

**DETERMINANTS OF QUALITY ASSESSMENT OF KENYA CERTIFICATE
OF SECONDARY EDUCATION AGRICULTURE PROJECTS IN SELECTED
SECONDARY SCHOOLS OF KAKAMEGA COUNTY, KENYA**

JOHN WESONGA MANYALI

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

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DECLARATION AND RECOMMENDATION

Declaration

I hereby declare that this research is my original work and has not been presented for the award of a degree or diploma in this or any other university and where other peoples work are cited they are referenced.

Signature.....

Date.....

Wesonga, J. Manyali

Reg. No. EM11 / 1854 / 07

Recommendation

This thesis has been submitted with our approval as the university supervisors:

Signature.....

Date

Dr. James Obara

**Department of Agricultural Education and Extension,
Egerton University**

Signature.....

Date

Prof. Joash Kibet

University of Kabianga

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DEDICATION

This thesis is fondly dedicated to: My beloved wife Margaret Wambui and my children Nafula, Namusia, Wachu, Sisa, Nawire, Waithira and Amos for their love, care and understanding during the entire course work and research period.

ABSTRACT

The assessment of the K.C.S.E agriculture project work has been plagued by disparities between the school and the external based assessments; with the inception of the 8-4-4 education system in Kenya the problem has become worse. The purpose of this study was to investigate the Determinants of Quality Assessment of Kenya Certificate of Secondary Education Agriculture Projects in selected secondary schools of Kakamega County from 1999 to 2003. The study endeavored to achieve the following objectives: determine the effect of teacher factors, student factors, school administration and management and KNEC marking guidelines and reports on quality assessment of K.C.S.E agriculture projects. The target population of the study consisted of 310 teachers of agriculture from 292 public and 14 private secondary schools. Simple random sampling was used to select 109 teachers of agriculture. Structured questionnaires were used to collect data. Conceptual framework and Achievement-Based Motivational Theory guided the study. Reliability coefficient value of 0.75 was obtained. The data was analyzed using descriptive, regression and inferential statistics using a Statistical Package for the Social Sciences. Results revealed that teacher factors, student factors, the level of administration and management commitment and KNEC guidelines positively and significantly affected the quality assessment of agriculture projects in secondary schools in Kakamega County. Therefore, the following were the conclusions of the study: increase in the teacher qualification by in service and further education, years of experience in teaching and integrity can have a positive and significant effect on the quality assessment of agriculture projects. When the student's interest, commitment, creativity, attendance and involvement in preparation of the project increases, then quality assessment of agriculture projects will be enhanced. For quality assessment of agriculture projects to be improved in secondary schools, the school administration and management ought to provide adequate land, equipment, security, support and understand the agriculture project curriculum, and project requirements. The following can improve quality assessment of K.C.S.E agriculture projects: KNEC project guidelines should be sent on time, should be easy to understand, students should be treated fairly and there is need to have adequate feedback. The study recommends that quality assessment of agriculture projects can be enhanced through the following: use of qualified and experienced teachers with high integrity, vetting of students, timely provision of project input and resources and timely provision of projects guidelines by KNEC. The finding of the study are significant in that agriculture is an important income earner in Kenya and therefore training and quality assessment of K.C.S.E agriculture subject is important in preparing the future managers of the economy.

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|---|
| ASK | Agriculture Society of Kenya |
| BEd | Bachelors of Education |
| BOG | Board of Governors |
| DEO | District Education Officer |
| GK | Government of Kenya |
| KCPE | Kenya Certificate of Primary Education |
| K.C.S.E | Kenya Certificate of Secondary Education |
| KNEC | Kenya National Examination Council |
| NACOSTI | National Council of Science Technology and Innovation |
| O- Level | Ordinary Level |
| SBA | School Based Assessment |
| SWOT | strength, weakness, Opportunities and Threats |
| TSC | Teachers Service Commission |
| TTC | Teacher Training College |
| USAID | United States Agency for International Development |

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Global studies show that Educational Assessment in form of tests and examinations has existed since time immemorial and, in the course of human events; no society has been able to do without some form of test or examination. Examinations are part of human culture and the advancement of this culture requires the exploitation of examinations to assess the effect of teaching and learning, and to distinguish and select talented people (Zhang, 1996). Worldwide, educational assessment in form of tests and examinations remain the main factor of access into the institutions of higher learning.

The government of Kenya (GOK) has set up several Commissions and Committees dealing with education since independence to look into ways and means of enhancing the quality of education (Eshiwani, 1993). The Kenya Educational Committee (GOK, 1964) suggested the introduction of practical assessment in order to promote the affective and psychomotor domain of the student's behaviour in learning. According to the report the National Committee on Educational Objectives and Policies, (GOK, 1976), assessment of the students practical work should be geared to improving the quality and standard of education in Kenya.

The Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond (GOK, 1988), postulates that quality education go hand in hand with quality assessment especially in practical projects in secondary school. The Ministry of Education (MOE, 2008), contends that agricultural projects call for quality assessment in order to boost the morale of the student and thus raise the quality and standard of education.

In 1985, the 8-4-4 structural and curriculum reforms articulated major reforms in the exam assessment policy based on the reports made by these committees and commissions. The reforms introduced school-based assessments in the final exams at the secondary school level, these assessments included: course-work, practical- tests, project-work, fieldwork, oral and aural tests. The Kenya National Examinations Council (KNEC) currently uses school-based assessment for subjects which have a project or end of course practical component supervised and marked by the subject teacher. Practical lessons and tests were also introduced in agriculture as a subject in the secondary school curriculum. A practical and a section

involving actual production of an agricultural product usually referred to, as the agriculture project work has been included. At the end of the four-year agriculture education course, students are expected to have attained knowledge and skills in actual production of an agricultural product and are assessed by the Kenya National Examinations Council (K.N.E.C) to ascertain if the learning process has actually taken place. The requirement of Kenya Certificate of Secondary Education (K.C.S.E) Agriculture assessment syllabus is that students should be assessed by the teacher on some practical (project work) in at least one enterprise continuously. Enterprises to be chosen from are piggery, field crops, vegetable production, broiler production and layer production (Mucheru and Wasanga, 2000).

The selection of the enterprises to be undertaken by the students is open to the school administration to select those that conform to the availability of resources and are compatible with the local environment. This also enables a wide range of educational objectives to be assessed. The students taking agriculture are required to practically carry out a project and compile a report based on their findings. During project assessment, marks are awarded to the students for tasks such as seed-bed preparation, transplanting of seedlings, care of crops (such as weeding, pruning, and disease control), harvesting, storage and report writing (KNEC, 2000-2001). Project work scores constitute 20% of the student's final grade in agriculture subject. The subject teacher is required to mark the work of the candidate as he/she progresses using a marking guide supplied by Kenya National Examination Council (KNEC). The Kenya National Examination Council also appoints, trains and commissions external assessors, who together with teachers of Agriculture share the duties of project assessment and moderation of schools. This includes the National coordinators, District coordinators and council assessors.

The inclusion of project work scores in awarding grades to students has created the need to critically examine the factors that enhance and ensure quality and uniformity in the assessment of agriculture projects. The challenge arises from the increased number of schools, learners, and limited resources. Project assessment is meant to cater for inadequacies of assessing affective and psychomotor domains, which are very subjective in measurement. In subjects where such school-based assessment does not exist, an examination culture pervades the entire syllabus. Consequently, teachers may not realize the value of such a school based assessment particularly if it is not seen as linked to improved performance in

public examinations. There is therefore, need for research on the factors determining quality of project work assessment and carefully monitor the gains made so as to ensure it is an authentic assessment (Ingolo and Wasanga, 2001).

1.2 Statement of the Problem

Due to the importance of KCSE Agriculture project mark to students' final grade in KCSE examination, quality and credible assessment of student Agriculture project work in secondary school is essential. There have been discrepancies in the assessment of KCSE Agriculture projects over years (1999-2003), as it has been cited by Prof. B.M Dlamini, Dr. B.E. Putsao and Dr. E.Z. Masumbuko, (2007). Some of the scores awarded, by teachers of Agriculture in the school assessment do not correlate well with the scores awarded by external assessors, leading to a significant influence to the performance of students KCSE Agriculture. Unfortunately, it is not clearly understood what determinants are the cause of the discrepancies or difference in the scores awarded. In order to empirically validate the school based KCSE Agriculture project assessment in Kakamega County, it is important to understand the factors that determine quality assessment of KCSE Agriculture projects in secondary schools. This study therefore sought to find out/investigate the determinants quality assessment of KCSE Agriculture projects in Kakamega County.

1.3 General Objective of the Study

The purpose of this study was to investigate determinants of quality assessment of Kenya certificate of secondary education agriculture projects in selected secondary schools of Kakamega County, Kenya.

1.4 Specific Objectives of the Study

The specific objectives of the study were to:

- (i) Determine the influence of the teacher factors on the quality of assessment in K.C.S.E agriculture project work based on the qualification of teachers, teaching experience and integrity of the teachers in Kakamega county
- (ii) Determine the influence of student factors on the quality assessments of K.C.S.E agriculture project based on the interests of students and preparedness in Kakamega county
- (iii) Determine the influence of school administration and management on the quality assessment of the K.C.S.E agricultures project based on; provision of material and

equipment, provision of security for projects and provision of learning resource in Kakamega county

- (iv) Determine the influence of K.N.E.C guidelines and reports on the quality assessment of K.C.S.E agriculture project work based on KNEC marking scheme in Kakamega county

1.5 Hypotheses of the Study

The following hypotheses were tested at 0.05 alpha levels:

- H₀₁** There is no statistically significant influence of teacher factors based on qualification of teachers, experience of teachers and integrity on quality assessment K.C.S.E agriculture project work.
- H₀₂** There is no statistically significant influence of student factors based on students' interest and preparedness on quality assessment of K.C.S.E Agriculture project work.
- H₀₃** There is no statistically significant influence of school administration and managements based on provision of material, provision of security for projects and provision of learning resources on quality assessment of K.C.S.E agriculture project work.
- H₀₄** There is no statistically significant influence of KNEC guidelines based on the KNEC marking scheme on quality Assessment of K.C.S.E agriculture project work.

1.6 Significance of the Study

The study identified pertinent factors, which determine the quality assessment of K.C.S.E Agriculture project work, which could be useful to the policy makers in the Ministry of Education to implement in order to attain the desired standards in the Agriculture subject at the K.C.S.E level. The finding of this study could be useful in providing the policy implementers, which include KNEC examiners, head teachers, teachers and any other stakeholders with information that could enable them to seal loopholes and weakness in the assessment of K.C.S.E Agriculture projects. The recommendations of this study could provide corrective measures in examinations. The results might assist the K.N.E.C to have uniform, quality and fair assessment of K.C.S.E Agriculture project as well as to produce

quality graduates. Scholars interested in carrying out further research in this area will also benefit from this study.

1.7 Scope of the Study

The study focused on the factors that determine the quality assessment of K.C.S.E Agriculture project of selected secondary schools in Kakamega County from 1999 to 2003. The study was based on the understanding that teacher's views were the most convenient option to tackle the issue of quality assessment in the agriculture project work. The findings of the study can be generalized to all the secondary schools in Kakamega County.

1.8 Assumptions of the Study

This study was conducted under the following assumptions:

- (i) All teachers of agriculture with different qualifications and levels of experience were aware of their teaching roles, use of schemes of work, lesson plans, lesson notes in teaching and assessment of agriculture project work.
- (ii) The interviewed Teachers had positive attitudes towards the teaching of agriculture and the assessment of Agriculture project work
- (iii) There were enough instructional materials that were utilized fully in the teaching of Agriculture by teachers of different qualifications and levels of experience.
- (iv) Respondents gave positive and honest responses.

1.9 Limitations of the Study

The following were the limitations of the study:

- (i) Some of the secondary schools were not easily accessible due to poor road networks, especially when it rained. The problem was overcome by use of the motorcycles as a means of transport in the area.
- (ii) Financial constraints; the researcher used a small sample due limited finances to produce many research materials.
- (iii) Time constraints also forced the researcher to use a small sample, which could be managed within a short time.

1.10 Definition of Terms

For the purpose of this study, the following were the operational definition of the key terms:

Assessment – Is the process developed and used primarily to ascertain how much a student has learnt in Agriculture project. In this study it will mean quality /validity of KCSE Agriculture project mark a student gets at the end of Agriculture project process

External assessor – Is an examiner assigned by KNEC to mark the students' Agriculture project work, not the teacher of Agriculture of the school.

KNEC Guidelines and Reports – These are official documents/instructions which advice both teachers of Agriculture and external assessors on how to assess Agriculture project in secondary schools, e.g. marking scheme of KCSE Agriculture project.

Project work – It is hands on method of instruction in which the learner engages in a given activity or task in an area of his/her interest, for instance, crop production project, on the school farm, or rabbit keeping/poultry by students

Psychomotor domain – Physical skills acquired during learning process through carrying out tasks in KCSE Agriculture project like weeding, pruning, land preparing, disease and pest control

Qualification – Is a level of knowledge one attains after sitting for an examination. It can be an examiner of KCSE Agriculture project who holds a Degree, Diploma and Certificate.

Quality Assessment – Is the standard/ thorough marking of KCSE Agriculture project exam following KNEC guidelines

School Administration and Management – These are factors associated with managing the school and provision of materials, equipment, security for KCSE Agriculture project exam

Student Factors – Is the interest and preparedness of a student as per KCSE Agriculture project exam

Teacher Factors – These are attributes possessed by the teacher of Agriculture such as qualifications and experience in assessing KCSE Agriculture project

Untrained – Is the lack of prerequisite knowledge and skills in assessing KCSE Agriculture project

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The study investigated the factors determining quality assessment of K.C.S.E agriculture projects in Secondary schools in Kakamega County. This chapter therefore, presents a summary of an overview of K.C.S.E agriculture projects in secondary schools, the teacher factors, student factors, school administration and management, and KNEC guidelines influence on the quality assessment of K.C.S.E agriculture project work. The chapter also highlights theoretical and conceptual frameworks.

2.2 An Overview of K.C.S.E Agriculture Project Assessment

In Kenya, agriculture was made a compulsory subject in secondary school in 1985 following the recommendations of the Mackey Commission that aimed at making learners self-reliant (Kibett, 2002). Agriculture attempts to inculcate values, attitudes, knowledge as well as practical skills to secondary school students with a hope that the subject will enable the youth to get exposed to the basic principles and practices of agriculture (KIE, 1985). This also enables majority of the future farming population to participate effectively in national development (KIE, 1985).

Teaching of agriculture in secondary schools attempts to put emphasis on the use of projects since they provide a link between theoretical knowledge learned in class and real-life agricultural experiences. GOK (1984) holds the view that there is need to harness quality assessment in K.C.S.E agriculture projects to encourage agriculture students, teachers and other stakeholders. Factors determining the quality assessment of the agriculture projects need to be identified and developed for better correlation of assessor's scores and theoretical scores in the final examination (Lewine & Dunne, 2000). In addition, Lewin & Dunne (2000) argue that the capacity of the African examination/assessment systems need to change and embrace new curricular innovations is inevitable. Concepts like objectivity, reliability, validity and discrimination dominate the approach to construction of quality assessment are designed to promote higher order cognitive skills and attention.

This need can be partly attributed to the absence of radical reforms in assessment in Kenyan education system as compared to the colonial metropolis from which the former tend to copy

their systems, as well as the lack of professionalism in quality assessments within the educator core (Lewin & Dunne, 2000; Sebatane, 2000). There is therefore a significant lag in quality assessment development between the African systems and that of their former masters.

It is often argued that the antecedent conditions and functional needs that have shaped the evolution of assessment practice in countries like England do not exist in many African education systems (Lewin & Dunne, 2000). In countries like England, America and Australia, it is said that the citizenry, professions, examinations bodies and political systems have a keen and active interest in the quality assessment systems and processes. In many Anglophone countries, the interest has a narrow base, which is often defined by the elite higher education institutions.

School based assessments in Kenya were introduced in the Kenya System of education by the Mackay Report of 1981, but it was not effected until 1988 when the Ministry of Education issued a policy through sessional paper number 10 of 1988 directing that continuous assessment scores should be incorporated into the formal examination scores at all level of education in determining the final score of every student. The policy implication was that every teacher from Primary school to University was to undertake and practice this assessment procedure. As a result, major Education assessment policy reforms in Kenya commenced and were articulated as part of the 8-4-4 structural and curriculum reforms. The new approach inevitably necessitated a change in the assessment procedures to incorporate assessment of practical subjects and projects at the end of every cycle. Since practical skills cannot reliably be measured by the use of paper and pencil test only, the Mackay report recommended the use of school based assessment/continuous assessment at each cycle. School based assessment was used to refer to learning assessment, which is conducted by teachers such as the Agriculture project work assessment.

2.3 Teacher Factors Determining Quality Assessment of Agriculture Projects

The teachers handling agriculture subject play a pivotal role in ensuring the success in the implementation of the KNEC agriculture projects as the learners depend on the instructions given by their teachers (KIE, 1985). Three distinct teacher factors that determine the quality

assessment of K.C.S.E agriculture projects were outlined by Kibett (2002) as teacher: qualification, experience and integrity.

2.3.1 Teachers Qualification in K.C.S.E Agriculture Project Assessment

Teachers dealing with Agriculture project Assessment are required to be degree, diploma or certificate holders in the area of their specialization. According to (KNEC 2005) report, schools tend to hire less qualified teachers due to shortage of enough personnel in the country. The report stresses further, that “it may affect the assessment procedures of agriculture project leading to false results. Semi-qualified teachers may be inconsistent in their course work, do much for the student or to inflate the agriculture project scores”.

In times of uncertainties, the unqualified teachers may delay in decision making for crisis intervention, such as an outbreak of a diseases, this trend has persistently affected the quality of assessment, and undermined the validity of the project work (MOE, 1988). The KNEC (2007) emphasized on the employment of qualified agricultural teachers in order to uphold the K.C.S.E quality assessment in agriculture projects. Teachers dealing with Agriculture project assessment have to be organized so that if one leaves an institution all the records are left intact for the next person to carry on without inconveniencing the candidate and avoid submitting incomplete scores. The teachers have also to be people of integrity who do not “give fake” marks. There are reports of missing project marks during processing of results. Some teachers fail to visit schools to assess the agriculture project as expected by the KNEC (KNEC, 2005). The unqualified personnel may also not possess the necessary competence and skills in developing the instruments for evaluating the behavioral outcomes of the three domains.

The untrained teachers have been found to: (i) fail to provide challenging work to students, causing the students not to explore the available opportunities to reach their full potential, (ii) award marks that are inconsistent with the quality of the project work, or (iii) do the work for the students. Teachers inflate Agriculture project marks in order to enhance their candidate’s chances of passing. This practice greatly undermines the validity and reliability of Agriculture project work (KNEC, 2001).

Large classes affect not only the teaching but also the assessment even when the teacher is competent. The teacher is also faced with the problem of the amount of content to be

assessed, should it be one unit of the subject syllabus or should it cover larger contents of earlier and related materials taught at the form four levels only? Another challenge is the non-submission of assignments on project work by students who drop out of school, For example, a girl child who becomes pregnant in the early months of the year. This may constitute an issue as which will lead to a zero mark which does not reflect the actual ability of the student.

The qualification of the teacher is an important factor in agricultural projects undertaken by the secondary school students, and that employing untrained teachers or those not properly qualified as agricultural teachers to a large extent may compromise the quality of the students' projects. However, the literature available failed to provide a clear link to show how having untrained/unqualified may compromise or influence the quality assessments done on the projects presented by the students. There exist a gap that is not clear about how having untrained teachers in a particular school affects the assessment, because any assessment has a criteria set out on how it should be done. This gap therefore underpins this study to determine link between quality of agriculture teacher and quality of the assessment.

2.3.2 Teachers Experience in K.C.S.E Agriculture Project Assessment

Teachers in agricultural institutions are vital in designing new inventions, implementing projects and in the evaluation of the projects (Neil, 2003). KIE (1985) articulates that for the successful curriculum development, the formulation of projects, quality assessment, and the need to hire experienced teachers cannot be undermined. The KNEC (2008) contends that the experienced teacher may perform better in project work. The long serving teachers find it easy to interpret the KNEC guidelines and pass these on to the students at initial stages of the project work perfectly.

The experience of the agricultural teacher is again highlighted in the sense that it assists the students in preparation of the projects, choosing of the projects, and interpreting of guidelines on carrying out the projects and what is expected of the students. Experience of the agricultural teachers based on the material available for this study does not clearly indicate or hint on how it affects the quality of the assessment done for the students. This gap is hence evidence and the study will therefore try to determine the extent in which teacher experience as a factor affect quality assessment of agricultural projects in secondary schools.

2.3.3 Teachers Integrity in K.C.S.E Agriculture Project Assessment

As noted by Kithuka (2001), professionalism and integrity are highly valued in the examination assessment. This ensures that the teachers assessing the exam is not biased in awarding KCSE Agriculture marks. Integrity is inherent character among teachers of agriculture which cannot be attained by training or forced on them. Teachers assessing KCSE Agriculture project should be firm and adhere to their professional code of ethics so that they are not influenced or swayed by the school management and any other external factors when assessing KCSE agriculture projects in secondary schools. As it was noted by KNEC reports (2001), some teachers assessing Agriculture projects in secondary schools award marks that are not in consistency with the quality of project work done by students and some give fake marks or inflate the marks. This undermines the credibility of the final grade that a student gets, because scores obtained from schools-based assessment are used by the examination council in national certification.

The literature available and presented for this factor again, demonstrates integrity guidelines on assessment done by both the school agriculture teacher and the external assessors sent by KNEC. None of these reports or literature highlighted above demonstrates through their findings how integrity or lack of it from either the internal assessors (agriculture teachers) or external examiners' affect the quality assessment. No material has demonstrated qualitatively or in quantifiable terms how teachers' integrity issues have been found to influence the quality assessment for agriculture projects. Therefore, this study aimed to fill this gap by assessing the influence teachers integrity has on quality assessment of agriculture projects.

2.3.4 External Assessor's Integrity in K.C.S.E Agriculture Project Assessment

The KNEC appoints and trains external examiner (assessors) to assess the K.C.S.E Agriculture projects at various stages of the project using the marking guidelines provided by the council (KNEC) (KNEC,2006). The role of the KNEC assessor is to sample 10% of the candidates work and use it to moderate the score awarded by the subject teacher. The 10% sample should be stratified based on candidates marks ranges, for instance, top, middle and bottom as given by the subject teacher. The assessor then adjusts the teacher's scores accordingly. An example is contained in table 1, "moderation of school based assessment scores by external assessor for one of the schools that took year 2000 K.C.S.E examination"

Table 1: Moderation of School Based Assessment Scores by External Assessor for One of the Schools, 2000 KCSE Examinations

| Candidates Index No. | Teacher's Marks (%) | External Assessor's Marks (%) | Deviations | Final Marks |
|-------------------------|------------------------|----------------------------------|------------|-------------|
| 003 | 94 | 97 | +2 | 99 |
| 010 | 88 | | | 93 |
| 013 | 88 | 94 | +6 | 93 |
| 016 | 88 | | | 94 |
| 018 | 87 | 90 | +3 | 92 |
| 020 | 86 | | | 91 |
| 021 | 87 | | | 92 |
| 027 | 88 | | | 93 |
| 031 | 85 | | | 91 |
| 032 | 87 | | | 92 |
| 034 | 86 | | | 91 |
| 036 | 88 | | | 93 |
| 043 | 75 | 93 | +18 | 80 |
| 053 | 88 | 84 | +6 | 93 |
| 063 | 89 | 97 | +8 | 94 |
| 065 | 87 | | | 92 |
| 066 | 88 | | | 93 |
| 073 | 88 | 85 | -3 | 93 |
| 076 | 90 | 93 | +3 | 95 |
| 078 | 90 | 87 | -3 | 95 |
| 079 | 78 | 89 | +12 | 83 |
| 081 | 85 | | | 90 |
| 082 | 87 | | | 92 |
| 083 | 89 | | | 94 |
| 084 | 89 | | | 94 |

Subject: Agriculture 443/3

Source: Kenya National Examination Council

Total deviation= +58-6= +52

Mean = $52/10 = 5.2 \approx 5$ (rounded)

In order to get the final mark for each candidate, the external (KNEC) assessor will have to add 5 marks to each of the candidate's mark previously given by the assessing subject teacher. The assessor has to prepare a detailed report on how he/she worked out the mark's adjustment for each centre, and enter the moderated and the candidates' scores into the manual mark sheets and write a report on the facilities at the centre (B.M Dlamini & B.E. Putsoa, 2007). However KNEC has received cases where external assessors have fake or inflated marks, delay the assessment, fail to sample candidates according to the given criteria, fail to visit the schools they are expected to assess as required, delay the submission of the marks and assessment reports, lose the mark sheet of candidates and assessment report. These incidences of lack of integrity affect the reliability of K.C.S.E Agriculture project scores obtained from external assessors.

2.4. Students' Factors Determining Quality Assessment of K.C.S.E Agriculture Projects

Ngaroga (2005) puts it right that quality assessment is determined by the students' attributes. The three main attributes of the students may vary from individual student and from time to time. The strategic plan for 2006-2011 (MOE, 2005), holds the view that quality education and corresponding assessment create great steps for realizing millennium Development Goals of Education for all. The sessional paper No. 1 of 2005 on "A Policy Framework for Education, Training and Research" further outlines students' factors as key in enhancing quality assessment in practical or project work.

2.4.1 Students' Interest in K.C.S.E Agriculture Projects

According to MOE (2005), students handling practical or project work should be assisted to create interest in the area of study. Torrance (1998), states that a professional agriculture teacher motivates students by carrying out individual SWOT analysis. This helps students to identify their own Strengths, weakness, opportunities and threats that enable learners to be more attentive, consultative and sacrifice more time for improving wanting areas. The agriculture project paper is supposed to test the candidate's practical skills in growing of a selected crop from land preparation to harvesting or rearing selected livestock to maturity.

According to the instructions given to schools, the candidates are expected to carry out the project work on their own, after the school providing the necessary inputs required. The project takes 8 months from February to September of a given year. The agricultural teacher is expected to objectively assess and evaluate the candidates' work at all stages. This paper aims at testing the practical skills that the candidate acquires during the four-year period in

secondary school. The Agriculture project contributes twenty marks to the final grade that a candidate gets (KNEC, 2009).

Students interest in agriculture projects is important because it helps them to carry out projects more competently and with a lot of vigor. The literature provided and reports analyzed so far merely talk about how agriculture teachers should assist or motivate the learners to have interest in agriculture as a subject and thereby increasing their interest agriculture projects. There is no mention from any report, which shows results that interest from students, or lack of it had impact on the assessment of agriculture projects; the reports largely point to a guess, which could be true or not true. It is therefore evident that students interest as a factor affecting assessment has gaps, which this study aims to evaluate; that student's interest or lack of it affect the quality assessment of agriculture projects.

2.4.2 Students' Preparedness for K.C.S.E Agriculture Projects

Mehrens (2002) suggests that quality assessment in any practical subject is highly determined by the student's preparedness. Projects allow students to make proper choices, decisions and work actively rather than respond passively. The assessment of implementation of any agriculture project focuses on student's preparation of plots, planting, weeding, pest and disease control and harvesting. In case of crops and livestock husbandry, practices like feeding, cleaning, parasite and disease control and weighing of the animals.

The preparation has a lot to do with how the students carry out their work; as pointed out by, Mehrens (2002); there is no mention on how preparation by the students may influence quality of the assessment. This study therefore tries to evaluate how students' preparation may determine the quality assessment done on students agricultural projects, which is clearly the gap in the study.

2.5 School Administration and Management in Quality Assessment of K.C.S.E Agriculture Projects

KIE (1985) articulates that school administration and management plays a key role in ensuring that the assessment of practical and project work of the learners is of high quality. The school needs to provide a piece of land and inputs which are necessary to carry out the

Agriculture project effectively. The school administration may delay the project by not providing the inputs such as hoes (*jembes*), fertilizers and planting materials on time.

The school is also required to keep all assessment cards, mark sheets and reports under lock and key. Schools attach a lot of significance to any assessment that contributes directly to the certification of their candidates'. Therefore, Agriculture project scores that are to be combined with external assessment scores are high stake scores. There have been times when head teachers of schools/institutions forced/ influenced the inflation of such scores. In the year 2000 K.C.S.E, a head teacher forced one of his teachers to give fake marks to one of the students who did not do Agriculture projects, the same year another head teacher employed a teacher to do for his daughter Agriculture project (KNEC 2001). Such incidences, which indicate lack of integrity on the side of school administration, affect the reliability of Agriculture project scores obtained from external assessor.

2.6 Summary of Literature Review

Quality assessment of agriculture projects for secondary schools is important in awarding form four candidate who take agriculture option practical marks which in turn affects such students' performance in K.C.S.E examinations. The literature materials and reports done in the past to a larger extent indicated how assessment of these projects should be carried out in schools and talked about the guidelines which are supposed to be followed to ensure that, the agriculture projects as conducted well.

The reports also highlighted the factors, which are necessary for agriculture projects to be carried out well in secondary schools. Almost all the findings in these reports and literature materials indicated these factors like: students' interest, students' preparedness, school administration & management, teachers' integrity, teachers' experience and teachers' qualification. These factors are presented in the literature used for this study as core to any meaningful agriculture project work undertaken by the students in secondary schools. However, a gap exist in that none of the findings from these reports did produce clear qualitative or quantifiable measurements, or scientific evidence that the factors are directly related and affect the quality assessment of agriculture projects in secondary schools and as such make up the determinants of quality assessment of agriculture projects. This study therefore aimed to fill this gap by scientifically evaluating these factors to see if they make

the determinants of quality assessment of Kenya Certificate of Secondary Education Agriculture Projects in secondary schools in Kakamega County, Kenya.

2.7 Theoretical Framework : Achievement–Based Motivational Theory

This study will be guided by Achievement-Based Motivational Theory. This theory was developed by Mc Clelland in 1958. Mc Clelland Theory states that human beings are born with the need to achieve (or an-Ach Theory). Kabiru and Njenga (2008) hold the view that achieving–based motivational theory aims at improving assessment methods, advocating for competency-based assessment and tests. This theory seeks for achievement, attainment of realistic but challenging goals and advancement. There is a strong need for feedback of achievement and progress that may satisfy the need for a sense of accomplishment.

Rudman (2000) defines motivation as the psychological process that arouses, directs and maintain behaviour towards set goals. This process arouses movement in human beings as well as cultivating and sustaining interest in a given activity in order to achieve set goals. Such goals could be in most cases the attainment of better grades to enable one to join a renowned University. In this study, quality assessment in agriculture project work can be realized where all stakeholders are motivated towards achieving better grades in school based assessment and final examinations.

The teacher plays a noble role of ranking and maintaining interest in students with the desire to venture in to agriculture practical work. Teachers help to build self-confidence and high self-esteem among agriculture students as they deal with each task in the project work. Focusing on the theory, the qualified and experienced teachers and other educational assessors become enthusiastic and more interested in their work, when they award genuine marks that are reflected in K.C.S.E results thereafter (KNEC, 2008). Those involved in ensuring better performance in schools, take the lead in encouraging students in agriculture projects to be more critical, creative, hardworking, develop problem solving skills and excellence to enhance better assessment results (Kabiru and Njenga, 2008).

Also in school situation the use of authentic assessment is essential to go beyond the traditional testing of mainly content knowledge, to the application of knowledge and understanding in real world situations. In other words, new assessment methods must be applied to assess high order skills outside classroom situations, which allow for more

authentic assessments. Thus, (Tunstall and Gins, 1996) look at the learning process and mode of assessment as the major variables that determine student achievement or 'output'.

Diez, (2002) and Rennert-Ariev, (2005) have also added voice that assessment tasks designed for students should be more practical, realistic and, challenging; and that tasks so designed, allow students to showcase their knowledge through hands-on activities and usually take place in more formal setting when learners work in groups. In this way, learners interact with their environment as active agents who build or construct personal understanding of their experience. This is the true aspiration for the assessment of Agriculture as a subject in Kenyan secondary schools syllabus (Rudman, 2000).

However, even though tasks may be done in groups, there is need to assess individual effort rather than giving a group mark (Gardner, 2004). This caters for differences among students in their intellectual strengths and weaknesses and in their styles of attack to learning pursuits, rather than the single dimension referred to as intellect. This is what the agriculture project work assessment endeavors to achieve.

Raivoce and Pongi (2000) have also added that the format of assessment, which encompasses the use of psychomotor, affective and cognitive skills of students, gives useful feedback about the student's progress and knowledge of the necessary steps to take. Hence, an attempt to incorporate teachers classroom assessment (such as project work) into summative assessment is considered to have more merits (Raivoce and Pongi, 2000.) Among other things, continuous assessment such as those used in project work assessment can focus on those outcomes that are not easily assessed through paper- and-pencil (Mehrens, 2002; Torrance, 1995). This was strongly supported by Black (1993) that, for formative performance assessment to be what it must be, it should be developed in tandem with, and linked to summative performance assessment.

This study finds value in McMillan, (2000) propositions on assessment thus, assessment of agriculture should be a comprehensive, multifaceted analysis of performance in all domains; and that assessment is a major factor influencing not only the learning process, but also the achievement/attainment of intended educational goals. This is where agriculture project work assessment fits into the relationship. There is need for a careful examination of all the

interacting factors and inter-relationships between educational inputs, assessment and expected educational outputs to achieve the intended goals of education in Kenya.

Raivoce and Pongi (2000) also made an interesting observation; that people often question the reliability and validity of any assessment, particularly one done by the classroom teacher, which does not involve the external examination, because they still equate assessment to external examinations. However, they add that many people were now getting enlightened that formative assessment is the best way to assess.

Figure 1 below summarizes this interrelationship.

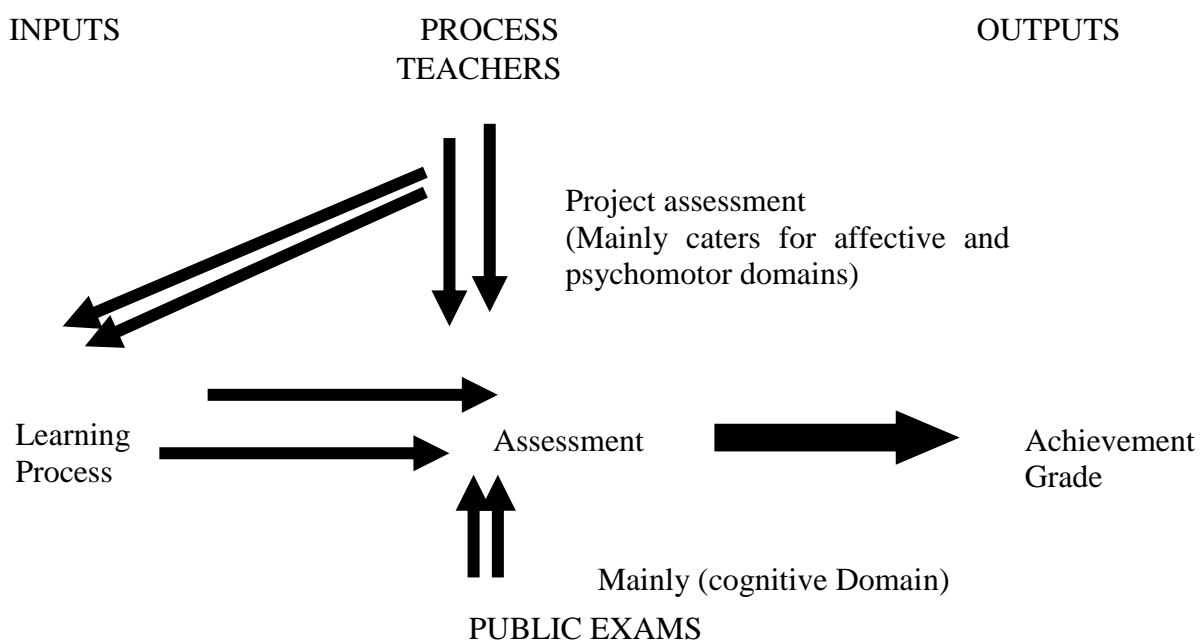


Figure 2.1: Proposition on quality assessment of K.C.S.E Agriculture project exams to complement learning process.

(Source: - Mc Millan, 2000).

The Figure 1 summarizes the interrelationship of the interacting factors in the learning process and can be explained as follows: Inputs include the learners and learning resources like textbooks, farm implements, field trips, ASK shows and among others, the teacher contributes to the learning process by imparting knowledge and skills in Agriculture. Assessment – which should assess all the three domains thus cognitive, affective and psychomotor? The teacher contributes to summative assessment while assessing project work. Public exams mainly assess the cognitive domain. Outputs — are the agriculture

students who have qualified in all the three domains adequately. This may be simply measured by the grade one attains (achieves).

A major criticism to the McClelland, propositions is that they are silent on what mark the practical/project work should contribute to the final grade or achievement of a learner; in any case, practical/project work cater for two domains as opposed to public examinations which caters for only one domain and should therefore get more marks; they also do not explain how affective and Psychomotor domains should be assessed.

2.8 Conceptual Framework

The conceptual framework gives an outline that was used to study or identify the factors determining quality assessment of K.C.S.E Agriculture project in secondary schools in Kakamega County. The dependent variable in this study was quality of assessment of K.C.S.E agriculture project in Kakamega County. This was measured in terms of very good, good, fair and poor. This was captured by interviewing and administering questionnaires to selected teachers of Agriculture, students and other administrators/education officers on their knowledge on quality assessment of K.C.S.E agriculture project in their current assessment. This revealed their perceptions and factors determining quality assessment of K.C.S.E agriculture project. Various independent variables were studied to reveal pertinent factor that determine quality of assessment of K.C.S.E agriculture project. These were assessors experience and qualifications, such as education levels, training and the period they have participated in assessing K.C.S.E agriculture project; the school head teacher's (administration's) role in the handling of the agriculture project such as supervision, packing, transporting and administering the K.C.S.E agriculture project. Challenges and constraints assessors face such as transport and recording of marks/keeping records. The variables such as the type of schools thus boarding, day, county and sub county schools, number of students assessed and perception of the assessor were the moderating variables, which could affect or influence relationship between independent variables and the dependent variable.

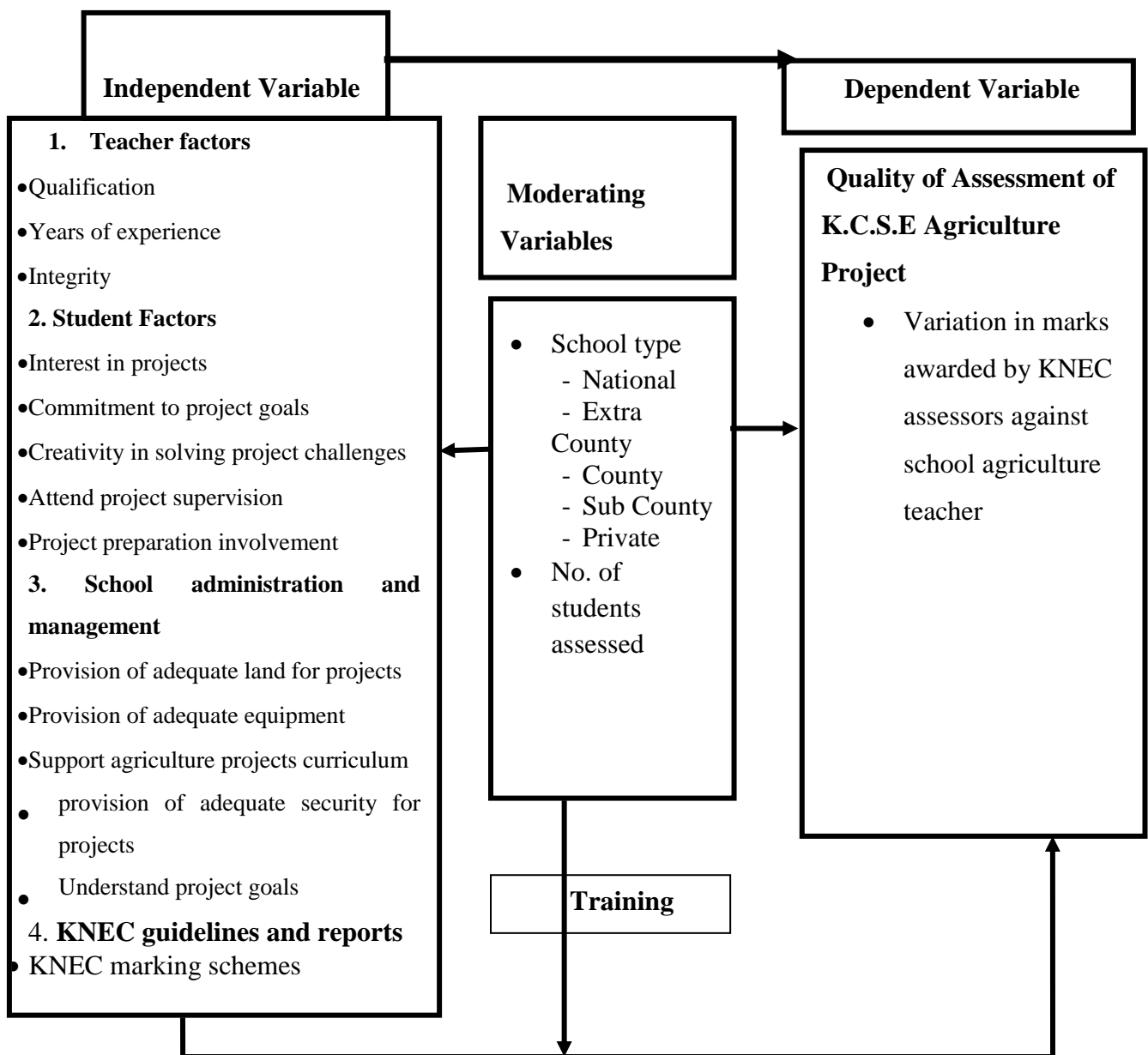


Figure 2.2 *Interplay of the Factors influencing Quality Assessment of Kenya Certificate of Secondary Education Project in Secondary Schools*

Source : Self Concept

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology used in this study. These have been arranged as descriptions of the research design, study location, the study population and sampling techniques. The final part of this chapter describes instrumentation, data collection techniques and data analysis.

3.2 Research Design

This study adopted *ex post facto* cross-sectional survey design. The research design was selected because the study did not manipulate the independent variables. The study involved exploration and description of an already happened phenomenon. The design is also appropriate for this study since it is easier to comprehend. Surveys are important in research and have been found to be useful in describing the characteristics of a population under study using a large sample size (Fraenkel and Wallen, 2000). The design also used appropriate corrective techniques such as call backs on absentee respondents and random replacement where necessary. Cohen and Manion (1980) contend that the intention of a survey research is to gather data at a particular point and use it to describe the nature of the existing conditions. Kerlinger (1978) advances the idea that surveys are useful for educational fact-finding and provide a great deal of information that is accurate. Kerlinger further observes that through descriptive surveys, views, opinions, attitudes, and suggestions for improvement of educational practice have been collected.

3.3 Location of The Study

This study was carried out in Kakamega County. Kakamega County is a County in the former Western Province of Kenya. It has a total population of 1,660,651; 398,709 households and covers an area of 3,244.9 km². The Population density is 515 per km² and unfortunately 57% of the population lives below the poverty line. Some of the strengths of Kakamega County include: natural resources as gold, arable land, and forests; tourist attractions as Kakamega forest, caves, crying stone of Ilesi; main economic activities include large-scale sugarcane farming, mixed farming, commercial businesses and 'Boda-Boda' transport business (see Appendix B) (Republic of Kenya, 2003). The study was carried in some of the selected schools in Kakamega County because there have been discrepancies in the assessment of the

agriculture projects over years (from 1999 to 2003). Over this period, some of the scores awarded in the school assessment do not correlate well with the score awarded by the external examiner

3.4 Target Population

This research surveyed teachers of Agriculture of Kakamega County. The target population of the study comprised of 310 teachers of Agriculture, teaching form four class Agriculture in secondary schools in Kakamega County. The county has 389 public secondary schools and 22 private secondary schools (staffing statistics from County education office, Kakamega 2015). The total number of secondary schools in the county was 408. Kakamega County was therefore appropriate for the study because it met the critical mass requirement for the study in terms of number of teachers of Agriculture and schools. The required critical mass for this study was 292 public and fourteen private secondary schools, totaling to 306, sampled from 408 secondary schools, which offered Agriculture as a subject. The scope, resources and time available was also taken into account before settling on the sample of 306 of secondary schools for the study.

3.5 Sampling Procedure and Sample Size

Simple random sampling was used to determine the sample size of teachers of agriculture. The process involved random selection of 109 teachers of agriculture using simple random sampling from 310 teachers of agriculture in the 306 secondary schools. From the list of schools obtained from the CDE Kakamega County, each school was assigned a number. The numbers were then randomly selected. Nassiuma (2000) asserts that in most surveys or experiments, a coefficient of variation in the range of 21% to 30% and a standard error in the range 2% to 5% is usually acceptable. The Nassiuma's formula does not assume any probability distribution and is a stable measure of variability. Therefore, a coefficient variation of 27% and a standard error of 2% were used in this study. The lower limit for coefficient of variation and standard error were selected to ensure low variability in the sample and minimize the degree or error.

$$S = \frac{N(Cv)^2}{(Cv)^2 + (N - 1)e^2}$$

Where S = the sample size

N = target population size

C.V= the Coefficient of Variation

e = standard error

Therefore, the sample size of schools was:

$$S = \frac{310 (0.27^2)}{0.27^2 + (309-1)0.02^2}$$

3.6. Instrumentation

The study used questionnaires to collect data from the respondents. The structured (closed-ended) and unstructured (open-ended) were used to get uniform responses from the respondents. The closed-ended questions provide a greater uniformity and would be more easily processed (China & Otieng'i, 2007). The structure questions were accompanied by a list of all possible alternatives from which respondents selected the suitable answer that describes their situation, by simply ticking (Mugenda & Mugenda, 2003). The advantage of using this type of instrument is the ease that it accords the researcher during analysis. Moreover, questionnaires are easy to administer and economical to use in terms of time and money. There were four sets of questionnaires' for teachers of Agriculture, school administration, form four students of Agriculture and KNEC guidelines based on the objects of the study outlined in chapter one (appendix A).

3.6.1 Validity of Instruments

Content validity refers to the degree to which the content of the items reflect the content domain of interest (Miller, 2003). Validity refers to the degree to which evidence and theory support the interpretation of test scores entailed by proposed uses of tests (AERA/ APA/NCME, 2000). Pest & Han (2005) suggest that the validity of the instrument is asking the right question, framed from the least ambiguous way, and based on study objectives. The instrument was amended according to the experts' comments and recommendations before administration. For the validation of the instruments, the researcher consulted experts and supervisors in the department of Agricultural education and extension at Egerton University, who assessed the validity of the instruments. Validation was also done through the departmental seminar presentation and proposal presentation to the faculty examiners, and their valuable comments were incorporated accordingly. The aim was to determine whether the items were adequate in content and logically arranged.

3.6.2 Reliability

According to Mugenda and Mugenda (2003), reliability of an instrument is a measure of the extent to which a research instrument yields consistent results or data after repeated trials in the study. In research context, it means that the instrument is dependable, stable, consistent, predictable and accurate. To establish the reliability of the questionnaire items, the draft questionnaires were piloted using 20 teachers who were identified through the CDE's office records and the selected teachers were not used in the final analysis. The consistency of the questionnaire was established through test re-test method where research tools were administered twice to the 20 teachers under identical conditions. The responses were then recorded and scored. Cronbach Alpha Reliability coefficient value was computed to determine how items correlate among themselves. The threshold value acceptable in this study was 0.7 and higher (Fraenkel and Wallen, 2000; Mugenda and Mugenda, 2003). A Cronbach's alpha of 0.75 was obtained. Based on the results of piloting process, the instruments were retained or duly modified to meet performance standards before being used for data collection.

3.7 Data Collection Procedure

The researcher first obtained authority to conduct research through the Graduate School of Egerton University and then proceeded to the National Council of Science Technology and Innovation (NACOSTI) to obtain a research permit to carry out the study in the field. The researcher approached the DEO and County Education Officers to be given a letter of authority to gain access to the teachers within the county and ensure that cooperation with the schools was not deterred by the procedure. The researcher then approached school administrators to gain permission for the teachers in the sampled schools to participate in the study. Finally, the researcher approached the teachers personally explaining the objectives of the study and requesting them to fill out the questionnaires. The names of the respondents were not required or recorded by the research team. The researcher also assured the respondents that they would maintain confidentiality of the data gathered. Respondents were allowed to withdraw or skip questions they felt they could not answer.

3.8 Data Analysis

The data collected for this study was processed and analyzed using the Statistical Package for the Social Sciences (SPSS) software. The quantitative data collected on the nominal (categorical), ordinal and scale (ratio and interval) variables of this study were analyzed using

both the descriptive and inferential statistics. The statistical tests were conducted at ($p \leq 0.05$) level of significance. The descriptive statistics used in analyzing the data included: frequencies, proportions, percentages, means, mode, standard deviations and cross tabulations. The inferential statistics used Multiple linear regression to ascertain the associations of the study variables and to test null hypotheses at $p < 0.05$ (95% confidence interval level).

3.8.1 Summary of Data Analysis

The techniques used in data analysis for each of the study objectives are summarized in Table 2. The Table lists the procedures used in analyzing the data obtained for this study.

Table 2: Summary of Data Analysis and Statistical Tests

| Hypothesis | Independent variables | Dependent variables | Statistical tests |
|--|--|--|--|
| H ₀ 1: there is no statistically significant influence of teacher factors on quality assessment of K.C.S.E. Agriculture projects | Teacher factors Qualification Years of experience Integrity | Quality assessment of agriculture projects | Descriptive statistics, Regression analysis |
| H ₀ 2: There is no statistically significant influence of student factors on quality assessment of K.C.S.E Agriculture projects | Student factors interest preparedness | Quality assessment of agriculture project | Descriptive statistics, Regression analysis |
| H ₀ 3: There is no statistically significant influence of school administration and management on quality assessment of agriculture project | School administrators & management | Quality assessment of agriculture projects | Descriptive statistics, Regression analysis |
| H ₀ 4: There is no statistically significant influence of KNEC guidelines on quality assessment of K.C.S.E agriculture projects | KNEC guidelines | Quality assessment of agriculture projects | Descriptive statistics, Regression analysis |

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides the results of data analyses and discussion with reference to research objectives and hypotheses as stated in chapter one. Analysis established the determinants of quality assessment of K.C.S.E Agriculture projects of selected secondary schools in Kakamega County. The aspects analyzed and discussed include: effect of teacher factors, student factors, school administration and management and KNEC guidelines and reports on quality assessment of K.C.S.E Agriculture projects from the surveyed schools. Statistical tests were done using SPSS for windows 10.0 at $\alpha = 0.05$. Results of the study are presented in the following order with each section followed by a discussion:

- (i) Characteristics of the respondents
- (ii) Description of determinants of quality assessment of K.C.S.E Agriculture
- (iii) Tests of hypotheses of determinants of quality assessment of K.C.S.E Agriculture project

4.2 Characteristics of the Respondents

The section presents data related to the respondent's characteristics under the following sub-topics: gender of respondents, highest level of education obtained by the teachers of agriculture, and the teaching experience of the teachers of agriculture.

4.2.1 Gender of Respondents

The gender representation of the sample was determined by asking the teachers to state their gender. The frequency distribution for the variable gender is given in Table 3

Table 3: Gender of Respondents (tables are numbered on continuous numbers and not by chapters.

| Gender | Frequency | Percent |
|---------------|------------------|----------------|
| Male | 78 | 71.6 |
| Female | 31 | 28.4 |
| Total | 109 | 100.0 |

Table 3 indicates that the total number of male teachers of agriculture in the county is much higher than that of female teachers. The male were 71.6 % compared to the female teachers who were 28.4 %. The results are in agreement with the study by Roberts and Dyer (2004), while conducting a survey of teachers of agriculture, posited that a majority of teachers experienced and qualified to teach agriculture as a subject were male. They found that few female teachers were interested in pursuing and gaining the qualifications required teaching agriculture. This is in line with the collected data, where majority of the teachers of agriculture were male.

4.2.2 Educational Levels of Agricultural Teachers

The educational level was an important factor that affected the quality assessment of agricultural projects in the County. Data from the teachers regarding their training was analyzed and presented in Figure 4.1. The indicators used to measure professional training included: diploma, bachelor’s degree and Master’s degree training. The County had 109 teachers who were teaching and assessing K.C.S.E agricultural projects. The results are shown in Figure 4.1.

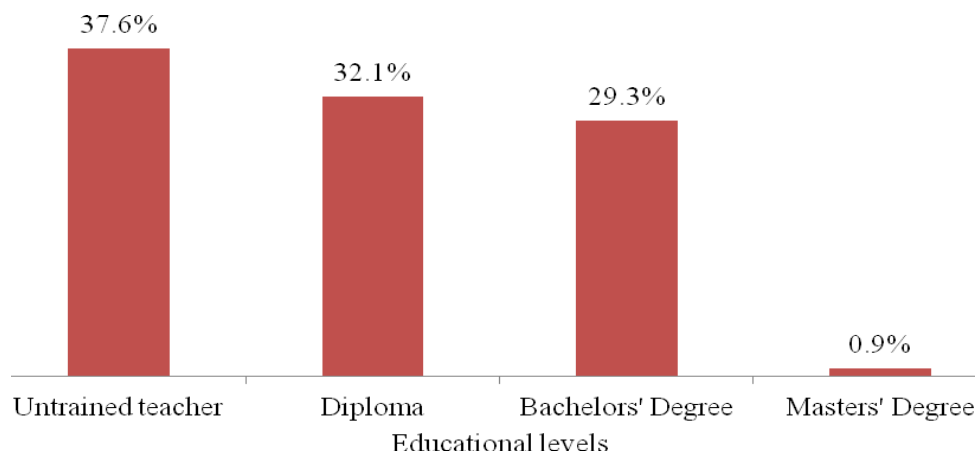


Figure 4.1: *Educational Levels of Agricultural Teachers*

The sample contained 109 teachers who were teaching and evaluating K.C.S.E agricultural projects. The professional agricultural teachers formed 62.3 % of the agricultural teachers, the remaining 37.6 % though teaching agriculture subject were not professionally trained in teaching the subject. The majority of the professional teachers of agriculture (32.1 %) were trained to the diploma level, while 29.3 % were trained to the bachelor’s degree level and 0.9

% to the master’s level. This was an indication that the majority of the respondents had attained minimum academic and professional qualifications required to teach agriculture in secondary schools in Kakamega County, with an exception of 37.6%. The results were consistent with what Krueger and Lindahl (2001) noted that there is significant scope for education to play a role in influencing the perceptions of people towards key aspects that surround them.

4.3 Influence of Teacher factors on Quality Assessment of K.C.S.E Agriculture Projects

This section is related to the study objective number one, which was to determine the influence of teacher factors on quality assessment of K.C.S.E agriculture project. Three indicators were used to assess aspects of teachers’ factors that would influence the assessment of agriculture projects, these were: qualification of the teachers, years of experience in teaching, and integrity.

4.3.1 Qualification of Teachers

Teacher qualification was measured in terms of: relevancy of materials prepared in the subject matter, their background training, disparity in marks awarded in projects and whether the teacher understood the entire project assessment process. Based on these measurable indicators, statements on qualification of teachers were generated. The respondents were asked to score on a five point likert scale (strongly agree, agree, neutral, disagree and strongly disagree). The results are given in Table 4

Table 4: Results on Teacher Qualification

| Indicator variables of Teacher qualifications | % of Teachers reporting | | | | |
|--|-------------------------|-------|---------|----------|----------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Prepare relevant subject matter | 16.5 | 17.4 | 28.4 | 25.7 | 11.9 |
| Examiners are professionals | 16.5 | 17.4 | 17.4 | 32.1 | 16.5 |
| Examiners are trained professionals | 18.3 | 21.1 | 30.3 | 21.1 | 9.2 |
| Disparity in marks awarded | 21.1 | 15.6 | 28.4 | 24.8 | 10.1 |
| Examination process understood | 14.7 | 20.2 | 26.6 | 17.4 | 21.1 |

n=109

The analysis of the indicator variables forming the teacher qualifications shows a variation in the rating of the indicator variables by the teachers. The majority of the respondents (39.4 %) were positive that the examiners were trained professionals. Comparing the responses for the

disparity of the marks awarded, the respondents who were positive formed 36.7 %, while the ones who had negative perceptions formed 34.9 %. 48.6% of the respondents felt that the examiners were not professionals. The majority of the teachers (38.5 %) felt that the teachers did not understand the examination process, while 34.9 % felt that they did understand the examination process. The majority of the teachers 37.6 % did not believe that the teachers prepared relevant subject matter.

4.3.2 Experience of Teachers of Agriculture in Project Assessment

Experience is strongly related to quality assessment of agricultural projects. The variable experience was operationalized as the number of years the teacher was involved in agricultural assessment at secondary school level.

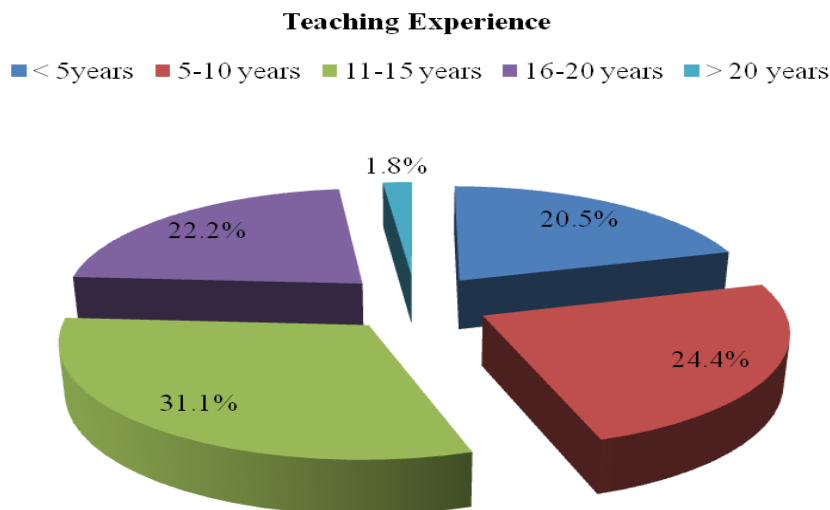


Figure 4.2: *Teaching Experiences of the Agriculture Teachers*

The teaching experience of agricultural teachers is illustrated in Figure 4.2. The average number of years the teachers had served was 12.5 ± 2.07 with a standard deviation of 6.57 and mode of 10. The majority of the agricultural teachers (31.1 %) had served between 11 and 15 years, while 24.4 % had served for 5 to 10 years, 22.2 % had served between 16 and 20 years. There was a significant ($p < 0.05$) difference in the teaching experience of respondents. Quíñones, Ford and Teachout (1996) also noted that measures of work experience had the highest correlations with measures of job performance.

Experience of teachers of Agriculture in project assessment was measured by the following indicators: years supervising agricultural projects; creativity in presenting the subject matter;

new teaching and instructional methods; awareness of agricultural project goals; and students' guidance in projects. The respondents were asked to score the statements on experience in teaching agriculture on a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree). The results of their responses are given in Table 5

Table 5: Results of Experience in Assessment of Agriculture by Teachers

| Experience in teaching Agriculture | % of Teachers reporting | | | | |
|--|-------------------------|-------|---------|----------|-------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Years supervising agriculture projects | 21.1 | 11.9 | 33 | 22.9 | 11 |
| Creative in presenting subject matter | 14.7 | 24.8 | 14.7 | 29.4 | 16.5 |
| Adopts new teaching and instruction methods | 24.8 | 20.2 | 19.3 | 23.9 | 11.9 |
| Aware of agriculture project goals | 22.0 | 24.9 | 23.9 | 17.4 | 7.3 |
| Helps, guides and facilitates students with projects | 22.0 | 19.3 | 22.0 | 22.0 | 14.7 |

n=109

The respondents were positive on three of the factors that included: that the teachers adopt new teaching and instructional methods (45 %), they are aware of the agricultural project goals (46.9 %) and that they helped, guided and facilitated the students (41.3 %). They were negative on the remaining variables: years supervising agricultural projects (33.9 %) and creativity in presenting subject matter (45.9 %). Therefore, the respondents had varied responses on the extent to which experience affects assessing agriculture projects.

4.3.3 Integrity of Teachers in Agriculture Projects Assessment

Integrity is a vital variable in measuring teacher factors in quality assessment of agriculture projects. Integrity is an inherent character among teachers of agriculture, one that cannot be attained through training or forced upon the employees. Integrity refers to a firm and constant adherence to a personal moral code. The integrity of teachers in this study was measured in terms of: honesty in assessment of projects; fairness to all candidates; commitment to success; answerable to assessing duties; and observe all KNEC ethical standards. The respondents were asked to score on a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree). The results of their responses on how they agreed with the statements are given in Table 6.

Table 6: Results of integrity in Assessing Agricultural Projects

| Indicator Variables of Integrity in assessing projects | % of teachers reporting | | | | |
|---|--------------------------------|--------------|----------------|-----------------|--------------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Honesty in assessing projects | 2.8 | 14.7 | 31.2 | 43.1 | 8.3 |
| Fairness to all candidates | 2.8 | 12.8 | 21.1 | 50.5 | 12.8 |
| Committed to success of projects | 3.7 | 16.5 | 32.1 | 36.7 | 11 |
| Answerable to assessing duties | 2.8 | 14.7 | 29.4 | 42.2 | 11 |
| Observe all KNEC ethical standards | 5.5 | 19.3 | 19.3 | 40.4 | 15.6 |

n=109

Majority of the teachers indicated that integrity of the teachers in assessing the KNEC agriculture projects was low or wanting (strongly agree - 2.8%, agree -14.7%, neutral - 31.2%, disagree - 43.1% and strongly agree - 8.3%). The majority of the assessors were not fair in their assessment (63.3 %), while 56 % of the respondents found the assessors do not observe the KNEC ethical standards, 53.2 % found the teachers not answerable to their assessing duties, 51.4 % of the respondents believed that the assessors were not honest in their assessment, and 47.7 % reported that the assessors were not committed to the projects.

It has been observed that integrity among staff can be impaired by both personal and institutional characteristics (Davis, 2002). This is more of the case in this study in that the principals of the schools desiring to have their schools to excel higher than others encourage the assessors to grade them upwards. The same for personal characteristics, especially for the non-professional staff tend to easily lower their integrity. Integrity among staff can be enhanced by increased job satisfaction and commitment to the job (McGowan, 2005).

4.4 Influence of Student Factors on Quality Assessment of K.C.S.E Agriculture Project

The second objective of the study was to determine Student factors on quality assessment of K.C.S.E agriculture project. The student's factors were assessed based on teachers responses to four variables selected to relate to positive student characteristics to agriculture project work, these variables included: (i) The interest the student had on the agricultural project work, (ii) commitment to project goals, (iii) creativity in solving project challenges, (iv) attendance to project supervision (v) the involvement in preparation of the project (preparedness).

4.4.1 Teacher's assessment of the student factors

The evaluation of the factors related to the student's positive attitude / interest and preparedness in agriculture projects is given in Table 7. The four variables were measured by asking the teachers to each variable using a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree) based on student's interest and preparedness of the agriculture projects. The responses of the teachers and the frequency distributions of their rating are given in Table 7.

Table 7: Frequency distributions of the variables related to student factors

| Indicator variables of Student factors | % of Teachers reporting | | | | |
|---|-------------------------|-------|---------|----------|-------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Interest in project | 9.2 | 40.4 | 24.8 | 22.0 | 3.7 |
| Committed to project goals | 78.8 | 15.6 | 2.8 | 1.0 | 1.8 |
| Creative in solving project challenges | 67.9 | 26.6 | 3.7 | 0 | 1.8 |
| Attend project supervision | 58.7 | 31.2 | 6.4 | 2.8 | 0.9 |
| Involvement in preparation of the project | 68.0 | 22.0 | 5.5 | 1.8 | 1.8 |

n=109

The student factors, which included five indicators, which are presented in, table 7. A majority of the respondents (49.6 %) were positive that students often generated a lot of interest in their own projects. This is important as interest often translates to hard work with the aim of getting better results, while 94.4 % of the respondents were positive that students were committed to pursuing project goals and meeting the targets set for them by teachers and assessors. The majority of the teachers (94.5 %) were positive that the students were creative in their project work, attended project supervision (89.9 %), and were involved in project preparation (90 %).

4.4.2 Measurement of Student factors

The teacher's factors, which included: The interest the student had on the agricultural project work, commitment to project goals, creativity in solving project challenges, attendance to project supervision and the involvement in preparation of the project (preparedness). The individual responses by the teachers were converted to scores with the most positive response (strongly agree) being rated highly a score of 5, and the most negative response (strongly

disagree) being rated lowly, a score of 1. The total scores were calculated based on the number of assessors for each category to get the total score and the mean scores for each indicator. A grand score for teacher factors was created by adding the scores of each indicator variables.

4.5. Influence of School Administration and Management on Quality Assessment of K.C.S.E Agriculture Projects

The third objective of the study was to determine the influence of school administration and management on quality assessment of K.C.S.E agriculture project. The teachers assessed the level of concern of the school administration and management based on five variables selected to relate to positive characteristics of the school administration and management to agriculture project work: The 5 selected variables included: (i) provision of adequate land, (ii) provision of adequate equipment for the projects, (iii) support and understand the agriculture project curriculum, (iv) provide security for the project and (v) understand the project requirements

4.5.1 Teacher’s assessment of school administration and management

The evaluation of the school administration and management by the teachers was based on the 5 indicator variables related to their positive characteristics to agriculture projects. The teachers were asked to agree or disagree with the 5 statements that were used as indicators for the level of commitment shown by school administrators and management using a 5-point Likert scale (Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree). The teacher responses and the frequency distributions of their rating are given in Table 8.

Table 8: Frequency distributions of the variables related to commitment of school administrators

| Indicator variables of Commitment of administrator | % of Students reporting | | | | |
|---|--------------------------------|--------------|----------------|-----------------|--------------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Provide adequate land for projects | 45.9 | 26.6 | 17.4 | 7.3 | 2.8 |
| Provide adequate equipment | 69.7 | 14.7 | 12.8 | 2.8 | 0 |
| Support agriculture projects curriculum | 51.4 | 23.9 | 19.3 | 4.6 | 0.9 |
| Provide adequate security for projects | 28.4 | 23.9 | 26.6 | 11.9 | 9.2 |
| Understand the project goals | 14.7 | 14.7 | 22.0 | 22.9 | 25.7 |

n=109

The assessment was based on a Likert scale, where the teachers rated the administration in terms of their assistance to the agriculture project work and the results of the factors considered in school administration are given in Table 8

A majority of the respondents (72.5 %) felt that the school administration indeed provided adequate land, which is a vital component for the completion of the agriculture projects by the students. The respondents (84.4 %) were positive that the school administrations provided adequate equipment for agriculture projects. With regard to the support of the agriculture project curriculum, a majority of the respondents (75.3 %) felt that school administrations understood and supported the same. The provision of adequate security for the projects, 52.3 % of the respondents were positive that the administrators provided for it. The majority of the respondents (45.6 %) disagreed with the statement that school administrations understood the project goals and requirements.

4.5.2 Measurement of factors related to commitment of the administration

The administration commitment factors, which included: provision of adequate land, provision of adequate equipment for the projects, supporting and understanding the agriculture project curriculum, provision of security for the projects and understanding the requirements for the projects. The individual responses by the teachers were converted to scores with the most positive response (strongly agree) being rated highly a score of 5, and the most negative response (strongly disagree) being rated lowly, a score of 1. The total scores were calculated based on the number of assessors for each category to get the total score and the mean scores for each indicator. A grand score for administration commitment factors was created by adding the scores of each indicator variables.

4.6 Influence of KNEC Guidelines and Reports on Quality Assessment of Agriculture Projects

The fourth objective of the study was to determine the influence of K.N.E.C guidelines and reports on quality assessment of K.C.S.E agriculture project work based on KNEC marking scheme. The teachers assessed the importance and relevance of the guidelines and reports of KNEC based on 5 variables selected to relate to positive characteristics of the KNEC to agriculture project work, the selected variables included: (i) project guidelines sent on time,

(ii) easy guidelines, (iii) fair treatment of students, (iv) adequate feedback and (v) satisfying marks are awarded (Table 9).

Table 9: Frequency distributions of the variables related to competence

| Indicator variables of KNEC contribution | % of Teachers reportingING OF | | | | |
|---|-------------------------------|-------|---------|----------|----------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Project guidelines sent on time | 62.4 | 25.7 | 7.3 | 3.7 | 0.9 |
| Guidelines are easy to understand | 72.5 | 21.1 | 2.8 | 3.7 | 0 |
| Fair treatment of students | 59.6 | 25.7 | 9.2 | 2.8 | 2.8 |
| Provide adequate feedback | 6.4 | 45.9 | 27.5 | 16.5 | 3.7 |
| Marks awarded are satisfying | 22.0 | 22.0 | 29.4 | 9.2 | 17.4 |

n=109

The analysis of the teacher's responses showed that the teachers perception on the contribution of KNEC to quality assessment of agriculture projects were positive that their contribution was timely and useful. The respondents (88.1 %) felt that the KNEC sent guidelines on time, while 93.6 % believed that the guidelines sent by the KNEC were easy to understand, 85.3 % reported that the KNEC treated the students with fairness, 52.3 % believed that KNEC provided feedback on time and 44 % were positive that the marks they awarded were satisfying.

4.6.1 Factors related to KNEC commitment to Agriculture projects

The KNEC commitment factors, which included: project guidelines sent on time, easy guidelines, fair treatment of students, adequate feedback and satisfying marks are awarded. The individual responses by the teachers were converted to scores with the most positive response (strongly agree) being rated highly a score of 5, and the most negative response (strongly disagree) being rated lowly, a score of 1. The total scores were calculated based on the number of assessors for each category to get the total score and the mean scores for each indicator. A grand score for KNEC commitment factors was created by adding the scores of each indicator variables.

4.7 Tests of Hypotheses

Tests of hypotheses were carried out to establish whether there was any relationship between various independent variables and the dependent variable.

4.7.1 Hypothesis one

“There’s no statistically significant influence of teacher factors on quality assessment of K.C.S.E agriculture project work”.

The hypothesis was tested using the bivariate regression analysis. The total score for quality assessment of agriculture projects formed the dependent variable, while the total score for the teacher’s factors formed the independent variable. The results of the regression model are presented in Table 10 and the regression coefficients are given in Table 11

Table 10: Regression analysis summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .436 ^a | .291 | .225 | 1.62953 |

a. Predictors: (Constant), index of teacher factor

The regression analysis results are given in Table 10. The model indicates an adjusted R² value of 0.225; this means that the teacher factors can only explain 22.5 % of the variation in the quality of assessment of agricultural projects.

The regression coefficients of the model, showing the beta, t statistics and the tolerance levels are given in Table 11.

Table 11: Regression Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | | | Tolerance |
|-----------------|-----------------------------|------------|---------------------------|-------|------|-----------|
| | B | Std. Error | Beta | T | P | |
| (Constant) | .973 | 1.031 | | 5.386 | .000 | .941 |
| Teacher factors | .381 | .029 | .490 | 1.707 | .000 | .882 |

The regression analysis (Table 11) indicates that the level of the teacher factors had positive and significant ($p \leq 0.05$) effect on quality assessment of agriculture projects ($\beta=0.490$, $p=.000$). Since a positive and significant effect between teacher factors and quality assessment of projects was established, the null hypothesis was rejected.

There indeed exists a positive relationship between the teacher factors and quality assessment of agriculture project. The results of the study agree with the findings of Becker (1998) that increased employee integrity in organizations, led to attraction of more customers and quality service delivery. Employees with high integrity are more likely to deliver services, and complete duties assigned to them much more effectively. Davis (1999) indicated that one of the most important ethical values in employees is that of integrity. Personal integrity of employees is a great determinant with regard to success or failure of an organization. This is especially the case in public organizations, where resources of the entity are often misused. Success of such public organizations such as the KNEC is highly dependent on the integrity of their employees.

4.7.2 Hypothesis two

“There’s no statistically significant effect of student factors on quality assessment of K.C.S.E agriculture project work”.

The hypothesis was tested using the bivariate regression analysis. The total score for quality assessment of agriculture projects formed the dependent variable, while the combined student factors formed the independent variable. The results of the regression model are presented in Table 12 and the regression coefficients are given in Table 13.

Table 12: Regression model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .475 ^a | .187 | .304 | 1.56499 |

a. Predictors: (Constant), index of student factor

The regression analysis results are given in Table 12. The model indicates an adjusted R^2 value of 0.304; this means that the student factors can only explain 30.4 % of the variation in quality of assessment of agricultural projects.

The regression coefficients of the model, showing the beta, t statistics and the tolerance levels are given in Table 13.

Table 13: Regression Coefficients

| | Unstandardized | | Standardized | | P | Tolerance |
|-----------------|----------------|------------|--------------|-------|------|-----------|
| | Coefficients | | Coefficients | | | |
| | B | Std. Error | Beta | t | | |
| (Constant) | .406 | .335 | | 1.211 | .000 | .841 |
| Student factors | .122 | .010 | .542 | 1.320 | .000 | .755 |

The regression analysis (Table 13) indicates that the level of the Student factors had positive and significant ($p \leq 0.05$) effect on the quality assessment of agriculture projects ($\beta=0.542$, $p=.000$). Since a positive and significant influence between student factors and quality assessment of projects was established, the null hypothesis was rejected.

The results show that there exists a strong relationship between student factors (which measures their accountability) and quality assessment of agriculture projects. The higher the accountability of the students to their projects, the higher was the quality assessment of agriculture projects. This is in agreement with the study conducted by Oketch (2004), who found that employees who were more accountable for their actions, registered better services and increased the quality of their productivity. Increased accountability, often leads to provision of better services (Smeenk *et al.*, 2006). When students feel responsible and actually take responsibility of their actions during project work, they work harder and this often translates to better and much more quality assessment.

4.7.3 Hypothesis three:

“There is no statistically significant effect of school administration and management on quality assessment of K.C.S.E agriculture project work”

The hypothesis was tested using the bivariate regression analysis. The total score for quality assessment of agriculture projects formed the dependent variable, while the school administration and management commitment to projects formed the independent variable.

The results of the regression model are presented in Table 14 and the regression coefficients are given in Table 15.

Table 14: Regression model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .708 ^a | .636 | .630 | 0.2991 |

a. Predictors: (Constant), school administration and management commitment to projects

The regression analysis results are given in Table 14. The model indicates an adjusted R² value of 0.630; this means that the school administration and management commitment to projects can only explain 63.0 % of the variation in quality of assessment of agricultural projects.

The regression coefficients of the model, showing the beta, t statistics and the tolerance levels are given in Table 15.

Table 15: Regression Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | | | Tolerance |
|---|-----------------------------|------------|---------------------------|-------|------|-----------|
| | B | Std. Error | Beta | t | p | |
| (Constant) | 1.376 | .129 | | .775 | .000 | .866 |
| school administration and management commitment | .251 | .004 | .324 | 1.084 | .000 | .731 |

The regression analysis (Table 15) indicates that the level of school administration and management commitment to projects had positive and significant ($p \leq 0.05$) influence on quality assessment of agriculture projects ($\beta=0.324$, $p=.000$). Since a positive and significant effect between the school administration and management commitment to projects and quality assessment of projects was established, the null hypothesis was rejected.

The alternate hypothesis was accepted that there are statistically significant influences of school administration and management factors on the quality of agricultural project

assessment in K.C.S.E. This means that as the level of school administration and management factors decreased the quality assessment of the agriculture project work also decreased. The involvement of the school administration in providing resources and supporting the school staff and agriculture students in their projects, was vital for positive assessment of Agriculture projects.

4.7.4 Hypothesis four

“There is no statistically significant effect of KNEC guidelines on quality assessment of K.C.S.E agriculture project work”.

The hypothesis was tested using the bivariate regression analysis. The total score for quality assessment of agriculture projects formed the dependent variable, while the KNEC guidelines formed the independent variable. The results of the regression model are presented in Table 16 and the regression coefficients are given in Table 17.

Table 16: Regression model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .118 ^a | .146 | .115 | 0.2991 |

a. Predictors: (Constant), KNEC guidelines

The regression analysis results are given in Table 16. The model indicates an adjusted R² value of 0.115, this means that the KNEC guidelines can only explain 11.5 % of the variation in quality assessment of agricultural projects. The regression coefficients of the model, showing the beta, t statistics and the tolerance levels are given in Table 17.

Table 17 Regression Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | | p | Tolerance |
|-----------------|-----------------------------|------------|---------------------------|-------|------|-----------|
| | B | Std. Error | Beta | t | | |
| (Constant) | .258 | .075 | | 3.443 | .000 | .866 |
| KNEC guidelines | .351 | .051 | .484 | .152 | .000 | .731 |

The regression analysis (Table 17) indicates that the KNEC guidelines had positive and significant ($p \leq 0.05$) effect on quality assessment of agriculture projects ($\beta=0.484$, $p=.000$). Since a positive and significant effect between KNEC guidelines and reports on quality assessment of projects was established, the null hypothesis was rejected. The alternate hypothesis was accepted that there is statistically significant effect of KNEC factors on quality assessment of K.C.S.E agriculture projects.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter outlines a brief summary of study findings, gives conclusions drawn and recommendations resulting from the study. It also gives suggestions for further research to be conducted to discover more in terms of other variables that determine quality assessment of K.C.S.E Agriculture projects exams.

5.2. Summary of the results

This research was undertaken to establish the determinants of quality assessment of K.C.S.E Agriculture projects in Kakamega County, which have influenced quality of Agriculture assessment over the years, thus 1999 to 2003. Studies indicated that insufficient information existed with regard to teachers of Agriculture, students of Agriculture, school administration and management and KNEC guidelines and reports on quality assessment of K.C.S.E Agriculture projects exams in secondary schools. The study used a sample of 109 teachers of Agriculture in secondary schools. The results of the study indicated that:

- (i) There were more male teachers of Agriculture (71.6%) than female teachers of Agriculture (28.4%). The professional Agriculture teachers formed 62.3%, the remaining 37.6% though teaching Agriculture subjects were not professionals. The results revealed that most of the respondents (teachers) had acquired necessary experience and skills in the teaching and assessing of Agriculture projects in the county. Also found out was that teachers assessing agriculture projects in Kakamega County were mainly men (71.6%), while female made up 28 % of the population. The study findings indicated that average teaching experience of teachers of Agriculture was 12 years. The highest trained teacher of Agriculture in Kakamega County was at the level of Master's Degree. The bulk of the trained teachers (61%) were trained to Diploma and Bachelor's degree level. The untrained teachers of agriculture, formed 38 % of the agriculture teachers' population; this generally affected quality of assessment of K.C.S.E agriculture projects in the county.

- (ii) The results of the regression analysis (Table 11) on the influence of the teacher factors on quality assessment agriculture projects was found to be ($\beta=0.490$, $p=0.000$, indicating a positive and significant influence at ($p \leq 0.05$). The null hypothesis was accordingly rejected.
- (iii) The results regression analysis (Table 13) on influence of student factors on quality assessment of KCSE agriculture projects were found to be ($\beta=0.542$, $p=.000$), indicating that student factors had positive and significant ($p \leq 0.05$) effect on the quality assessment of agriculture projects.
- (v) The results indicate that the KNEC guidelines had positively and significantly ($p \leq 0.05$) influenced the quality of assessment of agriculture projects ($\beta=0.484$, $p=.000$

5.3. Conclusion

Based on the study findings, the following conclusions were reached:

- (i) High integrity in organizations is most likely influence the quality of service delivery. Personal integrity of employees is a great determinant with regard to success or failure of an organization. This is especially the case in public organizations, where resources of the entity are often misused. Success of such public organizations such as the KNEC is highly dependent on the integrity of their employees.
- (ii) Student factors (which measures their accountability) have strong influence on quality of assessment of agriculture projects. The higher the accountability of the students to their projects, most likely, the higher the quality assessment of agriculture projects. Increased accountability, often leads to provision of better services. Likewise when students feel responsible and actually take responsibility of their actions during project work, quite often that could translate to better and much more quality assessment
- (iii) School administration and management factors have influence on the quality of agricultural project assessment in K.C.S.E. This could mean, where the level of school administration and management factors decrease the quality assessment of the agriculture project work could also decrease. The involvement of the school administration in providing resources and supporting the school staff and agriculture students in their projects, is vital for quality assessment of agriculture projects.

- (iv) The KNEC guidelines and reports significantly influenced the quality assessment of K.C.S.E Agriculture projects in Kakamega County.

5.4. Recommendations

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

- (i) Success of such public organizations such as the KNEC are highly dependent on the integrity of their employees. The Ministry of Education should use professionally trained teachers of Agriculture with experience and of high integrity to assess K.C.S.E Agriculture projects as this will improve quality assessment of K.C.S.E Agriculture projects. The national examination council should develop a training policy of examiners on issues of integrity handling and examining examinations including examination of agriculture projects.
- (ii) The higher the accountability of the students to their projects, most likely, the higher the quality assessment of agriculture projects. When students feel responsible and actually take responsibility of their actions during project work, quite often that could translate to better and much more quality assessment. Therefore, The school management should select students with interest and preparedness in the subject to take Agriculture.
- (iii) The involvement of the school administration in providing resources and supporting the school staff and agriculture students in their projects, is vital for quality assessment of agriculture projects. School principles and managers should provide adequate inputs, security and understand vividly Agriculture project curriculum to enhance quality assessment of K.C.S.E Agriculture projects.
- (iv) The KNEC guidelines and reports should be sent to secondary schools on time to enable school principals, teachers of Agriculture and students in early planning and preparation for the project.

5.5 Suggestions for further research

The following were suggestions for further research:

- (i) A study should be conducted in Kakamega county to establish the influence of gender difference among students undertaking K.C.S.E Agriculture projects
- (ii) A study should be carried out on a time series study over a 10 year period (1991-2011) on the changes in quality assessment of K.C.S.E agriculture projects undertaken by students in secondary schools in Kakamega County.
- (iii) A study should be conducted to establish the influence of school type on quality assessment of K.C.S.E Agriculture projects in Kakamega County

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APPENDICES

APPENDIX A: QUESTIONNAIRE

My name is Wesonga J. Munyali. I am a student at Egerton University. Currently I am carrying out a field research entitled. “Determinants of quality assessment of K.C.S.E Agriculture project in Selected secondary schools of Kakamega County from 1999 – 2003”. You have been selected to participate in this study Please make it a success by providing information as requested note: All notification given will be confined to this study and be considered as private and confidential.

SECTION A: BIOGRAPHICAL INFORMATION

Highest academic qualification

‘O’ Level ‘A’ LEVEL Diploma Degree other

Experience as an agriculture teacher

Less than 5yrs 6-10 11-15 16-20 above 20 yrs

SECTION B: TEACHER FACTORS

Please indicate the influence of teacher factors on quality assessment of agriculture project work. Select the response by putting tick in one of the scale:

Teacher qualifications

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| Teacher qualifications | SA | A | N | D | SD |
|-------------------------------------|----|---|---|---|----|
| Prepare relevant subject matter | | | | | |
| Examiners are professionals | | | | | |
| Examiners are trained professionals | | | | | |
| Disparity in marks awarded | | | | | |
| Examination process understood | | | | | |

Experience

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| Experience | SA | A | N | D | SD |
|--|-----------|----------|----------|----------|-----------|
| Years supervising agriculture projects | | | | | |
| Creative in presenting subject matter | | | | | |
| Adopts new teaching and instruction methods | | | | | |
| Aware of agriculture project goals | | | | | |
| Helps, guides and facilitates students with projects | | | | | |

Integrity

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| Integrity | SA | A | N | D | SD |
|------------------------------------|-----------|----------|----------|----------|-----------|
| Honesty in assessing projects | | | | | |
| Fairness to all candidates | | | | | |
| Committed to success of projects | | | | | |
| Answerable to assessing duties | | | | | |
| Observe all KNEC ethical standards | | | | | |

SECTION C: STUDENTS FACTORS

Kindly show how student factors influence the quality assessment of agriculture project work. Use the scale given below and select one response:

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| | SA | A | N | D | SD |
|---|-----------|----------|----------|----------|-----------|
| Interest in project | | | | | |
| Committed to project goals | | | | | |
| Creative in solving project challenges | | | | | |
| Attend project supervision | | | | | |
| Involvement in preparation of the project | | | | | |

SECTION D: SCHOOL ADMINISTRATION AND MANAGERS

Please, give the influence of the school administrators and mangers on quality assessment of a agriculture projects work. Select the best response using the scale given below:

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| | SA | A | N | D | SD |
|---|-----------|----------|----------|----------|-----------|
| Provide adequate land for projects | | | | | |
| Provide adequate equipment | | | | | |
| Support agriculture projects curriculum | | | | | |
| Provide adequate security for projects | | | | | |
| Understand the project goals | | | | | |

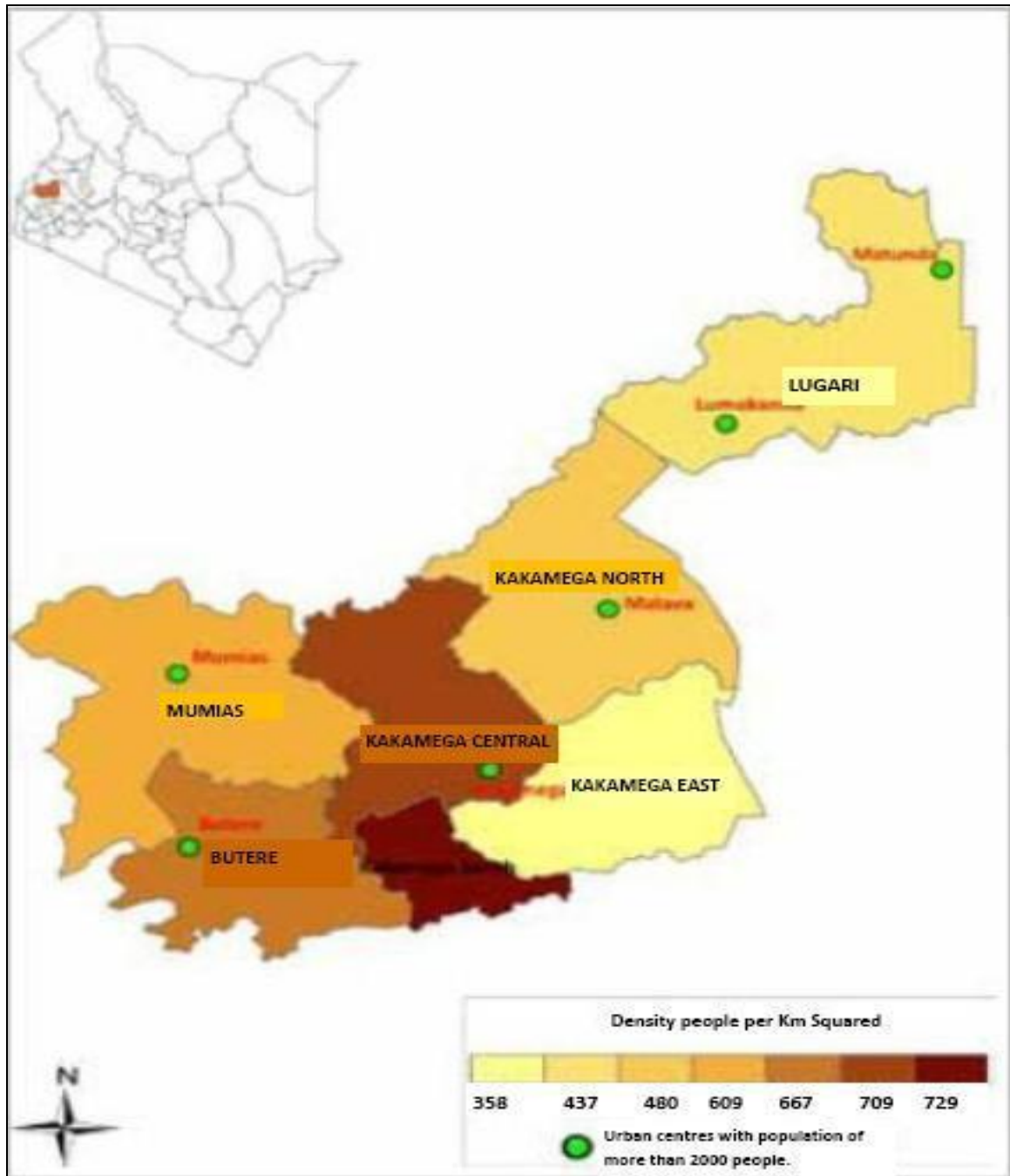
SECTION E: KNEC FACTOR

Please, give the effect of the school administrators and managers on quality assessment of a agriculture projects work. Select the best response using the scale given below:

Strongly Agree (SA) – 5; Agree (A) – 4; Neutral (N) – 3; Disagree (D)- 3; Strongly Disagree (SD) – 1

| | SA | A | N | D | SD |
|-----------------------------------|-----------|----------|----------|----------|-----------|
| Project guidelines sent on time | | | | | |
| Guidelines are easy to understand | | | | | |
| Fair treatment of students | | | | | |
| Provide adequate feedback | | | | | |
| Marks awarded are satisfying | | | | | |

APPENDIX B: A MAP OF KAKAMEGA COUNTY SHOWING ITS SIX SUB-COUNTIES



APPENDIX C: A PERMIT LETTER FROM NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349, 254-020-2673550
Mobile: 0713 788 787 , 0735 404 245
Fax: 254-020-2213215
When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: **NCST/RCD/14/013/819**

Date: **29th May 2013**

John Wesonga Manyali
Egerton University
P.O Box 536-20115
Egerton.

RE: RESEARCH AUTHORIZATION

Following your application dated 16th May, 2013 for authority to carry out research on "*Factors influencing quality assessment of Kenya Certificate of Secondary Education agriculture project (1999-2003) in selected secondary schools of Kakamega North District, Kakamega County, Kenya.*" I am pleased to inform you that you have been authorized to undertake research in **Kakamega North District** for a period ending **31st December, 2013.**

You are advised to report to **the Provincial Director of Education, Western Province, District Commissioner and District Education Officer, Kakamega North District** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:
The Provincial Director of Education
Western Province

**APPENDIX D: A PERMIT LETTER FROM DISTRICT EDUCATION OFFICE
KAKAMEGA NORTH**

Telegrams:
Telephone: 0722160832
When replying please quote
E-mail: kakameganorth@yahoo.com



REPUBLIC OF KENYA

DISTRICT EDUCATION OFFICE
KAKAMEGA NORTH
P. O. BOX 34- 501103
MALAVA

DATE: 2nd July 2013.

TO WHOM IT MAY CONCERN.

RE: RESERCH AUTHORIZATION – JOHN WESONGA MANYALI.

The above named person is a Masters Degree student of Egerton University. He has embarked on a research project titled “**Factors influencing quality assessment of Kenya certificate of secondary Education agriculture project (1999-2003) in selected secondary schools of kakamega North District, Kakamega County, Kenya.**”

Any assistance accorded to him will be highly appreciated.

A handwritten signature in blue ink, appearing to read 'Wanjohi S. Mwangi'.

**WANJOHI S. MWANGI
DISTRICT EDUCATION OFFICER
KAKAMEGA NORTH DISTRICT**

APPENDIX E: RESEARCH CLEARANCE PERMIT FROM NATIONAL COUNCIL OF SCIENCE AND TECHNOLOGY

PAGE 2

THIS IS TO CERTIFY THAT:
 Prof./Dr./Mr./Mrs./Miss/Institution
 John Wesonga Manyali
 of (Address) Egerton University
 P.O Box 536-20115, Egerton.
 has been permitted to conduct research in


| | |
|----------------|-----------------|
| | Location |
| Kakamega North | District |
| Western | Province |


on the topic: Factors influencing quality assessment of Kenya Certificate of Secondary Education agriculture project (1999-2003) in selected secondary schools of Kakamega North District, Kakamega County, Kenya.


for a period of days; 31st December, 2013.

PAGE 3

Research Permit No. **NCST/RCD/14/013/819**
 Date of issue **29th May, 2013**
 Fee received **KSH. 1,000**





 Applicant's
Signature


 For Secretary
National Council for
Science & Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.


REPUBLIC OF KENYA
RESEARCH CLEARANCE PERMIT

(CONDITIONS—see back page)

CPK6955(3)mt(10/2011)

APPENDIX F: LIST OF SCHOOLS USED IN THIS STUDY

1. Mukumu Girls
2. St. Mary's Mumias Girls
3. Butere Girls
4. Bulimbo Girls
5. Namirama Girls
6. St. Pauls' Lubinu Girls
7. Eregi Girls
8. Archbishop Njenga Girls
9. St. Agnes Shibuye
10. Buchenja Girls
11. St. Elizabeth Likuyani Girls
12. Bishop Sulumeti Girls
13. Silungai Girls
14. Silungai Boys
15. Malava Boys
16. Samitsi Girls
17. Malava Girls
18. Samitsi Boys
19. Shirugu Mixed
20. St. Anthony Kakoi
21. Shitoti Girls
22. St. Josephs Girls
23. Lirhandu Girls
24. St Agnes Girls Nzoia
25. Kakamega High
26. Musingu Boys
27. Lufumbo Girls
28. Mayoyo St. Anne Girls
29. Mwihila Girls
30. St. Annes Ikonyero
31. Matsakha Mixed
32. Mukhonje K Mixed

33. Shivanga Mixed
34. Lukume Mixed
35. St. Likes Ihonje
36. Solyo Mixed
37. Lirhanda Mixed
38. Kuvasali Mixed
39. Mahondo
40. Esokone
41. Shirali
42. Matisi Mixed
43. Mbagara Mixed
44. Lukala Mixed
45. Eshibuye
46. Mundaha Mixed
47. Mapera Mixed
48. Ikoli
49. Masaba Secondary
50. Buhayi Muslim
51. Lwanda K
52. Eshikhondi Mixed
53. Mahanga Mixed
54. Indangalasia
55. Chenjeni
56. Bushili
57. Shagungu
58. St. Stephen Mulwanda
59. Mundoli ACK Girls
60. Bishop Sulumeti Boys
61. Chebuyusi Boys
62. Sivile Mixed
63. Bukhakunga Mixed
64. Ingotse Boys
65. Sipande Mixed

66. Sisokhe Mixed
67. Matete Mixed
68. Shiswa Mixed
69. Shamberere Boys
70. Musingu Day Mixed
71. Shamoni
72. Kakamega Township
73. Kongoni Sec School
74. Vashele Sec School
75. St. Johns Mtoni Sec School
76. St. Dennis Munjiti
77. Lugusi Sec School
78. Malondo Sec School
79. Tande Mixed
80. Chekalinin Secondary
81. St. Mary's Namalasire
82. Mufutu Secondary
83. Shimanyiro Sec
84. Chimoroni Secondary
85. Musaga Mixed
86. Ekatsombere Secondary School
87. Shabwali Secondary
88. Angayu Secondary
89. Makunda Shisesia Secondary
90. Our Lady of Asumption, Shitoli
91. St. Basil Academy
92. Navakholo Secondary
93. Mukonge Secondary
94. Inyanya Secondary
95. Lirhembe Secondary
96. St. Mary's Sihome
97. Manyonyi Secondary
98. Shagungu Secondary

99. Shaindiche Secondary
100. Lusiola Secondary
101. Handidi Secondary
102. Lusui Secondary
103. Sisokhe Secondary
104. St. Joseph Lumino
105. Nzoia D.E.D
106. St Peters Itenyi
107. Mwangasa Secondary
108. Shireye Secondary
109. Khwisero Secondary

APPENDIX G: INSTRUCTIONS TO SCHOOLS

443/3 Instr. to Sc.
AGRICULTURE PROJECT
Paper 3
Jan. - Sept. 2014



THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education
AGRICULTURE PROJECT
Paper 3

Instructions to Schools

*Each school presenting candidates for Agriculture (443) in the KCSE examination for the year 2014 will produce **two** copies of this document. One copy of the document will be for the Head teacher and the other one for the teacher in charge of Agriculture project examination hereafter referred to as the Agriculture teacher.*

The Head teacher and the Agriculture teacher should each read the document carefully. Relevant information should then be conveyed to the candidates as soon as possible to enable them to carry out the project in good time.

*There are two alternative projects, namely **Project A** and **Project B**. Each school should select only **one** alternative. It is therefore necessary for the Agriculture teacher to discuss the alternatives with the Head teacher and with the candidates so as to select the most appropriate alternative.*

The Agriculture Teacher will mark all candidates' projects.

The projects should be accessible to authorised KNEC agent(s).

This paper consists of 5 printed pages.

GENERAL INSTRUCTIONS

1. *The Agriculture Teacher should brief the candidates on the requirements of the projects as soon as the school receives this document from the Kenya National Examinations Council (KNEC). The candidates, the Agriculture teacher and Head teacher should then discuss the alternative projects and make a suitable choice.*
2. *The school should provide the candidates with adequate **resources** for their project.*
3. *The candidates should be instructed to keep records of their activities and observations which they shall use to write the final project report.*
4. *Each candidate should be supplied with an adequate number of ruled A4 papers on which to write the project report. The report should be between 1, 000 and 1, 500 words.*
5. *In addition, each candidate should be given a declaration form which will make the first page of the report.*
6. *The school should provide adequate security for the candidates' projects.*
7. *The project chosen by the school must be seen and treated as an examination. It must therefore be the candidates' true and unaided work. At the same time the scores awarded by the Agriculture teacher must be objective and remain confidential.*
8. *The Agriculture teacher should assess each candidate's project from time to time using the marking scheme provided by the KNEC and enter the marks in the project assessment sheets. It is **absolutely important** that the marks are entered in the project assessment sheets **immediately** after each assessment.*
9. *All the project assessment sheets must be kept underlock and key in the Head teacher's office in a sealed envelope. They should be made available **only** to the Agriculture teacher whenever the teacher is going to assess the project or an authorised KNEC agent. The sheets must be returned to the Head teacher immediately after each assessment. The Head teacher should check to ensure that scores are entered on the assessment sheets after every assessment. In the absence of the Head teacher, the Deputy Head teacher should be in charge of the custody of the documents.*
10. *At the end of the assessment, the Agriculture teacher should transfer the total score of each candidate from the assessment sheet to the manual mark sheet. The index numbers of candidates should be entered in ascending order ensuring that all candidates **have the same Index Numbers as in the final examination.***
11. *The Agriculture Teacher should write a brief report about the centre using the centre report form provided by the KNEC.*

12. At the end of the project, the Head teacher **must** ensure that the assessment sheets and manual marksheets are duly filled, signed and stamped. All the candidates' Agriculture Project Reports, project assessment sheets, manual marksheets and project report form for the centre should be packed and **handed over to the District Education Officer by 18th September 2014.**
13. The District Education Office will then hand over **all** the documents to the Kenya National Examinations Council by **30th October 2014**

**APPENDIX H: SAMPLE MARKING SCHEME FOR KCSE AGRICULTURE PROJECT
ASSESSMENT**

**443/3 MS
AGRICULTURE PROJECT
MARKING SCHEME
Paper 3
Jan - Sept 2015**



THE KENYA NATIONAL EXAMINATIONS COUNCIL

Kenya Certificate of Secondary Education

AGRICULTURE PROJECT: (443/3)

MARKING SCHEME

(CONFIDENTIAL)

This marking scheme is to be used when assessing the candidate's project.

The Agriculture Teacher concerned with the project assessment is reminded to keep this information confidential. No **candidate** or any **unauthorised** person should have access to this information either directly or indirectly.

This paper consists of 6 printed pages. © 2015 The Kenya National Examinations Council Turn over PROJECT A: RABBIT REARING

GUIDELINES FOR MARKING CANDIDATES' PROJECTS

| | Maximum Score |
|---|----------------------|
| 1. Housing | |
| Clean house | 1 |
| Appropriate bedding material considering texture and type | 1 |
| Adequate bedding material considering thickness of litter | 1 |
| Dry bedding material/ absence of wetness | 1 |
| Clean bedding material/ absence of soil or faecal matter | 1 |
| (5 marks) | |

| | |
|---|---|
| 2. Feeding and watering | |
| Different types of feeds | 1 |
| Appropriate feed types | 1 |
| Provision of water | 1 |
| Provision of salt lick | 1 |
| Fresh feed | 1 |
| Clean feed and feeders | 1 |
| Clean water and waterers | 1 |
| (7 marks) | |
| 3. Health of rabbits | |
| Signs of good health | 1 |
| Absence of ectoparasites | 1 |
| (2 marks) | |
| 4. Record keeping | |
| Availability of records (Any 3 x 1) | 3 |
| Dates the various activities and operations were carried out | 1 |
| (Award 1 mark for each activity/ operation up to a maximum of five marks) | 5 |
| Well organized records | 1 |
| (10 marks) | |

Subtotal for each Assessment 24 marks

Total for three assessments (24 x 3) 72 marks

| | |
|---|------------------|
| 5. Initiative / Originality | |
| Consider unique practices carried out by a candidate which promote proper growth and health of rabbits. | |
| Award a maximum of 4 marks for each initiative identified (considering appropriateness and effectiveness) up to a maximum of 2 initiatives. (4 x 2) | (8 marks) |

Total (72 + 8) 80 marks

Note: Except for initiative/ originality, all the other aspects of the project will be assessed three times. During each assessment the project should be scored out of a maximum of 24 marks as shown in the marking scheme. The sum of three assessments added to the score on initiative/ originality should be out of 80 marks.

PROJECT A: RABBIT REARING

GUIDELINES FOR MARKING CANDIDATES' PROJECT REPORTS

The project report should be assessed out of 20 marks. The guidelines below should be followed to arrive at an objective score.

| Aspect of the project report | | Maximum Score |
|-------------------------------------|---|----------------------|
| 1. | Project title Clearly written | 1 |
| 2. | Introduction Stating aim of project | 1 |
| | Breed of rabbit kept | 1 |
| 3. | Housing Description of the hutch | 1 |
| | Siting of the hutch | 1 |
| 4. | Feeding Type of feed | 1 |
| | Quality and quantity of feed given daily | 1 |
| | Supplementary feeds | 1 |
| | Frequency of feeding | 1 |
| 5. | Watering Provision of water(fresh/ adequate/ clean) | 1 |

| | | | |
|----|---|---|---|
| 6. | Health Free from symptoms of disease | 1 | |
| | Disease control measures put in place | | 1 |
| | Free from parasites and parasite infestation symptoms | | 1 |
| | Parasite control measures put in place | | 1 |
| 7. | Observation Achievements made | 1 | |
| | Problems encountered and actions taken | | 1 |
| 8. | Results Consider results in relation to the aim and management of project | 2 | |
| 9. | Conclusion Consistent with the aim and operations | 2 | |

Total (20 marks)

Turn over

**PROJECT B: PRODUCTION OF NAPIER GRASS/BANA GRASS
GUIDELINES FOR MARKING CANDIDATE'S PROJECTS**

| | | | Maximum Score |
|---|---|----------------------------------|----------------------|
| 1. | Seedbed/ land preparation | | |
| | Timely land preparation | | 3 |
| | Appropriate tilth | | 4 |
| | Free from weeds | | 2 |
| | Uniform seedbed | | 1 |
| Edges of plot are straight | 1 | Appropriate depth of cultivation | 1 |
| Correct plot dimensions | | | 2 |
| | | | (14 marks) |
| 2. | Crop establishment | | |
| | Timely planting | | 1 |
| | Correct depth of planting | | 2 |
| | Correct spacing | | 2 |
| | Appropriate crop stand/ coverage/plant population | | 3 |
| | Manure and fertilizer application | | 1 |
| | Crop vigour | | 2 |
| | Straightness of rows | | 2 |
| | | | (13 marks) |
| 3. | Weed control | | |
| Timely weeding | 4 | Thorough weeding | 4 |
| No effects of weeding on the crop e.g injury; burying of some foliage; some roots. | | 3 | exposure of |
| Maintenance of edges of the plot. | | | 1 |
| | | | (12 marks) |
| 4. | Pest and disease control | | |
| Effectiveness of pest control considering symptoms, presence or absence of | | 5 | pests. |
| Effectiveness of disease control considering symptoms, presence or absence of diseases. | | 5 | of |
| | | | (10 marks) |
| 5. | Other cultural practices | | |
| Consider any other appropriate cultural practices applied to the crop e.g earthing up, gapping. | | | 5 |
| | | | (5 marks) |

| | | Maximum Score |
|-------------------|---|----------------------|
| 6. | Soil and water management | |
| | Appropriate and effective soil and water management measures taken considering topography, climate and soil e.g. terracing, contour planting and ridging. | 4 |
| (4 marks) | 7. Harvesting and handling: | |
| | Avoidance of wastage during harvesting. | 3 |
| | Timeliness of harvesting. | 2 |
| (5 marks) | 8. Yield obtained: | |
| | Quality and quantity (to be) harvested compared to other candidates in the class | 5 |
| (5 marks) | 9. Initiative/ originality: | |
| | Consider other unique practices carried out by a candidate aimed at improving the growth and performance of the crop. This aspect should be assessed any time during the course of the project. | |
| | (Award a maximum of 4 marks for each unique practice identified up to a maximum of 12 marks) | 3 |
| (12 marks) | | |

Total maximum marks 80 marks

Turn over

**PROJECT B: PRODUCTION OF NAPIER GRASS / BANA GRASS
GUIDELINES FOR MARKING CANDIDATES' PROJECT REPORTS**

The project report should be assessed out of 20 marks. The guidelines below should be followed to arrive at an objective score.

| | | Maximum Score |
|----|---|----------------------|
| | Aspects of the project report | |
| 1. | Project title Clearly written | 1 |
| 2. | Introduction Stating the aim of the project | 2 |
| 3. | Seedbed preparation Clearing the land using pangas/ slashers | 1 |
| 4. | Preparation Appropriate tilth using jembes/ fork jembes | 1 |
| 5. | Planting Application of manures/fertilizers Appropriate preparation of planting materials Details of planting procedure appropriate to the crop Application of pesticides | 2 |
| 6. | Weed control Time of weed control Types of weeds Method of weed control | 1 |

| | | | |
|-----|--------------------------|---|----------|
| 7. | Pests control | Types of pests identified Types of damage caused Control measures taken | 1 |
| 8. | Disease control | Symptoms of diseases identified Control measures taken | 1 |
| 9. | Other ement practices | crop Mulching, thinning, gapping and watering Soil and water management | 2 |
| 10. | Observations | Achievements and problem experienced | 2 |
| 11. | Harvesting | Method applied, tools and materials used and timeliness | 2 |
| 12. | Result/ yield | Considering quality and quantity (to be) obtained | 2 |
| 13. | Conclusion | Consistent with the aim/ management of the project | |
| | | Total (20 marks) | |