evident that a somewhat larger percentage of respondents,

48.4 percent, believed that school location and category affect students' performance in the agriculture topic.

The results also showed that there was insufficient funding for practical lessons in schools, which was graded as the most detrimental variable with the highest score of 352.5. This was then followed by inadequate agricultural teachers in most high schools at 335.1, and the third variable was prevents the use of a practical approach to teaching the subject. Financial constraints came in at 288.6. The rest consists of with a score of 253.8, 235.2, 197.5, 171.3, 168.9, 167.9, and 153.6, respectively, insufficient lands to conduct field operations; insufficient farm tools and equipment in the schools; insufficient agricultural textbooks in most schools; a lack of parental and teacher motivation for students; a poor attitude among students toward agriculture subjects; and finally, insufficient time to conduct field operations. The average mean grade prior to the inceptions of practical techniques was 4.58, which is based on the third aim, which was to determine the relationship between practical ways of teaching agriculture and academic achievement of the agricultural topic (C-). There was a significant improvement in the mean score over the past five years with the introduction of the practical technique (2011 to 2015). The study also showed that, following the adoption of practical techniques, the mean average score for schools in Kisii County was 7.51, which is (B-). This is a blatant example of how the practical approach to classroom instruction makes a significant contribution to improved academic achievement in schools.

Although the respondents felt that demonstrations were very effective, at 55.1 percent, experiments came in second, followed by project methods and field visits at 44.6 percent. According to the study's findings utilizing the correlation coefficient, there is no association between students' academic achievement in the agriculture topic and the use of display as a practical teaching approach ($p \leq 0.618$ $r = 0.29$ at). However, the project's techniques and

experiments found a weak but positive link, with p≤ 0.053 r=0.113 at and p≤ 0.000 r=0.366 at, respectively. The results also showed that field trips had an adverse association with academic acheivement (p≤ 0.003 r= -0.173 at), which can be read as meaning that the more field trips students take, the more that relationship will damage the school's overall mean score The school's average test score might also be seen as meaning that extra field excursions will only aid the agricultural topic and not the other subjects, leading to low performance in those areas.

This showed that the experiment was thought to have less of an impact on academic advancement in agriculture-related courses. As far as the improvement of academic performance in the agriculture subject is concerned, 8.6percent of respondents on average said that the practical method's use in secondary schools in Kisii County had no bearing at all; 31.1percent said that it rarely had such an effect; 43.0percent, the majority, said that it occasionally had such an effect; and 17.4percent said that it frequently had such an effect. Demonstrations had the lowest standard deviation (SD), indicating that respondents' responses were closely correlated, at 0.695, followed by project methodology, fieldwork, and experiments at 0.757, 0.828 and 0.955 respectively

The absolute value of the coefficient correlation, which illustrtes a low coefficient between the independent and dependent factors project approach, demonstrations, experiments, field trips was 0.24, according to the model summary on the relationship between practical approaches and the performance. The summary model's R Square of 0.235 explains how much variability there is. This means that only 23.5 percent of the dependent variable of academic performance in the agriculture subject can be controlled by the variables of the application of demonstrations, project methods, field trips, and experiments, while the remaining 76.5percent can be controlled by the variables that are not included in the model.

The results of the ANOVA show that the linear regression model successfully and comprehensively predicts performance in agriculture, with an F-ratio of 23.324 and a p-value of $p \leq 0.000$ showing that the results of the regression model were significant. The results also showed that the constant term was 6.846; the demonstration coefficient was discovered to be negative -0.836; the project method coefficient was 1.34; the field trip coefficient was discovered to be negative -0.774; and the experiment coefficient was at 0.878. The p-values for the experiments (EXP), field visits (TRP), project techniques (PRJ), and demonstrations (DEM) are all $p \leq 0.000$. While the demonstration and field visits showed a negative but strong relationship, $r = -4.040$ at $p \leq 0.000$ and $r = -5.019$ at $p \leq 0.000$, the project techniques and experiments demonstrated a positive and strong relationship of $r = 8.231$ at $p \leq 0.000$ and $r = 5.677$ at $p \leq 0.000$, in that sequence. This suggests that each of the four highlighted practical approaches has a major impact on how well students in agriculture classes perform academically.

5.3. Conclusions

As per the findings of this study, the following conclusions were reached:

1. Use of Demonstrations

According to the study's findings utilizing the correlation coefficient, there was no significant association between students' academic achievement in the agriculture topic and the use of display as a practical teaching approach ($r= 0.29$ at $p\leq 0.618$). ANOVA, on the other hand, demonstrated that the featured practical technique significantly influences the academic performance of the agriculture topic in schools, with a negative but strong association of $r= -4.040$ at $p\leq 0.000$.

2. Use of Project Methods

By using ANOVA, it was confirmed that project methods also revealed a positive and strong relationship of $r= 8.231$ at $p\leq 0.000$, indicating that project methods positively influence the academic performance of the agriculture subject. It was concluded that project methods revealed a positive but weak relationship of $r=0.366$ at $p\leq 0.000$.

3. Use of Field Trips

According to the study, field trips had an inverse relationship with academic performance of $r= -0.173$ at $p\leq 0.003$, which could be interpreted as meaning that the more field trips a school takes, the worse its academic performance will be overall. It could also mean that more field trips will only benefit the agriculture subject and not the other subjects.

4. Use of Experiments

44.6percent of respondents thought the trial had little impact on academic advancement in the agricultural subject. However, it showed a r=0.113 at p≤ 0.053 weakly positive connection. ANOVA trials had a significance of r=5.677 at p≤ 0.000, indicating that they had an impact on agricultural academic achievement.

5.4. Recommendations

The following recommendations were made based on the study's findings: that the findings would help people realize how various practical strategies might help them perform better in agricultural tests. This would aid them in organizing and giving the target area's instructors the resources they need. Additionally, the findings would aid school officials in raising the academic bar for the discipline in classrooms and give them insight into the difficulties faced by teachers.

5.5. Recommmendations for Further Study

This study focused on practical approaches of teaching evaluating agriculture as one of the subjects offered in high schools and without incorporating other elements that equally may impact the academic achievement, recommendation on further study to be carried on the effects of geography location of the school and the surrounding school-community relationship on academic success in the same kisii county.

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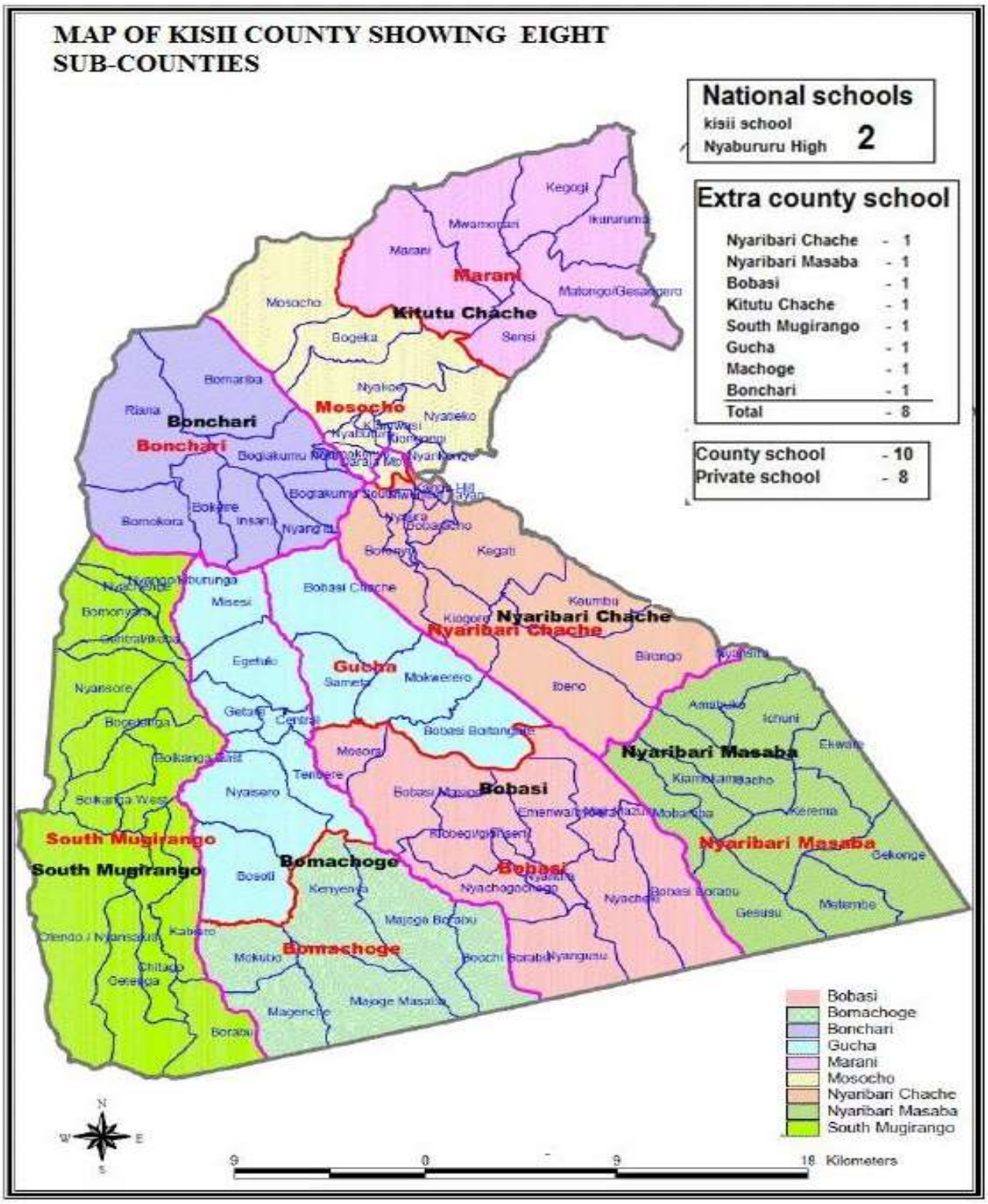
APPENDIX I: MAP OF KISII COUNTY



APPENDIX II: QUESTIONNAIRE

Dear Respondent,

I am an MSc Student at Kisii University pursuing a Master's of Science degree in Agriculture subject. My research study focuses on 'to determine the influence of the practical methods of teaching agriculture on academic performance of agriculture subject in secondary schools in Kisii County.

Kindly respond to the questionnaire with ultimate honesty. Please **DO NOT** write your name or identification because the information will be treated as confidential. Once filled in, it will be mixed with the others therefore, please answer without any fear. There is no right or wrong answer. Am interested in your opinion and experience, so please answer spontaneously and do not worry because the information will be treated as confidential and shall be used for academic purposes only. Thank you for your collaboration and for taking the time to support this study.

PART 1: QUESTIONNAIRE FOR PRINCIPALS & AGRICULTURE TEACHERS

SECTION A: DEMOGRAPHIC DATA

a) Please respond honestly and accurately to the items given below

b) Please **tick** (✓)where appropriate

County……Name of school……

1. Gender Male [ ] Female [ ]

2. Age of the respondent **20-30**[ ]yrs **31-40**[ ]yrs **41-50**[ ]yrs Over**51** [ ]yrs

3. School category? National [ ] Extra county [ ] County [ ] Private [ ]

4. Is your school Mixed or Single? Boys only [ ] Girls only [ ] Boys and girls [ ]

5. Designation? Principal [ ] Agriculture teacher [ ]Agriculture students [ ]

6. Teaching experience Below **10** [ ]yrs**10-20** [ ]yrs**21-30** [ ]yrsOver **31**

SECTION B: TEACHING METHODS OF AGRICULTURE

7. Are practical methods of teaching agriculture offered in your school?**Yes** [ ] **No** [ ]

8. If (**No**), why?

……

……

……

9. Practical methods used in teaching agriculture in various schools.

The following are the practical methods used in teaching agriculture in various schools. Please tick the option which best describes the level of **Usage** according to the statements given below: 5= Always, 4 = Often, 3= Sometimes, 2= Rarely and 1= Never					
Methods	5	4	3	2	1
Demonstration					
Project method					
Field trip					
Experiments					
Any other (please specify)……..					

10. How do you rate these practical methods of teaching agriculture subject in your school?

Methods	Highly Efficient	Moderately Efficient	Efficient	Inefficient	Highly inefficient
Demonstration					
Project method					
Field trip					
Experiments					
Any other (please specify)……..					

SECTION C: INFLUENCE OF PRACTICAL TEACHING OF AGRICULTURE ON PERFORMANCE

11. For the **last five (5)** years, which year did the practical methods of teaching agriculture subject applied in your school?

2012[] 2013[] 2014[]2015[] 2016[]

12. What was the performance of the agriculture subject mean score before the application of practical methods of teaching? **Mean score [……]**

13. What was the mean score of agriculture subject for the **last five (5)** from the time the practical methods of teaching agriculture was applied in your school?

Year	Mean score in agriculture subject
2012	Mean score [……]
2013	Mean score [……]
2014	Mean score [……]

2015	Mean score [……]
2016	Mean score [……]

14. Kindly indicate the challenge(s) of each of the following practical methods of teaching:

This section deals with the challenges facing the application of the earlier indicated practical methods. Please tick the option which best describes the level of **Agreement** according to the statements given below: 5= Strongly Agree, 4= Agree, 3= Neither, 2= Disagree, 1= Strongly Disagree

Factor	5	4	3	2	1
Attitude					
Inadequate resources					
Inadequate skills					
inadequate information					
Others, Please Specify					

15. Practical methods of teaching agriculture and academic performance in schools:

How do you rate the level of influence of these practical methods of teaching agriculture subject in your schools?Tick the option which best describes the level of **Influence** according to the statements given. 5= Mostly , 4= Sometimes, 3= Rarely , 2= Not at all, 1= Don't know					
Methods	**Mostly**	**Sometimes**	**Rarely**	**Not at all**	**Don't know**
Demonstration					
Project method					
Field trip					
Experiments					
Any other (please specify)……..					

16. Some factors beyond your control that affect student performance in agriculture:

This Section Deals with other factors beyond control that affect student performance. Please tick the option which best describes the level of **Agreement** according to the statements given below: 5= Strongly Agree, 4= Agree, 3= Neither, 2= Disagree, 1= Strongly Disagree					
Factor	5	4	3	2	1
Learners Background and Ability					
Parents					

Peer Pressure					
School Type and Staffing					
Location and Category					
Others, Specify					

PART 2: QUESTIONNAIRE FOR AGRICULTURE STUDENTS

SECTION A: DEMOGRAPHIC DATA

a) Please respond honestly and accurately to the items given below

b) Please **tick** (✓)where appropriate

County……Name of school……

17. Age of the respondent **10-15**[ ]yrs **16-20**[ ]yrs Over**21** [ ]yrs

18. Gender Male [ ] Female [ ]

19. Are these practical methods of teaching agriculture offered in your school?Tick the option which best describes the level of **Usage** according to the statements given. 5= Mostly , 4= Sometimes, 3= Rarely , 2= Not at all, 1= Don't know

Methods	**Mostly**	**Sometimes**	**Rarely**	**Not at all**	**Don't know**
Demonstration					
Project method					
Field trip					

Experiments					
Any other (please specify)…					

20. What was your mean grade for agriculture subject before the application of the practical method of teaching? **Agriculture Mean grade before […….]**

21. What was your mean grade for agriculture subject after the application of a practical method of teaching? **Agriculture Mean grade after [……]**

22. Which method do you prefer in agriculture teaching in terms of effectiveness?

Practical method [ ] Theoretical methods [ ]

23. What are some of the challenges you face?

……

……

Thank you for answering this questionnaire.

- End-