

**ATTITUDE OF STUDENTS TOWARDS SELECTED TEACHING METHODS IN
AGRICULTURE IN SECONDARY SCHOOLS IN MUKAA SUB-COUNTY OF
MAKUENI COUNTY, KENYA**

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**A Thesis Submitted to the Graduate School in Partial Fulfillment of the Requirements
for the Master of Science Degree in Agricultural Education of Egerton University**


EGERTON UNIVERSITY

MAY, 2021

DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been previously submitted or published for the award of a degree or diploma in this or any other university.

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Recommendation

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DEDICATION

This thesis is dedicated to my loving husband Joshua Maluti and my children Stephen, Rachel and Gabriel, whose love, patience and understanding during my study period enabled me to complete this thesis.

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ABSTRACT

This study determined students' attitude towards selected agriculture teaching methods; cooperative, demonstration, field trips and lecture in secondary schools in Mukaa Sub-county of Makueni County, Kenya. This study was guided by the following specific objectives: To determine; students' attitude towards use of cooperative method of teaching agriculture, students' attitude towards the use of demonstration method of teaching agriculture, students' attitude towards use of field trip method of teaching agriculture, students' attitude towards the use of lecture method of teaching agriculture and the difference in the attitude of students towards the various teaching methods in agriculture between Sub-county, County and Extra County secondary schools in Mukaa Sub-county. This study was informed by the Theory of Reasoned Action. Descriptive research design was adopted. Four wards in Mukaa Sub County were selected by use of purposive random sampling. The target population of the study consisted of 12,963 all agriculture students in secondary schools in Mukaa Sub County. A sample size of 120 respondents was randomly selected from accessible population of 1,773 Form Three students in the four wards in Mukaa Sub-county. Both quantitative and qualitative data were collected using semi structured questionnaire. Statistical Package for Social Sciences (SPSS) was used to analyze the data. The results were presented using frequencies, means, percentages, independent sample t-test and one way ANOVA. The study results established that the attitude of students towards the four selected methods, cooperative, demonstration, field trips and lecture was positive, and was the same for male and female students across sub-county, county and extra county schools. The most commonly used method of teaching agriculture was established to be lecture method, followed by demonstration, although with a large difference between the two. The third commonly used was the cooperative method and the last was field trips. The most preferred method of teaching by agriculture students was established to be field trips and the least preferred was demonstration method. The study recommends that the Ministry of Education (MoE) through the Teachers Service Commission (TSC) should formulate policies that will enable teachers to use student centered methods in teaching of agriculture. It also recommends agriculture teachers to combine various methods of teaching agriculture as the situation demands, to make teaching and learning more effective.

TABLE OF CONTENTS

DECLARATION AND RECOMMENDATION	ii
COPYRIGHT	iii
DEDICATION.....	iv
ACKNOWLEDGEMENTS	v
ABSTRACT.....	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ACRONYMS AND ABBREVIATIONS	xii
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	5
1.3 Purpose of the Study	5
1.4 Objectives of the Study.....	5
1.5 Research Questions	6
1.6 Hypothesis of the Study	6
1.7 Significance of the Study	6
1.8 Scope of the Study	7
1.9 Assumptions of the Study	7
1.10 Limitations of the Study.....	7
1.11 Definitions of Terms	7
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction.....	9
2.4 Methods of Teaching Agriculture and their Usefulness	12
2.4.1 Cooperative Teaching Method.....	14
2.4.2 Demonstration.....	16
2.4.3 Field Trips.....	18
2.4.4 Lecture Method.....	20
2.5 Students' Attitude towards Agriculture Subject in Secondary Schools.....	20

2.6	Students' Attitude towards Teaching Methods used in Agriculture Subject in Secondary Schools	22
2.6.1	Students' Attitude towards Field Trips	23
2.6.2	Students' Attitude towards Demonstration.....	23
2.6.3	Students' Attitude towards the lecture method.....	23
2.6.4	Students' Attitude towards the cooperative method	24
2.7	Challenges of Agriculture Teaching in Secondary Schools	24
2.8	Effect of Agriculture Students' Attitudes on Agriculture Achievement	25
2.9	Theoretical Framework.....	26
2.10	Conceptual Framework.....	27
CHAPTER THREE		29
RESEARCH METHODOLOGY		29
3.1	Introduction.....	29
3.2	Research Design.....	29
3.3	Location of the Study.....	29
3.4	Target Population.....	29
3.5	Sampling Procedure and Sample Size	30
3.6	Instrumentation	32
3.6.1	Validity	32
3.6.2	Reliability.....	33
3.7	Data Collection Procedure	33
3.8	Data Analysis	34
CHAPTER FOUR.....		36
RESULTS AND DISCUSSION		36
4.1	Introduction.....	36
4.2	Questionnaire Return Rate.....	36
4.4	Respondents' Attitude towards use of Demonstration Method of Teaching Agriculture	41
4.5	Analysis of students' Attitude towards use of Field trip Method of Teaching Agriculture	45

4.6	Analysis of Respondents’ Attitude towards use of Lecture Method of Teaching Agriculture	48
4.7	Methods commonly used to teach Agriculture	51
4.8	Methods Most Preferred by Respondents	52
4.8.1	Reasons for preferring the selected teaching methods the most	53
4.9	Results on difference between Attitude of Students towards the selected teaching methods in agriculture.....	57
CHAPTER FIVE		60
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS		60
5.1	Introduction.....	60
5.2	Summary of the Study	60
5.3	Conclusions.....	62
5.4	Recommendations.....	62
5.4.1	Recommendations for Further Research.....	63
REFERENCES.....		64
APPENDICES.....		74
Appendix A: Questionnaire for Form Three Agriculture Students		74
Appendix B: Key Data Analysis and Outputs		80
Appendix C: Abstract of the Journal Article		83
Appendix E: Authority from Nacosti.....		85
Appendix F: Map of Makueni County.....		86
Appendix G: Authority from the Ministry of Education, Science and Technology		87
Appendix H: Authority from County Commissioner		88
Appendix I: A Letter To School Principals		89

LIST OF TABLES

Table 1:	Population of Agriculture Students in Mukaa Sub-County	30
Table 2:	Distribution of Respondents by Wards in Mukaa Sub County.....	31
Table 3:	Summary of Data Analysis	35
Table 4:	Questionnaire Return Rate in the three categories of schools	36
Table 5:	Means' Rating in the Likert Scale	37
Table 6:	Attitude of Students towards Cooperative Method of Teaching Agriculture	38
Table 7:	Positively Stated Statements for Cooperative Method of Teaching	39
Table 8:	Negatively Stated Statements for Cooperative Method of Teaching.....	40
Table 9:	Attitude of Students towards Demonstration Method of Teaching Agriculture	41
Table 10:	Positively Stated Statements for Demonstration Method of Teaching.....	42
Table 11:	Negatively Stated Statements for Demonstration Method of Teaching	44
Table 12:	Attitude of Students towards Field trip Method of Teaching Agriculture....	45
Table 13:	Positively Stated Statements for Field Trip Method of Teaching.....	46
Table 14:	Negatively Stated Statements for Field Trip Method of Teaching	48
Table 15:	Attitude of Students towards Lecture Method of Teaching Agriculture	48
Table 16:	Positively Stated Statements for Lecture Method of Teaching	49
Table 17:	Negatively Stated Statements for Lecture Method of Teaching.....	50
Table 18:	Frequencies of the Most Commonly Used Methods to Teach Agriculture .	51
Table 19:	Most Preferred Method of Teaching by Respondents	53
Table 20:	Reasons for Indicating Field Trip as the Most Preferred Method of Teaching Agriculture	54
Table 21:	Reasons for Indicating Lecture as the Most Preferred Method of Teaching Agriculture	54
Table 22:	Reasons for Indicating Cooperative as the Most Preferred Method of Teaching Agriculture	55
Table 23:	Reasons for Indicating Demonstration as the Most Preferred Method of Teaching Agriculture	56
Table 24:	Independent Sample T-Test.....	58
Table 25:	ANOVA Results	59

LIST OF FIGURES

Figure 1: Conceptual framework Showing the Interaction of Variables	30
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LIST OF ACRONYMS AND ABBREVIATIONS

CT	Cooperative Teaching
CTM	Cooperative Teaching Method
FAO	Food and Agriculture Organization
FFA	Future Farmers in America
GDP	Gross Domestic Product
GS	Graduate School
KCPE	Kenya Certificate of Primary Education
KICD	Kenya Institute of Curriculum Development
KLB	Kenya Literature Bureau
KNEC	Kenya National Examination Council
MDG	Millennium Development Goal
MoE	Ministry of Education
NACOSTI	National Council of Science, Technology and Innovation
SAE	Supervised Agricultural Experience
SEO	Sub-County Education Office
SPSS	Statistical Package for the Social Sciences
SQA	Scottish Qualification Authority
TRA	Theory of Reasoned Action
TSC	Teachers Service Commission

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture has an immense impact to humanity in terms of global food supplies, hunger alleviation, economic development and provision of employment (Sangnate, 2019). In Sub-Saharan Africa, the agricultural sector has become a dominant provider of employment, and it remains crucial for economic growth (Darko *et al.*, 2015). Moreover in most parts of Africa food security is still a critical issue and therefore food production will continue to be a major focus of agricultural education and training institutions (Darko *et al.*, 2016).

Agriculture plays a very important role in the economy of Kenya (Republic of Kenya, 2010). Additionally the sector contributes about 24 per cent Gross Domestic Product (GDP) and about 19 per cent formal wage employment despite occasional shortages of food due to deficiency in rainfall during certain years, agriculture guarantees food security to the nation (Sahin *et al.*, 2016) Agriculture contributes over 60% of exports and provides 80% of all industrial raw materials (LaCharite, 2016). Therefore agriculture can be considered to be a pillar for human survival and hence the importance of agriculture being taught at all levels of education.

Agriculture is a vocational subject which is a vital tool in preparing people for a new phase of rural development (Cheplogoi *et al.*, 2016). According to Onni (2017) agriculture in other parts of the world for example United States of America (USA), is a subject that is designed to help students develop agricultural appreciation encompassing knowledge and information needed by any workers to enter and make progress in employment on a useful and productive basis. In Malaysia vocational education is meant to produce a workforce which is educated, skilled and having positive attitude (Akdemir & Özçelik, 2019). In Bangladesh, technical subjects are highly recognized due to their contribution to national development in areas of manpower creation and running of industries (Antonio, 2018).

Agriculture was officially established in Kenyan school's curriculum in several phases in the slow development of colonial education (Muchiri & Kiriungi, 2015). With the introduction of the 8-4-4 system of education in Kenya in 1985, all the schools started offering agriculture (Ndirangu, 2017; Republic of Kenya, 1984). The subject is taught so that the youth can appreciate the role agriculture plays in the economy of the country (Muchiri & Kiriungi, 2015). Additionally, school agriculture is an attempt to inculcate attitudes, knowledge and practical

skills in students needed to improve agricultural production (Konyango & Asienyo, 2015). Effective teaching and learning of agriculture subject is done through use of different methods of teaching which include lecture, discussion, demonstration and field trips (Muchiri *et al.*, 2015). Effectiveness of these methods depends, to a great extent, on the attitude that students have towards them.

Attitude is a psychological construct theorized to be composed of emotional, cognitive and behavioural components (Yunandar *et al.*, 2019). Attitude serves functions such as social expression, value expressive, utilitarian, and defensive functions, for the people who hold them (Adebayo & Kavoos, 2016). According to Jebson and Hena (2015), the attitude of students plays a significant part in any satisfactory explanation of learning methods used in agriculture subject. As reported by Jaleel *et al.* (2017), many students develop negative attitude towards teaching methods of agriculture subject, probably due to the fact that teachers are unable to satisfy their aspiration or goals.

Starting from the emergence of the constructivist view of learning, new frameworks for designing learning environments have emerged (Akdemir & Özçelik, 2019). Additionally, modern trends in teaching agriculture in secondary schools emphasize certain approaches which determine the method to be used. These approaches include; interactive approach, collaborative approach, transmission approach, experiential approach and facilitation approach (Sahin *et al.*, 2016). Interaction approach is where there is exchange of ideas between the teacher and the learner or among learners themselves as in group work. Collaborative approach is where learners share ideas in groups or projects. Transmission approach, the teacher dominates the lesson by use of lecture. From the above approaches the agriculture teacher determines the method to use depending on the content to be taught to the students (Onni, 2017).

Teaching method refers to the ways and means which a teacher adopts to guide the students through teaching and learning activities in order to accomplish the desired goal (Jebson & Hena, 2015). There are conventional and heuristic methods of teaching agriculture available to the teacher which are designed for communicating with students (Adeleke *et al.*, 2013; Sangnate, 2019). Effective teaching and learning takes place when the teacher knows which method to use in a particular situation to meet specific goals (Ofoegbu, 2015). In using teaching methods, teachers are faced with the task of placing the students in an educational setting

tailored to the students learning. The setting in which methods of teaching agriculture are used by teachers have a strong influence on the students' attitude (Ndem, 2016).

Different teaching methods are available for the teacher to use in communicating attitudes, ideas, knowledge, and skills to the students in order to achieve the desired objectives of a given lesson (Razaei & Khodaei, 2017). Most teachers apply the conventional method of teaching in teaching agriculture (Prabha, 2016; Waiganjo *et al.*, 2014). In conventional method of teaching agriculture, most of the students struggle to identify and actually understand the teaching method in different perceptions (Onni, 2017). Additionally, few agriculture teachers use heuristic teaching methods, where students influence the content, activities, materials, and pace of learning. Additionally, these teaching methods have positive aspects as well as negative aspects to students. Therefore it was important to investigate the students' attitude towards methods used in teaching agriculture in secondary schools. According to Waiganjo *et al.* (2014), and Akdemir and Ceyda (2019), researches have been done on effective teaching methods and effective learning in Kenyan secondary schools from the perspectives of teachers. Additionally few investigations have been done on how much secondary school agriculture students know about the teaching methods and what attitude they have towards them.

This study was limited to investigating students' attitude towards cooperative, field trips, demonstration and lecture methods of teaching agriculture. Teachers use these teaching methods to enable agriculture students achieve certain goals. The teaching methods were selected because they are among the most commonly used by agriculture teachers in secondary schools. The teaching methods were selected from conventional and heuristic teaching methods in agriculture.

According to Antonio (2018), conventional teaching methods are largely teacher centred, the learners passively acquire knowledge as the teacher teaches and the students take notes. In this study they will include demonstration and lecture. Heuristic methods are learner-centred. These methods are such that the learners are actively involved in the learning process (Sahin *et al.*, 2016). In this study they will include cooperative and field trips.

According to Akdemir and Özçelik (2019), cooperative learning experiences promote knowledge retention and motivation to learn agriculture subject. A study done by Thoron and Burleson (2014) revealed that cooperative learning was a successful teaching method in which

small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. In this method, each member of a team is responsible not only for learning what was taught but also for helping team mates to learn, thus creating an atmosphere of achievement (Wambugu *et al.*, 2013).

Demonstration is a practical way of explaining or describing a process or an activity (Onni, 2017). Additionally, the teacher demonstrates an activity before engaging the class in the same. The teacher may also use one of the learners to demonstrate the activity. Demonstration method is generally effective in teaching sciences, mathematics and mechanics as well as subject areas within vocational and technical education (Diise *et al.*, 2018). As stated by Farah and Alec (2016) the professional success of a technologist is directly related to his/her ability to transfer knowledge gained in the academic environment to real-world situations. The study added that much student learning occurs through observing others.

Field trips provide learners with an opportunity to explore other environments and make school life more interesting it provides the learners with exciting experiences that bring joy and satisfaction that would not have been experience in the normal classroom interaction (Darko *et al.*, 2016). However, a number of instructors are of the opinion that field trips are not well – planned and scheduled (Nkereowajiro, 2014). Therefore, the site and time of the visit need to be selected carefully, preferably with the students themselves. The group should be prepared for the visit; if possible, the students should prepare before they go, a list of things they are going to look out for (Ndem, 2016). Study done by Akdemir and Özçelik (2019) added that, the teacher should always follow up the visit by group discussion. Perhaps some or all of the members could write an account of the visit and state how they felt about what they saw.

Lecture is a teaching method in which there is a one-way channel of communication where the teacher makes an oral presentation of the subject matter content and students react by silently listening and taking notes (Ndirangu, 2017). Additionally, in this method the teacher gives out all the facts to the students to know and master.

Agriculture is the main source of livelihood for the majority of Kenyans who live in rural areas, teaching and learning the subject in secondary schools effectively is very important (Republic of Kenya, 2010). Agriculture teachers use different teaching in communicating attitudes, ideas, knowledge, and skills to the students in order to achieve the desired objectives of a given lesson

(Razaei & Khodaei, 2017). In Makueni County, teachers of agriculture in secondary schools teach regularly using different methods (County Education office, 2019). According to Muchiri and Kiriungi (2015), the pedagogical value of the teaching methods used to teach agriculture subject continues to be questioned, specifically whether agriculture students learn sufficiently and develop the right attitude from them. The extent to which the teaching methods contribute to development of student attitude towards the methods during the learning process remain unresolved.

1.2 Statement of the Problem

The teaching methods agriculture teachers use are very important because the way a teacher presents the subject matter to students may make them to like or dislike the agriculture subject. Moreover the teaching method affects the responses of students and determines whether they are interested, motivated and involved in a lesson in such way as to engage in good learning.

In Makueni, Concern regarding the use of teaching methods in agriculture in secondary schools continues to surface from time to time without any apparent solution. Most suitable methods to teach agriculture students in order to determine best practices for classroom delivery and enhance their attitude towards teaching methods using the resources available to them remain unidentified. Since teaching methods among other factors plays a significant role in developing attitude of agriculture students towards the teaching methods used, this study therefore sought determine students' attitude towards selected teaching methods, cooperative, demonstration, field trips and lecture in agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.

1.3 Purpose of the Study

The purpose of the study was to determine students' attitude towards selected teaching methods, cooperative, demonstration, field trips and lecture in agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.

1.4 Objectives of the Study

The objectives of the study were to determine:

- i. Students' attitude towards use of cooperative method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.

- ii. Students' attitude towards the use of demonstration method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.
- iii. Students' attitude towards use of field trip method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.
- iv. Students' attitude towards the use of lecture method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.
- v. The difference in the attitude of students towards the various teaching methods in agriculture between Sub-county, County and Extra County secondary schools in Mukaa Sub-county of Makueni County, Kenya.

1.5 Research Questions

The study sought to answer the following research questions:

- i. What is students' attitude towards the use of cooperative method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya?
- ii. What is students' attitude towards the use of demonstration method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya?
- iii. What is students' attitude towards the use of field trip method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya?
- iv. What is students' attitude towards the use of lecture method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya?

1.6 Hypothesis of the Study

The following null hypothesis was tested:

HO₁ There is no statistically significant differences in the attitude of students towards various teaching methods of agriculture in secondary schools in Mukaa Sub county of Makueni County Kenya.

1.7 Significance of the Study

The findings of the study may inform the Ministry of Education and the Teachers Service Commission in Kenya, on the attitude of students towards teaching methods used in secondary school agriculture. The research findings may be useful to education policy makers in guiding them towards policy formulation for enhancement of methods used in teaching and learning of agriculture in secondary schools. The information may point to better methods of teaching agriculture subject for the purpose of having students develop a positive attitude towards the teaching method used in agriculture. Findings may also provide new insights into the way this

attitude may hinder or facilitate learning. The study may be beneficial in building a knowledge base to understand the student learning experiences at secondary schools from a different angle and to help teachers to reflect on effective teaching in terms of using various teaching methods.

1.8 Scope of the Study

The study was confined to Form Three agriculture students in secondary schools in Mukaa Sub-county of Makueni County. It mainly focused on the students' attitude towards cooperative, demonstration, field trips and lecture methods of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya.

1.9 Assumptions of the Study

The study assumed that:

- i. All respondents would be willing to participate in the study and that they voluntarily gave the correct information.
- ii. Agriculture teachers use a variety of methods for teaching agriculture.
- iii. Agriculture students are familiar with the teaching methods under the study.

1.10 Limitations of the Study

The study was limited by the fact that the sample of respondents covered Form Three agriculture students in Mukaa Sub-county. Not all the sub-counties in Makueni County were covered. Any findings and generalizations of the study were therefore to be confined to the Sub-County.

1.11 Definitions of Terms

This section provides the operational meaning of some of the words and phrases used in this study.

Attitude: Is a function of belief in which inward feeling is expressed by the out behavior of a person (Vallera & Bodzin, 2016). In this study it referred to the way agriculture students believe and feel about the use of cooperative, demonstration, field visit and lecture method in teaching agriculture in secondary schools. It was measured by determining the preference, willingness and eagerness of students to participate in agricultural activities

Conventional teaching method: refers to measurement of lower order thinking skills, which is mostly focusing on memorization of in-class learning, they are teacher controlled methods (Ndirangu, 2017). In this study, they include demonstration and lecture methods

Cooperative learning: is the structured, systematic instructional technique in which small groups work together to achieve a common goal (Amedu & Gudi 2017). In this study cooperative learning referred to structured, systematic instructional method in which students form small groups to work together in agriculture subject to achieve a common goal.

Heuristic methods of teaching agriculture: Refers to measurement of higher order thinking skills which is mostly focusing on problem solving skills. They are learner-centred Methods (Sangnate, 2019). In this study they included cooperative and field teaching methods in agriculture.

Lecture method: Refers to the teaching procedure involved in clarification or explanation to the students on some major ideas (Onni, 2017). In this study lecture method referred to one way channel of communication where the agriculture teacher makes an oral presentation of the subject matter content and agriculture students react by silently listening and taking notes.

Methods of Teaching Agriculture: Refers to all the observable activities that take place between teachers and students in class, how teachers teach, how students respond (Njoroge & Orodho, 2014). In this study Methods of teaching agriculture included all the observable activities that take place between teachers and students in class, how teachers teach using cooperative, demonstration, field trips and lecture teaching method and how students respond to the selected teaching methods in terms of involvement in agricultural activities.

Technical Subjects: Subjects devoted to a practical study (Akdemir & Ozcelik, 2019). In this study it will refer to those subjects in group IV by Kenya National Examination Council (KNEC). They include agriculture, home science, art and design, aviation technology and computer studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the various subsections as derived from the research title through the use of literature review. It is organized into the following subtopics under the objectives of the study and focuses mainly on; the status of agricultural education in secondary schools; aims and objectives of agriculture education in secondary schools; methods of teaching agriculture subject and their usefulness in Secondary schools; students' attitude towards teaching methods; students' attitude towards agriculture, challenges faced by the agriculture teachers in teaching, relationship between students' attitude and performance. The chapter concludes by outlining the theoretical and conceptual framework that guided the study.

2.2 The Status of Agricultural Education in Secondary Schools

Agricultural education is instruction about crop production, livestock management, soil and water conservation and various other aspects of agriculture (Ndirangu, 2017). According to Cheplogoi *et al.* (2016) agricultural education also includes instruction in food education, such as nutrition which improves the quality of life for all people by helping farmers increase production, conserve resources and provide nutritious foods. The purpose of agricultural education in high schools in the United States is to provide students with the personal academic and career experiences essential for success in the fields of science, business and technology (LaCharite, 2016). High school agricultural education programme consists of three components namely classroom/ laboratory instruction, supervised agricultural experience (SAE) and future farmers in America (FFA) (Bower *et al.*, 2015). Classroom curriculum and laboratory exercises provide students with foundation knowledge in agricultural practices, preparing them for careers in food, fiber and natural resource industries (Suhin *et al.*, 2016). Supervised agricultural experiences provide students with the opportunity to experience ownership of their own agricultural enterprises or work in the industry. Supervised agricultural experience also enables students to develop skills in agriculture related career areas (Prabha, 2016). The combination of the three components of agricultural education, classroom laboratory, SAE and FFA develop well rounded individuals who will become future leaders of the agriculture industry (Sangnate, 2019).

In China during the past decade, agriculture schools have started to take actions systems and to strengthen their vocational programs (Ministry of Education, 2012). There are 360

agricultural schools distributed among the provinces, autonomous regions and municipalities throughout China. Agricultural schools are typically resident schools that require students to pass standardized admission examinations (Darko *et al.*, 2016). Additionally, these schools enroll graduates from junior secondary schools and each program lasts for three or four years. The Ministry of Agriculture undertakes the function of guidance and macro-management for all agricultural schools. Unlike in Kenya, Agriculture is an option subject during the subject selection at form two (Muchiri & Kiriungi, 2015). Thus, its selection is influenced by different factors which are either availability of guidance and counselling, agriculture teachers teaching methods, career awareness or students social background. Study done by Sangnate (2019) established that at the secondary education level in Thailand, the goal of junior –level agricultural education is to develop in students an appreciation for and a positive attitude towards agriculture, while the goal of the senior –level agricultural education programme is to prepare interested youth to gain entry to the college of agriculture at the university of Thailand. According to Ofoegbu (2015), girls choose to study agriculture in high school in Swaziland because of economic, personal, educational, family and social reasons.

Ghana established that a student’s decision to choose agricultural science subjects is influenced by gender and socio-economic background of student, the level of knowledge about prospects in choosing agriculture as vocation, the terminal nature at agricultural colleges, where trainees are awarded certificates in agriculture, the influence of parents, guardians and peers who accord agriculture low recognition compared to other professions (Diise *et al.*, 2018). Despite having workable educational objectives of post –primary agricultural education and training in sub –Saharan African countries, there is an increased trend of food insecurity, rural-urban migration and high poverty levels (Otekunrin *et al.*, 2017). These countries are meant to be in the group of underdeveloped countries in the world, Poor infrastructures and low levels in technology among others (Onni, 2017).

In Kenya agriculture is offered at all levels of the formal education system (MoE, 2012). The study added that the primary level has 8 years of compulsory universal education system and agriculture is integrated in the science subject. The secondary schools level lasts for four years and agriculture is offered as an optional subject. There are 3 categories of tertiary education levels, that is, certificate, diploma, and degree, and agriculture is offered in the three levels (Cheplongoi *et al.*, 2016). The teaching of agriculture in Kenya is expected to promote the acquisition of skills for self–reliance in farming (Kyule *et al.*, 2016). It is viewed as particularly

critical for the development of Kenya as agriculture is the main economic activity in most parts of the country. The overall objective of the course is the development of basic agricultural skills relevant to Kenya and the learner' home environment. The subject is meant to have a large practical component to enable learners acquire useful agricultural practice skills. Study done by Ndirangu (2017), identifies the goals of teaching agriculture aims at reinforcing interest and awareness of opportunities existing in agriculture by demonstrating that farming is a dignified and profitable occupation. A second aim is to expand the student's knowledge on basic principles and practices in agriculture. The third aim is to develop students understanding of the value of agriculture to the family and community with a view to promoting self-reliance, resourcefulness, problem solving abilities and an occupation outlook in agriculture. Fourth, students who take the course are expected to be active participants in rural development activities while in school (Muchiri & Kiriungi, 2015). The study added that, the content of the agriculture syllabus includes crop and livestock production, farm machinery, farm structures and agricultural economics. Key areas of coverage include soils and soil fertilities, water conservation supply and irrigation, land reclamation, farm layout, principles of crop production, crop parts and diseases, crop production practices, crop types; principles of livestock production, farm power tools, equipment and machinery, farm records, land tenure and land reform, production economics, farm accounts, agricultural marketing and agricultural organizations (Aholi *et al.*, 2018), noted that agriculture is an optional subject at the secondary school level in Kenya and all public secondary school offer the subject.

2.3 Aims and Objectives of Agriculture Education

Previous study by Akyina *et al.* (2015) indicated that, one of the key objectives of agricultural education at the senior secondary school level in Ghana is to train agricultural science teachers and students alike to enable them to play a supplementary role of agriculture extension agents in their respective communities. Diise *et al.* (2018) also indicated that, the introduction of vocational agricultural education at the senior secondary school level in Ghana is aimed at training agricultural science students to become good workers in both on-farm jobs and off-farm jobs as well as to acquire relevant knowledge and skills needed for further academic and professional advancement at the tertiary institutions including agricultural colleges and universities. According to Onni (2017) introduction of agriculture into the educational institution are essential components of the curriculum and indicates strongly that policy makers have realized that the problem confronting Ghana Agriculture can partially or if not completely, solved through agriculture education.

The objectives of agricultural education in secondary school level as indicated by the Ministry of Education (MoE, 2012) in Kenya are: to stimulate and sustain students' interest in agriculture, to enable students acquire useful knowledge and practical skills in agriculture, to prepare students for studies in agriculture, and to prepare students for occupations in agriculture. In it attempts to attain these laudable goals, MoE in 2012 outlined the basic objectives of teaching agricultural science at the secondary school level as follows: to stimulate and sustain students interest in agriculture; to inculcate in students farming skills; to enable students acquire basic knowledge and practical skills in agriculture; to prepare students for future studies in agriculture and to produce prospective future farmers. According to Razaei and Khodaei (2017) in Swaziland the goal of junior level agricultural education is make students appreciate and have a positive attitude towards Agriculture while at senior level agricultural education programme is to prepare interested youth to gain entry to the college of agriculture at the University of Swaziland.

According to MoE (2012) in Kenya the agriculture curriculum for General Agriculture at secondary school level is aimed at helping agriculture students to: appreciate the contribution of agriculture in the socio-economic development of Kenya; acquire the needed decision making skills through field observation, data collection, data analysis and data interpretation; develop skills and attitudes required for productive and profitable agriculture through practice and experiential learning; see agriculture as a business and a viable livelihood option rather than being merely a livelihood source of the people; develop positive attitudes, interests, habits and good husbandry practices; become aware of the rules of agricultural extension service in agriculture value chain issues; recognize the job prospects that exist in the agricultural sector; acquire techniques for efficient management of agribusinesses; and acquire requisite knowledge and skills needed for further academic and professional advancement in agriculture in the tertiary institutions.

2.4 Methods of Teaching Agriculture and their Usefulness

Methods used in teaching agriculture have made the subject be universally recognized for a few decades (Suhin *et al.*, 2016). Methods of teaching agriculture in Florida prepare students to be effective leaders of a school-based agricultural science program within the community (Wong & Fong, 2014). In Sub-Saharan Africa agriculture is a complex human activity taught to students in order to be able to satisfy basic human needs, to contribute to the wellbeing and

to the survival of the expanding and developing human population (Olajide *et al.*, 2015). In Ghana agriculture is taught to make students become self-employed (Darko *et al.*, 2015). In Kenya, agriculture is a useful subject in the secondary school curriculum as it prepares one for self-reliance (Muchiri & Kiriungi, 2015). Teaching methods must be changed to reflect a modern society mandating the need for functioning, thinking-oriented, decision-making student (Jebson & Hena, 2015). Therefore the selection of an appropriate teaching method is important to enhance students interest in the instructional method used hence make a success of the teaching and learning process.

Teaching method refers to the ways and means which a teacher adopts to guide the students through teaching and learning activities in order to accomplish the desired goal (Jebson & Hena, 2015). The study also added that agricultural education and training is special in comparison with other forms of education and training in that agriculture cannot be learned solely in the field or solely in the classroom. As noted by Antonio (2018), integration of instruction into real-world problems is a persistent argument. In addition Auwal (2013) stated that students appear to benefit from knowing how to execute a strategy (procedural knowledge), knowing why the strategy works (conceptual knowledge), and knowing where the strategy works (contextual knowledge). The study added that, general agreement prevails that students will best learn if they realize how the concepts are directly applied to their future lives. It is very important to agriculture teachers to provide students with sufficient context while they teach (Muchiri & Kiriungi, 2015)

Specifically, it is believed that contextualized learning holds promise for improving a student's ability, to synthesize information from disparate sources, for furthering understanding of new and sometimes contradictory data, for assisting in making meaning and ultimately, for enhancing one's ability to think critically and transfer learning to future life experience (Bower *et al.*, 2015). If the instructor aspires to help students build analytical and synthesis skills, apply concepts, learn to solve problems, develop mature judgment, enhance communication skills, and retain information, then an appropriate method of instruction should be used (Ofoegbu, 2015). There exist a number of teaching methods available for agriculture teachers to use and they include cooperative, demonstration, field trips and lecture methods of learning.

Teaching methods are broadly categorized into two; expository and heuristic. The expository methods also referred to, as conventional methods are largely teacher centred. The learners passively acquire knowledge as the teacher teaches and the students take notes (Sahin *et al.*, 2016). A number of problems have been identified concerning these methods of teaching such as passivity of students, lack of collaborative learning, and emphasis on theory. According to Ndirangu (2017), when the teaching method is inappropriate for the level of students, the result is likely to be boredom and dislike of a subject. The heuristic methods of teaching are learner-centred. These methods are such that the learners are actively involved in the learning process (Akdemir & Ozcelik, 2019). Learning is through inquiry and it is where flexibility and creativity are encouraged.

2.4.1 Cooperative Teaching Method

Learners are not isolated individuals but part of a larger society (Amedu & Gudi, 2017). Additionally, children's learning is affected by their homes, parents, peers and the community as a whole. The goal structure of individuals is directed at the same communally held objectives, and there exists a high interdependence among the goal attainment of the individuals (Waiganjo *et al.*, 2014). In addition, by the time the child gets to school and meets a different climate, his learning ability becomes affected. In the place of cooperation the child has been used to from home, is a violent competition. The child sees the classroom in a different light from what he is used to outside of the class. This sudden change from cooperation to competition can create a problem of maladjustment which could have negative consequence on the child's cognitive development. To Antonio (2018), 'students are to be aware of the fact that they should work so as to maximize the learning levels of not only themselves but also that of their peers. In cooperative learning, peers assist each other's learning and establish proper communication among themselves. Students with different culture, experiences, and learning modes get together to achieve success towards a common goal by assuming the responsibility of each other's progress' (Onni, 2017)

Study done by Suhin *et al.* (2016) noted that students in a cooperative class never felt bored, maintained in- class communication and learned the lessons happily. Additionally, the goal of an individual student can be influenced by the goal structure of the group he/she belongs. Once an individual can see the world from the perspective of another person, it will naturally follow that one will see that person in a more positive way (Waiganjo *et al.*, 2014). This reduces resentment for others. This is of great importance to teachers and should be encouraged. As

learners negotiate meanings among themselves, an atmosphere of friendliness and mutual sharing develops. If such psychological basis for cooperation is not established, chaos may become characteristic of groups.

Cooperative Teaching (CT) is a Method that is student-centred (Antonio, 2018). The study added that, the method has an interactive nature of learning which enables the students to take a more active role in the learning process, take responsibility for their work, be highly effective and develop cognitive skills, and provide enjoyment to the learner. In cooperative learning method, students are organized in small teams of three to five members (Waiganjo *et al.*, 2014). According to Suhin *et al.* (2016) each team member, from the fastest to the slowest learner, has a contribution to make rather than pitting the students against one another in competition for attention and grades. Teachers can select an appropriate Cooperative Teaching Method (CTM) that effectively complements more conventional teaching styles and addresses their students' needs (Prabha, 2016). Additionally using CTM as a teaching method, the students teach one another and are likely to acquire greater mastery of the material than in the common individual learning (Akdemir & Ozcelik, 2019). CTM forces the recognition that some learning environments encourage students to compete with one another rather than learn in a cooperative fashion (Muchiri & Kiriungi, 2015). If CTM is properly implemented, it has the potential for contributing positively to academic achievement (Onni, 2017).

According to Amedu and Gudi (2017), the way students perceive one another and interact with one another is a neglected aspect of instruction. In CTM, the learner is an active participant in knowledge construction (Suhin *et al.*, 2016)). Research studies done in different subjects and at different levels of learning using CTM have shown that the learning process is activity based and enhances performance (Waiganjo *et al.*, 2014). According to Konyango and Asienyo (2015). CTM has the potential for providing a learning environment where students are engaged in appropriate learning experiences and consequently as aroused the attitude of learners.

An essential element of cooperative learning is the appropriate use of interpersonal and small group skills. These social skills include staying with the group, using quiet voices, giving direction to the group's work, encouraging participation, relating present learning to past learning, criticizing ideas without criticizing people, asking probing questions and requesting further rationale (Amedu & Gudi, 2017). In order to ensure that small group processing takes

place, teachers allocate time at the end of each class session for each cooperative group to process how effectively members worked together (Antonio, 2018). In addition, groups need to describe what member actions were helpful and not helpful in completing the group's work and make decisions about what behavior to continue or discard. Some of the keys to successful small group processing are allowing sufficient time for it to take place, providing a structure for processing, emphasizing positive feedback, making the processing specific rather than general, maintaining student involvement in processing, reminding students to use their cooperative skills while they process and communicating clear expectations as to the purpose of processing (Sahin *et al.*, 2016).

2.4.1.1 Basic Principles of Cooperative Learning

According to Amedu and Gudi (2017), the most successful cooperative learning strategies share five essential factors: positive interdependence, face-to-face promote interaction, individual accountability (personal responsibility), social skills and group processing. Positive interdependence is defined by as the dual responsibility that the students are demanded in cooperative learning situations learn the assigned material and ensure that every member of the group learns it (Nima & Dariush, 2014). Individual accountability focuses on the individual group member's performance, which means each student individually responsible for his or her own and other group member's learning and every member is in charge of the achievement of the group's goal (Amedu & Gudi, 2017). Social skills are another essential factor in cooperative learning because in order to achieve group goals, group members need to develop not only target language but also social skills. Small group discussions provide higher levels of peer to peer interaction, and more student participation (Waiganjo *et al.*, 2014). Additionally, the purpose of group processing is to improve the effectiveness of the group work by analyzing the collaborative information of group members' performances in order to fulfill the final outcome.

2.4.2 Demonstration

Demonstration method refers to the type of teaching method in which the teacher is the principal actor while the learners watch with the intention to act later. Here the teacher does whatever the learners are expected to do at the end of the lesson by showing them how to do it and explaining the step-by-step process to them (Ndem, 2016). Study done by Anibel (2014). Sangnate 2019, described it as a display or an exhibition usually done by the teacher while the students watch with keen interest. He further added that, it involves showing how something

works or the steps involved in the process. Some of the advantages of this method as outlined by Diise *et al.* (2018) include: - It saves time and facilitate material economy; the method is an attention inducer and a powerful motivator in lesson delivery; students receive feedback immediately through their own products; it gives a real-life situation of course of study as students acquire skills in real-life situations using tools and materials; it help to motivate students when carried out by skilled teachers and it is good in showing the appropriate ways of doing things.

Demonstration is a method of teaching which involves hands-on activities that require students to show their ability to perform certain actions (Otekunrin *et al.*, 2017).The study added that the method is a student –centred where students learn by doing (Onni, 2017).The study added that, children learn best by doing not just by sitting and listening. This method have been found to be superior in developing students’ abilities in applying concepts and personal growth, developing positive attitudes, fostering motivation, and encouraging appropriate group social skills (Sangnate, 2019). In addition the study noted that, using this method in teaching the teacher assumes the roles of a facilitator, mediator and assessor of learning. According to Prabha (2016), demonstration teaching method features active students’ participation in the learning process to produce superior results. The study also reported that, the method guides students to discover facts for themselves. Study done by Ndem (2016) advised that, for effective teaching of agriculture to occur, the teacher should get the students involved as much as possible in activities that will enable them to develop that needed process skills and attitudes relevant to teaching methods. Study done by Diise *et al.* (2018) highlighted the characteristics and significance of demonstration teaching method as it: demands certain level of skills and practical; is a good method for introducing new skills; is a good method for developing understanding; is good in showing the appropriate ways of doing things; allows for very low interaction between students and materials in class, helps to enlist the various senses in a human being; helps to motivate students especially when skilled teachers carry it out; saves time and energy especially for the teacher.

Demonstration method is an attention inducer and a powerful motivator in lesson delivery by the agriculture teacher as it allows the teacher to use activities that ordinary will be too dangerous for the students to handle or carryout themselves such as Chemical spraying and tractor operation among others (Ndirangu, 2017).

According to Ramadhan and Surya (2017), demonstration method is a method of providing lessons by exhibiting and demonstrating. Additionally it is a method of teaching by done by demonstrating things, events, rules, and sequences of activities, either directly or through using instructional media which is relevant to the subject matter or material that will be presented. The purpose of teaching using a demonstration method is to show the process of occurrence of an event according to the teaching materials, how they are attained and the ease to be understood by the students in teaching learning process (Sangnate, 2019).

2.4.3 Field Trips

Field trips have always been an important means of teaching, as evidence of a long tradition in the history of agricultural education. Field trips are usually arranged by schools, have educational purposes, and take place in an interactive setting (Antonio, 2018) all of which have been shown to increase learning. Muchiri *et al.* (2015), argues that the aims of the field trip have not changed much through history. In addition, field trip may serve as a tool for improving thinking skills, interest and success in agricultural learning. Outdoor environments, which can be used for field trips include natural systems, museums, zoos, urban areas and so forth (Sangnate, 2019). Additionally, the major potential of the field trip should be the possibility of having concrete experiences through using: A transitional learning stage from simple to complex concepts; a direct experience with concrete phenomena and materials and the ability of hands-on activities for construction and amplification of abstract concepts.

Field trips as complex learning settings enable binding the agriculture curriculum to the environment, combining cognitive and affective aspects of learning. The field trip allows using observations, conducting short investigations and group discussion in an informal learning environment (Diise *et al.*, 2018). Study done by Onni (2017) indicated that there are activities that last three to four hours that are not common although they could offer a variety of learning activities. One major problem about field trips is the inadequate financial support to agriculture teachers (Akdemir & Ozcelik, 2019). Secondary school agriculture curriculum include field experiences, in which the students are exposed mainly to ecological content knowledge and rarely deal with agricultural educational aspects of the field trip.

Field trip is a group visit to locations for the purpose of observing on-the-spot situations under special guidance (Onni, 2017). The study added that the field trip provides a link between classroom and actual life situation. It permits students to experience that which could never

occur in classroom or laboratory (Diise *et al.*, 2018). The study also revealed that this method enhances the meaningfulness of some problem by seeing it at first hand. A field visit enables an activity or project to be seen in terms of its environment rather than an isolated activity (Antonio, 2018; Muchiri *et al.*, 2015).

Field trips are a critical component of standards-based instruction in the classroom, not a separate activity, but a direct extension of classroom instruction (Sangnate, 2019). According to Ofoegbu (2015) field work is a type of instructional medium in use today, since instructional medium according to the author, is anything (materials and equipment) that can help the teacher to communicate effectively his or her ideas to the students, so that at the end of the instruction the student can do that which the teacher stated in the objectives. Basically, agricultural field trip is seen as a support for effective teaching and not a centre of attention. As stated by Muchiri and Kiriungi (2015) effective teaching should be the goal and defines effective teaching as getting the content across in a manner that will accomplish the desired objectives. The study also added that if at the end of the instruction, the student do what the teacher want them to do through the process of evaluation, then effective teaching will have taken place. Furthermore, agricultural field trips by secondary school students are expected to enhance student attitude towards it through interaction with resource persons and the environment (Akdemir & Ozcelik, 2019).

2.4.3.1 The Value of Field Trips

Field trips are a critical component of standards-based instruction in the classroom, not a separate activity, but a direct extension of classroom instruction (Nkereowajiro, 2014). Additionally the study agrees that field work is a type of instructional medium in use today that can help the teacher to communicate effectively his or her ideas to the students, so that at the end of the instruction the student can do that which the teacher stated in the objectives. Examples are: real object (specimen, models, excursions, field work) projected/non-projected images, print non-prints etc. Basically, agricultural field trip is seen as a support for effective teaching and not a centre of attention. According to Behrendt and Franklin (2014), effective teaching should be the goal, and defines effective teaching as “getting the content (message) across in a manner that will accomplish the desired objectives, and add also that if at the end of the instruction, the student do what the teacher want them to do through the process of evaluation, then effective teaching has taken place.

Furthermore, Muchiri and Kiriungi (2015) argued that agricultural field trips by secondary school students are expected to enhance student learning experiences through interaction with resource persons and the environment. Such centers are supposed to provide better resources than the school for firsthand information, especially as learning outside the classroom aims at ensuring that all young people had chances to participate in high quality outdoor learning experiences (Akdemir & Ozcelik, 2019). It also set out to improve students attitude, academic achievement, developed skills and interdependent in a widening range of environments and provide the opportunity to acceptable levels of risk. But regrettably, many critics have expressed that the whole exercise is a mere waste of time and energy and has not in any way responded to improve student's performance in agriculture (Nkereowajiro, 2014).

2.4.4 Lecture Method

This is a teaching procedure in which there is a one way channel of communication where the teacher makes an oral presentation of the subject matter content and students react by silently listening and taking notes (Onni, 2017). Additionally In this method the teacher gives out all the facts he wants the students to know and master, caring very little if at all whether or not, the students are actively participating and contributing to the success of the lesson. This method is good for large class since much work could be easily covered in shorter time (Antonio, 2018). The study also noted that teaching under this method is reduced to storytelling. The method reduces students to mere note – taking and passive listeners (LaCharite, 2016). The study also noted that students' attitude and assimilation of the subject matter is slow. Lecture method often inhibits active participation of students in the classroom and teacher dependence on the part of students (Marmah, 2014). The study added that teaching methods must be changed to reflect a modern society mandating the need for functioning, thinking-oriented, decision-making students. Therefore the selection of an appropriate teaching method is important to the success of the teaching and learning process. To be successful, teachers should select and use a wide variety of teaching strategies (Ndem, 2016). Additionally skills are best learnt through practices rather than mere listening.

2.5 Students' Attitude towards Agriculture Subject in Secondary Schools

According to Darko *et al.* (2016) agricultural sector is the foundation of any society. The Government of Kenya has given priority to developing agriculture sector as one of the strategy to diversify the economy (Cheplogoi *et al.*, 2016). Additionally provision of agricultural education is one of the basic strategies for the development of agricultural sector in Kenya.

Despite the government's efforts to improve on agricultural sector in Kenya, the enrolment in agriculture secondary schools has been declining (County Educational Office, Makueni 2019).

In Makueni, agriculture is not attracting as many students as other subjects resulting in declining enrollment in the agriculture subject as compared to total enrollment (County Educational Office, Makueni 2019). Additionally the total enrolment of students in secondary schools in Makueni County has increased by 54.51% in 2019 compared to 2016 whereas enrolment in agriculture increased only by 1.22 %. The decline in enrolment and low interest towards agriculture in Makueni is unfavourable to the government efforts of improving agricultural sector. There can be many reasons for the decline in secondary agricultural enrolment such as interpersonal reasons, school factors and home factors (Muchiri & Kiriungi, 2015).

Attitude impels people to react to objects and situations in ways that can be called favorable or unfavorable (Njoroge & Orodho, 2014). There are two general sources of attitude: external influences such as from parents, peer, teachers and students (Jebson & Hena, 2015). The second general source is internal influences due to personal conflicts such as students making a choice of career to pursue. As stated by Oba and Lawrence (2014) career choice is a complex exercise involving unconscious decisions that are constrained by culture and social traditions. Environmental, curriculum and administrative related factors influence students' attitude towards agriculture subject (Farah & Alec, 2016). Additionally, factors influencing students' attitude towards agriculture subject may be formed due to past experiences encountered identification and due to one's past behavior and actions (Burton, 2014). All these may be termed as environmental influences. As argued by DiBenedetto *et al.* (2016), attitude generally involves an emotional or affective component for instance, liking or disliking, a cognitive component (beliefs) and a behavioral component tendency to act towards these items in various ways. The study supported that attitudes are strongly held beliefs, opinions and feelings, which are reflected in people's behaviours. As stated by Nima and Dariush (2014), attitude is influenced by teaching methods of agriculture subject.

High school students' attitude towards the agricultural sector is that, it consists solely of production and farming (DiBenedetto *et al.*, 2016). Agriculture and careers in agriculture have suffered from a negative attitude (Antonio, 2018). In a study conducted by Razaei and Khodaei (2017) stated that high school students were unaware of the range of opportunities in

agricultural careers. Additionally, Students believe that agricultural subject is boring, which involves laborious work and more muscle than brain thus male oriented subject (Ofoegbu, 2015). According to Diise *et al.* (2018), students think that agricultural careers are being underpaid and of low prestige. Individual attitude need to be corrected and students need to be shown that careers in agriculture are numerous, diverse, well paid, stable, advanced in technology, and requiring advanced education (Akdemir & Ozcelik, 2019).

As revealed by Njoroge and Orodho (2014), the way and manner students think of agriculture, arises from the fact that instructional approaches adopted by teachers in the classroom during teaching and learning process are not impressive. The effect of this is lack of interest and poor performance of students' hence negative attitude towards agriculture subject (Darko *et al.*, 2018; Ogembo *et al.*, 2015). Therefore, to arrest students' attention, interest, curiosity and promote their attitude and performance, the use of activity stimulating and student-centered types of teaching methods like cooperative, practical, demonstration and project need to be embraced.

2.6 Students' Attitude towards Teaching Methods used in Agriculture Subject in Secondary Schools

Teaching is the action of a teacher imparting skills, knowledge or giving instruction, or the job of a person who teaches (Waiganjo *et al.*, 2014). Additionally it is the process of guidance by which the student is made to grasp ideas and facts and develop skills. According to Ofoegbu (2015) teaching is the process of developing the cognitive, affective and psychomotor powers of the student through giving the student knowledge of facts about subject matter; reinforcing or developing positive attitude in the student and also developing in the student certain physical or manipulative skills.

Teaching method refers to all the things the teacher does in the classroom to enable the student to learn (Akdemir & Ozcelik, 2019). Teaching method involves the teacher's skills and manipulations on the subject matter and the learning situations in order to secure positive and desired response from the student (Thoron & Burlison, 2014). According to Nkereowajiro (2014) if agriculture teachers want to make sure their teaching intentions is effectively realized, it is important for them to take time to think about articulating teaching methods which engage students in their teaching activities. The teaching method in any teaching and learning situation

in agriculture subject is very important because the way a teacher presents subject matter to students may make them to like or dislike the teaching method used (Jebson & Hena, 2015). It has also been reported by Muchiri and Kiriungi (2015) that teaching method in agriculture subject affects the responses of students and determines whether they are interested, motivated and involved in a lesson in such way as to engage in a good learning. What constitutes good teaching and learning of school subjects is the use of appropriate methods of teaching (Ndem, 2016).

2.6.1 Students' Attitude towards Field Trips

Agricultural field trips have great potentialities for unlocking interests and inducing investment in agriculture as well as exposing students in secondary schools to some practical details in agriculture (Antonio, 2018). Meaningful field trip enhances positive students' attitudes towards field trip (Onni, 2017). A study done by Vallera and Bodzin (2016) reported that student's attitude towards the field trip and agriculture became greatly enhanced because the students were taken to existing natural and man-made sites to see real objects, events and activities in their natural habitat and environment.

2.6.2 Students' Attitude towards Demonstration

The demonstration method demands that the teacher models the correct skill and procedure while the learner observes, at the end of which the student is asked to imitate what the teacher has observed. According to Antonio (2018) demonstration is an example of teaching by showing. He went further to say that demonstration method employs sight and touch rather than hearing as the major means of communication. It is an activity which combines telling, showing and doing for the benefit of the students (Onni, 2017). A study carried out by Obunadike (2014) proved that demonstration method favours teaching of agriculture, because demonstration method improved attitude of students towards instructional experience, since it emphasized practical, tangible and concrete illustrations during agriculture lessons.

2.6.3 Students' Attitude towards the lecture method

Despite the development of new approaches to teaching and learning of agriculture, lecture method remains prominent (Sangnate, 2019). Students prefer the lecture approach for many of the reasons that education experts believe it to be weak: it enables them to listen passively, organizes the subject matter for them, and prepares them well for tests (Otekunrin *et al.*, 2017). According to Alex (2014) Students who are faced with a teacher's demands that they be active and take responsibility for their learning become hostile, they complain that they are

paying tuition to be taught, not to teach themselves. A study done by Ndirangu (2017) examined students' perceptions across six teaching methods: lecture/discussion, lab work, in-class exercises, guest speakers, applied projects, and oral presentations. Students most preferred the lecture/discussion method. Despite the fact that most students do have preference for the lecture method, many educators believe that the traditional lecture approach to teaching is ineffective in compared to active learning methods (Obunadike & Omeje, 2014). They are of the view that for meaningful learning to occur, students must actively engage with subject-matter through such activities as discussion, hands-on activities, and problem solving (Akdemir & Ozcelik, 2019).

2.6.4 Students' Attitude towards the cooperative method

Research studies done in different subjects and at different levels of learning using CLA have shown that the learning process is activity based and enhances performance (Darko *et al.*, 2016). Additionally CLA has the potential for providing a learning environment where learners are engaged in appropriate learning experiences and consequently as aroused the interest of students (Akdemir & Ozcelik, 2019).

A study done by Suhin *et al.* (2016), on students' attitude towards cooperative learning, the students believed that group tasks clear their concepts more than individual learning. It also makes learning interesting, it provides fun, done in satisfactory situation and their socialization enhance. Students also expressed that during the assigned work, they felt responsibility of work, committed to success of each member and their group.

2.7 Challenges of Agriculture Teaching in Secondary Schools

Globally teaching of agriculture is faced by different challenges making teaching of the subject in all levels ineffective (Darko *et al.*, 2015). In U.S.A one of the most pressing issues facing agricultural education as a profession is the shortage of qualified agriculture teachers (Wong & Fong 2014). In Nigeria, Agriculture is taught theoretically due to lack of teaching resources hence failing to make an impression on society (Olajide *et al.*, 2015).

In Kenya, agriculture teachers are expected to be effective in their teaching job, however for them to be effective they must be accorded emotional, administrative and technical support (Njoroge & Orodho, 2014). They also need to be supported so that their teaching takes place

in an environment suitable for teaching the subject. Study done by Muchiri and Kiriungi (2015) stated that agriculture teaching generally takes place not only in the classrooms and laboratories but also on-site in school farms or gardens, It also requires time, effort, and travel beyond the normal school day (Muchiri *et al.*, 2015). According to Kyule *et al.* (2016) even if teachers are competent and well trained, they will often find it difficult to teach effectively because of lack of adequate teaching and learning resources. Agriculture teacher determines the teaching method to use depending on the availability of resources (Aholi *et al.*, 2018). Additionally inadequate teaching resources make agriculture teachers to use conventional teaching methods which are likely to be disliked by the students.

Other challenges faced include teachers' workload which is determined by the number of teaching periods a teacher has, without looking into the number of students a teacher teaches per class or processes involved in teaching a particular subject (Konyango & Asienyo, 2015). As stated by Ndirangu (2017) agriculture teachers therefore have to choose teaching methods which require less time thus escaping heuristic teaching methods which involves physical tasks associated with teaching agriculture, for example, working with livestock and crops outside the classroom. Agriculture curriculum in secondary schools of Kenya has a broad range of subject matter, which includes theory coupled with practical (Muchiri *et al.*, 2015). Agriculture teaching deserves relatively more teaching time and effort yet there is a huge competition for time between subjects due to increased enrolment at secondary level, a factor that also made agriculture teachers opt to using conventional teaching methods (Diise *et al.*, 2018).

2.8 Effect of Agriculture Students' Attitudes on Agriculture Achievement

Attitude is an important concept in social judgments, behaviours and thus, is one of the most important concepts in decision making (Marmah, 2014). Positive attitudes towards agriculture predict high achievement in the subject while negative attitudes predict low achievement (Abdullahi *et al.*, 2015b). The study added that, attitude is an important concept about learning affecting everything that one attempts. They affect ones relations with other people and ones openness to new experiences (Akyina *et al.*, 2015). According to Amedu and Gudi (2017), if a person's attitude toward a task is positive, she/ she will most likely enjoy the process of doing it and look for opportunities to do it. The study also indicated that, if one's attitude is negative, s/he will most likely avoid or delay the occasion of doing it and, if s/he must do the task, he/she will probably not enjoy it or do well at it. Many times, the difficulty experienced by students

in agriculture is not related to ability but rather is related to the attitudes that are held about agriculture (Abdullahi *et al.*, 2015a).

Studies done by Ndirangu (2017), Adebayo and Kavoo (2016), and Jebson and Hena (2015) indicate that attitude is one of the determinants of academic performance. Additionally, an individual's attitude toward a person has a direct bearing on the person's reaction to the person. Many learners who perform dismally tend to exhibit problems with learning and school personnel (Celik, 2018), and they may exhibit hostility toward learning (Carter, 2014). Study done by Otekunrin *et al.* (2017), argued that learners' attitude towards teaching methods in agriculture determines their performance in the subject. Study done by Vallera and Bodzin (2016) stated that positive attitude towards teaching methods in agriculture help students to function effectively in school while negative attitude towards teaching methods in agriculture interfere with school life and there is general belief that it is far more important to promote positive attitudes in students.

2.9 Theoretical Framework

This study was guided by the Theory of Reasoned Action (TRA). This model developed by Fishbein and Ajzen (1975) defines the links between beliefs, attitudes, norms, intentions, and behaviors of individuals (Nima & Dariush, 2014). According to this model, a person's behavior is determined by the behavioral intention to perform it (Southey, 2011). This intention is itself determined by the person's attitudes and his subjective norms towards the behavior. Subjective norms is defined as the person's perception that most people who are important to him think he should or should not perform the behavior in question (Tlou, 2009).

This theory can be summarized by the following equation:

$$\text{Behavioral Intention} = \text{Attitude} + \text{Subjective norms}$$

According to TRA, the attitude of a person towards a behavior is determined by his beliefs on the consequences of this behavior, multiplied by his evaluation of these consequences. Beliefs are defined by the person's subjective probability that performing a particular behavior will produce specific results. This model therefore suggests that external stimuli influence attitudes by modifying the structure of the person's beliefs. Moreover, behavioral intention is also determined by the subjective norms that are themselves determined by the normative beliefs of an individual and by his motivation to comply to the norms.

According to Nima and Dariush (2014), theory of reasoned action, attitudes are a function of beliefs. Based on this theory, believing that performing a task will result in, mainly, positive outcomes and this leads to taking a favorable attitude towards the task. On the other hand, mistrust of the success of performing a task will lead to taking an unfavorable attitude. Therefore, if students' believe that a certain teaching method will have a significant effect on their learning of agriculture subject, then this method will be to their benefit and the students will take a favorable attitude towards it. If the teaching methods have no significance effect on the students learning of agriculture subject, the student will take unfavorable attitude towards the method. Attitudes once formed can shape the way students think, understand, feel, and behave. Attitudes and beliefs are a subset of a group of constructs that name, define, and describe the structure and content of mental states that are thought to drive a person's actions (Southey, 2011).

2.10 Conceptual Framework

The conceptual framework was developed from the reviewed related literature. Under this frame work, selected methods of teaching agriculture namely; cooperative, demonstration, field trips and lecture methods are the independent variables of the study. This variable was measured by determining how agriculture students feel and respond to cooperative, demonstration, field trips and lecture methods. The dependent variable is the students' attitude towards the teaching methods. The variable was measured by determining the preference, willingness and eagerness of learners to participate in agricultural activities when a selected method was used in teaching through a Likert scale questions. The interaction between independent and dependent variables is further influenced by intervening variables. The intervening variables influence the effects of the independent variable on the dependent variables (Onni, 2017). In this study intervening variables are gender, and school category which were controlled through random selection of the participants. The study was conceptualized as indicated in Figure 1.

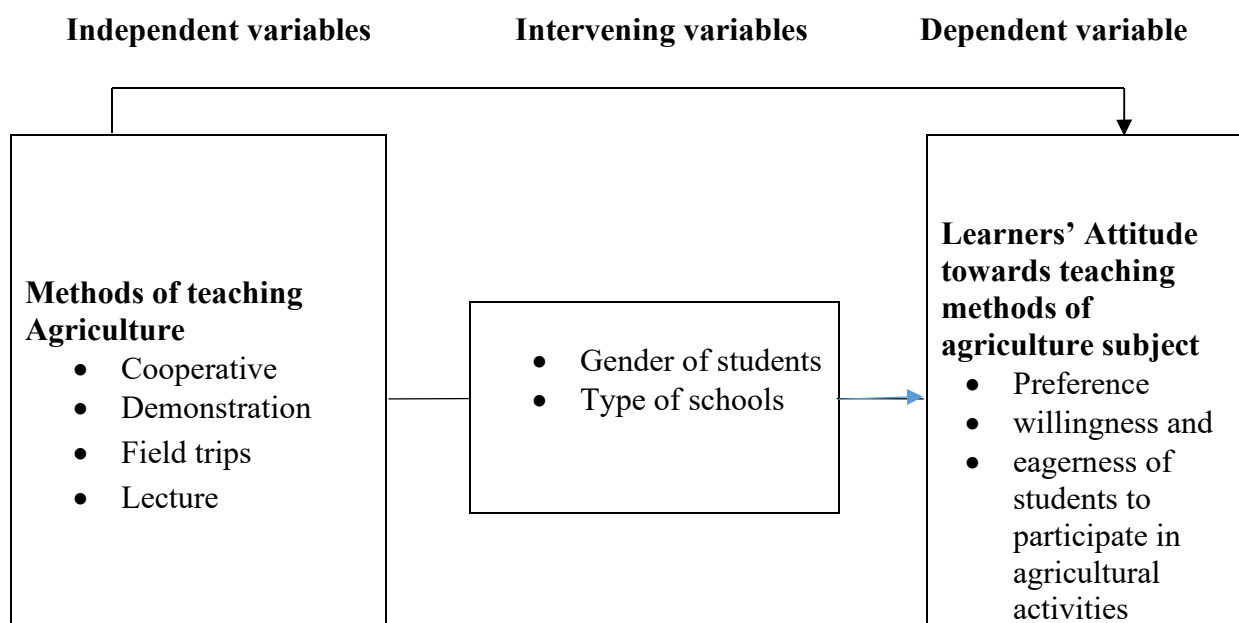


Figure 1. Conceptual framework showing the interaction of variables

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter outlines the research methodology used in the study. It covers research design, location of the study, population of the study, sampling procedure and sample size, instrumentation, data collection, data analysis and summary of the analytical procedures.

3.2 Research Design

In this study, a descriptive survey research design was used. This design is relatively faster and inexpensive. It provides self-reported facts about respondents, their inner feelings, attitudes, opinions and habits (Kothari & Garg, 2014). It takes a snapshot of a population at a certain time, allowing conclusions about phenomena across a wide population to be drawn. It is envisaged that this descriptive survey provides appropriate information on the attitude of agriculture students towards teaching methods of agriculture as it exists in secondary schools.

3.3 Location of the Study

The study was conducted in Mukaa Sub-county of Makueni County, Kenya, which covered an area of 629.9 square kilometers. The Sub-county borders Kajiado County to the West, Makindu Sub-county to the South, Nzau Sub-county to the East and Machakos County to the North. The Sub-county lies in the Arid and Semi-arid zones of the Northern region of the County. Rainfall ranges between 800mm-1200 per annum. Farmers in the Division are mainly mixed crop and livestock subsistence farmers. Few engage in commercial farming. Horticultural crops such as Irish potatoes, cabbages, kales, garden peas and carrots are common among most small-scale farmers. Annual crops like maize and beans are also grown. Livestock kept include cattle, sheep, poultry and dairy goats among others. The study area has markets, polytechnics, clinics, hospitals, churches, hotels and restaurants, relaxation centres and residential areas in its environment. The inhabitants are involved in different occupations and professions such as teaching, fish farming, trading, banking, administration and are engaged in other commercial and business activities.

3.4 Target Population

The target population of the study consisted of 12,963 students' taking agriculture in all the secondary schools in Mukaa Sub-County. The accessible population consisted of all Form Three students' in secondary schools in Mukaa Sub-county. Form Three agriculture students

were preferred because they had already selected the subject unlike the students in Form One and Two. Distribution of the students portrayed in Table 1 is of those students who take agriculture hence targeted by the study.

Table 1

Population of Agriculture Students in Mukaa Sub-County

Ward	No. of Schools	Target Population	Accessible Population
Kasikeu	11	3,433	401
Kiongwani	9	3,243	511
Maiani	11	3,586	540
Kilome	9	2,701	321
Total	40	12,963	1773

Source: Sub-County Director TSC Office Mukaa (2019)

3.5 Sampling Procedure and Sample Size

Mukaa Sub- County was purposively selected for the study since it was fairly representative and easily accessible. The researcher is conversant with the area. The area has presence of ranches and it is the only Sub-county in Makueni County with Techno city. The four wards in Mukaa Sub-county were purposively included in the study since they are easily accessible. Mukaa Sub-county has 45 secondary schools distributed in the four wards, out of which 40 secondary schools were purposively selected because they have offered agriculture for at least four years. Offering agriculture for four years means that agriculture syllabus cycle from Form 1 to Form 4 has been completed.

The sampling frame for the study consisted of all Form three agriculture students in Kasikeu, Kilome, Kiongwani, and Maiani wards of Mukaa Sub-county. The sample size was calculated using the coefficient of variation method (Nassiuma, 2000).

According to Nassiuma (2000), for most surveys or experiments, a coefficient of variation in the range of 21% to 30% and a standard error ranging between 2% to 5% is acceptable. This study used a coefficient of variation of 21% and a standard error of 2%. The lower limit of coefficient of variation and standard error used ensured low sample variability and minimized the degree of error. The formula given by Nassiuma (2000) is:

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

Where:

n = sample size

N = population

C = coefficient of variation

e = standard error

The sample size for Mukaa Sub County will be:

$$n = \frac{1773 \times (21\%)^2}{(21\%)^2 + (1773 - 1)(0.02)^2} = 109 \text{ Respondents}$$

Thus, 110 respondents were considered appropriate for the study. To cater for attrition, respondent refusal to participate and other similar circumstances, 10 respondents were added, which is 10 percent of the calculated sample size as recommended by Mugenda & Mugenda (1999). The final sample size was therefore 120. .

Students in each secondary school were proportionately selected because the number of students in each school varied. The total sample size of 120 Form Three agriculture students was randomly selected from Extra-County, County and Sub-County schools to participate in the study.

Table 2
Distribution of Respondents by Wards in Mukaa Sub County

Ward	Number of Schools	Number of Students	Percentage	No. of Respondents
Kasikeu	12	401	22.61	27
Kiongwani	08	511	28.82	34
Maiani	11	540	30.45	37
Kilome	09	321	18.10	22
Total	40	1773	100.0	120

Source: Sub-County Director TSC Office Mukaa (2019)

3.6 Instrumentation

The researcher developed a semi-structured questionnaire containing both open and close ended questions to collect both qualitative and quantitative data from agriculture students in secondary schools in Mukaa Sub-County. The questionnaire was chosen because it allows standardization, ease of use, and anonymity (Nayab, 2011). In many surveys, honest answers depend on the extent to which the respondents feel the data remain confidential (Antonio, 2018). The questionnaire consisted of six sections (A-F). Section A determined the demographic data of the respondent. Section B contained 12 items on Likert scale that measured students' attitude towards cooperative teaching method of agriculture subject while Section C contained 12 items on a Likert scale that measured students' attitude towards demonstration teaching method of agriculture subject. Section D contained 12 items on Likert scale that determined students' attitude towards field trip teaching method of agriculture subject. Section E contained 12 items on Likert scale that determined students' attitude towards lecture teaching method of agriculture subject. Section F contained both closed and open ended questions that determined students' attitude towards selected teaching methods of agriculture subject.

3.6.1 Validity

Validity is the accuracy, soundness or effectiveness with which an instrument measures what it intended to measure in the research objectives (Fraenkel & Wallen, 2000). To ensure content validity which shows if a questionnaire covers the domain of interest in an adequate way and if it represents the illness of interest precisely and face validity which shows if a measurement is at face value and if it assesses what it appears to test, the instruments were scrutinized by a panel of experts in Agricultural Education and research methodology of Egerton University. The experts judged the appropriateness of the items and recommended modifications that improved the validity of the instruments. Experts' comments and suggestions were incorporated into the final instrument.

In addition, the supervisors in the Department of Agricultural Education and Extension at Egerton University ensured that items in the questionnaire adequately measured the degree to which the data collected represented concepts that cover all relevant issues under investigation (Mugenda & Mugenda, 1999).

3.6.2 Reliability

Reliability is defined as the degree to which a research instrument yields consistent results after repeated trials (Fraenkel & Wallen, 2000; Mugenda & Mugenda, 1999). As suggested by Johanson and Brooks (2010) and Hill (1998), that a pilot study sample should be at least 10% of the sample projected for the larger parent study, a pilot study was done using a sample of 30 agriculture students in Nzau sub-County. The sub-county was chosen because it had similar characteristics to those of the study location. Cronbach's alpha reliability coefficient was used to measure the questionnaire's internal consistency. Study done by Ashcroft and Parker (2009) have indicated that reliability scores of less than 0.6 are generally problematic. The researcher therefore, ensured that the questionnaire met the threshold for acceptable alpha reliability coefficient of 0.70 or higher by pretesting it with 30 agriculture students in Nzau Sub-County having set the significance level *a priori* at 0.05. The study established Cronbach's reliability coefficient of 0.86 which was above the required threshold of 0.70. Pre-testing procedures were identical to those that were used during the actual data collection as recommended by Kothari (2014).

3.7 Data Collection Procedure

A letter of approval was obtained from the Board of Graduate Studies of Egerton University and was presented to the National Commission for Science, Technology and Innovation (NACOSTI) to obtain a research permit. Once authority was obtained, arrangements were made to visit the Sub-County Director of Education, Mukaa Sub-County for further clearance. Once authority was obtained, arrangements were made to visit the sampled schools and administer the Questionnaires to the respective respondents. The head teachers and the agriculture subject teachers were informed of the intended research by the researcher and the date for administering the questionnaires was arranged. A total of 120 Form three agriculture students in Extra County, County and Sub- county schools in Mukaa Sub-County were given the questionnaires. The researcher informed the agriculture students of the intended research and requested them to fill in the questionnaire following the guidelines given. The respondents were given ample time to respond to the items before the researcher collects the questionnaires. This was to ensure that there was achievement of a good return ratio and help respondents to get a chance to seek clarification on items which might have proved difficult to understand. The filled questionnaires were collected for data analysis.

3.8 Data Analysis

The researcher collected both qualitative and quantitative data. Qualitative data was edited and cleaned up before coding. The edited, proof read and coded data was then analyzed. Qualitative method was used to answer interpretive and explanatory questions of why, how and which way while quantitative methods was used to answer objective questions of when, where, how many, at what time and to what extent. Qualitative data was evaluated, classified and categorized into appropriate themes based on the objectives and then coded. Analyses of qualitative data collected was an on-going process where emerging themes were categorized based on research objectives. Quantitative data was coded and analyzed using Statistical Package for the Social Sciences (SPSS) Version 20. Frequency tables, pie charts and percentages were used to summarize and present the quantitative data. Table 4 presents the summary of data analysis.

Table 3
Summary of Data Analysis

Research Question	Independent Variables	Dependent Variables	Statistical Test
What are students attitudes towards the cooperative teaching method in agriculture in Mukaa Sub-county of Makueni County, Kenya?	Cooperative teaching Method	Students attitude towards cooperative teaching method	Frequencies Mean Percentages
What are students attitudes towards demonstration teaching method in agriculture in Mukaa Sub-county of Makueni County, Kenya?	Demonstration teaching Method	Students attitude towards demonstration teaching method	Frequencies Mean Percentages
What are students attitudes towards fieldtrip teaching method in agriculture in Mukaa Sub-county of Makueni County, Kenya?	Fieldtrip teaching method	Students attitude towards fieldtrip teaching method	Frequencies Means Percentages
What are students attitude Towards lecture teaching Method in agriculture In Mukaa Sub county of Makueni County, Kenya?	Lecture teaching method	Students attitude towards Lecture teaching method	Frequencies Mean Percentages
H₀ There is no statistically Significant difference in the attitudes of students towards the various teaching Methods.	School category	Students attitude towards the selected teaching methods	Independent sample t-test One way ANOVA

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents results and discussions based on objectives research questions and hypothesis of the study. It is divided into the following section: Students attitude towards cooperative teaching Method; students’ attitude towards demonstration teaching method; students’ attitude towards field trip teaching method and students’ attitude towards lecture teaching method

4.2 Questionnaire Return Rate

The questionnaire return percentage was 93.3 percent since the final sample used for analysis was 112 respondents; 57 male and 55 female distributed as shown in Table 5. While the response rate depends on, among other factors, the length of the questionnaire, a rate of 50 percent is considered adequate and that of 70 percent very good (Stacks, 2011). Therefore since all the categories and gender groupings obtained responses rated 85 percent and above, then the responses were considered appropriate for use in data analysis.

Table 4
Questionnaire Return Rate in the three categories of schools

Category of School	Gender	No. of Questionnaire Returned	Percentage
Extra-County	Male	20	
	Female	18	
	Total	38	34
County	Male	19	
	Female	17	
	Total	36	32
Sub-county	Male	18	
	Female	20	
	Total	38	34

The questionnaire was based on a 5-point Likert scale; 5-Strongly Agree, 4-Agree, 3-Uncertain, 2- Disagree and 1- Strongly Disagree. The values obtained after treating the data using SPSS version 20 were assumed meanings as shown in Table 5 according to the Likert scale;

Table 5
Means' Rating in the Likert Scale

Range	Meaning	Attitude
4.50 – 5.00	Very High Rating	Positive
3.50 – 4.49	High Rating	Positive
2.50 – 3.49	Average Rating	Uncertain
1.50 – 2.49	Low Rating	Negative
1.00 – 1.49	Very Low Rating	Negative

4.3 Respondents Attitude towards use of Cooperative Method of Teaching Agriculture

The research question addressed in this section was '*what is students' attitude towards the use of cooperative method of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya?*'

On a scale of 1 – 5, Where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) 5= Strongly Agree (SA), the respondents were asked to indicate the extent to which they agreed with a set of statements regarding their attitude towards the use of Cooperative (group work) Teaching Method of Agriculture Subject.

The overall attitude of respondents towards use of cooperative method in teaching agriculture was determined by computing a mean using SPSS. Table 6 shows results of the descriptive statistics. The items contained both positive and negative statements. The responses are given in Table 7 and 8.

Table 6

Attitude of Students towards Cooperative Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.25	4.08	3.59	.33

The standard deviation of 0.33 indicates that the values of responses given by the respondents were closely around the mean rating. The overall attitude of students towards cooperative method of teaching agriculture was highly rated and above average ($\mu = 3.59$) meaning that the respondents portrayed a positive attitude towards cooperative teaching method in agriculture. This finding is similar to those of other researchers who established positive attitudes towards cooperative teaching amongst their respondents who were students though not in agriculture (Akhtar *et al.*, 2012; Karali & Aydemir, 2018; Reda, 2015). A quasi experimental study designed and performed in selected schools in Nasarawa State in Nigeria, revealed that 5,520 out of 5867 respondents portrayed a positive attitude towards cooperative teaching approach (Amedu & Gudi, 2017).

Findings of this study were also related to a study done by Nima and Dariush (2014), on students' attitude towards cooperative approach to reading comprehensions whose findings showed that students had positive attitude towards cooperative learning, with 4.39 as average rating for the statements. The rating was above average just as it is the case with the finding in this study. The findings were also in support of findings of a study done by Er and Aksu Ataç (2014) which investigated the attitudes of students towards cooperative learning in a class. The results revealed that students had positive attitude towards cooperative learning.

An analysis of the attitude of students towards specific areas of cooperative teaching approach was revealed by responses to the 12 specific statements used in the research and their results are as shown in Table 7

Table 7**Positively Stated Statements for Cooperative Method of Teaching**

Statement	Mean	Std. Dev.
Learning in groups in agriculture class enables sharing of agricultural ideas more	4.75	.64
I willingly participate in agricultural group learning activities	4.15	1.08
Working in groups improves my attitude towards assignment in agriculture	4.47	.87
I will be more comfortable if more group activities were incorporated in our agriculture lesson	3.57	1.41
I have more confidence to try agricultural exercises when I work in a group	4.46	.82
Working in a group make me understand the agricultural concepts better	4.52	.79
In agriculture lesson I achieve more within the group than on my own	4.10	1.04
Working in groups enhances good working relationships among agriculture students	4.33	1.00

The positively stated statements which are for positive attitude towards cooperative method of teaching garnered high ratings among the twelve statements used, meaning that the respondents portrayed a positive attitude towards cooperative teaching method in agriculture. These findings are in line with a Study done by Parveen *et al.* (2011) which examined the effects of cooperative learning on the achievement of 8th class students in the subject of Social Studies. The sample comprised 40 students of 8th class equally placed in experimental group and control group on the foundation of scores obtained in the social studies annual examination. In this experiment of two weeks period, “cooperative learning resulted in higher achievement as compared to regular method of teaching social studies”. This also corresponds with one of the statements in the questionnaire used in this study, which stated as “In agriculture lesson I achieve more within the group than on my own” with a rating of 4.10. This rating indicated that students agreed on high achievement when working in groups.

The negatively stated statements which are for negative attitude towards cooperative method of teaching, garnered low ratings among the twelve statements used. The statement ‘in

agriculture lesson I prefer to work on my own rather than in a group garnered a mean rating of 3.15 which according to the scale used in this research was rated average, an equivalence of being uncertain or a somehow undefined attitude towards cooperative teaching strategy. Another statement ‘group work makes agriculture lesson less interesting’ also showing negative attitude towards cooperative teaching achieved a very low mean rating of 1.46. Additionally, the statement ‘working in groups limits my participation in agriculture class’ which was also negatively stated yielded a low rating of 1.79. Finally, the negatively stated statement ‘agricultural creativity is limited in the group setting achieved a low rating of 2.32. The findings about the negatively stated statements was summarized in Table 8.

Table 8
Negatively Stated Statements for Cooperative Method of Teaching

Statement	Mean	Std. Dev.
In agriculture lesson I prefer to work on my own rather than in a group	3.15	1.43
Group work makes agriculture lesson less interesting	1.46	.80
Working in groups limits my participation in agriculture class	1.79	1.00
Agricultural creativity is limited in the group setting	2.32	1.20

Table 8 shows that the general scores to negatively stated statements were low, that is, either average, low, or very low rating. On the word of McNabb (2010), when low scores are assigned to negatively stated statements about attitude, then the attitude of respondents is positive.

All other statements in Table 8 had means that rated above average. The statement ‘Learning in groups in agriculture class enables sharing of agricultural ideas more’ obtained the highest rating among all the statements used to test attitude towards cooperative teaching with a mean rating of 4.75. As Karali and Aydemir (2018) assert, good relationships in class enhance interaction in the learning process. A study done by Nima and Dariush (2014) established a mean of 4.39 for the statement testing for the attitude towards social interaction in the process of cooperative teaching and learning approach. This agrees with another finding of this study; with a mean rating of 4.52 that ‘working in a group make me understand the agricultural concepts better’. The mean is also above average and indicates that the respondents agreed that learning through a cooperative approach is enhanced since social interactions are boosted in the process.

In general, the results of statement analysis in tables 7 and 8 revealed that secondary school agriculture students have positive attitudes towards all aspects of cooperative approach of teaching. The probable reason for the positive attitude towards cooperative teaching is that the method makes learning agriculture interesting ($\mu= 4.54$), makes them to willingly participate in learning activities ($\mu=4.15$) and, overall, working in groups improves the attitude towards agriculture ($\mu= 4.47$). These findings are similar to Haberyan (2007) who reported that team based learning is motivating, interesting and enjoyable, and has been utilized in science, education, business and medical disciplines with positive results.

4.4 Respondents' Attitude towards use of Demonstration Method of Teaching Agriculture

This second research question for the study stated: *What is students' attitude towards the use of demonstration method of teaching agriculture subject in secondary schools in Mukaa Sub-county of Makueni County, Kenya?*

The respondents were asked to indicate the extent to which they agreed with a set of statements regarding their attitude towards demonstration teaching method of agriculture subject. The responses are given in Table 9.

Table 9

Attitude of Students towards Demonstration Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.92	4.17	3.64	.27

The overall attitude of students towards demonstration method was established to be highly rated ($\mu=3.64$) as shown in table 9. This means that the attitude towards demonstration method was positive and that most respondents agreed that the method was favourable for instruction in teaching agriculture. Demonstration is activity-based and students tend to like learning that involves some activities. However such activities have different influences on the learners' interest in studying a certain subject (Nkereowajiro, 2014). On the other hand, findings of this study disagree with findings of a study done by Sola and Ojo (2007) who argued that demonstration approach was less effective than the project approach. The study noted the powerful effect of project approach over the demonstration approach. This study also disagreed with findings of Inuwa *et al.* (2018), in the context of United States, found no significant

difference in the knowledge acquisition of learners who were exposed to conventional and demonstration approach. This finding is also in line with Anabel (2014) findings, who reported that teacher demonstration method was more effective in learning chemistry subject at central/high school Kanas City Missouri than individual laboratory. Finding of this study also agreed with findings of a study done by Umar *et al.* (2016) which found out that demonstration method was effective in learning economic concepts among secondary school students in Borno state.

The statements which were used to investigate attitude of students towards demonstration teaching method were both positively and negatively stated. Table 10 displays descriptive information about the positively stated statements.

Table 10
Positively Stated Statements for Demonstration Method of Teaching

Statement	Mean	Std. Dev.
I prefer presentation of agricultural activities in agriculture class	4.02	1.06
Display of agricultural activities enables me to identify a link between classroom and actual life situation	3.96	1.02
Display of agricultural activities permit me to experience that which could never occur in classroom	3.83	1.15
Exhibition of agricultural activities helps me understand the agricultural concepts better	4.43	.78
I gain more confidence to try extra work when I carry out exhibition in agriculture lesson	4.31	.87
Display of agricultural activities enable me have opportunity to observe, touch, hear and work with other students	4.17	.95
Agricultural activities done with my hands makes me recall of learned experiences easy during agriculture tests and examination	4.56	.69
Display of agricultural activities enhances my ability in the management of practical exercises in the farm projects	4.3	.88

All the positively stated statements attained means that rated high except one which rated very high. This is an indication of a positive attitude towards demonstration as a method of teaching.

The statement that rated very high was ‘agricultural activities done with my hands makes me recall of learned experiences easy during agriculture tests and examination’ ($\mu=4.56$). In Kenya, success in secondary school education is examination performance based, such that, a student who finds tests to be easy is expected to pass and any teaching strategy that makes students pass their examinations will be welcomed as favourable. Therefore, if a student goes through an experience of learning that makes tests and examinations easy automatically the learner’s attitude towards learning is boosted.

This finding agrees with results of experimental studies which established that students were favoured by demonstration method over lecture method, in that, students taught using the method performed better than those taught using the lecture method (Giridharan & Raju, 2016; Daluba, 2013). The findings of this study also confirm the results of a study done by Inuwa *et al.* (2018) which investigated the effect of the demonstration method on students' achievement in financial accounting. The study found that students taught using demonstration method performed better. The findings of this study are consistent with results of a study done by Auwal (2010), who conducted a quasi-experimental study to examine the effects of demonstration and discussion approaches on secondary school students’ achievement in Agricultural Science. He observed that demonstration approach developed and sustained students’ learning interests, which led to better achievement in Agricultural Science.

Similarly, findings of Ogologo and Wagbara (2013) and Effiogo (2010) show that due to the adequate participation of students in the learning process, the achievement of students taught through the demonstration approach for students was significantly better than that of their counterparts in the conventional approach. Hemanthakumar *et al.* (2013) reported a similar finding where the achievement of biological science students had improved significantly after use of demonstration instructional approach.

The statement that was rated second high “exhibition of agricultural activities helps me understand the agricultural concepts better” ($\mu=4.43$) corresponds with the results of the research done by Ramadhan and Surya (2017) investigating the implementation of demonstration method to increase students’ ability in operating multiple numbers by using concrete object, to which average score of the students’ achievement score of the ability to comprehend the mathematics concept of each individual improved from 63.9 (56.67%) to 68.4

and 72.5 with the percentage of the total value of 76.67% and 86.67% in cycle 1 and 2 respectively..

Study done by Ameh and Dantani (2012), argued that the demonstration teaching method allows active participation of students in the lesson. This is in line with another highly rated statement in this study stating “I gain more confidence to try extra work when i carry out exhibition in agriculture class” ($\mu=4.31$). This means that demonstration enable learners to actively participate in agriculture class by doing extra work.

Portrayed in Table 11 are results of the negatively stated items related to demonstration method of teaching agriculture.

Table 11
Negatively Stated Statements for Demonstration Method of Teaching

Statement	Mean	Std. Dev.
Learning through exhibition does not enable me excel agriculture exams	1.90	1.08
Agriculture class presentations has no effect on my interest in Agricultural activities	1.20	0.81
Working with my hands makes agriculture lesson less interesting	1.02	1.16
Exhibition of agricultural activities has no effect on my practical experiences in agriculture	1.70	0.88

All the means of negatively stated items were below average. The low mean attained from the statement ‘agriculture class presentations have no effect on my interest in agricultural activities’ ($\mu=1.20$) implies that students responses were against the negativity towards low attitude towards activity centered learning. In addition, a mean of 1.02 for the statement ‘working with my hands makes agriculture lesson less interesting’ is very low; meaning that they like being involved in activities in the process of learning agriculture. This is a confirmation that involving students in hands-on activities makes learning interesting and boosts their attitude towards the subject. In agreement, involving students in learning through activities that involve use of their hands increases motivation to learn and attitude towards the subject being learnt (Celik, 2018).

Demonstration method involves hands-on activities hence the finding corresponds to that of a study done to experimentally establish effects of hands-on and minds-on activities on attitude towards physics. From the study it was determined that both hands-on and minds-on activities affect attitude positively (Ates & Eryilmaz, 2011). On a different note, a study done by Giridharan and Raju (2016) established that one of the seven hands-on activities tested in the experimental study on impact of demonstration teaching method affected students' interest negatively while the other seven did so positively. The study recommended incorporation of hands-on activities including demonstration in teaching.

4.5 Analysis of students' Attitude towards use of Field trip Method of Teaching Agriculture

The research question for the study was: *'What are students' attitudes on the field trip teaching method in agriculture subject in secondary schools in Mukaa Sub-county of Makueni County, Kenya?'*

Twelve statements were used to examine students' attitude towards field trip as a method of teaching. The statements were both positively and negatively stated in relation to fieldtrip method of teaching agriculture. They were used to compute a variable that gave an overall view of the learners' attitude towards field trip as a method of teaching. Table 12 shows the descriptive statistics.

Table 12

Attitude of Students towards Field trip Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.50	4.00	3.43	.27

The overall attitude of students towards fieldtrip method of teaching agriculture rated average ($\mu=3.43$). The implication is that the students' attitude towards field work as a method of teaching was uncertain. The respondents showed an uncertain attitude towards field work as a teaching method. This finding contradicts with that of Mutlu and Afacan (2013) who conducted a research using single group pretest-posttest model involving pre-service teachers in Ahi Evran University in Turkey. The researchers tested respondents' attitude before and after a field trip on environmental education and established that the attitude after the field trip was higher than before. The finding also contradicts with that of a qualitative study done to

investigate students' attitude towards learning by taking a field trip from the usual class room setting by Djonko-Moore and Ndem (2016), the findings indicated that the students had positive attitude towards field trip as learning method, The findings also disagree with findings of a study done by Malbrecht *et al.* (2016) on assessment of the overall usefulness of field trips which revealed that Students who attended trips to a laboratory reported that “a field trip is an invaluable addition to the learning experience.”

The results of individual statements both positively and negatively stated statements were displayed in Table 13 and 14.

Table 13

Positively Stated Statements for Field Trip Method of Teaching

Statement	Mean	Std. Dev.
I feel am part of the agricultural scenery by exploring an environment	4.09	1.14
Visiting agricultural sites enable me to make observation on the spot situation under guidance	4.52	.68
Agricultural tour enable me to link between classroom work and actual life situation	4.60	.80
Exploring agricultural sites permit me to experience that which could never occur in classroom	4.34	.82
Agricultural site visit increases my ability in the organization of practical exercises in my farm projects	4.54	.71
Visiting agricultural sites provide me with a good friendly learning atmosphere	4.09	1.05
I gain better understanding of nature when I visit agricultural sites	4.29	1.09
Teacher's agricultural explanations are interesting when I go out of school to see what he/she is talking about	4.39	1.03

All the eight positively stated statements attained means that rated above average in the scale used; an implication that the respondents' attitude towards field trip method of teaching was high. Two statements ‘agricultural tour enable me to link between classroom work and actual life situation’ ($\mu=4.60$) and ‘agricultural site visit increases my ability in the organization of practical exercises in my farm projects’ ($\mu=4.54$) recorded very high ratings. This is in support

with Fuller (2006) who maintains that many studies have results that show that learning is enhanced by experiencing the reality of life outside the classroom especially through field trips. It is also in line with a study done by Ja'afar-Furo *et al.* (2017), which revealed that students who learn by going for a field trips are able to gain first-hand information, and employ various senses to see, touch, and feel what they have read and heard about in the classroom.

Finding of a statement which states 'I gain better understanding of nature when I visit agricultural sites ($\mu=4.29$) which was also highly rated is in line with findings of a study done by Luckey and Murphrey (2013) assessing the impact of an Adventure program at the 2011 Houston Livestock Show, revealed a significant change in knowledge at the .006 level after a paired sample t-test. Finding is also in support of findings of a study done by Savoie (2006) investigating understanding ability of students in a dairy project focused on the entire dairy production process, from farm to table, including field 18 trips to a dairy farm and agriculture day at the local county fair. The participating students exhibited a 70% improvement in their ability to identify three healthy benefits of consuming three servings of dairy foods daily. Student also demonstrated an increase in the ability to identify dairy production techniques.

In justifying the need to teach using fieldtrips, authors of an agriculture teachers' guide for form two syllabi in agriculture propose use of the approach and argue that fieldtrips involve experience with the real-world making learning more meaningful (Nyanjom & Kanyango, 2003). The two statements, agricultural tours enable me to link between classroom work and actual life situation' ($\mu=4.60$) and 'agricultural site visit increases my ability in the organization of practical exercises in my farm projects' ($\mu=4.54$) showed that students preferred method of learning as being practical and not abstract. Activities in teaching motivate students by arousing their need to perform practically applicable activities to real life. The study was performed in a rural setting where students can apply what they learn into practical projects and this motivates them to like field trip method. Table 14 presents results of the negatively stated items related to fieldtrip method of teaching. Two statements in the table rated low and two rated very low in the 5.0 scale.

Respondents disagreed that visiting agricultural sites is time consuming ($\mu=1.40$) and that lack of demonstration in learning makes the process clear without visiting agricultural sites ($\mu=1.43$). The disagreement is in favour of the method. The very low and low means of the negatively stated statements in Table 14 seemed to have affected the overall mean of the

attitude towards field trip as a method of teaching and imply that the respondents were positive about the method.

Table 14

Negatively Stated Statements for Field Trip Method of Teaching

Statement	Mean	Std. Dev.
Agriculture lessons are clear to me even without visiting agricultural sites	1.43	.90
My practical experiences remains the same even after I visit agricultural sites	1.71	.99
Exploring agricultural sites consumes time that could be used to learn more in class	1.40	.79
Touring agricultural sites make me have no fun in learning agriculture	1.78	1.09

Negatively stated statement “Touring agricultural sites make me have no fun in learning agriculture” ($\mu=1.78$). Was lowly rated meaning that the respondents agreed that there is fun in learning agriculture by touring agricultural sites. This is in support to findings of Studies done by Omeodu and Abara (2018) and Behrendt and Franklin (2014), which revealed that field trip is a type of learning which increases students’ interest, knowledge and Motivation to learn.

4.6 Analysis of Respondents’ Attitude towards use of Lecture Method of Teaching Agriculture

Table 15

Attitude of Students towards Lecture Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.75	4.83	3.6510	.39095

The overall attitude of students towards lecture method of teaching agriculture was highly positive as displayed in table 15. Students portrayed a positive attitude towards conversational interactions with their agriculture teachers. The overall mean of the statements used to examine attitude towards lecture method was established to be 3.65. This mean depicts that, generally, students liked the lecture method of teaching agriculture.

This finding contradicts those of some researches whose results show a negative attitude towards lecture method of teaching (Daluba, 2013; Giridharan & Raju, 2016; Pugsley & Clayton, 2003). However, there are numerous studies that reveal students positive attitude towards lecture method of teaching (Kilian & Ferreira, 2013). The study by Marmah (2014) exposed positive students' attitude towards lecture method and concluded that the method is not as unpopular as most experts think since it has positive effects on students' attitude towards learning. Similarly Kilian and Ferreira (2013) ascertained that students perceive lecture method of teaching positively and their attitudes towards the method were found to be positive. Findings of this study also agreed with findings of a study done by Umar *et al.* (2016) which found out that lecture method was effective in learning concepts in economics among secondary school students in Borno state.

The results of individual statements both positively and negatively stated statements were presented in Table 16 and 17.

Table 16

Positively Stated Statements for Lecture Method of Teaching

Statement	Mean	Std. Dev.
I enjoy when my teacher tells me about agricultural activities during agriculture lesson	4.29	.76
Good learning atmosphere is created when my teacher inform me about agricultural activities during agriculture lesson	4.08	.87
I rely on what my teacher notify me to learn what I need to know during agriculture lesson	3.51	1.31
Teacher teaching through talking makes me gain confidence in agriculture	3.66	1.30
I understand agriculture better when agriculture teacher discuss agricultural ideas with me	4.25	1.00
Listening while my agriculture teacher carries out discussion increases my participation in agriculture lesson	4.19	.99
Teacher – student discussion makes agriculture lessons more enjoyable	4.59	.72
Teacher conversing agricultural ideas during agriculture lesson prepares me very well for tests	4.25	.80

Out of the twelve statements examining students' attitude towards lecture method of teaching, the eight positively stated items yielded means that were above average. This is an indication that students agreed with most of the aspects of the lecture method. They agreed that teachers create good learning atmosphere ($\mu=4.08$), Provide discussions that make them understand better in agriculture ($\mu=4.29$) and are therefore well prepared for examinations ($\mu=4.25$).

The respondents also agreed that teachers make learning in agriculture enjoyable using lecture method ($\mu=4.29$). However, the statement 'teacher student discussion makes agriculture lessons more enjoyable' ($\mu=4.59$) yielded a very high rating. While this statement appears to be in favour of the lecture method, teacher-student interaction in a discussion process is interactive. This implies that, though the students agreed that lecture method is worthwhile, they are in favour of aspects of the method that are more student involving.

Out of the twelve statements testing students' attitude towards lecture method of teaching, four statements generated means that exposed students uncertain attitudes towards some aspects of the lecture method of teaching. The statements are presented in table 17 along with their means and standard deviations.

Table 17
Negatively Stated Statements for Lecture Method of Teaching

Statement	Mean	Std. Dev.
Topics taught by my teacher through talking in agriculture class always go out of my memory	2.99	1.39
I perform poorer in agriculture tests and examinations in topics taught through practical.	2.24	1.21
I like agriculture lessons that make participate in activities more than when the teacher just talks	2.98	1.36
I master less agriculture content when a teacher teaches through dialogue	2.79	1.38

Three of the negatively stated statements in favour of the lecture method of teaching attained responses whose attitudes rated average. This indicates that the respondents were uncertain whether they disagree with the negativity of the method. This means that their attitude towards lecture method was uncertain. One statement 'I perform poorer in agriculture tests and

examinations in topics taught through practical' ($\mu=2.24$) rated very low showing that the respondents actually disagreed that lecture method was considered better than learning through activity-centered methods. The analysis of the positive and negative statements used to examine the respondents' attitude towards lecture method of teaching agriculture reveals that, whereas the attitude rated above average, the results also exposed that their attitude towards the negatively aspects of the lecture method was also uncertain. This provides evidence of negativity towards the method. The probable reason for this mixed attitude could be that they are used to the method of teaching until they have the belief that it is a good method.

4.7 Methods commonly used to teach Agriculture

This section addresses the most commonly used method of teaching by agriculture teachers. To tackle this question descriptive statistics, particularly frequency was run using the SPSS and the results obtained were as indicated in Table 18.

Table 18
Frequencies of the Most Commonly Used Methods to Teach Agriculture

	Method	Frequency	Percentage
Valid	Cooperative	6	5.4
	Demo	8	7.1
	Fieldtrip	5	4.5
	Lecture	93	83.0
	Total	112	100.0

The information in table 19 shows the proportions of the frequencies and percentages of the selected methods of teaching agriculture as indicated by the respondents. The frequency of lecture method was established to be 93 out of the 112 respondents making (83%). Therefore, the most commonly used method of teaching was the lecture, followed distantly by demonstration method which was mentioned by 8 respondents (7.1%). The third was cooperative teaching 6(5.4%) and lastly fieldtrip method 5(4.5%). This finding implies that teachers in agriculture dominate the teaching-learning process majorly and rarely involve their students in the process. The students are treated as recipients of knowledge instead of being involved in the process of discovering the knowledge by themselves.

The findings of this study are in line with the findings of a study by Onni (2017); Omeodu and Abara (2018) who found that most used strategies in teaching agriculture are lectures, demonstrations, discussion, educational visits, projects, question and answers, assignments and practical. According to review done by Ndirangu (2017) on pedagogy and classroom practices revealed that the teacher-centred and student centred teaching methods are basic to most theoretical and teaching propositions. Study done by Sahin *et al.* (2016) further confirms the findings by mentioning that agriculture teachers in Kenya use lecture, class discussion and group discussion methods. In a study investigating agricultural teaching approaches applied to teach agriculture in Embu County, lecture method was ranked third with 65 respondents (21.2%) terming it as the most common method (Njura *et al.*, 2020). The first was discussion (31.9%) followed by demonstration. The similarity being that in the two-studies demonstration method was ranked second. Both lecture and discussion methods are similar in that they involve talking without hands-on activities (Vida, 2018). Additionally Lecture method is easy to plan and practice, it saves time and also a teacher can cover a lot of work within a short period of time. Therefore it is possible that teachers of agriculture prefer this method in order to cover a lot of work and complete the syllabus in good time to have ample time for revision for examinations.

The findings are also in line with the findings of a study by Kabugi (2013) who found that most used strategies in teaching agriculture are, lectures, demonstrations, discussion, educational visits, projects, question and answers, assignments and practical. Ahmad (2008) review on pedagogy and classroom practices revealed that the teacher-centred and student centred teaching methods are basic to most theoretical and teaching propositions. Ngesa (2006) further confirms the findings by mentioning that Agriculture teacher teachers in Kenya use lecture, class discussion and group discussion methods.

4.8 Methods Most Preferred by Respondents

The study also sought to find out the methods of teaching agriculture preferred most by the agriculture students in order to ascertain their attitude towards the teaching methods.

This section addresses the most preferred method of teaching by agriculture students. After running an analysis of data, results obtained were as shown in Table 19 which shows percentage of the most preferred methods of teaching.

Table 19

Most Preferred Method of Teaching by Respondents

Method	Frequency	Percentage
Cooperative	31	27.68
Demonstration	07	6.25
Fieldtrip	48	42.86
Lecture	26	23.21
Total	112	100

The information in table 19 shows the frequencies and percentages of the selected methods of teaching agriculture as indicated by the respondents. The method of teaching most preferred by students was field trip 44(39.3%), followed by the lecture method 35(31.3%), then the cooperative method 27(24.1%) and finally demonstration method 6(5.4%). Despite the negative notion many people have towards lecture method, it still considered worthwhile by students. This is similar with the finding by Marmah (2014) whose study revealed students' attitude being positive towards the lecture method hence contradicted the common belief that lecture method is not famous.

4.8.1 Reasons for preferring the selected teaching methods the most

This section shows respondents own opinion as to why a specific teaching method in agriculture is preferred most.

4.8.1.1 Reasons Preference of the Field Trip Method of Teaching

Those who most preferred field trip as a method of teaching gave the reasons in Table 21 for doing so. The most recurring reason was that 'field trip forms a link between class work and reality' 18(37.5%) seconded by 'Improves recall and understanding' 13(27.08%). Third was that 'field trip is fun' 7(14.58%). Among the four methods of teaching agriculture, field trip had the most number of reasons for its preference. A total of 48 reasons for preferring field trip method the most were extracted and grouped into six themes/reasons.

Table 20:

Reasons for Indicating Field Trip as the Most Preferred Method of Teaching Agriculture

Reason	Frequency	Percentage
Links class work with reality	18	37.50
Improves recall and understanding	13	27.08
It is fun	7	14.58
Boosts interest	4	8.33
Develops confidence	3	6.25
The method is participative	3	6.25
Total	48	100.00

4.8.1.2 Reasons for Preference for the Lecture Method of Teaching

Those who preferred lecture method the most stated several reasons as why they do so. A total of 26 reasons were given which were grouped into six themes /reasons.

Table 21

Reasons for Indicating Lecture as the Most Preferred Method of Teaching Agriculture

Most Preferred: Lecture		
Reason	Frequency	Percentage
I understand better	11	42.31
A lot is covered	7	26.92
Enjoyable	4	15.38
Orally participative	3	11.54
Good for exams	1	3.85
Total	26	100

Over half of the respondents 18(54.55%) reported to prefer lecture method over the other three methods when being taught in agriculture since they understand the subject better. The second reason for preferring the lecture method was that, through the method, is detailed or most informing compared to the other three since a lot is covered 7(21.21%). Four respondents (12.12%) stated that lecture method is enjoyable, 3(9.09%) considered the method to be participative since during the practice the teacher applies dialogue. Finally, one student (3.03%) stated that the method is suitable for preparing students for examinations.

4.8.1.3 Reasons for indicating Cooperative Method as the Most Preferred Method of Teaching

Table 22 shows reasons given by those who preferred cooperative method most. Their responses were grouped into themes whose frequencies were recorded.

Table 22

Reasons for Indicating Cooperative as the Most Preferred Method of Teaching Agriculture

Reason	Frequency	Percentage
Encourages sharing of ideas	12	38.7
Boosts understanding	11	35.5
Promotes participation in class	4	12.9
Improves attitude & attitude towards the subject	3	9.7
Promotes freedom of expression	1	3.2
Total	31	100.0

A total of 31 reasons for preference of the cooperative method were pointed out in which five common themes (reasons) were developed. Out of the 31 responses 12(38.7%) asserted that they enjoy sharing ideas with other students. This reason had the highest frequency among the four themes established. The possible reason for this is that in group work students are encouraged to open up and reveal what they know or can remember about the subject of discussion. This motivates the learners to expound on some issues more explicitly and in the language the others understand. The same reason could justify that a good number indicated that their understanding was boosted when learning as a group 11(35.5%). Another theme that was disclosed as a reason for preference of the cooperative method was that it promotes participation in class 4(12.9%) followed closely by opinion that group work improves attitude towards the subject 3(9.7%).

4.8.1.4 Reasons for Indicating Demonstration as the Most Preferred Method of Teaching Agriculture

Table 23 presents frequencies of the themes developed as the reasons for preference of demonstration as the most method of teaching agriculture. Seven reasons were given which were coded into 4 themes though with low frequencies. Of the seven reasons 3(42.86%) stated

that demonstration boosts their understanding of the agriculture content, 2(28.57%) expressed demonstration as a method that heightens their ability to recall, 2(28.57%) indicated that the method arouses interest, and one participant (14.29%) showed a liking of the activities involved in the method.

Table 23

Reasons for Indicating Demonstration as the Most Preferred Method of Teaching Agriculture

Most Preferred: Demonstration			
	Reason	Frequency	Percentage
1.	Enhances understanding	3	42.86
2.	Boosts ability to recall	2	28.57
3.	Arouses interest	2	28.57
4.	I like activities	1	14.29
	Total	7	100

4.8.1.5 Reasons for Indicating Demonstration as the Least Preferred Method of Teaching Agriculture

Demonstration method of teaching agriculture was least preferred as compared to other three methods as evidenced by low frequencies made by respondents. Finding of this study implies that agriculture teachers rarely use the method and if they use it, students are treated as recipients of knowledge instead of being involved in the process of discovering the knowledge by themselves.

The findings of this study support findings of a study done by Oyibe and Ven (2014) investigating students’ preference of instructional methods used in teaching and learning of Social Studies. Their findings revealed that the respondents showed low preferences to teacher centered teaching methods. From the responses, the researchers reported that teacher centered methods such as Demonstration, lecture method, note-taking method, story-telling method, questioning, explanation and expository methods make classroom instruction passive. The methods do not actively involve students in learning process and they do not provide opportunity for students to interact with the teacher and the learning environment. The findings also agree with findings of a study done by Ndirangu (2017) on Student-centered instruction,

which indicated a strong preference, with 83%, toward a student-centered learning environment, with 15% preferring a teacher-centered and 3% preferring a content-centered.

4.9 Results on difference between Attitude of Students towards the selected teaching methods in agriculture

This section addresses the hypothesis **HO₁** There is no statistically significant differences in the attitude of students towards various teaching methods of agriculture subject in secondary schools in Mukaa Sub county of Makueni County Kenya. To tackle this hypothesis Independent samples t-test and One-way ANOVA were used and the results obtained were as indicated in table 24 and 25. Independent samples t-test was carried out to check the attitude of boys and girls. The results obtained are presented in table 24.

All the four significant values from the Levene's Tests of Variance were greater than the alpha value ($\alpha=0.05$); cooperative ($\alpha=0.330$), demonstration ($\alpha=0.231$), fieldtrip ($\alpha=0.123$) and lecture (0.709). When the values are greater than 0.05 the variability of the two groups (male and female) is about the same meaning that the scores for male do not vary very much from the score for female. A similar finding was observed by Pugsley and Clayton (2003) who compared lecture to experiential teaching approaches but found no significant difference between attitude of male and female towards the methods. Findings of this study disagree with findings of a study done by Reda (2015), to determine whether there was a significance difference in attitude towards cooperative learning method by sex. Male participants had higher mean score on the attitude scale (mean=42.8 SD=11.58) than female participants (mean= 37.2, SD=10.89). This implied that there was a significance difference between male and female student in their attitude towards cooperative learning method. This findings also disagree with the report of a study done by Er and Aksu Ataç (2014), which was investigating whether there was a significant differences in the attitudes of the students towards cooperative learning and individual learning. The results indicated that there was a significant difference between male and female students in cooperative learning and individual learning. It was found that male students preferred studying individually more than female students. 36.1% of the students were at the side of individual work.

Table 24**Independent Sample T-Test**

		Levene's Test for Equality of Variance		t- test for Equality of Mean		
		F	Sig.	t	Sig. (2-tailed)	Mean difference
Cooper.	Equal variances assumed	.958	.330	-.847	.399	-.5385
	Equal variances Not assumed			-.851	.397	-.5385
Demon.	Equal variances assumed	.1453	.231	.222	.825	-.01140
	Equal variances Not assumed			.221	.825	-.01140
Fieldtrip	Equal variances assumed	2.414	.123	-.1.391	.167	-.07047
	Equal variances Not assumed			-1.397	.165	-.07047
Lecture	Equal variance assumed	1.260	.264	-.374	.709	-.02772
	Equal variance Not assumed			-.374	.709	-.02772

Similarly, the significant values (2-tailed) used to compare means of the four teaching methods were also greater than 0.05; cooperative ($\alpha=0.399$), demonstration ($\alpha=0.231$), fieldwork ($\alpha=.123$) and lecture ($\alpha=0.709$). This leads to acceptance of the null hypothesis that there is no significant difference between male and female attitude towards the four methods used to teach agriculture.

One-way ANOVA was used to determine whether there is any significant difference between sub-county, county and extra-county schools. The results are presented in Table 25.

Table 25**ANOVA Results**

ANOVA		Sum of Squares	df	Means Squares	F	Sig.
Cooperative	Between Groups	.282	2	.141	1.254	.290
	Within Groups	12.254	109	.112		
	Total	12.535	111			
Demonstration	Between Groups	.052	2	.026	.351	.704
	Within Groups	8.078	109	.074		
	Total	8.130	111			
Fieldtrip	Between Groups	.074	2	.037	.507	.604
	Within Groups	7.966	109	.073		
	Total	8.040	111			
Lecture	Between Groups	.693	2	.347	2.321	.103
	Within Groups	16.273	109	.149		
	Total	16.966	111			

All the four teaching methods had p-values greater than 0.05; cooperative ($\alpha=0.290$), demonstration ($\alpha=0.704$), fieldwork ($\alpha=0.604$) and lecture ($\alpha=0.103$) indicating that there is no significant difference in attitudes of students towards the selected methods of teaching agriculture between sub-county, county, and extra-county schools. This translates to similar attitudes towards the methods regardless of the level of school the respondent was in. This findings are in support with the results of a study done by Akdemir and Özçelik (2019), investigating teachers' attitude towards using student centered teaching methods and techniques according to the school type variable, the results revealed that there was no significant difference in attitude towards student centered teaching methods. The findings of this study are also in line with findings of a study done by Amedu and Gudi (2017), which revealed that there was no significant development of positive attitude towards the jigsaw cooperative learning approach by students taught using the jigsaw cooperative learning approach.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study in four sections; the summary of findings, conclusions, recommendations, and suggestions for further studies.

5.2 Summary of the Study

The purpose of this study was to investigate students' attitude towards the use of cooperative, demonstration, field trip, and lecture methods of teaching agriculture in secondary schools in Mukaa Sub-county of Makueni County, Kenya. The cooperative, demonstration, field trips and lecture methods were the independent variables, the dependent variable was the students' attitude towards the teaching methods and the intervening variables were gender and school category. The researcher settled on this study due to the prevailing perplexity among agriculture teachers in choice of the most appropriate method to apply when teaching agriculture. To address the issue, the researcher opted to obtain and measure responses from students that reveal their attitude towards the selected methods and also determine the methods they are subjected to by their teachers.

Related literature was reviewed on methods of teaching agriculture subject and their usefulness in Secondary schools; students' attitude towards teaching methods; students' attitude towards agriculture, challenges faced by the agriculture teachers in teaching and effect of agriculture students' attitude on agriculture performance. However the literature review did not reveal any study on the Students' Attitude towards selected teaching methods used in agriculture subject in secondary schools in Mukaa Sub County, Makueni.

A students' questionnaire designed by the researcher was used for data collection in this study which employed descriptive research design. The questionnaire contained close-ended and open-ended questions. Data was collected from 112 form three students from sub-county, county and extra-county schools in the sub-county. Simple random sampling was used to select the students. The data was analyzed using descriptive statistics with the help of statistical package of social sciences (SPSS) version 20. For open ended questions content analysis was employed to analyze the data. The summary of the study findings are as follows:

Secondary school students revealed a highly positive attitude towards cooperative method of teaching agriculture. As the teacher uses cooperative method to teach many students get the opportunity to share ideas related to the content being delivered. This arouses interest in the subject and makes the learning process enjoyable.

The overall attitude of secondary school students used as respondents in this study was highly positive towards demonstration. Students expressed a liking for learning through activities and that such activities boost their ability to recall. They also indicated that they like display and exhibitions involved in the method. Positively stated items examining attitude towards demonstration method were rated above average and those negatively stated items were below average. This was a confirmation that the attitude was positive.

In general the attitude of respondents towards field trip method of teaching was statistically unclear. However the positively stated items showed a positive attitude and the negatively stated rated very low. Since the two aspects were used to determine the overall attitude score then the conclusion that the attitude of students was positive could be considered valid.

On the whole secondary school students portrayed a positive attitude towards lecture method of teaching, meaning that they accept that lecture method worthwhile. However a scrutiny of the statements used to examine the attitude uncovered that students like participative aspects of the method, implying that they like the method.

The most commonly used method of teaching agriculture was established to be lecture method, followed by demonstration though with a large difference between the two. The third commonly used was the cooperative method and the last was field trip. This implies that are mainly learners are receivers of information and are not involved in discovering the information on their own.

However the most preferred method of teaching by the respondents was determined to be fieldtrip followed by the lecture, then cooperative and finally the demonstration method. As previously indicated, the most commonly practiced method is lecture yet the most preferred is the field trip. Students were found to have similar attitudes towards cooperative, demonstration, fieldtrip and lecture methods used in teaching agriculture. There was no significant difference in attitude of students towards the selected methods

5.3 Conclusions

The following conclusions were made based on the findings of the study:

- i. Secondary school students in Mukaa Sub County have a highly positive attitude towards cooperative method of teaching agriculture. Students get opportunity to share ideas related to the content being delivered. Their interest in the subject arouses and thus learning process becomes enjoyable.
- ii. The attitude of secondary school students in Mukaa Sub County towards demonstration method of teaching agriculture is highly positive. Students like learning through activities and those activities boost their ability to recall. They also like display and exhibitions involved in the method.
- iii. The attitude of secondary school students in Mukaa Sub County towards field trip method of teaching agriculture is positive. Students are able to link class work with reality making learning process enjoyable.
- iv. Secondary school students in Mukaa Sub County have a highly positive attitude towards lecture method of teaching agriculture.
- v. There is no significant difference in attitude of secondary school students in Mukaa Sub County towards the cooperative, demonstration, field trip and lecture method of teaching agriculture.

5.4 Recommendations

The following recommendations are made:

- i. Teachers of agriculture should plan their group activities well and be available to monitor their progress.
- ii. Teachers of agriculture should properly plan demonstration method of teaching agriculture and involve students in learning activities especially in display and exhibitions.
- iii. Teachers of agriculture should try to move away from the lecture method and if lecture is unavoidable then they should involve the learners more by making them participate in various activities during agriculture lessons.
- iv. Teachers of agriculture should organize for affordable field trips even near school localities and utilize the method as often as possible.

- v. Teachers of agriculture should combine the selected teaching methods of agriculture as the situation demands to make teaching and learning effective.
- vi. The stakeholders through the Ministry of Education and training institutions need to reconsider reviewing of training methodologies in agriculture to enhance the teaching and learning process.

5.4.1 Recommendations for Further Research

Based on this study, the researcher recommends the following areas for further research:

- i. Studies should be done in other Sub Counties of Makueni County to determine effects of each one of the selected methods of teaching agriculture on performance in agriculture which was not a concern of this study.
- ii. An investigation should be carried to determine whether the resources available at school affects attitude of students towards the selected methods of teaching.
- iii. A descriptive study can be done to investigate whether students' career aspirations, economic background and level of education of their parents/guardians have effect on their attitude towards the selected methods of teaching agriculture.
- iv. Similar studies can be carried out in other counties of Kenya to check whether similar results will be obtained.

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APPENDICES

APPENDIX A: QUESTIONNAIRE FOR FORM THREE AGRICULTURE

STUDENTS

Introduction

I am Esther Mumbi Nzomo, a student at Egerton University, Njoro Campus doing Master of Science degree in Agricultural Education. As part of my studies, I am conducting a research study on learners' attitude on selected teaching methods of agriculture subject in secondary schools of Mukaa Sub-county of Makueni County, Kenya. I am glad to inform you that you have been selected to participate in the study. You are requested to sincerely respond to the items in the questionnaire. Your contribution will be useful in not only this study but also in future learning of secondary school agriculture. Your responses are highly valued, appreciated and will be treated with at most confidentiality. Kindly answer all the questions. The accuracy of your answer depends on your being straight forward in answering this questionnaire. You will not be identified by your answer.

Section A: Personal Characteristics of Respondent

Tick (√) appropriately

1. Gender

a. Male ()

b. Female ()

2. Category of Your School

a. Sub-County ()

b. County ()

c. Extra county ()

Section B: Students' Attitude towards Cooperative (group work) Teaching Method of Agriculture Subject

The statements presented in the table below describe the various aspects of students' attitude towards cooperative method (group work) of teaching agriculture. Please **circle** number in the box that matches extent to which you agree or disagree with each statement.

Where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) 5= Strongly Agree (SA)

	Item	SD	D	U	A	SA
a	In agriculture lesson I prefer to work on my own rather than in a group.	1	2	3	4	5
b	Learning in groups in agriculture class enables me to share of agricultural ideas more.	1	2	3	4	5
c	I willingly participate in agricultural group learning activities	1	2	3	4	5
d	Working in groups improves my attitude towards assignment in agriculture	1	2	3	4	5
e	I will be more comfortable if more group activities were incorporated in our agriculture lesson.	1	2	3	4	5
f	Group work makes agriculture lesson less interesting	1	2	3	4	5
g	I have more confidence to try agricultural exercises when I work in a group	1	2	3	4	5
h	Working in a group make me understand the agricultural concepts better.	1	2	3	4	5
i	In agriculture lesson I achieve more within the group than on my own	1	2	3	4	5
j	Working in groups limits my participation in agriculture class.	1	2	3	4	5
k	Working in groups enhances good working relationships among agriculture students.	1	2	3	4	5
l	Agricultural creativity is limited in the group setting.	1	2	3	4	5

Section C: Students' Attitude towards Demonstration Teaching Method of Agriculture

Subject

The statements presented in the table below describe the various aspects of students' attitude towards demonstration method of teaching agriculture. Please **circle** number in the box that matches extent to which you agree or disagree with each statement.

Where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) 5= Strongly Agree (SA)

	Item	SD	D	U	A	SA
a	I prefer agricultural activities in agriculture classes	1	2	3	4	5
b	Display of agricultural activities enables me to identify a link between classroom and actual life situation	1	2	3	4	5
c	Display of agricultural activities permit me to experience that which could never occur in classroom	1	2	3	4	5
d	Learning through exhibition does not enable me excel agriculture exams		2	3	4	5
e	Exhibition of agricultural activities helps me understand the agricultural concepts better	1	2	3	4	5
f	I gain less confidence to try extra work when I carry out exhibition in agriculture lesson	1	2	3	4	5
g	Display of agricultural activities enable me have opportunity to observe, touch, hear and work with other students.	1	2	3	4	5
h	Agriculture class presentations increases my interest in Agricultural activities	1	2	3	4	5
i	Working with my hands makes agriculture lesson less interesting	1	2	3	4	5
j	Agricultural activities done with my hands makes me recall of learned experiences easy during agriculture tests and examination	1	2	3	4	5
k	Exhibition of agricultural activities has no effect on my practical experiences in agriculture	1	2	3	4	5
l	Display of agricultural activities enhances my ability in the management of practical exercises in the farm projects	1	2	3	4	5

Section D: Students' Attitude towards Field Trip Teaching Method of Agriculture Subject

The statements presented in the table below describe the various aspects of students' attitude towards field trip method of teaching agriculture. Please **circle** number in the box that matches extent to which you agree or disagree with each statement.

Where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) 5= Strongly Agree (SA)

	Item	SD	D	U	A	SA
a	I feel am part of the agricultural scenery by exploring an environment	1	2	3	4	5
b	Visiting agricultural sites enable me to make observation on the spot situation under guidance	1	2	3	4	5
c	Agricultural tour enable me to link between classroom work and actual life situation	1	2	3	4	5
d	Agriculture lessons are clear to me even without visiting agricultural sites	1	2	3	4	5
e	Exploring agricultural sites permit me to experience that which could never occur in classroom	1	2	3	4	5
f	My practical experiences remains the same even after I visit agricultural sites	1	2	3	4	5
g	Agricultural site visit increases my ability in the organization of practical exercises in my farm projects	1	2	3	4	5
h	Exploring agricultural sites consumes time that could be used to learn more in class	1	2	3	4	5
i	Touring agricultural sites make me have no fun in learning agriculture	1	2	3	4	5
j	Visiting agricultural sites provide me with a good friendly learning atmosphere	1	2	3	4	5
k	I gain better understanding of nature when I visit agricultural sites	1	2	3	4	5
l	Teacher's agricultural explanations are interesting when I go out of school to see what he/she is talking about	1	2	3	4	5

Section E: Students' Attitude towards Lecture Teaching Method of Agriculture Subject

The statements presented in the table below describe the various aspects of students' attitude towards lecture method of teaching agriculture. Please **circle** number in the box that matches extent to which you agree or disagree with each statement.

Where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Uncertain (U), 4=Agree (A) 5= Strongly Agree (SA)

	Item	SA	A	U	D	SD
a	I enjoy when my teacher tells me about agricultural activities during agriculture lesson	1	2	3	4	5
b	Good learning atmosphere is created when my teacher inform me about agricultural activities during agriculture lesson	1	2	3	4	5
c	I rely on what my teacher notify me to learn what I need to know during agriculture lesson	1	2	3	4	5
d	Teacher teaching through talking makes me gain confidence in agriculture	1	2	3	4	5
e	Topics taught by my teacher through talking in agriculture class always go out of my memory	1	2	3	4	5
f	I understand agriculture better when the teacher just talks without involving me in any activity	1	2	3	4	5
g	I perform poorer in agriculture tests and examinations in topics taught through practical.	1	2	3	4	5
h	I like agriculture lessons that make me participate in activities more than when the teacher just talks	1	2	3	4	5
i	Listening while my agriculture teacher carries out discussion increases my participation in agriculture lesson	1	2	3	4	5
	Teacher – student discussion makes agriculture lessons more enjoyable	1	2	3	4	5
k	Teacher conversing agricultural ideas during agriculture lesson prepares me very well for tests	1	2	3	4	5
	I master less agriculture content when a teacher teaches through dialogue	1	2	3	4	5

Section F: General Information on Teaching Methods used in Agriculture Subject

1. Which is the most used method of teaching by your Agriculture teacher? (Put a tick (√) where appropriate.

- (a) Cooperative (Group work)
- (b) Demonstration
- (c) Field trips
- (d) Lecture (Explanation and Discussion)

2. Which among the following methods of teaching agriculture do you prefer most?

- (a) Cooperative (Group work)
- (b) Demonstration
- (c) Field trips
- (d) Lecture (Explanation and Discussion)

Give reasons for your answer above

Thank you for your time and responses

APPENDIX B: KEY DATA ANALYSIS AND OUTPUTS

Attitude of Students towards Cooperative Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.25	4.08	3.59	.33

Attitude of Students towards Demonstration Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.92	4.17	3.64	.27

Attitude of Students towards Field trip Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.50	4.00	3.43	.27

Attitude of Students towards Lecture Method of Teaching Agriculture

N	Minimum	Maximum	Mean	Std. Deviation
112	2.75	4.83	3.6510	.39095

Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Sig. (2- tailed)	Mean Difference
Cooperative	Equal variances assumed	.958	.330	-.847	.399	-.05385
	Equal variances not assumed			-.851	.397	-.05385
Demonstration	Equal variances assumed	1.453	.231	.222	.825	.01140
	Equal variances not assumed			.221	.825	.01140
Fieldtrip	Equal variances assumed	2.414	.123	-1.391	.167	-.07047
	Equal variances not assumed			-1.397	.165	-.07047
Lecture	Equal variances assumed	1.260	.264	-.374	.709	-.02772
	Equal variances not assumed			-.374	.709	-.02772

ANOVA Results

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Cooperative	Between Groups	.282	2	.141	1.254	.290
	Within Groups	12.254	109	.112		
	Total	12.535	111			
Demonstration	Between Groups	.052	2	.026	.351	.704
	Within Groups	8.078	109	.074		
	Total	8.130	111			
Fieldtrip	Between Groups	.074	2	.037	.507	.604
	Within Groups	7.966	109	.073		
	Total	8.040	111			
Lecture	Between Groups	.693	2	.347	2.321	.103
	Within Groups	16.273	109	.149		
	Total	16.966	111			

APPENDIX C: ABSTRACT OF THE JOURNAL ARTICLE

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Attitude of Students towards Lecture Teaching Methods in Agriculture in Secondary Schools in Mukaa Sub-County of Makueni County, Kenya

Esther Mumbi Nzomo, James Obara, Agnes Nkurumwa Oywaya

Abstract— Successful teaching and learning of agriculture in secondary schools in Kenya depends mostly on correct use of teaching methods whose activities target learning senses. Attitude of agriculture students are quite often acquired through teaching and learning process. Agriculture students' attitude can be changed by using a variety of teaching and learning methods. The purpose of this study was to determine students' attitude towards lecture teaching method in agriculture in secondary schools in Mukaa Sub County of Makueni County. The study was conducted to ascertain the Learners' Preference, willingness and eagerness to participate in agricultural activities in secondary schools in Mukaa Sub-county of Makueni County. This study employed a descriptive research design. The target population of the study consisted of 1773 Form three agriculture students in secondary schools in Mukaa Sub County. A sample size of 120 respondents was randomly selected from a sampling frame of 1773 Form three students in the four wards in Mukaa Sub-county. A semi-structured questionnaire was used to gather data from the respondents. To establish reliability of the research instruments a pilot study was carried out using 30 randomly selected secondary school Form three agriculture students in Nzani Sub County. Face and internal validity of the instrument was established by the supervisors from the department of Agricultural Education and Extension. Quantitative data were coded and analyzed using the Statistical Package for Social Sciences. Qualitative data was analyzed using document report analysis. The results were presented in frequencies, means and percentages. The study established that the attitude of students towards the lecture method was positive. The study recommends that teachers of agriculture should be given in-service training on how to improve the lecture method of teaching agriculture to enhance the teaching and learning process and also combine various teaching methods of agriculture as the situation demands to make teaching and learning effective.

Index Terms— Student Attitude, Lecture Teaching Methods, Agriculture Subject.

I. INTRODUCTION

Agriculture has an immense impact to humanity in terms of global food supplies, hunger alleviation, economic development and provision of employment¹. In Sub-Saharan Africa, the agricultural sector has become a dominant provider of employment, and it remains crucial for economic

growth². Moreover in most parts of Africa food security is still a critical issue and therefore food production will continue to be a major focus of agricultural education and training institutions³.

Agriculture is a vocational subject which is a vital tool in preparing people for a new phase of rural development⁴. According to¹ agriculture in other parts of the world for example United States of America (USA), is a subject that is designed to help students develop agricultural appreciation encompassing knowledge and information needed by any workers to enter and make progress in employment on a useful and productive basis. In Malaysia vocational education is meant to produce a workforce which is educated, skilled and having positive attitude³. In Bangladesh, technical subjects are highly recognized due to their contribution to national development in areas of manpower creation and running of industries⁵.

Agriculture became officially established in Kenyan school's curriculum in several phases in the slow development of colonial education⁶. With the introduction of the 8-4-4 system of education in Kenya in 1985, all the schools started offering agriculture (Republic of Kenya, 1984;⁷. The subject is taught so that the youth can appreciate the role agriculture plays in the economy of the country⁸. Additionally school agriculture is an attempt to inculcate attitudes, knowledge and practical skills in students needed to improve agricultural production¹. Effective teaching and learning of agriculture subject is done through use of different methods of teaching⁹. Effectiveness of these methods depends, to a great extent, on the attitude bear towards them.

A study done by¹⁰ found out that the attitude of students plays a significant part in any satisfactory explanation of learning methods used in agriculture subject. As reported by³, many students develop negative attitude towards teaching methods of agriculture subject, probably due to the fact that teachers are unable to satisfy their aspiration or goals.

Effective teaching and learning takes place when the teacher knows which method to use in a particular situation to meet specific goals⁵. In using teaching methods, teachers are faced with the task of placing the students in an educational setting tailored to the students learning. The setting in which services are rendered has a strong influence on the students' attitude³. Different teaching methods are available for the teacher to use in communicating attitudes, ideas, knowledge, and skills to the students in order to achieve the desired objectives of a given lesson. This study was limited to investigating students' attitude towards lecture method of

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James Obara, Department of Agricultural Education and Extension, Egerton University, P.O.Box 546 – 20115 Egerton
Agnes Nkurumwa Oywaya, Department of Agricultural Education and Extension, Egerton University, P.O.Box 546 – 20115 Egerton



APPENDIX D: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:

**MS. ESTHER MUMBI NZOMO
of EGERTON UNIVERSITY, 45-90132**

**YOANI, has been permitted to conduct
research in Makueni County**

**on the topic: ATTITUDE OF STUDENTS
TOWARDS SELECTED TEACHING
METHODS IN AGRICULTURE IN
SECONDARY SCHOOLS IN MUKAA
SUB-COUNTY OF MAKUENI COUNTY,
KENYA**

**for the period ending:
12th October, 2019**



**Applicant's
Signature**

Permit No. : NACOSTI/P/18/43572/26186

Date Of Issue : 12th October, 2018

Fee Received :Ksh 1000





**Director General
National Commission for Science,
Technology & Innovation**

APPENDIX E: AUTHORITY FROM NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471.
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/43572/26186**

Date: **12th October, 2018**

Esther Mumbi Nzomo
Egerton University
P.O. Box 536-20115
NJORO

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Attitude of students’ towards selected teaching methods in agriculture in secondary schools in Mukaa Sub-County of Makueni County, Kenya”* I am pleased to inform you that you have been authorized to undertake research in **Makueni County** for the period ending **11th October, 2019**.

You are advised to report to **the County Commissioner and the County Director of Education, Makueni County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

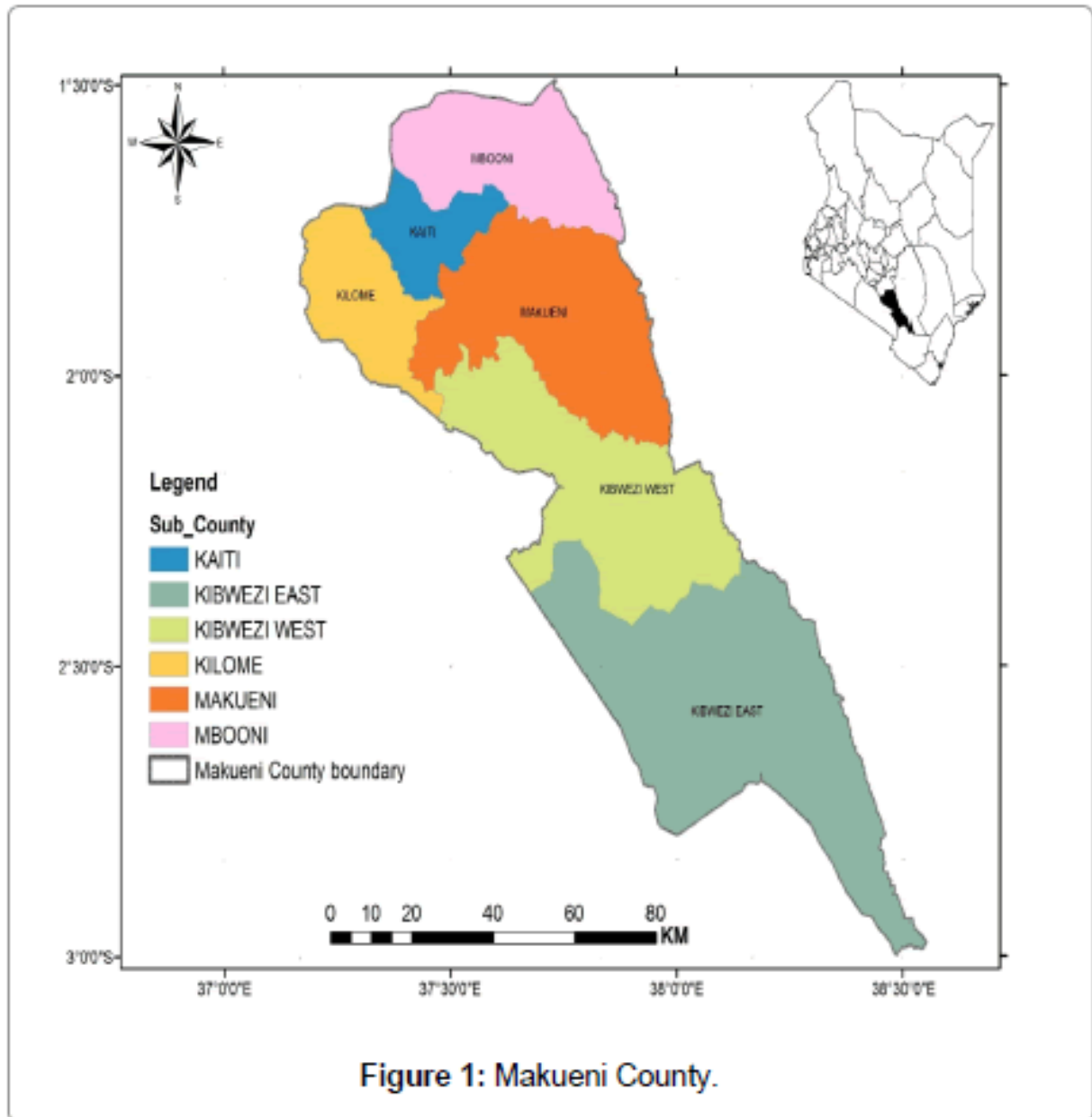
**GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Makueni County.

The County Director of Education
Makueni County.

APPENDIX F: MAP OF MAKUENI COUNTY



APPENDIX G: AUTHORITY FROM THE MINISTRY OF EDUCATION, SCIENCE
AND TECHNOLOGY



REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Telephone:
Fax:
Email:cdemakueni@gmail.com
When replying please quote

County Director of Education Office
Makueni County
P.O. BOX 41 - 90300
MAKUENI

Ref No. MKN/C/ED/5/33/VOL.2/196

8th August ,2019

Esther Mumbi Nzomo
Egerton University
P.O Box 536-20115
NJORO.

RE: RESEARCH AUTHORIZATION FOR ESTHER MUMBI NZOMO

This office is in receipt of a letter from the Director General, National Commission for Science, Technology and Innovation (NACOSTI) authorizing you to carry out research on **“Attitude of students towards selected teaching methods in agriculture in secondary schools in Mukaa Sub- County of Makueni County, Kenya”** for the period ending **11th October, 2019.**

Following this authorization, you are allowed to proceed with your research as requested.

Dr. Samson Arodi
For: County Director of Education
MAKUENI COUNTY

CC:
Director General/ CEO, NACOSTI



APPENDIX H: AUTHORITY FROM COUNTY COMMISSIONER



**THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT**

Telegram:
Telephone: 0743-987-177
Fax:
Email: cc.makueni@interior.go.ke

**COUNTY COMMISSIONER
MAKUENI COUNTY
P.O. Box 1-90300
MAKUENI**

Ref: MKN/CC/ADM.6/I VOL.III/233

8th August, 2019

Esther Mumbi Nzomo
Egerton University
P.O. Box 536- 20115

NJORO

RE: RESEARCH AUTHORIZATION

Reference is made to Director General National Commission for Science Technology and Innovation letter **Ref. NACOSTI/P/18/43572/26186** dated 12th October, 2018 **on** the above subject.

You are hereby authorized to undertake research on "***Attitude of students towards selected teaching methods in agriculture in secondary schools in Mukaa Sub County, Kenya***" for a period ending **11th October, 2019**.

By a copy of this letter the Deputy County Commissioner is requested to give you the necessary assistance.

**B.K. NICHOLAS
FOR: COUNTY COMMISSIONER
MAKUENI**

c.c.
Deputy County Commissioners
MUKAA SUB COUNTY

County Director of Education
MAKUENI COUNTY

APPENDIX I: A LETTER TO SCHOOL PRINCIPALS

**ESTHER MUMBI NZOMO
AGRI, EDU & EXENTENTION,
EGERTON UNIVERSITY,
PO BOX 536,
NJORO, KENYA.**

7TH MAY, 2019.

THE PRINCIPAL
.....
.....

Dear Sir/Madam,

**REF: RESEARCH ON ATTITUDE OF STUDENTS' TOWARDS SELECTED
TEACHING METHODS IN AGRICULTURE IN SECONDARY SCHOOLS IN
MUKAA SUBCOUNTY OF MAKUENI COUNTY, KENYA.**

I am carrying out study on attitude of students' towards selected teaching methods in agriculture in secondary schools in Mukaa Sub- County of Makueni County. The needed information is to be gotten from the Form 3 agriculture students. I will require a meeting of about 30 minutes with ten form 3 agriculture students. I plan to visit your school May 2019 for the same. This research is part of my post Graduate Science Degree Program in Agricultural Education at Egerton University, Njoro Campus. Any assistance will be highly appreciated.

Thank you in advance.

Yours faith fully,

ESTHER MUMBI NZOMO