AN EVALUATION OF THE PRIMARY TEACHER EDUCATION HOME SCIENCE CURRICULUM IN SELECTED COLLEGES IN KENYA

BY

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATIONAL TECHNOLOGY, HOME SCIENCE AND TECHNOLOGY EDUCATION IN THE SCHOOL OF EDUCATION,

UNIVERSITY OF ELDORET, KENYA

JUNE, 2017

DECLARATION

DECLARATION BY THE CANDIDATE

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DEDICATION

I dedicate this work to my loving children; Joan Ngugi Mwangi and Ian Ngugi Mwangi, my mother Veronica Siomi Sempele for always reminding me that education is key in life, my sister Salome Resian Sempele for bearing with my absence in the course of conducting the study and my good friends George Ariya and Peter Mwangi for always urging me on: no words can thank you all enough. May the Almighty God continue to shower you with His blessings.

ABSTRACT

Provision of education in any society is known to be an expensive undertaking. It requires immense investments of human and non human resources, hence the need to justify the viability of the returns obtained from such investments. The main objective of Home Science Education is to promote self reliance and improve the quality of life for its students, families and the community. This objective can only be achieved if the curriculum offered is relevant. The purpose of this study was to establish the relevance of the Primary Teacher Education (PTE) Home Science curriculum in meeting the objectives of Home Science Education. The specific objectives were: to establish the effect of teacher trainees' attitude towards Home Science on achievement of the objectives of Home Science Education, determine the effect of planned content in the Home Science curriculum on achievement of the objectives of Home Science Education, establish the effect of instructional resources used in Home Science lessons on achievement of the objectives of Home Science Education, determine the effect of instructional methods used to teach Home Science on achievement of the objectives of Home Science Education and find out the effect of assessment techniques used to assess teacher trainees on achievement of the objectives of Home Science Education. Five hypotheses were tested. The study was underpinned in the pragmatic philosophical paradigm and adopted the convergent parallel mixed methods strategy embedded in the cross sectional survey research design. The Context, Input, Process and Product model of evaluation grounded the study. The Kenya Institute of Curriculum Development (KICD), nine primary teacher training colleges (PTTCs) and nine primary schools were selected for study. Stratified random sampling was used to select the stratum size from each training college while simple random sampling was used to select the sample of 331 teacher trainees. Tutors, Deans of Curriculum (DOCs) primary school teachers, teacher trainees and the subject specialist at KICD were purposively selected. Semi-structured questionnaires were distributed to tutors, teacher trainees and primary school teachers while DOCs and the subject specialist from KICD were interviewed. An observation guide was used to assess the environmental context of curriculum implementation at the PTTCs. Cronbach Alpha test for Internal Consistency was used to test the reliability of the questionnaire. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 21. Skewness and Kurtosis tests confirmed normality of the data. Factor analysis was carried out to verify the constructs underlying each scale adopted. Descriptive statistics were carried out to explain and summarize data collected while inferential tests specifically chi square and standard multiple regression analysis were used to establish the effect of the components of the PTE Home Science curriculum on achievement of the objectives of Home Science education at a 95% confidence level. The results showed that teacher trainees' attitude towards Home Science (β_1=-0.069, p=0.002), instructional resources (β_2=0.465, p=0.000), instructional methods (β_3=0.172, p=0.000) and assessment techniques (β_4=0.342, p=0.000) had significant effects on achievement of the objectives of Home Science Education since all probability values were less than 0.05. However, planned curriculum content (β_5=0.004, p=0.957) had no significant effect on achievement of the objectives of Home Science Education. In conclusion, the results indicated that teacher trainees' attitude towards Home Science, instructional resources, instructional methods and assessment techniques used in Home Science Education at PTTCs explained 86% of the variance in achievement of the objectives of Home Science Education. These findings contributed to literature pertaining Home Science Education in Kenya and recommended that KICD reviews the curriculum to ensure all curriculum components give a positive contribution towards achievement of the objectives of Home Science Education. The review will also ensure that the curriculum is at par with educational transformations in Kenya and the world for a progressive Home Science Education system.

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LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

AED	-	Academy for Educational Development
APWA	-	All Pakistan Women Association
ASAL	-	Arid and Semi-Arid Land
CATs	-	Continuous Assessment Tests
CEMASTEA	-	Centre for Mathematics, Science and Technology Education in Africa
DOC(s)	-	Dean(s) of Curriculum
EFA	-	Education for All
EIC	-	Education Information Centre
ESQAC	-	Education Standards and Quality Assurance Council
HOD	-	Head of Department
ICT	-	Information and Communication Technology
IFHE	-	International Federation for Home Economics
IHE	-	Institute of Home Economics
KESSP	-	Kenya Education Sector Support Programme
KICD	-	Kenya Institute of Curriculum Development
KIE	-	Kenya Institute of Education (now KICD)
KLB	-	Kenya Literature Bureau
KNEC	-	Kenya National Examinations Council
KNHCR	-	Kenya National Commission on Human Rights

MOE	-	Ministry of Education
MOEST	-	Ministry of Higher Education, Science and Technology
NACOSTI	-	National Commission for Science, Technology and Innovation
NCEOP	-	National Committee on Educational Objectives
NESC	-	National Economic and Social Council
PTC	-	Primary Teacher College
PTE	-	Primary Teacher Education
PTTC	-	Primary Teacher Training College
ROK	-	Republic of Kenya
SDGs	-	Sustainable Development Goals
STI	-	Science, Technology and Innovation
TP	-	Teaching Practice
TPCTM	-	Teachers Proficiency Course Training Manual
TSC	-	Teachers Service Commission
TTC	-	Teacher Training College
UN	-	United Nations
UNAID	-	United Nations Joint Programme on HIV and AIDS
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
UNICEF	-	United Nations Children’s Fund (formerly United Nations International Children’s Emergency Fund)

χ^2	-	Chi square
β	-	Beta
ε	-	Error

OPERATIONAL DEFINITION OF TERMS

The following terms were specifically used for this study:

Curriculum – is a written plan for action that serves as a guide to teachers engaged in instruction. It comprises all means of instruction (planned or unplanned, desired or undesired, intended or unintended) used by Home Science tutors to provide learning opportunities for teacher trainees in Primary Teacher Training Colleges in Kenya.

Curriculum evaluation – an assessment of the extent to which the current PTE Home Science curriculum meets the objectives of Home Science Education in Kenya.

Curriculum relevance – the ability of the Home Science curriculum offered in PTTC's in Kenya to meet the objectives of Home Science Education.

Home Science curriculum – comprises teacher trainees' attitude towards Home Science Education, planned content in the Home Science curriculum, instructional resources used in Home Science lessons, instructional methods used to teach Home Science lessons and assessment techniques used to assess teacher trainees by Home Science tutors at PTTCs.

Objectives of Home Science Education – also referred to as course objectives, comprise the six statements that guide Home Science education in PTTCs in Kenya as developed by KIE in 1994. They include: to help teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development; to enable teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids; to help teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life; to enable teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living; to enable teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community and to enable teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning.

ACKNOWLEDGEMENT

I would like to thank God for His guidance during the entire process of research. I wish to thank Prof. Ruth Otunga, Dr Jacob Lolelea and the late Prof. Grace Mbagaya for guiding me in conceptualizing the research problem, data collection and report writing. My appreciation goes to all my course work lecturers: Prof Patrick Kafu, Prof Chris Mukwa, Prof Jackson Too, Dr. Kisilu Kitainge, Dr. Simon Wanami, Dr. Charlotte Serem, Dr. Racheal Karei, Mrs. Elizabeth Buluku and Ms Monica Cheruiyot.

To all the tutors, teacher trainees, primary school teachers, Deans of Curriculum and the subject specialist from Kenya Institute of Curriculum Development, this study would not have been possible without your support.

God bless you all.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter gives background information regarding the study, the statement of the problem, the purpose of the study, objectives of the study, hypotheses of the study, justification of the study, significance of the study, limitations of the study, assumptions of the study, the theoretical framework that guided the study and the conceptual model adopted by the study.

1.2 Background to the Study

Home Science classes were first offered in the United States, Canada, Germany and Great Britain followed by Latin America, Asia and Africa (Engberg, 1996; Mberengwa, 2004; Serem, 2011). Later, it was introduced as Domestic Science and was mainly offered to Africans (Otunga, 1993; Sigot, 1987; Serem, 2010). Home Science was introduced in Kenya as a technical and vocational subject by the Christian missionaries towards the end of the nineteenth century. It was referred to as Home Craft and was aimed at equipping African women with skills that would enhance family life, equip house servants with skills that would enable them provide quality services to the white settlers and their administrators and prepare young girls for marriage (Mberengwa, 2004; Sang, 2002; Serem, 2010; Serem, 2011). Later, Domestic Science was referred to as Science Applied to the Home and the Study of Food Value (Otunga, 1993; Serem, 2011). The courses considered for training then included Cookery, Needlework, Childcare, First Aid, Housewifery and Nutrition (Serem, 2011).

Currently in Kenya, Home Science is offered at the secondary and tertiary levels of education that include the Primary Teacher Training Colleges (PTTCs). The mission of Home Science is to help individuals, families and communities improve their economic, social, cultural and political environment (Education Information Centre (EIC), 2006; Nyangara, Indoshi & Othuon, 2010a; Waudo, 2002). Its main objective is to promote self-reliance and improve the quality of life for students, families and the community (Kenya Literature Bureau (KLB), 2003; Nyangara et al., 2010a: Nyangara, Indoshi & Othuon, 2010c). Further, it seeks to help develop learner's ability to understand and adapt to environmental, social and economic changes around them (Nyangara et al., 2010a; Nyangara et al., 2010c).

Primary Teacher Education (PTE) is a post secondary programme of study offered to provide further education and training to teacher trainees for the award of a P1 certificate (Lolelea, 2011; Mwangi, 2012; ROK, 2015). It is offered in PTTCs under the Ministry of Education, Science and Technology in Kenya. Courses offered in PTTCs focus on pedagogy and subject knowledge content (ROK, 2016). The graduates then proceed to teach in primary schools.

The number of PTTCs has remained constant at 132 for the years 2012, 2013 and 2014 (ROK, 2016). Out of these, 26 are public PTTCs while 106 are registered private PTTCs. Seven PTTCs that include Bondo, Kenyenya, Kitui, Garissa, Narok, Chester and Ugenya, some of which had initially been taken over by universities, have been repossessed by the government and are now fully operational as public PTTCs (ROK, 2016). The total enrolment in public PTTCs has increased from 19,774 (9,578 male and 10,196 female) in 2013 to 21,008 (10,216 male and 10,792 female) in 2014, 21,380 (10,400 male and 10,980 female) in 2015 and a further 21,431 (9,994 male and 11,437 female) teacher trainees in 2016 (ROK, 2016). It is at these PTTCs that the Home Science curriculum is implemented.

Different people have defined the term curriculum differently. Generally, a curriculum may be described as a set of values that are activated through a development process and culminates in classroom experiences for learners (Syomwene, Nyandusi & Yungungu, 2017; Wiles, 2005). The curriculum offered at PTE in Kenya is developed by KICD. According to KIE (2004), the objectives of PTE include, among others: to develop the basic theoretical and practical knowledge about the teaching profession so that the teacher's attitude and abilities can be turned towards professional commitment and competence. Further, PTE aims at providing suitable learning opportunities for the child besides developing the child's communicative skills and individual potential abilities to their maximum by offering them a variety of creative learning experiences. It also expects to develop the child's ability in critical and imaginative thinking in problem solving and self expression.

It is from these objectives that the various subject or programme objectives are derived. The PTE curriculum in Kenya was first introduced in 1986 and revised in 1994 with the aim of making it responsive to the changes in society (KIE, 2004; Lolelea, 2011). The curriculum was further revised in the year 2004 following recommendations by various educational fora that included the Conference of College Principals Association held in the year 2000 (KIE, 2004; Otunga, 2015).

This revision addressed several PTE curriculum issues that included: the harmonization of the PTE curriculum with the revised primary school curriculum;

addressing issues of curriculum overloads and overlaps; infusing and integrating contemporary issues and incorporating industrial and technological development in the revised curriculum (KIE, 2004; ROK, 2016). However, despite this revision, there have been concerns on the suitability of the curriculum in meeting the demands of the changing societal needs.

For instance, *The Standard* newspaper of February, 20th, 2009 presented an article on the dilemma of the Kenyan education curriculum which argued that the education system was not promoting the application of acquired knowledge by the graduates in the world of work. According to the article, such graduates were portrayed as not useful to society and themselves in that they had the knowledge about several things but lacked the necessary skills to apply the same in reality. This renders them irrelevant in terms of self reliance, self employment and even improving their standards of living besides that of their families and the community. Therefore, a comprehensive evaluation of the PTE curriculum would verify this claim and establish its relevance in meeting the needs of the society.

Curriculum evaluation attempts to throw light on two questions: do planned learning opportunities, programmes, courses and activities as developed and organized actually produce desired results and how can the curriculum offerings best be improved (McNeil; 1977; Syomwene et al., 2017). Rogers (1997) describes a worthy curriculum as more than just a list of subjects or topics covered in a school or a set of objectives for any particular course. According to the author, a quality curriculum encompasses a number of interdependent factors amongst them: what students learn and how, what teaching strategies are most effective and how the structure of the school supports both student achievement and teacher effectiveness. Further, the final goal of curriculum evaluation would be general agreement in the extent to which the curriculum meets state standards and benchmarks, is relevant and sufficient (valid) or is effectively implemented and students are achieving key objectives at an acceptable level (Rogers, 1997; Syomwene et al., 2017).

Curriculum relevance is the ability of learners to apply what is taught to them to their needs and interests of the society (Kafu, 2014; Otunga, 2010b). According to Otunga (2010b), a relevant curriculum in any country should consist of the following elements: promote holistic development and individual excellence; be non discriminatory (inclusive); promote human rights, democracy, justice and the rule of law; focus on achievement of national development goals; take into account the available support resources; recognize the ecological realities, socio-cultural integration, national identity, historical land marks, regional and international realities as essential for growth and development; and take on board contemporary and emerging issues and problems in life.

Curriculum evaluation would thus, involve a systematic and continuous process of collecting, analyzing and interpreting information to determine the extent to which learners are achieving instructional objectives (Mwaka, Nabwire & Musamas, 2014). A curriculum may be evaluated to determine its relevance in relation to achieving its objectives or determine whether all the efforts directed to it in terms of finances and human resources have been worthwhile (Scriven, 1999; Stufflebeam & Shinkfield, 2007), appropriate or valid (Mwaka et al., 2014; Rogers, 1997).

Home Science is one of the subjects offered in the PTE curriculum. The main objectives of teaching Home Science to teacher trainees at the PTTCs are: to help teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development; to enable teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids; to help teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life; to enable teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living; to enable teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community; and to enable teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning (KIE, 1994).

During the first year of study in PTTCs, Home Science and Agriculture subjects are integrated into Science Education. The three subjects are taught as one and referred to as Integrated Science (KIE, 2004). A few topics; specifically Health Education and Food and Nutrition from the Home Science syllabus are taught as part of Integrated Science (KIE, 2004). During the second year of study, Home Science is introduced as a separate subject. It is placed in the same group as Science, Agriculture and Mathematics. This group is known as the Science option. Emphasis is on specialization in the Sciences category of subjects (KIE, 2004). This is despite the fact that Home Science and Agriculture are not offered in primary schools in Kenya. According to KIE (2004), this reorganization and integration of subjects was meant to make the curriculum manageable and rational.

Home Science at PTTC is taught under four broad units: Home Management, Food and Nutrition, Clothing and Textiles and Maternal and Child Health Care (KIE, 2004). The teacher trainees then seat for their theory paper in PTE examinations and proceed to teach in primary schools upon successful completion. This therefore means that they only teach Science and Mathematics in primary schools despite training and even specializing in other Science related subjects like Home Science and Agriculture.

This may imply that the PTE curriculum is not in congruence with the primary school curriculum in Kenya. This is because, while the PTE curriculum trains teacher trainees in Home Science Education, the primary school curriculum does not offer Home Science as one of its subjects. In terms of educational efficiency, decisions need to be made on either offering Home Science in primary schools or not training teachers in Home Science Education given the immense resources invested in the training process.

The vocational subjects of the PTE curriculum in Kenya include Agriculture, Computer Studies and Home Science (KIE, 2006; Mwiria, 2002; ROK, 2016). These subjects are supposed to be taught through a combination of theory and practice with the practical bit forming an essential element of teacher training (KIE, 2004; Sifuna & Otiende, 2009; Wanjohi, 2011; Wosyanju, 2009). The teaching of Home Science at the PTTCs has not been without challenges. It is unfortunate that institutions in Kenya today place much emphasis on good performance in vocational subjects for good grades more than on their practical application in solving life related challenges and potential in promoting employment (Mwiria, 2002; Nyangara et al., 2010a; Nyangara, Indoshi & Othuon, 2010b; Nyangara et al., 2010c; Otunga, 2010a).

Further, most of the drawbacks of the vocational curriculum highlighted by research indicate that there have been overlaps across subjects (KICD, 2016; KIE, 2004; Mwiria, 2002), negative student and societal attitudes towards the subject (Cheruiyot, 2001; Iregi, 2015; Otunga, 1993; Sang, 2002), some objectives seem unachievable in terms of resource availability, poor sequencing of teaching topics within individual subjects and little time allocation to some subjects (Nyangara et al., 2010a; Otunga, 2010a; Sigot, 1987).

Further, some content is seen as obsolete, thus fails to keep pace with the changing times especially technological advancement (Kinuthia, 2009). Research has recommended that it is important to reduce the content of vocational subjects still being offered in learning institutions to what is deemed feasible and the introduction of other types of functional survival skills in form of short courses (Nyangara et al., 2010c).

According to Nyangara et al. (2010c), it is important to make it mandatory for schools to offer a specific minimum of vocational subjects in order to make them strong and enable teacher trainees generate interest in them. Given a context of a vibrant national economy, technical and vocational subjects are perceived as a source of valuable employment and training opportunities for the graduates. In fact, in order to ensure that teacher trainees acquire appropriate and important skills out of training, Nyangara et al. (2010c) recommend that KNEC should examine more of the practical knowledge besides the theoretical aspect of the educational curricula it examines.

The vision of the Ministry of Education is to have a globally competitive quality education, training and research for Kenya’s sustainable development. Its mission is to provide, promote and coordinate lifelong education, training and research for sustainable development (Otunga, 1993; ROK, 2008; Serem, 2011; Sifuna & Otiende, 2009; Wanjohi, 2011; Wosyanju, 2009). One of the key objectives of the MOE is to enhance access, equity and quality in education (ROK, 2008; Sifuna & Otiende, 2009; UNESCO, 2014; Wosyanju, 2009).

To achieve a globally competitive quality education, training and research for Kenya’s sustainable development, the government is committed to seventeen Sustainable Development Goals (SDGs). Key amongst these goals is the government’s commitment to offer quality education, promote industry innovation and infrastructure, reduce inequalities, eliminate poverty and provide descent work, economical growth, good health and the well being of all its citizens (UNESCO, 2015). This has been adopted in Kenya’s vision 2030 which is the government’s development blue print for 2008-2030.

Vision 2030 places a great emphasis on the link between education and the labour market, the need to create entrepreneurial skills and competences and the need to strengthen partnerships with the private sector (ROK, 2015). The aim of the vision is to make Kenya a globally competitive and prosperous country with a high quality of life by 2030. It is assumed that this will drive Kenya into a middle income economy by 2030. This new approach to education is aimed at creating a globally competitive quality education, training and research for Kenya's sustainable development (National Economic and Social Council (NESC), 2007; ROK, 2008) by partly raising the quality and relevance of education besides emphasizing on Science and Technology Education (NESC, 2007).

It is thus evident that technical and vocational subjects that include Home Science are crucial in realizing Kenya's industrialization goals (Eshiwani, 1990; Ngerechi, 2003; Nyangara et al., 2010a; Otunga, 2010a; Otunga, 2012; Saitoti, 2005; Serem, 2011). Therefore, the curricula offered at the various levels of education in the country should basically be relevant, offer technical and vocational subjects besides ensuring that the practical aspect of such curricula is given the emphasis it deserves in order to achieve the basic aims and objectives of education as is envisaged in important educational policies, Sessional papers, SDGs and Vision 2030.

Due to dynamism of the world of work, it is important to continuously review the curriculum to make it relevant and able to serve the needs of the society and demands of Kenya Vision 2030 which has established clear priorities for the Vision attainment and the on-going changes in the broader economic environment following the signing of the East African protocol (ROK, 2016).This study therefore sought to evaluate the relevance of the PTE Home Science curriculum offered in PTTCs in Kenya. There was need to establish whether it is viable to continue offering the PTE Home Science curriculum despite the fact that it is not offered in the primary education curriculum. The study also sought to establish whether teacher trainees, despite not having an opportunity to teach Home Science in the primary schools they are finally employed to teach are able to apply what is taught to them to their practical life situations in order to solve life related challenges and improve their standards of living and that of their families as outlined in the objectives of Home Science Education.

1.3 Statement of the Problem

The importance of Home Science Education as specified in its main objective cannot be over emphasized given its potential in creating employment, self reliance, creativity and improving the standards of living of its graduates, their families and the community. In fact, a Needs Assessment Survey undertaken by KICD in the year 2016 established that learning activities that best expose learners abilities are included in Home Science thus concluded that Home Science should be emphasized in the reformed curriculum and made compulsory (KICD, 2017). Moreover, in countries with the most rapid development, over 40% of the learners are reported to have studied technical and vocational subjects (ROK, 2012; Saitoti, 2005).

The Primary Teacher Education (PTE) Home Science curriculum in Kenya was last reviewed in the year 2004 with no subsequent reviews 13 years later. This is despite repeated recommendations by various researchers (Nyangara et al., 2010a; Nyangara et al., 2010b; Nyangara et al., 2010c; Otunga et al., 2011; Serem, 2010; Serem, 2011) that the Home Science curricula at the various levels of education be reviewed in order to ensure that they are relevant for the job market. Furthermore, there have been concerns raised on the relevance of the PTE Home Science curriculum given that it is used to train teachers who end up teaching in primary schools where Home Science is not among the subjects offered (Iregi, 2015). This implies that the country is producing graduates in Home Science Education for a nonexistent labour market.

A majority of these studies focused on the high school Home Science curriculum. Specifically, there was insufficient research conducted on the PTE Home Science curriculum. Further, KICD already undertook a summative evaluation of the primary and secondary school curricula in the year 2009 and recently, in the year 2016, the

PTE curriculum in Kenya. However, these reviews evaluated curricula for the different levels of study - primary, secondary and primary teacher education and not curricula for the specific subjects offered.

This study therefore filled the gap on the need for review of the PTE Home Science curriculum by evaluating the relevance of the PTE Home Science curriculum in meeting the objectives of Home Science Education in Kenya. Five curriculum components: teacher trainees' attitude towards Home Science, planned content in the Home Science curriculum, instructional resources used in Home Science lessons, instructional methods used to teach Home Science lessons and assessment techniques used to assess teacher trainees in Home Science Education at PTTCs were used in the evaluation.

1.4 Purpose of the Study

The purpose of this study was to determine the relevance of the Primary Teacher Education Home Science curriculum in relation to the objectives of Home Science Education.

1.5 General Objective of the Study

The general objective of the study was to establish the effect of the components of the Primary Teacher Education Home Science curriculum on achievement of the objectives of Home Science Education.

1.6 Specific Objectives of the Study

Five specific objectives were derived from the general objective of the study. These objectives aimed to:

i) Establish the effect of teacher trainees' attitude towards Home Science on achievement of the objectives of Home Science Education.

ii) Determine the effect of planned content in the Home Science curriculum on achievement of the objectives of Home Science Education.

iii) Establish the effect of instructional resources used during Home Science lessons on achievement of the objectives of Home Science Education.

iv) Determine the effect of instructional methods used to teach Home Science lessons on achievement of the objectives of Home Science Education.

v) Find out the effect of assessment techniques used to assess teacher trainees on achievement of the objectives of Home Science Education.

1.7 Research Hypotheses for the Study

The following research hypotheses were used to establish the effect of the specific components of the Primary Teacher Education Home Science curriculum on achievement of the objectives of Home Science Education.

H_{O1}: Teacher trainees' attitude towards Home Science does not significantly affect achievement of the objectives of Home Science Education.

H_{O2}: Planned curriculum content in the Primary Teacher Education Home Science curriculum does not significantly affect achievement of the objectives of Home Science education.

H_{O3}: Instructional resources used by Home Science tutors have no significant effect on achievement of the objectives of Home Science Education.

H_{O4}: Instructional methods used by tutors to implement the Home Science curriculum in teacher training colleges do not significantly affect achievement of the objectives of Home Science Education.

H_{O5}: Assessment techniques used to assess Home Science teacher trainees do not significantly affect achievement of the objectives of Home Science Education.

1.8 Significance of the Study

Each government requires a well-educated and trained manpower for its economic and social development. The findings of this study offer good lessons on the relevance of the PTE Home Science curriculum in relation to the objectives of Home Science Education. Additionally, the Kenya Institute of Curriculum Development (KICD) will benefit from recommendations given regarding the relevance of planned curriculum content, instructional resources, instructional methods, and assessment techniques used by Home Science tutors in meeting the objectives of Home Science Education. This will inform future decisions made in curriculum development and reviews.

The Education Standards and Quality Assurance Council (ESQAC) will benefit from data collected regarding the actual practice of implementing and assessing the Home Science curriculum at the PTTCs in Kenya. Besides giving suitable recommendations, study findings established the relevance of the PTE Home Science curriculum and the best implementation practices that would ensure quality education to teacher trainees.

These study findings provide the Teachers' Service Commission (TSC) with information regarding the present conditions and needs of Home Science tutors in PTTC's in the Kenya. This will guide the commission on issues pertaining staffing, in-servicing and the challenges tutors face while implementing the Home Science curriculum at the PTTC's in the country.

The study provides important information for the Kenya National Examinations Council regarding teacher trainees' assessment at PTE level of study in Kenya. This is beneficial in terms of ensuring that quality examinations are offered and efficiently managed to reciprocate the objectives of Home Science Education. Further, study findings highlighted the most preferred mode of assessment in PTE education which would greatly inform KNEC's PTE evaluation practices.

Primary Teacher Training Colleges are bound to benefit from findings on attributes of a relevant curriculum and quality curriculum implementation practices. These attributes are bound to influence the quality of Home Science tutors in turn influencing the competences acquired by Home Science trainees from the respective PTTCs which should be in line with the objectives of Home Science Education.

Home Science tutors are key players in the process of implementing the Home Science curriculum. These research findings offer them good lessons regarding good practices in planning for instructional experiences through appropriate selection of planned curriculum content, instruction resources, instructional methods and assessment techniques for better results and achievement of the course objectives.

The results also enlighten Home Science teacher trainees from the different PTTCs in Kenya on the benefits of Home Science Education besides benefiting from a relevant curriculum. This will enable them acquire relevant competences required by the labour market hence empower them economically and boost their levels of self reliance. Lastly, the community benefits from study findings in that they get to understand what Home Science Education entails and how the knowledge and skills acquired can be used to improve the lives of individuals, families and the community.

1.9 Justification of the Study

Provision of education in any society is known to be an expensive undertaking. It requires immense investment in the human and non human resources. The Home Science curriculum, therefore, had to be evaluated to determine whether all the effort made towards it in terms of finances and human resources have been worthwhile. Various stakeholders, for instance, the government, PTTCs, tutors, parents, teacher trainees and the general community want to know the extent to which the objectives of Home Science Education are being achieved. Results of this study's findings form the basis for making judgement about the extent to which the objectives of Home Science Education are being achieved. This will in turn ensure a sound foundation for the country in terms of developing a well trained and skilled manpower that will propel it towards achieving its industrialization vision by the year 2030. This will guarantee viable returns from the investments committed towards the education system by the government, citizens, parents and the teacher trainees themselves.

1.10 Assumptions of the Study

This study made several assumptions. Firstly, it was assumed that the Home Science curriculum is offered in PTE and that all PTTCs in Kenya, whether public or private, implement the same Home Science curriculum. Secondly, the study assumed that teacher trainees taking Home Science Education in PTTCs in Kenya are qualified and admitted in accordance with the government's policy of recruiting applicants. Applicants are required to have scored a minimum Mean Grade C plain in their Kenya Certificate for Secondary Education examination.

The third assumption was that employment of staff teaching Home Science Education in PTTCs is in accordance with government policy to have well qualified graduates recruited from accredited institutions of higher education by the TSC. The fourth assumption of the study was that members of staff teaching Home Science Education and their trainees cover the Home Science curriculum as recommended by MOEST within the prescribed period of two years. This was assumed to be the practice in both the public and private PTTCs in the country.

1.11 The Scope of the Study

Home Science Education in Kenya is offered at the post primary level of study specifically at the secondary school level, primary teacher training college level and the university level as an optional subject. In this respect, therefore, this study focussed on the tertiary level of education specifically on public and private PTTCs in Kenya. Study informants included PTTC tutors, teacher trainees and Deans of Curriculum. The study ensured that sample sizes for PTTCs and informants were representative of the respective population.

There were many stakeholders who would have made significant contributions to the study such as teacher trainees' parents, the TSC, KNEC, ESQAC and the general public. It was not possible to include all of them but a sample of the primary school teachers who are graduates of the PTTCs and the subject specialist at KICD were also included. Lastly, the relevance of the curriculum was based on the following five indicators of the PTE Home Science curriculum: teacher trainees' attitude towards Home Science, planned curriculum content, instructional resources, instructional methods and assessment techniques used in Home Science Education.

1.12 Limitations of the Study

The study was conducted only in selected PTTCs in Kenya. Therefore, findings from the investigation should be generalized with caution. Moreover, although the curriculum represents a key factor of the learning system, it is not the only factor that influences the outcome of education. Other factors related to tutors' and trainees' characteristics and the environmental context of curriculum implementation may also influence the educational outcomes. These factors were considered as intervening variables in the study and their influence on achievement of the objectives of Home Science Education accounted for in the multiple regression analysis equation.

Further, the study was limited to public and private PTTCs that were operational since the last review of the current PTE Home Science curriculum in the year 2004. This is because, these PTTCs had implemented the previous and current curricula, thus comfortably placed to provide relevant responses based on their real experiences with the two curricula. Moreover, private PTTCs have mushroomed uncontrollably today in Kenya. Unfortunately, some do not have adequate resources that are important in curriculum implementation. For private PTTCs that have been operational since 2004, it was assumed that they are by now stable and better established in terms of curriculum implementation thus able to participate in the current study.

1.13 Theoretical Framework of the Study

The Stufflebeam (1971) Context, Input, Process and Product (CIPP) model guided this study. This is a widely cited model of evaluation (Otunga, 2015). According to Zhang et al., (2009), the CIPP model of evaluation has been used extensively in educational settings. For instance, Wamunga (2008) used this model to evaluate street children programmes in Uasin Gishu District in Kenya. Further, the CIPP model served as the evaluation model for Osokoya and Adekunle (2007) who assessed the trainability of enrollees in the Leventis Foundation, Agricultural Schools' projects in Nigeria.

This model is mainly applied in educational studies to determine if a particular educational effort has resulted in a positive change in school, college, university or training organization (Hussain, Dogar, Azeem & Shakoor, 2011; Otunga, 2015). The model is centered on decision making regarding a specific programme. According to Stufflebeam and Shinkfield (2007), the model is not usually used to prove, but to improve a programme. The authors aver that a proactive application of the model can facilitate decision making and quality assurance besides allowing the faculty members to continually reframe and "sum up the project's merit, worth, probity, and significance" (p. 325).

To decide whether to maintain, modify or eliminate a curriculum or programme, information is obtained by conducting the following four types of evaluation: context, input, process and product evaluation (Hussain et al., 2011; Mwaka et al., 2014; Otunga, 2015). This model is described as a comprehensive framework for conducting formative and summative evaluations of projects, personnel, products, organizations, and evaluation systems (Stufflebeam & Shinkfield, 2007). Thus, the model relies on both formative and summative evaluation to determine the overall effectiveness of a curriculum programme. This is because evaluation is required at all levels of the programme being implemented.

Formative evaluation is carried out during the *Context, Input and Process* stages of evaluation while summative evaluation is considered during the *Product* stage of evaluation. *Context evaluation* is the most basic stage of evaluation with the purpose of providing a rationale for evaluation objectives. The evaluator defines the environment in which the curriculum is implemented which could be a classroom, school or training department. The evaluator determines needs that were not met and reasons why the needs are not being met. Also identified are the shortcomings and problems in the organization under review. The techniques of data collection would include observation of conditions in the school, background statistics of teachers and interviews with players involved in the implementation of the curriculum.

Input evaluation provides information on how resources are utilized to achieve objectives of the curriculum. It looks at school resources and how they are utilized during curriculum implementation. *Process evaluation* focuses on provision of periodic feedback on how the curriculum is being implemented while *product evaluation* involves collection of data to determine whether the curriculum managed to accomplish what it was set out to achieve. Product evaluation involves measuring the achievement of objectives, interpreting the data and providing information that informs the decision whether to continue, terminate or modify the curriculum.

The study adopted this model as a guide since it employs multiple methods in the evaluation process, it has been tested in a wide range of contexts, it has evolved and strengthened over time and is supported by theoretical and pragmatic literature. Context evaluation in this study involved the analysis of the environment under which the PTE Home Science curriculum is being implemented. This included an assessment of the PTTCs' environmental context and the tutors' and teacher trainees' related characteristics. Specifically, the analysis addressed issues related to the availability and adequacy of infrastructural facilities and resources in the various PTTCs and tutors demographic information that included age, sex, educational and professional background and professional development courses undertaken. Under trainees' characteristics, the study explored their attitude towards Home Science Education, sex, age and background knowledge in Home Science Education.

Input evaluation looked at the components available for the implementation of the PTE Home Science curriculum at PTTCs. This comprised planned curriculum content and instructional resources used to teach the subject by Home Science tutors. Process evaluation focused on the process of curriculum implementation specifically instructional methods and assessment techniques used by tutors to deliver and assess Home Science trainees in PTTCs respectively while product evaluation looked at the outcome of training in Home Science Education. This specifically looked at the extent to which the objectives of Home Science Education are being achieved.

According to Stufflebeam and Shinkfield (2007), without the guidance of the CIPP evaluation model, oversight or failure can easily occur in any part of the curriculum evaluation process. Each of the elements in the model plays an important role in effective curriculum implementation thus the need to evaluate each adequately and following a specific process in this case the four stages of evaluation in the CIPP model.

1.14 The Conceptual Framework of the Study

The conceptual model for the study depicted in Figure 1.1 was modified from Stufflebeam's CIPP theory of curriculum evaluation. As illustrated in the conceptual model, teacher trainees' attitude towards Home Science Education, respondents' characteristics and the environmental context of curriculum implementation represent the *context of evaluation;* planned curriculum content and instructional resources used to teach Home Science lessons are *inputs for evaluation*; instructional methods and assessment techniques used in Home Science Education represent variables under *process of evaluation* and achievement of the objectives of Home Science Education comprise *products for evaluation.*

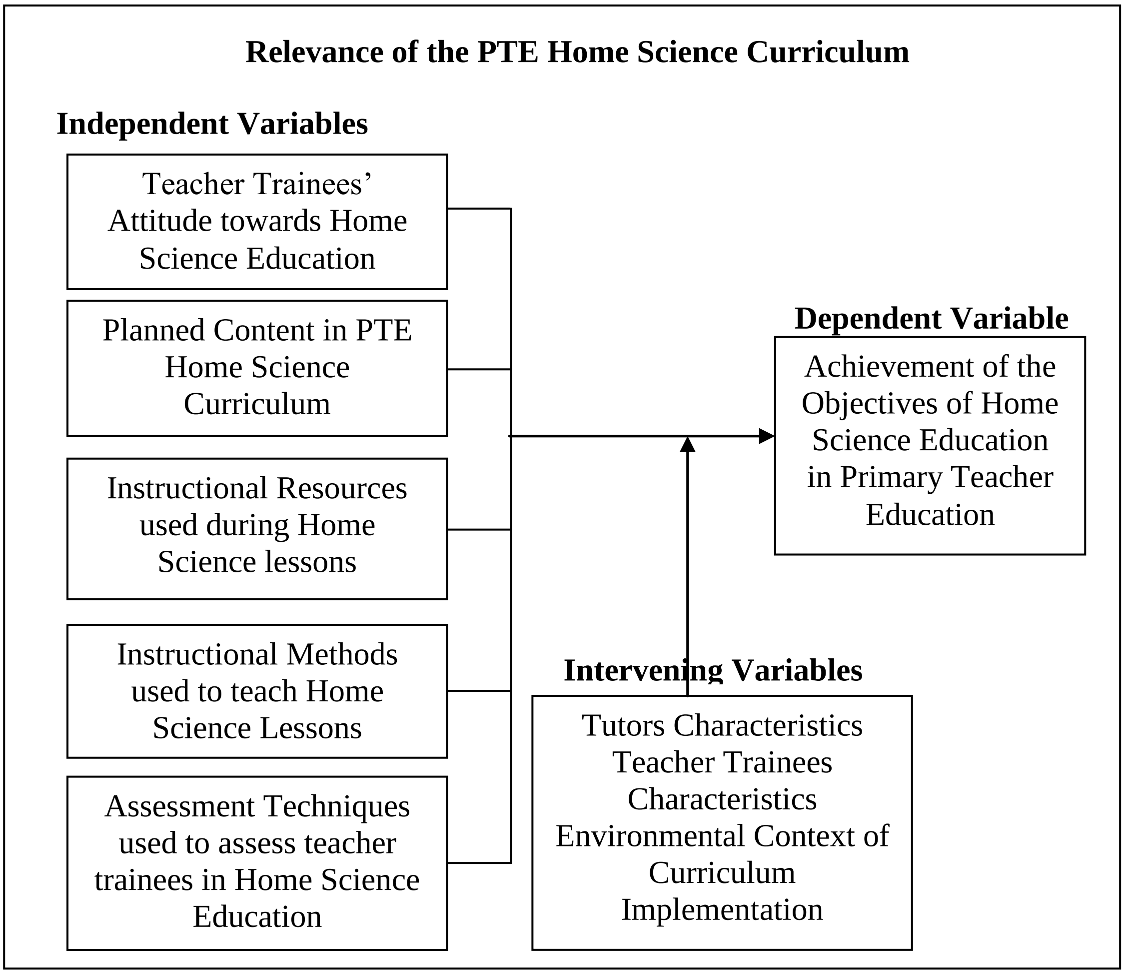

Figure 1.1: Conceptual Model for the Study

(Source: Author, 2016)

Teacher trainees' attitude towards Home Science Education, planned curriculum content, instructional resources, instructional methods and assessment techniques used in Home Science Education comprised the independent variables while objectives of Home Science Education comprised the dependent variable of the study.

1.15 Variables of the Study

This section addresses variables of the study according to the conceptual framework.

1.15.1 Dependent Variable of the Study

The dependent variable of the study was achievement of the objectives of Home Science Education in PTE. These objectives include: to help teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development; to enable teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids; to help teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life; to enable teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living; to enable teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community and to enable teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning.

They were measured by finding out the extent to which the respective objectives are being achieved as a result of the implementation of the PTE Home Science curriculum. A 5-point Likert scale on their extent of achievement was used to solicit this information.

1.15.2 Independent Variables of the Study

The independent variables of the study were:

1.15.2.1 Teacher Trainees' Attitude towards Home Science Education

This information was solicited from teacher trainees and primary school teachers who participated in the study. Six items related to attitude towards Home Science Education were formulated from the literature reviewed. Teacher trainees and primary school teachers were, therefore, required to rate these attributes based on their perceptions towards Home Science Education against a 5-point likert scale. These ratings were used to establish their attitude towards the subject.

1.15.2.2 Planned Content in the PTE Home Science Curriculum

Content related indicators were developed and used to describe the relevance of planned curriculum content in meeting the objectives of Home Science Education. Respondents were therefore required to rate these indicators against a 5-point Likert scale which was then analysed and used to deduce the effect of planned curriculum content on the objectives of Home Science Education.

1.15.2.3 Instructional Resources used in Home Science Education

The study also sought to establish the extent to which tutors prepared instructional resources and used them to facilitate the teaching of Home Science lessons at the PTTCs. Their adequacy, effectives, availability and appropriateness was established using a 5-point Likert scale. This data was used to establish the effect of instructional resources on achievement of the objectives of Home Science Education.

1.15.2.4 Instructional Methods used to Teach Home Science Lessons at PTTCs

The study determined the recommended instructional methods in the PTE Home Science curriculum and compared them to the actual methods used by tutors in content delivery. Respondents thus rated the various recommended instructional methods based on the frequency with which Home Science tutors use them to teach besides rating them according to their relevance in meeting the objectives of Home Science Education. The appropriateness, frequency and variety of their use were determined using a 5-point Likert scale.

1.15.2.5 Assessment Techniques used in Assessing Teacher Trainees' Level of Content Mastery

The study sought to find out techniques suggested in the Home Science curriculum and those used by tutors to assess teacher trainees' mastery of content. Respondents rated recommended assessment techniques in terms of the frequency with which Home Science tutors use them to assess teacher trainees, gave their perceptions towards the relevance of these assessment techniques in meeting the objectives of Home Science Education using a 5-point Likert scale and gave suggestions on their most preferred mode of assessment in Home Science Education in PTTCs.

1.15.3 Intervening Variables of the Study

The study also sought respondents' characteristics which represented the environmental context under which the Home Science curriculum is being implemented. These included other factors besides the Home Science curriculum likely to affect achievement of the objectives of Home Science Education. By use of the observation guide, the study sought availability and adequacy of infrastructural facilities and resources for use by Home Science tutors in the various PTTCs. Further, the study used the questionnaire to seek tutors' demographic information regarding their age, sex, educational and professional background and professional development courses undertaken. On the other hand, teacher trainees' and primary school teachers' characteristics sought by the study included sex, age and background knowledge in Home Science Education.

1.16 Summary of the Chapter

This chapter was concerned with defining the problem and putting it in a proper context for the benefit of the researcher and the reader. The significance of the study has been established as well as the recognition of the assumptions on which the study was based. A number of objectives and research hypotheses guided the researcher in this study. These objectives and research hypotheses have been set out in this chapter. Several limitations of the research have also been pointed out in recognition of the influence they had on the research study as well as establishing the scope of the study. A review of relevant literature related to the research constitutes the subject of the next chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on Primary Teacher Education, the general overview of Home Science Education, teacher trainees' attitude towards Home Science Education, planned content in the PTE Home Science curriculum, instructional resources used in Home Science lessons, instructional methods used to teach Home Science lessons and assessment techniques used to assess teacher trainees and curriculum evaluation. This analysis also brings to surface studies that have recently been done related to Home Science Education.

2.2 Primary Teacher Education

According to Mwaka et al. (2014), education is considered the software for development. It requires competent teachers to achieve this role given that education is seen as the primary means of social mobility, national cohesion and socio-economic development (Makatiani, 2008; ROK, 2015). Teacher education refers to the policies and procedures designed to equip prospective teachers with knowledge, attitudes, values and skills they require to perform their respective tasks effectively (Kafu, 2014; Lolelea, 2011; Mwaka et al., 2014; Mwangi, 2012). Mwaniki (2006) avers that teacher education is crucial in ensuring the maintenance of quality and relevance of education.

It is thus the teacher education programme that prepares and supplies this cadre of teachers to educational institutions (Lolelea, 2011; Mwaka et al., 2014). In fact, Kafu (2013) describes teacher education programme as the incubator of innovations and creativity in education. The author posits that teacher education programme is a catalyst in the process of developing quality education. Primary Teacher Education in Kenya is a two year programme that admits trainees with a minimum mean grade of C plain in KCSE. Trainees who successfully complete the course are then awarded a Primary (1) Teacher Education certificate.

The aim of teacher education is to train teachers who have relevant knowledge, skills, values, attitudes and the ability to identify and deliver the curriculum needs of the learner (ROK, 2008). This can be achieved in three stages: pre-service which is the initial training one gets before entering the classroom as a professional teacher, induction which is the process of providing training and support to the teacher during the first few years of teaching and in-service courses which involve teacher development or continuing professional development for practicing teachers (Mwaka et al., 2014).

The pre-service primary teacher education programme is offered in teacher training colleges. This is where the teacher trainee is introduced to basic principles of teaching that include the aim of education, the curriculum, the nature and characteristics of child growth and development, methods of teaching and assessment besides development and use of appropriate instructional resources (Farrant, 2002; Lolelea, 2011).

On the other hand, teacher induction and in-servicing continuously update teachers with skills to promote efficiency in performance. The education of the teacher does not end at pre-service training but has to be continuous even after the teacher graduates and enters into the teaching service (Chemutai, 2010). Unfortunately, this is not given the attention it deserves by most governments. For instance, a study by

Kisirkoi (2011), on the "Effectiveness of Teacher Advisory Centers (TACs) in Teacher Professional Development in Nairobi County" confirms this. The study established that only about 40% of teachers had attended seminars and workshops organized by organizations and institutions such as KIE (now KICD) and CEMASTEA during their in-service.

According to UNESCO (2014), teacher training is generally considered as a major element in the implementation of a curriculum. UNESCO (2015) asserts that teachers are the key agents in ensuring effective teaching and in determining the quality of education that children receive. In fact, Shober (2012) maintains that the quality of teachers has a larger impact on the learning of pupils than the quality of the curriculum and its components.

Ornstein and Hunkins (2016) argue that most new educational programmes cannot be implemented without providing proper training for teachers which enables them to look at a particular curriculum development effort as their own and not something being imposed on them. Many teachers tend to disregard new curriculum pedagogical practices if they seem to be of challenge to their understanding and outlook. According to the Government's policy framework as defined by the Sessional Paper No.2 of 2015: Reforming Education and Training in Kenya, there are various laws and regulations that govern education in Kenya. They include: the Basic Education Act of 2013 that assigned the responsibility of education to the Ministry of Education, Science and Technology and instituted various organs for the organization and management of education at all levels. These organs include the Teachers Service Commission established under the Teachers' Service Commission Act of 2012 that provides services to teachers on issues related to registration, recruitment, deployment, remuneration, promotion, discipline and maintenance of teaching standards.

According to the TSC Code of Regulations for Teachers (2015), school heads, as instructional leaders, are obligated with teaching; supervising quality implementation of the curriculum; verifying teachers professional documents; supervising syllabus coverage; ensuring class attendance by teachers; providing adequate teaching and learning materials and inducting new teachers among others.

The second organ is the Kenya National Examinations Council established under the Kenya National Examinations Council Act No. 29 of 2012. It is expected to set and maintain examinations standards, conduct public academic, technical and other national examinations within Kenya at basic and tertiary levels on behalf of the government. The third organ is the Kenya Literature Bureau (KLB) established by the Kenya Literature Bureau Act No. 12 of 2012 to print and publish books and other educational materials for use in educational institutions in the country.

Other organs include; the Kenya Institute of Curriculum Development (KICD) established by KICD Act which came into effect from January 25th 2013, which is charged with the responsibility of conducting research and developing curriculum and curriculum support materials for all levels of education, except for the universities; the Education Standards and Quality Assurance Council (ESQAC) of the legal notice number 11 of 2014 obligated with the provision of quality assurance services in education and training institutions and establishing, maintaining and improving educational standards.

The Education Standards and Quality Assurance Council is also responsible for quality assurance and standards assessment at all levels of education except the university besides providing feedback to and from all educational institutions (except universities) as a means of ensuring constant improvement in service delivery. The other organ is the Kenya Education Staff Institute (KESI) which provides management training through workshops and seminars aimed at improving performance and efficiency of educational personnel at various levels amongst others (ROK, 2015). All these organs are expected to work together for the provision of quality and relevant education to the Kenyan learner.

2.3 Challenges of Primary Teacher Education

Primary Teacher Education has not been without challenges. For instance, a majority of trainers at PTTCs lack the necessary skills and competences to train primary school teachers (Galabawa, 2003; Lolelea, 2011). This is because most of them trained in universities as secondary school teachers then ended up teaching in PTTCs thus lack skills required to train the adult learner. This is bound to create a mismatch between the kind of training offered by the tutors and the training requirement of the teacher trainees. There is need for the government to ensure that tutors in PTTCs are either trained or inducted appropriately to enable them adequately meet the training needs of learners at the PTTCs.

Further, research has established that teacher training education suffers from lack of formal research agenda, weak linkage with teachers and tertiary institutions (Galabawa, 2003), low funding from the government, lack of adequate and appropriate tuition, teaching and learning materials and infrastructure (Iregi, 2015), over-emphasis on passing of examinations rather than on pedagogical skills (ROK, 2012; World Bank Report, 2004a), irrelevance of some content to contemporary society, fixation on examinations and certification, inadequate promotion of creativity, innovation, analytical ability as well as capacity to deal with diversity (Digolo, 2006; Mulama, 2007; Otieno, 2008).

According to the Academy for Educational Development (2008), the PTE curriculum has also had several challenges. For instance, planning of the PTE syllabi, staff training, development of teaching and learning resources and evaluation and support of curriculum implementation are outlined as major areas in which PTE in Kenya is ineffective. Further, PTE has been found to be ineffective in resource allocation (KNCHR, 2007); creation, adoption, adaptation and usage of knowledge, matching skills with contemporary demands (ROK, 2007); in-servicing of primary school teachers, adopting alternative methods of curriculum delivery and infusion of ICT in the PTE curriculum (Gakuu, Kidombo, Bowa, Ndiritu, Mwangi & Gikonyo, 2015; Thuranira, 2010).

These challenges are not peculiar to Kenya only. In Uganda, according to Kagoda and Ezati (2013), in their study "Contribution of primary teacher education curriculum to quality primary education in Uganda", Primary Teacher Colleges (PTCs) are reported to experience the following: limited government funding, inadequate teaching and learning materials and infrastructure, the absence of a unified continuous professional development programme, use of teacher-centered method of teaching dominated by lecture method and less emphasis if any is placed on child-centered methods, the curriculum is examination oriented thus each college trains teacher trainees to pass the national examinations rather than helping them become quality primary teachers and that the curriculum of PTC does not include some of the subjects taught in primary schools like languages, specifically Kiswahili and local languages. This shows that PTE is likely to experience challenges no matter which country the programme is being offered. Nevertheless, just like KNCHR's (2007) recommendation, this study advocates for restructuring of PTE in order to improve the recommended teaching methods, planned content and resource allocation amongst others.

2.4 General Overview of Home Science Education

Home Science is an interdisplinary field of study that prepares its graduates to develop themselves with multiple vocational and career options (Mwiria & Ng'ethe, 2007). It is classified as a technical and vocational subject that offers prevocational skills directly applicable to the world of work (Nyangara et al., 2010a; ROK, 2003; Serem, 2011). The Home Science course is the oldest of the vocational subjects (Mwiria, 2002; Otunga, 1993). Its main objectives are the promotion of self-reliance and the improvement of the quality of life of students, their families and immediate community (KIE, 2004; Nyangara et al., 2010a; Serem, 2011).

Different names have been used to refer to Home Science Education (IFHE, 2008; Pendergast, McGregor & Turkki, 2012). They include; Home Science, Household Arts, Domestic Science, Domestic Economy, Home Economics, Human Ecology, Family and Consumer Sciences, Living Science, Home Science Education, Human Sciences, Practical Life Studies, Household Technology, Science of Living, Family and Household Education, Family and Nutritional Studies and Nutrition and Consumer Studies among others. The only difference comes in the scope of the content taught and the emphasis given to the programmes selected.

According to IFHE, (2008), the study of Home Economics, which is based on both social and physical sciences, originated at the turn of the century in the United States of America at a series of meetings of academics and national leaders in Lake Placid, New York, that were seeking remedies for the social ills of the day. In the United States, the teaching of cooking and sewing in public schools was concurrent with manual training for boys, beginning in the 1880s. State institutions that included Iowa, Kansas and Illinois pioneered in introducing Home Economics courses at the college level in the 1870s.

In 1914, the Smith-Lever Act made federal funds available for extension work in Home Economics and Agriculture - all this in cooperation with the states. Through this provision, supplemented by later Acts, home demonstration work was carried out in many rural localities. The Smith-Hughes Act of 1917 instituted secondary school vocational education in Home Economics and other fields. Home Economics, once taught only to women, is now taught to both men and women. In the United States, Home Economics courses are taught mainly at the secondary school level, more commonly in rural than in urban areas (IFHE, 2008; Pendergast et al., 2012).

In high schools in some Canadian provinces, the study of Home Economics was called Family Studies with emphasis on the study of family living and family relationships. Today, it is referred to as human ecology. According to Home Science practitioners, this shift to a more science-based discipline reflects a return to the field's roots. The University of Alberta, University of Manitoba and Brescia University College at the University of Western Ontario now have Human Ecology programs instead. At other Canadian universities, the essence of what was once Home

Economics is now called Family Studies or Food and Nutrition Sciences (Ma & Pendergast, 2011).

In India, the anticipation of the changing environment and changing skill requirements of professionals have necessitated the review of the Home Science curricula to make them more relevant, holistic and contextual. Here, institutions award both bachelor's and master's degrees in food and nutrition, housing, home management and interior design, human development and family studies, art and design and textiles and clothing.

Home Economics in Karachi started in 1952 with support from the Ford Foundation of USA and All Pakistan Women Association (APWA). The foundation provided funds for construction, purchase of books and training of staff while the Pakistan government provided the land. The APWA was an active member of the governing council and an administrative liaison between Ford Foundation and Pakistan Government. Oklahoma State University in USA further assisted in making the curriculum and syllabi, establishing the college besides training Home Economics teachers in Karachi (McGregor, Pendergast, Seniuk, Eghan & Enberg, 2008).

In Pakistan, Home Economics started in 1955 at the Rana Liaquat Ali Khan College of Home Economics. Home Economics here was seen as a field of formal study that covers topics such as consumer education, institutional management, interior design, home furnishing, cleaning, handicrafts, textiles, sewing and clothing construction (McGregor et al., 2008).

In Ghana, Home Science is incorporated in the curriculum for the primary, junior secondary and senior secondary, college and university levels. Issues related to Home Science Education are mainly monitored by the Ghana Home Economics Association while in Gambia, the Home Economics Vocational Training Centre was established with support from the Canadian government in 1985. The centre was set up to train and enable graduates generate income either by being self employed or as employees. The Gambia Home Economics Association works together with the Canadian Home Economics Association to establish and run Home Economics affairs in Gambia.

In Nigeria, Home Economics is offered at the junior and senior secondary school level where all students both male and female take the course. At the tertiary level, the federal and state colleges of education train Home Economics teachers for the junior secondary schools. Home Economics is also offered at the university level. In Tanzania, Home Economics is offered at the primary through college levels. Some of the key responsibilities of the Tanzania Home Economics Association are to review the Home Economics curriculum and develop requisite educational materials.

Home Economics in Zambia is supported by the Canadian International Development Agency. It prepares Home Economics teachers to teach a relevant, problem centred and activity based curriculum. Zambia emphasizes interaction between the schools and the community for prosperity in the field of Home Economics (IFHE, 2008; Pendergast et al., 2012).

Graduates of Home Economics have a myriad of employment opportunities. According to the Ontario Home Economics Association, Home Economics graduates would go on to work in areas related to policy making, education, community development, product research, dietetics, resource management, textile design, financial counselling, nutrition, consumer consulting among others. Further, human ecology has a strong focus on prevention of social and health problems. As a result, its graduates would easily get work opportunities in areas dealing with public health and sanitation.

This shows that Home Science is a course that is offered to learners worldwide irrespective of its name. Therefore, many countries value its benefits. In fact, some of the countries offer Home Science right from primary to the university level of education. For some countries, Home Science is treated as a core subject. For instance, in Nigeria, Home Economics is offered in the junior and senior secondary schools for all students both male and female. It is also offered in the tertiary and university levels of study. In Ghana and Tanzania, the subject is offered from primary through university levels.

This therefore calls for Kenya to reconsider its decision in offering the subject only at the secondary, tertiary and university levels and only as an optional subject. The basic skills obtained from Home Science education are important for every child irrespective of their age. In fact, in the recent Needs Assessment Survey conducted by KICD in the year 2016, it was established that activities that boost learners' abilities are found in Home Science Education. The survey concluded that Home Science should be reintroduced in Kenya's education system and be made compulsory for all learners (ROK, 2016). Therefore, Home Science should be offered right from the primary school level of education. It is encouraging that the government is already considering reintroducing some aspects of Home Science in the primary school curriculum. This is indeed a step in the right direction.

2.5 The Primary Teacher Education Home Science Curriculum

According to Otunga et al. (2011), a curriculum is the means to achieving the aims of education. A curriculum may be described as a written plan for action that serves as a guide to teachers engaged in instruction (Syomwene et al., 2017). A curriculum has three key elements: aims, goals and objectives; learning experiences; and the evaluation processes. Learning experiences refer to the interaction between the learner and the external environment that includes the content, the teacher, fellow learners, instructional resources, strategies and the learning environment (Otunga et al., 2011).

However, according to Mwaka et al. (2014), a curriculum has five components: the framework of assumptions about learners and the society that includes interests, motivation and culture; aims and objectives; content in terms of scope and sequence; modes of transaction which refers to instructional methodology and the learning environment and evaluation. This may be summarized to imply that a curriculum comprises the learning environment, its aims and objectives, the content, instructional resources, teaching strategies and curriculum evaluation.

The PTE Home Science curriculum in Kenya was developed by KICD. The KICD was established mainly for the purpose of research and development of curricula. Its main functions are to conduct research and prepare syllabi for all levels of education except for the university, to conduct research and prepare teaching and evaluation materials, to conduct in-service courses and workshops for teachers, to organize orientation programmes for education officers, to transmit programmes through mass media to support the curriculum and to prepare correspondence courses for students and teachers (KIE Strategic plan, 2006).

Curriculum development at KICD goes through several stages namely needs assessment, conceptualization and policy formulation, curriculum designs, syllabus development and approval, development of curriculum support materials, piloting of the developed curriculum, national implementation, monitoring and evaluation. Appendix VII shows the model KICD uses in curriculum development. After curriculum development, teachers at PTTCs implement the curriculum and supposedly cover it in a period of two years (ROK, 2017).

According to Morrison (2007), curriculum implementation is the process of putting the developed curriculum into practice. Ornstein and Hunkins (2009) posit that the process entails the interaction between students, teachers and the educational programme in order to produce the desired objectives. Further, Shiundu and Omulando (1992) describe curriculum implementation as making real that which has been planned. Therefore, Home Science tutors are responsible for implementing the PTE Home Science curriculum in the PTTCs in which they are employed. This is a very important stage in the curriculum development process which plays a key role towards the success of the whole process. It is therefore important that tutors are prepared well for this responsibility. They need to understand clearly the components of the curriculum that include the objectives, content, teaching and assessment methods and instructional resources to be able to interpret them correctly and implement the curriculum successfully.

2.5.1 Objectives of Home Science Education

In Kenya, the national aims of education form the basis for developing educational goals at the various levels of education. Likewise these goals give rise to the development of objectives related to respective subjects or courses. According to Mwaka et al. (2014), the national goals of education embodied in Vision 2030 focus curriculum implementation on enlarging learner knowledge, experiences and imaginative understanding as well as developing an awareness of moral values and capacity for life-long learning.

To achieve this vision, Kenya needs a relevant curriculum which will provide appropriate knowledge, skills, competences and values that will enable learners move seamlessly from the education system into the world of work with further academic, technical and vocational education adding value to what has been acquired through the education system (Otunga et al., 2011). Educational aims, goals and objectives justify the need for providing education. They further justify the various aspects of the school curriculum besides guiding the education process and providing a basis for evaluation to determine the extent to which an educational programme is useful (Mwaka et al., 2014; Syomwene et al., 2017).

The objectives of Home Science Education are derived from the goals of education which are derived from the national aims of education. Generally, the aims and objectives of education should be relevant, realistic, not ambiguous and harmonious at the different levels, measurable, achievable, meaningful, clear and allow learners to be creative and innovative (Mwaka et al., 2014; Otunga et al., 2011). It is notable that some of the six objectives of Home Science Education at the PTE level are not stated in achievable terms. The KICD needs to correct this so as to ensure each of the objectives is indeed specific, measurable, achievable, realistic and time bound.

2.5.2 Teacher Trainees' Attitude towards Home Science Education

According to Akinbobola (2009), attitudes are an internal state that influences the personal actions of an individual. Attitudes may be exhibited as personal experiences, that which is learned from other people or a creation in one's mind. Attitudes are thus acquired through learning and can be changed through persuasion using a variety of techniques. A teacher is responsible for facilitating the learner to acquire new knowledge, skills and attitudes. Attitudes have been found to determine, to a great extent, the degree of success achieved in learning (Imarhiagbe, 2002; Okeke, 2006).

The attitudes teachers and learners posses are an important resource in the learning process. The attitudes teachers develop towards learning are thus likely to influence the attitudes learners develop towards learning and in turn the general learning outcome. The knowledge, skills and attitudes teachers' posses are acquired from training at the various levels and the experiences they attain as practicing teachers (Otunga et al., 2011).

According to Otunga et al. (2011), learner characteristics are an important consideration in any instructional process. Learners in the same class may not be the same (heterogeneous learners) in terms of their cognitive abilities, developmental levels, habitual nature that include their attitudes or even biological characteristics. However, attitudes may change gradually since people are bound to form new attitudes or modify old ones when they are exposed to new information and new experiences in life (Adesina & Akinbobola, 2005).

Home Science Education has been stereotyped as a subject for girls and women only and as a subject for academically weak students (Anene, 2002; Serem, 2010). The society perceives it as a subject that does not require one to go to school in order to study it. All these views are likely to influence Home Science Education in one way or another.

Given the significance of attitudes in the education process, several studies have been done on students' attitudes towards Home Science Education. For instance, Cheruiyot (2001) in the study "The teaching of clothing and textiles in secondary schools within Eldoret Municipality" established that clothing and textiles was the most disliked unit in Home Science Education. This finding was similar to findings by Otunga (1993) who also established that this was the most disliked unit in Home Science Education. Further, Sang (2002), studying teachers' and students' attitudes towards the teaching and learning of Home Science in secondary schools, found out that students disliked Home Science because of its practical nature especially clothing and textiles which is said to be difficult to pursue. Serem (2011) examined the instruction of Home Science in secondary schools in Kenya and established that clothing and textiles was the most disliked unit of Home Science. On the contrary, Serem (2010) studied the future of clothing and textiles in Kenyan secondary schools and established that students and teachers of Home Science had a positive attitude towards clothing and textiles although clothing and textiles was the least liked unit.

Ndiga (2004) looked at the challenge of enrolment in Home Science Education in secondary schools in Limuru Division, Kiambu District and concluded that there was need to cultivate a positive image of technological and vocational education. Arubayi

(2009), in the study ‘Teaching clothing and textiles: An appraisal by students in tertiary institutions in Delta State, Nigeria’, established that many lecturers and students in Nigeria perceive clothing and textiles as a very difficult aspect of Home Economics. The study concluded that students had a negative attitude towards the subject since they perceived clothing and textiles career as a job for illiterates and considered money spent on doing clothing and textiles projects as a waste.

Similarly, Anene (2002) noted that many students hate Home Economics to the extent that some show little interest in the subject that they do it half way and drop it. This, the author attributed to general societal attitudes that perceive vocational subjects as subjects for the under achievers and girls or as a result of lack of appreciation and awareness of learners on the important role of Home Economics to socio-economic advancement of the nation. This negative attitudes of the students are likely to hinder effective learning of the subject given that studies on attitudinal patterns of school learners have established that during classroom instruction, attitudes determine to a great extent, the degree of success to be achieved (Imarhiagbe, 2002; Okeke, 2006).

Most of these studies focused on attitude towards Home Science Education at the high school level of education. The current study filled this gap by investigating attitude towards Home Science at a different level of study specifically at the tertiary level of education. Findings from this study enabled comparison of learners’ attitude towards Home Science Education at both the secondary and tertiary levels of education. The study further sought the influence of attitude towards Home Science on achievement of the objectives of Home Science education.

2.5.3 Planned Content in the PTE Home Science Curriculum

The KICD expects teachers to put into consideration and teach curriculum content given the specific lesson objectives. Curriculum content specifies what is to be taught in terms of scope and role. Actual presentation of content requires appropriate use of the selected resources and techniques to facilitate the realization of the set objectives (Mwaka et al., 2014; Otunga et al., 2011). Content to be taught is usually determined by the curriculum being used. The selection of content is based on national goals of education, specific lesson objectives and the level of learners (Mwaka et al., 2014).

Issues that arise in the course of time are integrated into the relevant subject areas. The teacher interprets the curriculum and then implements it in relation to the stated objectives based on the aspirations and interests of the learners. Moreover, the teacher interprets the curriculum in relation to its contextual relevance to real life situations locally, nationally and internationally (Otunga et al., 2011). It is government policy that PTTCs should use the curriculum recommended and prescribed for the PTE programme by the Ministry of Education and cover all topics in the curriculum for the PTE certificate programme in a period of two years (KIE, 2004; Lolelea, 2011).

Home Science at PTE level is taught in four basic units. Unit one on home management focuses on good grooming, worms, common communicable diseases, sexually transmitted infections, HIV and AIDS, immunization, safety in handling chemicals used at home, drugs and substance abuse, common accidents in the home, home based care, care of the compound, drainage systems, laundry work processes, care labels, laundering different fabrics, housing the family, ventilating the house, cleaning equipment and materials, cleaning the house, materials used for household surfaces and time and energy management.

Unit two explores food and nutrition with the main teaching topics including classification of food, nutritional deficiency diseases, nutrition for special groups, food hygiene, food poisoning, table manners, food preservation, nutrition disorders, food supplements, fortified foods, methods of cooking, kitchen equipment, kitchen plans, meal planning, preparation and service and re'chauffe cookery.

Unit three centers on clothing and textile, specifically, classification of textile fibres, properties and physical identification of textile fibres, basic needlework tools and equipment, stitches, seams and garment construction processes that include disposal of fullness, edge finishes, pockets, collars, sleeves, fastenings and hem management.

Unit four focuses on maternal and child health care and covers pregnancy and related topics like preparation for parenthood, pregnancy, antenatal care, postnatal care, preparation for the baby's arrival, confinement, breastfeeding, weaning the baby, habit training and childhood diseases and ailments (KIE, 2004). All these topics should be covered in one year and its graduates come out as specialists in Home Science Education. This is because Home Science is introduced in the second year of study despite the various college programmes like the co-curricular activities and three teaching practice (TP) sessions two of which are carried out during the second year of study.

Most Home Science tutors have complained of too much and unfamiliar content in the PTE Home Science curriculum (Iregi, 2015). For instance, a contextual analysis by Nyangara et al. (2010a) on the need for review of Home Science Education in Kenya showed that Home Science Education had evolved in terms of structure and time allocated for teaching the subject but very little in terms of the content itself. The review put the gains made from these reviews as localization of content and textbooks.

The study recommended that the syllabus and organization of Home Science Education be reviewed to ensure the subject remains relevant to the country's development goals. Similarly, Joana (2015) recommended that practical teaching hours for Home Science lessons should be increased as this would ensure teachers have enough time to take students through practical training. Also, the author maintained that there is need to acquire modern equipment like vacuum cleaners, sewing machines, and computers to aid in the teaching of the various topics in the subject. All these studies explored Home Science Education at the secondary school level and not at the PTE level. The current study sought to address this gap by evaluating the relevance of planned curriculum content in the PTE Home Science curriculum offered in PTTCs in Kenya.

2.5.4 Instructional Resources used in Home Science Education

In any curriculum instruction process, resources for teaching and learning are crucial because they are the channel through which delivery of content and assessment procedures for learners are facilitated (Otunga et al., 2011). According to Twoli (2007), teaching and learning resources are aids that teachers use to assist learning and enhance student's participation in class for effective learning. Their selection should be based on their intended purpose, the participants, place of instruction, instructional plan and their production.

Instructional resources should be materials that will enable learners achieve all sorts of cognitive objectives in addition to achieving the affective and psychomotor objectives (Mwaka et al., 2014). They can be made by both the teacher and learner or commercially designed but adapted by the teacher to the content (Mwaka et al., 2014). Therefore, the teacher's knowledge and expertise on the use of such resources will determine how efficient and effective the teaching-learning process will be (Mwaka et al., 2014; Pollard, Simco, Swaffield, Warin & Warwick; 2002). If resources are well utilized by teachers, they lead to quality learning and teaching (Farrant, 2002; Mwaka et al., 2014).

Instructional resources fall into two main categories: human and non-human resources (Otunga et al., 2011). The teacher and resource persons fall under human resources while the textual (print) and non-textual (non-print) materials fall under the non-human resources. Further, according to Pollard et al. (2002), instructional resources can be classified into people, buildings, equipment and materials. They determine what is possible or can be achieved in a school or a classroom. They are used alongside instructional strategies and methods to complement content delivery and achievement of the set objectives (Otunga et al., 2011).

A teacher who has knowledge and skills on how to utilise resources can make learning more effective and enhance learner performance (Barasa, 2005). The quality and adequacy of resources such as teaching and learning materials determine the effectiveness of curriculum implementation (Mwaka et al., 2014). In the absence of teaching and learning materials, lessons are bound to be teacher-centered and students are likely not to do their work independently.

However, there is a general outcry from teachers on lack of the basic resources like textbooks (Mokamba, 2007) that hinder effective planning and use of instructional resources. Whether this is as a result of books missing in the market, lack of funding to procure books, corruption, poor planning and management skills amongst school heads, teachers should strive to provide some instructional resources for the lessons they plan to teach. Improvisation can help remedy this scarcity to a great extent.

A report by KICD on summative evaluation of the primary and secondary school education curricula established that publishers were producing textbooks which had factual and editorial errors, inconsistent information, inaccuracies and poor or difficult language for the learner. Wanjiku (2002) carried out a study on “Factors that affect the availability and acquisition of resources in the teaching of languages” and established that a lot of emphasis was laid on course books but not other resource materials. It should be noted that successful instruction cannot be realized through the use of textbooks alone especially in Home Science Education given that most of the resources required are equipment and materials.

Ogwo and Oranu (2006) posit that inadequate instructional materials and unwillingness of teachers to improvise are the greatest impediments to Home economics instruction. This is made worse by teachers’ lack of interest to use the limited instructional materials available or even improvise simple materials. This, the authors attribute to insufficient time allocated for Home Science lessons. The absence of instructional materials during instruction is likely to place serious limitations on what the teacher can achieve in terms of meeting course or curriculum objectives.

As a result, Wanzala (2013) emphasizes the need to investigate new ways of delivering instruction to include the use of both audio and video materials. The Home Science curriculum for PTTCs has a list of recommended instructional resources aimed at guiding tutors on the possible resources for use when teaching Home Science lessons. These resources are classified into needlework tools and equipment, sewing notions, cleaning equipment and materials, cooking tools and equipment, laundry equipment and materials, labour saving equipment, oven equipment and safety equipment (KIE, 2004). Various items are listed under each category as possible resources. Thus, teachers have the option of either selecting and using the listed items or improvising them depending on what they can easily access from their local environment. However, this remains a challenge given that most, if not all, of these resources require financial investments for their acquisition. Therefore, this study aimed at establishing the availability, appropriateness, adequacy and relevance of instruction resources used by Home Science tutors during Home Science lessons at the PTTCs.

2.5.5 Instructional Methods used in Home Science Education

According to Mwaka, et al. (2014), the role of methodology is to enable the learner achieve instructional objectives at the end of learning. Teaching methods adopted by the teacher affect learner's performance to a great extent. Therefore, the teacher needs to be conversant with the different teaching methods for the learner to acquire high performance. Teaching methodology is a sufficient factor in facilitating the achievement of the intended curriculum objectives in a given educational programme. These include approaches, instructional methods, teaching and learning activities used in the teaching of the subject and how the required skills are to be developed. A good teacher uses several methods of teaching in a single lesson depending on the teaching and learning situation in a given class (Mwaka et al., 2014; Telewa, 2009).

Teaching strategies or approaches have been defined as the overall way in which the process of instruction is organized and executed (Twoli, 2007), or basically the way and means of organizing and facilitating learning experiences (Mwaka et al., 2014). Nafukho, Amutabi and Otunga (2005) refer to instructional strategies as either pedagogy or andragogy. They define pedagogy as the process of instructing young people while andragogy is the process of instructing adults. Mwaka et al. (2014) categorize instructional strategies into two: expository or transmission and heuristic strategies. Expository strategies involve direct instruction where the teacher transfers information, values, skills and attitudes that the learner memorizes copies, imitates or reproduces. The teacher is seen as the custodian of knowledge in this strategy. The teacher applies teaching methods like lecturing, teacher demonstrations, narrations, text reading and audio-visual presentations (Mwaka et al., 2014; Omari, 2010). Otunga et al. (2011) refer to expository approaches as direct or teacher-centred approaches in teaching.

Heuristic strategy, on the other hand, is also referred to as discovery, facilitation, inquiry or the experimentation strategy (Mwaka et al., 2014). It involves indirect instruction where the teacher facilitates learning by posing questions, guiding, sharing ideas, problems and solutions. The teacher plays the role of a facilitator while the learner becomes an active participant in the learning process. The teacher uses methods like laboratory experiments, simulations, question and answer, programmed instruction, role play, discussion, field trips, problem solving, projects and learner demonstrations (Mwaka et al., 2014; Telewa, 2009).

Otunga et al. (2011) refer to this as indirect or learner-centred approach of teaching. According to Van Driel and Berry (2012), teachers appear to use teacher-centered approaches more frequently that the learner-centered approaches in lesson instruction. In fact, the study by Kisirkoi (2011) established that lecture method was dominantly used as a teaching method by 80% of teachers followed by question and answer at 12%, group work at 4%, individual work at 2%, and discussion and others like role play at 2%.

Expository strategies are appropriate when content coverage is extensive compared to time available, when the class size is large, when content to be covered is theoretical in nature, when guiding learners in preparation for experiments, projects, field work and discussions and when introducing or concluding lessons. When used appropriately, expository strategies ensure extensive content coverage, save on learning time, facilitate teaching despite inadequate instructional resources, ensure effective class discipline since the teacher is the focus of interest, lead to uniformity of content delivered and the assurance that all learners benefit equally (Mwaka et al., 2014).

On the other hand, heuristic strategies work well when there are adequate instructional resources, when there is adequate time to cover given content, when the class size is small and when the nature of learning requires practice, problem solving and acquisition of practical skills, experimentation and project work (Mwaka et al., 2014). When heuristic strategies are used appropriately, they are able to stimulate learners' mental activity as they encourage discovery, train learners in research skills, train in presentation of ideas, facts and critical thinking, facilitate retention of materials learnt and cater for individual differences amongst learners (Mwaka et al., 2014).

Various factors influence the choice of instruction strategy that a teacher prefers to use in the instruction process. For instance, lack of adequate instructional resources will dictate the use of expository strategies. Other factors include the number of learners in the classroom, type of curriculum (whether competency or examination oriented), the scope of content in the syllabus and challenges of individual teacher trainees and their competences (Mwaka et al., 2014). According to Wanzala (2013), there are serious problems in Africa with the quality of instruction used by teachers during teaching: the size of classes, availability of up-to-date materials and equipment, the relevance of the curriculum to current conditions and the integration of quality of education with the world of work. The author notes that there is a serious need to provide teachers at the tertiary level of education with adequate pedagogical skills.

Other factors influencing the choice of instructional strategies and methods include compatibility with lesson objectives, availability of time, variety for stimulus variation, level of interaction expected and learner differences (Otunga et al., 2011). Mwaka et al. (2014) recommend the following as guidelines for consideration by the teacher during selection of instructional strategies and methods: consideration for the nature of the topic and scope of learning required or content to be taught, learner characteristics in terms of their abilities, skills, experiences and interests, teacher characteristics to include teacher’s personality, interests, ability, creativity and teaching style and the influence of constraints like facilities, teaching aids, size of the class, time available and the learning environment.

The 21st Century instructional strategies require independent learners with capacity for problem solving and decision making, creative and critical thinking, collaboration, communication and negotiation, intellectual curiosity and the ability to find, select, structure and evaluate information out of self motivation (Mwaka et al., 2014; Wanzala; 2013). On the other hand, the 21st Century pedagogy requires the use of learner-centred approaches, use of a variety of strategies and skills, interdisciplinary and project-based work and the delivery of authentic learning (Mwaka et al., 2014).

In the choice of instructional methods, one therefore needs to consider the nature of the learner, instructional objectives and the environment within which the objectives have to be met (Mwaka et al., 2014). This means that it would be best for a teacher to use a variety of instructional methods to address these variations and inadequacies in some strategies chosen for the teaching context (Cohen & Heather, 2000; Syomwene et al., 2017).

Blooms taxonomy identifies three main categories of learning; cognitive, affective and psychomotor domains. The three offer a suitable basis for deciding the mode of instruction a teacher can use. In the cognitive domain, learning may take place using all the methods of teaching, affective domain may be achieved using discussion, case study and role play method while psychomotor learning may be best acquired by use of methods that require active physical participation by the learner such as demonstration, experimentation or project work (Oguta, 2014).

According to the Ministry of Education (2012), the teacher should always ensure that learners form focus of instruction hence utilize methods that actively and meaningfully engage them in the learning process. Killen (2003) asserts that learner-centered approaches are motivating to learners and teach them how to learn. KICD has given suggestions on possible instructional methods for tutors' use in content delivery in the PTE Home Science curriculum. The suggested experiences include discussion, field visit, demonstration, question and answer, observation, project work, practical and role play (KIE, 2004). It is thus the teacher's responsibility to select the most appropriate methods for specific lessons and topics.

However, studies done on the teaching of Home Science have established contrary findings. For instance, Ndiga (2004) established that the teaching methods frequently used are teacher-centered, such as lecture, assignment and demonstrations. Student-centered methods like the use of professional guest-speakers, seminars and exposure visits are rarely used. Moreover, tutors are not given induction courses upon joining colleges and are not in-serviced on Home Science teaching methods after college.

Further, Mumbi (2012) in the "critical study on the teaching of Home Science in selected PTTCs in Kenya" established that teacher trainees enrolled in colleges lacked sound Home Science background which hindered effective training as primary school Home Science teachers. Further, methods of preparing teacher trainees for teaching were inadequately done with the practical aspect of Home Science not being adequately examined. This has led to the practical component in the syllabus being ignored during teaching. This study sought respondents perceptions towards the frequency with which Home Science tutors use the recommended instructional methods to teach Home Science lessons at PTTCs and the effect this has on achievement of the objectives of Home Science Education.

2.5.6 Assessment Techniques used in Home Science Education

According to Otunga et al. (2011), a curriculum can be evaluated at two levels: the programme level and instructional level. The two levels are not mutually exclusive since for any authentic evaluation to take place, the two levels of evaluation must be considered as fundamental parts. Programme evaluation looks at the curriculum in totality. The evaluation includes all components of the curriculum, their interactions and their impacts.

Instructional evaluation on the other hand forms part of programme evaluation. It is narrow and specific. It focuses on the progress of individual learners in terms of the increased knowledge and understanding or development of attitudes and skills (Shiundu & Omulando, 1992; Syomwene et, al., 2017). Evaluation of learning in Home Science Education at the PTTCs is both internal and external and takes three forms: continuous assessment, a final examination and assessment of TP. Continuous assessment contributes 30 percent of the total marks while the other 70 percent comes from the final examination administered by KNEC. However, to qualify for the award of a PTE certificate, the student must pass in the subjects offered and TP.

The PTE Home Science curriculum gives suggestions on the possible assessment techniques that tutors can use to assess trainees' level of content mastery. They include practical work, project work, field trips, oral questions, quizzes, written tests and examination and group reports (KIE, 2004). Home Science tutors are thus free to choose the most appropriate techniques for the different lessons to be taught. This study sought respondents perceptions towards the frequency with which Home Science tutors use the recommended assessment techniques to assess teacher trainees' level of content mastery and the effect this has on achievement of the objectives of Home Science Education.

2.6 Environmental Context of Curriculum Implementation

Apart from planned curriculum content, instructional methods, assessment techniques and instructional resources, there are other factors likely to affect the anticipated outcome of curriculum implementation. Factors like environmental context of curriculum implementation, teacher and learner characteristics cannot be ignored as they are bound to influence to some extent the way instruction is managed and presented besides influencing the extent to which the desired objectives are being achieved.

The learning environment is the setup or physical surrounding in which learning takes place. Context is the physical and social setting in which the curriculum is designed, developed and implemented (Otunga et al., 2011). The appropriate learning environment should have a strong sense of shared purpose, concrete support from administration and staff members, adequate funding, consistent policies and procedures, continuing monitoring and a sense of commitment and professionalism (Mwaka et al., 2014).

Farrant (2002) and Otunga et al., (2011) aver that learning takes place in both the formal and informal environments. The formal environment includes what is carefully structured like the syllabus, timetables and the teaching provided. The non-formal environment includes any organised learning activities outside the structure of the formal education system that is consciously aimed at meeting specific learning needs of particular learners. Generally, the learning environment comprises the number and types of classrooms, laboratories, playing grounds and libraries amongst others.

The learning environment facilitates the teaching and learning process through acquisition of knowledge, skills and attitudes (Otunga et al., 2011). Normally, teachers may not have a say on the kind of school they work in but they can manipulate the environment they find around them to make it conducive and useful for learning. Effective learning means that the learner is able to understand the content taught. Part of what the teacher does is to create an environment that promotes learning. However, the teacher should not focus on the physical environment only, but also on the emotional, social and cognitive environments that facilitate learning (Mwaka et al., 2014).

According to Syomwene et al., (2017), a good teacher must have a variety of personal and professional skills in order to teach effectively. These skills include organization, planning, management, communication, monitoring, evaluation, subject knowledge, theories of child development, theories of learning, theories of teaching methods, and self knowledge. These skills are acquired from the pre-service training a teacher gets before entering into the teaching profession and any induction or in-service courses taken while practicing as a teacher. A knowledgeable teacher is thus best placed to utilize learner capabilities to enhance learning.

Research has established that the quality and number of teachers in an institution pose problems on teaching and learning to a great extent. This finding corroborates observations made by Mberengwa (2004) that an insufficient number of teachers influences teaching negatively. The author attributes this finding to the fact that teacher education has failed to prepare clothing and textiles teachers adequately for classroom practice and that in-service seminars or workshops are not regularly organized for the teachers.

Osisefo (2004) and Uko-Aviomah (2005) aver that students' poor performance at the end of a school year may be attributable to teacher's skills and effectiveness. If teachers are weak in content knowledge and pedagogical competence, then learners' achievement is bound to be equally weak. Moreover, instruction is a factor that is greatly affected by the size of the class. Most classes in the country today have a high number of learners in relation to the teachers. This affects the choice of teaching methods, instructional resources and assessment techniques by the teachers.

The teacher thus needs to plan instruction well to address these attributes of diversity. This will enable the teacher to relate and respond appropriately to every learner's needs. Further, the level of the learner determines the quality and quantity of knowledge, skills and attitudes the learner is bringing into a learning setup. Therefore, the teacher needs to anticipate what the learner will understand best and prepare accordingly. This study assessed the status of the environment under which the Home Science curriculum is being implemented to ascertain its contributions towards achievement of the objectives of Home Science Education.

2.7 Curriculum Relevance

Curriculum relevance refers to the ability of the curriculum to enable learners apply what they learn in schools to their needs and the interests of society (Kafu, 2014; Otunga, 2010a). Curriculum relevance is the ultimate aim of educational reforms worldwide (Nyangara et al., 2010a). Education quality and relevance are determined by the extent to which the curriculum is in consonance with societal needs. To remain functional and relevant, the curriculum has to operate within the constitution, the guidelines of the Policy Framework for Education, the East African treaty and other global trends in Kenya (ROK, 2015).

The development of new programs towards the enhancement of ICT Education and Science, Technology and Innovation (STI) is of paramount importance to ensure a globally competitive human resource (Sessional paper No. 2 of 2015). International trends require that curricula should be revised every five years to address the dynamic needs of the society (ROK, 2016). According to Otunga et al. (2011), a curriculum is due for review to remain relevant in terms of the latest developments in the respective discipline, once it has been in use for a minimum life span for the programme. The PTE Home Science curriculum was last reviewed in the year 2004 thus the urgent need for review to establish its relevance.

2.7.1 Factors that Influence Curriculum Reforms

Certain factors play a role in motivating curriculum reforms. These factors are envisaged in one main general problem; is the curriculum meeting the needs and aspirations of the learner taking into account the national financial resources available to education? Such factors include but are not limited to the need to establish: whether curriculum objectives are clear, achievable, realistic, relevant and pertinent to the needs of society; whether the curriculum is overloaded; the appropriateness of the scope of the existing curriculum, appropriateness of the depth of the existing curriculum content, areas of unnecessary overlap within and across subjects in other levels of education, the availability, adequacy and appropriateness of the physical and human resources; assessment of the effectiveness of curriculum implementation and the consideration for emerging issues such as the HIV and AIDS pandemic, gender imbalance, environmental issues, drug abuse and misuse prevention education, guidance and counseling, insecurity besides the high rate of school drop outs that could be due to poverty, non-conducive environment, early pregnancies, social-cultural hindrances and a non-child friendly curriculum (World Bank Data, 2007).

The current PTE Home Science curriculum was last reviewed in 2004. This translates to more than 10 years of implementing the same curriculum irrespective of the dynamic changes in the environmental context under which the curriculum operates. It means therefore that the revision of the current PTE Home Science curriculum is urgently required. A reform and review of this curriculum will ensure that the knowledge and skills taught match the requirements of the industry.

KICD undertook a summative evaluation in 2009 on the primary (KIE, 2011a) and secondary (KIE, 2011b) curricula in Kenya and recently in the year 2016, the PTE curriculum. The review revealed many gaps with regard to the appropriateness of the primary and secondary education curricula on achievement of Vision 2030. The focus areas of evaluation included curriculum objectives; curriculum relevance; implementer's capacity; assessment and management structures that support curriculum implementation. Unfortunately these reviews did not cover the PTE Home Science Curriculum. This study therefore evaluated the PTE Home Science curriculum to determine its relevance in relation to the objectives of Home Science Education. Relevance was measured based on the extent to which the various curriculum components (attitude towards Home Science, planned content, instructional methods, resources and assessment techniques) meet the objectives of Home Science Education.

2.8 Curriculum Evaluation

Education and Training is one of the main focus areas under the social pillar of Kenya's Vision 2030. Assessment is a very important component for education and training to be meaningful towards the development of the nation into a newly industrialized, middle income country (ROK, 2016). In Kenya, educational assessment is a role undertaken by KNEC. KNEC has therefore the critical role of assessing candidates on competences, to ensure adequate and a capable human resource is developed through knowledge and skills acquisition.

Evaluation has been defined and described variably by different scholars, programme developers and curriculum specialists. Recent ones perceive evaluation as the process of collecting data on a programme to determine its value or worth (Oluoch, 2006; Syomwene et al., 2017) and merit (Otunga et al., 2011) with the aim of deciding whether to adopt, reject or revise the programme. Tyler (1949) defines evaluation as the process of determining to what extent educational objectives are actually being realised while Shiundu and Omulando (1992) and the Teachers Proficiency Course Training Manual (TPCTM) of 2007 perceive evaluation as the acquisition and analysis of information for the purpose of decision-making.

According to Stufflebeam and Shinkfield (2007), curriculum evaluation is meant to trigger curriculum improvement. Programmes are evaluated to answer questions and concerns of various parties. The public wants to know whether the curriculum implemented has achieved its aims and objectives; teachers want to know whether what they are doing in the classroom is effective and the curriculum developer or planner wants to know how to improve the curriculum product.

Curriculum evaluation is a process or cluster of processes that people perform in order to gather data that will enable them decide whether to accept, change or eliminate the curriculum in general (Otunga et al., 2011; Syomwene et al., 2017). It is the formal determination of the quality, effectiveness or value of a programme, product, project, process, objective or curriculum (Catherine, 2009; Otunga et al., 2011). Curriculum evaluation seeks to identify curriculum weaknesses and strengths as well as problems encountered in its implementation so as to improve the curriculum development process and determine the effectiveness of the curriculum and the returns on finances allocated (Catherine, 2009; Otunga et al., 2011;).

Any curriculum requires to be monitored in order to ensure it is being implemented as planned. Evaluation examines the whole process of teaching and learning and provides feedback on the achievement of the objectives (Mwaka et al., 2014). Curriculum evaluation should be carried out after its complete implementation (Otunga et al., 2011). This is aimed at assessing the extent to which curriculum objectives have been achieved or are being achieved. Such monitoring should focus on the objectives, content, methods of instruction, assessment procedures or learners' performance, textbooks and assessment of teacher effectiveness (Otunga et al., 2011; Syomwene et al., 2017).

The assessment done by the teacher to check whether the course objectives have been achieved is essential in education and training of teachers since this provides information on learner's progress (KIE, 2006). Evaluation is a phase in the curriculum development process as well as a specific step. The various instruments used to collect this type of data include questionnaires, surveys, interviews, observations and tests. The instrument chosen should however be carefully designed and executed in order to ensure that the data collected is accurate and valid (Otunga et al. 2011). In the KICD model (Appendix VII) of curriculum development, evaluation is programmed at stage 8. The activities of this stage comprise monitoring, summative evaluation and syllabus revision. KICD has not been able to implement this stage concerning the PTE Home Science curriculum for over 10 years as required citing inadequacy of resources required to facilitate the process (Nyangara et al., 2010a; ROK, 2008) thus this study filled this gap.

2.8.1 Purpose of Curriculum Evaluation

The curriculum is evaluated for various reasons: to find out the extent to which the programme has attained or is attaining the set goals, to identify problems that may hinder attainment of goals, to find out the extent to which learners have mastered basic concepts, to appraise the effectiveness of teaching approaches and learning materials, to provide learners and other stakeholders with feedback about their performance, to provide educational administrators with useful information about gaps or discrepancies inherent in the programme and the needs of the institution and to make reliable decisions about educational planning.

Further, curriculum evaluation is intended to provide an objective basis for determining promotion of learners from one grade to another, identify problems experienced by learners and teachers in the teaching and learning process, ascertain the worth of time, energy and other resources invested in a programme, improve efficiency of school systems, obtain useful information that can assist in designing and developing future programmes, determine the impact of a given curriculum on its learners and other users, predict the general trend in the development of teaching and learning processes and provide useful information about learners entry behaviour into the programme (KIE, 2006; Marsh & Willis, 2007; Otunga et al., 2011; Shiundu & Omulando, 1992; TPCTM, 2007).

Sigot (1987) evaluated the high school Home Science curriculum in Kenya. The purpose of the study was to investigate the extent to which the curriculum was meeting the aims and objectives of Home Science Education. The study aimed at assessing the extent to which aims and objectives of the high school Home Science curriculum were being achieved; identify the suitability of the curriculum against the needs of the high school students and society; identify the strengths and weaknesses of high school Home Science curriculum; investigate students and teachers perceptions towards Home Science and make suggestions and recommendations towards improving the high school Home Science curriculum.

In evaluating the Home Science curriculum, the study focused on the following curriculum components: the general aims of Home Science, curriculum balance, curriculum objectives, curriculum content, learning experiences, examinations and curriculum construction. Study respondents included former and present Home Science students, Home Science teachers, head teachers, Home Science inspectors and the subject specialists at the MOE, KNEC and KIE. The study established that the curriculum was achieving its general aims but not the specific course objectives. She identified problems with the teaching and learning of the subject specifically inadequate time allocation, lack of financial support and proper guidance from KIE as the key contributing factors thus concluded that the curriculum was not relevant to the needs of students and society.

Otunga (1993) explored the dynamics of planned curriculum change focusing on the high school 8-4-4 Home Science curriculum. The study established that, the 8-4-4 curriculum went through procedural stages in curriculum change process although the needs assessment and piloting stages were omitted. This omission had implications on the teaching and learning of the subject. The study recommended that future curriculum change activities should be effective and systematic. It further recommended a replication of a similar study at the primary and tertiary levels of education.

Based on the KICD summative evaluation of the primary and secondary school curricula in 2009, several gaps were identified. Regarding the primary school curriculum, the evaluation established that the achievement of curriculum objectives has been constrained by non-coverage of the syllabi in some subjects due to heavy workload for the teachers and high pupil-teacher ratio. The findings also indicated that the most widespread method of assessment was through written tests, which were administered continuously during the term and at the end of term or year. Learners therefore spent too much time preparing for tests at the expense of actual learning and even participating in co-curricular activities (KIE, 2011a).

Concerning the secondary school curriculum, the evaluation found out that curriculum objectives had also not been fully achieved. It was further revealed that some subjects had difficult and broad content; some schools had inadequate instructional materials and inadequate number of teachers. Regarding innovation and the application of technology, the curriculum was deficient as the majority of its graduates did not exhibit those attributes after school. Moreover, most respondents indicated that the current curriculum had not played its role effectively in promoting national cohesion especially in view of the post-election violence that the country experienced in 2007/2008.

Further, the centralized curriculum used for all regions in Kenya did not take into account the diverse needs of learners in their geographical and socio-cultural contexts. Moreover, there had been a concentration on imparting theoretical skills at the expense of practical skills and desired attitudes and values. Acquisition of the practical skills had been further undermined by inadequate facilities. This had particularly affected the learning of science and technical subjects whose instruction requires a practical approach (KIE, 2011b).

According to the summative evaluation, capacity building in curriculum implementation remains one of the major challenges facing the education sector. There seems to be no regular, scheduled in-service and orientation programmes to continuously enhance the capacity of teachers to interpret and implement the curriculum effectively. Further, there is poor coordination of in-service courses offered by the different players. The evaluation established that schools burden learners with frequent continuous assessments at the expense of learning due to the high stakes placed on summative examination. This has in turn led to private tutoring, extra tuition, remedial teaching and use of commercially developed examination papers which at times do not conform to the curriculum or what the teacher has taught. KNEC has also developed a parallel syllabus to that of KICD which is preferred by teachers since this is the basis on which they are assessed themselves.

In summary, inadequate ICT skills in teaching and learning, use of traditional methods of teaching, inadequate teaching and learning materials, poor distribution of curriculum support materials that are not readily available in learning institutions, poor planning of human resource resulting to teacher shortages in some subjects were some of the key findings of the summative evaluation on the secondary school curriculum. The evaluation urged for more infusion of content on Science, Technology and Innovation into the secondary school curriculum so as to develop the requisite skills in the learners (KIE, 2011b). This evaluation only focused on the primary and secondary curricula and not the PTE Home Science curriculum which the current study sought to evaluate.

Nyerere (2009), in his presentation on Technical and Vocational Education and Training (TVET) sector mapping in Kenya, noted that the orientation of the primary school syllabus excluded technical subjects hence eliminating access to choices. This meant that education in Kenya is not giving learners the basic life skills training they require creating a gap between the labour market and training in institutions of learning (Mwiria & Nge'the, 2007). Nyerere (2009) recommended the harmonization of all educational curricula with the market requirements of the time. The current study sought to evaluate the current PTE Home Science curriculum to determine its relevance in meeting the objectives of Home Science education in turn meeting the demands of the job market.

According to research, the common goal of the review of education in Kenya over the years has been emphasis on quality, relevance and vocationalization of education as a key to industrialization. Nyangara et al. (2010a) lament that despite all this effort, little attention has been directed towards policies that directly address the needs of practical and vocational subjects like Home Science. This lack of consideration on vocational subjects like Home Science may eventually lead to negative perceptions amongst members of the society. People may stereotype Home Science as a subject that is less important despite the fact that the country is seeking industrial transformation by 2030. The authors recommend that the Home Science curriculum needs to adapt to changing realities in order to remain valid and be relevant to changing expectations of the Kenya society.

At the PTE level, various subjects are classified into options and offered as electives. Vocational subjects like Home Science that are bound to offer various skills and attitudinal change in learners are taken by only a few teacher trainees thus limiting the number of learners who would experience and acquire the related competences. Moreover, it is not a guarantee that all learners that pursue such subjects acquire the competences as expected. ROK (2008) reiterates that the current curricula have been objective but not competence based. The cognitive domain has been over emphasized at the expense of affective and psychomotor domains. Further, some important aspects of the curriculum are not being implemented especially if the subject is non-examinable. This therefore calls for education stakeholders to rethink the planning, design and implementation of the curricula in order to ensure that it remains envisaged in the country's future development focus.

2.8.2 Types of Curriculum Evaluation

According to Marsh and Willis (2007), Otunga et al. (2011) and Syomwene et al. (2017), there are three types of curriculum evaluation: diagnostic, formative and summative evaluation. Diagnostic evaluation is carried out before teaching to identify specific areas of weaknesses or strengths in learners or their nature before the programme design and implementation. Formative evaluation is carried out during the learning process to get data that will strengthen or improve the education process. It examines content delivery, quality of implementation, assessment of instruction in terms of the context, personnel, procedures and inputs.

In formative evaluation, experts would evaluate the match between the instructional strategies and materials used and the learning outcomes or what it aims to achieve. From these formative reviews, curriculum problems may be discovered. The feedback obtained is then used to revise and improve instruction. Formative evaluations are used during the needs assessment, product development, and testing steps of evaluation.

Lastly, in summative evaluation, data is collected at the end of implementation of the curriculum programme. It tests the extent of achievement of programme objectives, teacher's performance in using the curriculum, the infrastructure, the instructional resources, time allocation, administrative support, cost of the programme and the impact of the programme (Makatiani, 2008; Otunga et al., 2011).

Summative evaluation can occur after new course materials have been implemented in full to evaluate the effectiveness of the programme, or several months to years after the materials have been implemented in full (Otunga et al., 2011). It is important to specify what questions one wants answered by the evaluation and what decisions will be made as a result of the evaluation. The evaluator may want to know if learners achieved the desired objectives or whether the programme produced the desired outcomes. Quantitative and qualitative methods can be used to determine how well teacher trainees met the specified objectives. A combination of both methods may help provide data that neither method would provide on its own. The current study applied the mixed methods approach to gather data for evaluation purposes.

2.8.3 Approaches to Curriculum Evaluation

According to Stufflebeam and Shinkfield (2007), there are several approaches that can be used in curriculum evaluation. The approaches are classified into five categories: the pseudo-evaluation studies, quasi-evaluation studies, improvement and accountability oriented evaluation studies, social agenda and advocacy studies and the eclectic evaluation studies. Pseudo-evaluation studies are often motivated by political objectives like public relations inspired studies or politically controlled studies. The quasi-evaluation studies either focus on answering one or several questions. Examples include objectives based studies; accountability studies; objective testing programs; outcome evaluation studies; experimental studies; case evaluation studies; criticism and connoisseurship studies; program theory–based evaluation and mixed methods studies.

Improvement and accountability evaluation studies are oriented towards determining the merit and worth of the project, programmes or entity being evaluated. They encompass three approaches: decision and accountability oriented studies, consumer oriented studies and accreditation and certification. The social agenda and advocacy category of studies devote evaluation efforts to pursuing social justice under three approaches: responsive evaluation or client-centred studies, constructivist evaluation and deliberation democratic evaluation (Stufflebeam and Shinkfield (2007).

Last but not least is the eclectic evaluation approach which includes utilization-focused evaluation approach which draws selectively from all available evaluation concepts and methods to serve the needs of a particular user group (Stufflebeam and Shinkfield, 2007). This study adopted the improvement and accountability evaluation studies approach that is oriented towards determining the merit and worth of the project, programmes or entity being evaluated. This approach was deemed appropriate as it would enable the study establish if the resources committed towards Home Science education at PTTCs are indeed worthwhile. There are a variety of models that can be used in these approaches.

2.8.4 Models of Curriculum Evaluation

There are a number of views on evaluation models that have been proposed by various authors. These models try to address how a curriculum should be evaluated and what should be evaluated (Otunga et al., 2011). Syomwene et al., (2017) and Otunga et al. (2011) provide eight possible approaches to measuring the effectiveness of a developed curriculum. According to the authors, one of the earliest curriculum evaluation models was that proposed by Ralph Tyler that seeks to determine to what extent educational objectives have been or are being achieved. It is an objective centered model.

Tyler’s approach moves rationally and systematically through seven related steps. The evaluation begins with the behavioral objectives that have been previously determined. These objectives specify both the content of learning and the student behavior expected of them. The identification of the situations that will give the student the opportunity to express the behavior embodied in the objective then forms the second step. This is followed by the selection, modification or construction of suitable evaluation instruments and checking the instruments for objectivity, reliability, and validity.

The evaluation then implements the instruments to obtain summarized or appraised results. The comparison of results obtained from several instruments before and after given periods is done in order to estimate the amount of change taking place. The results are then analyzed in order to determine strengths and weaknesses of the curriculum and to identify possible explanations about the reason for this particular pattern of strengths and weaknesses. The results are then used to make the necessary modifications in the curriculum

This model is relatively easy to understand and apply. It is rational, systematic and focuses attention on curricular strengths and weaknesses rather than being concerned solely with the performance of individual students. It also emphasizes the importance of a continuing cycle of assessment, analysis and improvement. However, it does not suggest how the objectives themselves should be evaluated (Syomwene et al., 2017). It does not allow for unintended outcomes and neither does it take into account learners as individuals with varying abilities besides being essentially summative in nature (Otunga et al., 2011).

To address these weaknesses the Phi Delta Kappa committee chaired by Daniel Stufflebeam developed a model that seemed to appeal to educational leaders as it emphasized the importance of producing evaluative data for decision making which they saw as the sole justification for evaluation. The Stufflebeam model provides a means for generating data relating to four stages of program operation: context evaluation, which continuously assesses needs and problems in the educational context to help decision makers determine education goals and objectives; input evaluation, which assesses alternative means for achieving those goals; process evaluation, which monitors the processes both to ensure that the means are actually being implemented and to make the necessary modifications and product evaluation, which compares actual ends with intended ends and leads to a series of recycling decisions.

The emphasis of the Context, Input, Process, Product (CIPP) model on decision making seems appropriate for administrators concerned with improving curricula. Its concern for the formative aspects of evaluation remedies a serious deficiency in the Tyler model. Finally, the detailed guidelines and forms of evaluation provide step-by-step guidance for users. However, this model fails to recognize the complexity of decision-making process in organizations. It assumes more rationality than exists in such situations and ignores the political factors that play a large part in these decisions. It also seems difficult to implement and expensive to maintain (Mertens, 2015).

As a result, Malcolm Provus proposed a discrepancy evaluation model that borrows from systems management. It has four components: determining programme standards, programme performance, comparing performance with standards then determining whether a discrepancy exists between performance and standards. It outlines five stages of evaluation that involve comparing programme design with prescribed standards, comparing actual programme operations and noting discrepancies, evaluating specific processes and also noting discrepancies, evaluating products of the programme against the original goals then evaluating the cost of the programme. This model can be used at any stage of curriculum development and any level of education although just like Tyler's model, it is more concerned with achievement of goals rather than the actual outcomes of the curriculum.

Parlett and Hamilton proposed an illuminative evaluation model that focuses on how the curriculum works in practice rather than how well it relates to the stated objectives. It highlights two important concepts: the instructional system and the learning environment. This model gives more significance to the learning environment since a curriculum is never implemented exactly as planned. During evaluation, one should observe the activities and interactions in the environment, inquire about significant features and occurrences of curriculum implementation then seek general principles regarding causes and effects leading to explanations of how the curriculum is working out in actual practice (Marsh & Willis, 2007). This model examines the curriculum from a wide perspective using in-depth analysis. It can be seen to be more realistic in that it focuses on what actually happens in curriculum implementation rather than what should happen. However, it is bound to be subjective and very demanding on the evaluator (Marsh & Willis, 2007; Ornsteins & Hunkins, 2016).

Michael Scriven was the first to question the assumption that goals or objectives are crucial in the evaluation process. After his involvement in several evaluation projects where side effects seemed more significant than the original objectives, he began to question the seemingly arbitrary distinction between intended and unintended effects. His goal-free model was the outcome of this dissatisfaction. According to this author, in conducting a goal-free evaluation, the evaluator functions as an unbiased observer who begins by generating a profile of needs for the group served by a given program. Then, by using methods that are primarily qualitative in nature, the evaluator assesses the actual effects of the program. If a program has an effect that is responsive to one of the identified needs, then the program is perceived as useful.

Scriven's main contribution was to redirect the attention of evaluators and administrators to the importance of unintended effects of curriculum implementation. The model emphasised on qualitative methods when there was increasing dissatisfaction in the research community with the dominance of quantitative methodologies. However, goal-free evaluation should be used to complement goal-based assessments. Otunga et al. (2011) argue that if used alone, it cannot provide sufficient information for decision making. The model also does not provide more explicit directions for developing and implementing the goal-free model; as a consequence, it probably can be used only by experts who do not require explicit guidance in assessing needs and detecting effects.

Robert Stake made a major contribution to curriculum evaluation in his development of the responsive model, because the responsive model is based explicitly on the concerns of stakeholders. This model considers those for whom the evaluation is done to be paramount in determining evaluation issues. Stake recommends an interactive and recursive evaluation process that embodies the following steps. The evaluator meets with clients, staff and audiences to gain a sense of their perspectives on and intentions regarding the evaluation. The evaluator draws on such discussions and the analysis of any documents to determine the scope of the evaluation project.

The evaluator then observes the program closely to get a sense of its operation and to note any unintended deviations from announced intents. The evaluator discovers the stated and real purposes of the project and the concerns that various audiences have about it and the evaluation. The evaluator identifies the issues and problems with which the evaluation should be concerned. For each issue and problem, the evaluator develops an evaluation design, specifying the kinds of data needed. The evaluator selects the means needed to acquire the data desired. The evaluator implements the data-collection procedures and organizes the information into themes and then communicates in natural ways the thematic reports. This may be in form of videotapes, artefacts or case studies. By again being sensitive to the concerns of the stakeholders, the evaluator decides which audiences require which reports and chooses formats most appropriate for given audiences (Otunga et al., 2011; Syomwene et al., 2017).

Clearly, the chief advantage of the responsive model is its sensitivity to clients and its virtue of flexibility. The evaluator is able to choose from a variety of methodologies once client concerns have been established. Its chief weakness is its susceptibility to manipulation by clients, who in expressing their concerns might attempt to draw attention away from weaknesses they don’t want exposed.

Elliot Eisner Connoisseurship model is based on art, aesthetic and emphasizes on qualitative evaluation. The Eisner model is built on two closely related constructs: connoisseurship and criticism. Connoisseurship is the art of appreciating and recognizing what is educationally significant while criticism is the art of disclosing the qualities of an entity that connoisseurship perceives. This model is more humanistic and qualitative although it requires a great deal of expertise (Otunga et al., 2011; Syomwene et al., 2017).

The eclectic model is one that takes advantage of the strengths of the various evaluation models while at the same time countering their weaknesses. Such a model is seen to best address educators' needs for curriculum evaluation. While the models proposed by the experts Stake, Scriven and Eisner differ in many of their details, several common features emerge in the approaches of studying the context, determining client concerns, using qualitative methods, assessing the opportunity cost, being sensitive to unintended effects and developing different reports for different audiences. By using these common features, along with insights generated from analysing other models, it is possible for evaluators to develop a list of criteria that can be used in both assessing and developing evaluation models.

Based on their utility, feasibility, propriety and accuracy, the CIPP model has been rated as the best evaluation model. It belongs in the improvement and accountability category and is one of the most widely applied evaluation models. It is designed to systematically guide the evaluator in posing relevant questions and conducting assessments at the beginning of a programme (context and input evaluation), while it is in progress (input and process evaluation) and at its end (product evaluation). Therefore, this study chose this model to evaluate the PTE Home Science curriculum.

Specifically, the context evaluation component of the CIPP evaluation helped in the identification of the environmental needs under which the curriculum is implemented.

The input evaluation component assessed the relevance of planned curriculum content and instructional resources available for the implementation of the curriculum. Next, the process evaluation component established the relevance of instructional methods and assessment techniques used in curriculum implementation by Home Science tutors. Finally, the product evaluation component measured, interpreted and judged the outcome of curriculum implementation in this case the extent of achievement of the objectives of Home Science Education thus interpreted the curriculum's merit and worth hence determining its relevance.

2.9 Summary of the Chapter

This chapter has combined the literature on Home Science Education identifying gaps which the study intended to fill. It focused on Home Science Education and the PTE Home Science curriculum. Components of this curriculum have been described with an aim of laying the foundation for their evaluation. Most studies reviewed indicate that curriculum evaluation had indeed been carried out on Kenya's educational system. However, the evaluation had been mostly comprehensive on the whole curriculum and not specific to individual subjects.

Specifically, the review showed that generally, Home Science education has experienced a myriad of challenges. Amongst these challenges are negative perceptions from students and the society towards the subject, too broad and outdated content, use of inadequate instructional resources during Home Science lessons, use of ineffective instructional methods by Home Science teachers and inadequate assessment of Home Science students. These challenges were however not specific to Home Science Education at the PTE level of education but rather for the primary and secondary school levels of education.

There was therefore need to investigate the specific challenges experienced by PTTCs in the implementation of the Home Science curriculum. Results would establish whether the current PTE Home Science curriculum is relevant and whether it meets the objectives of Home Science Education. Descriptions of the methodologies that were used to answer the hypotheses raised in this chapter constitute the subject of the next chapter.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the methodological orientation of the study. It presents the philosophical paradigm of the study, the research approach and design, a rationalization of the study area, population, sample and sampling procedures, research instruments, data collection, data analysis procedures and the ethical considerations of the study.

3.2 Philosophical Underpinning of the Study

A research study is guided by the research paradigm under which it is established. According to Creswell (2009) and Mertens (2015), research paradigms determine the direction of research, how the research reaches its reality and how it answers questions of the seeking mind while helping the researcher use appropriate methodology and apply the research findings. Research paradigm thus refers to the set of beliefs or assumptions that guide a research study (Saunders, Lewis & Thornhill, 2009). These basic assumptions include ontology, epistemology and methodology (Creswell & Plano, 2007; Ornstein, 2016).

Ontology refers to the nature of reality and what can be known about it. Epistemology addresses the nature of the relationship between the knower and what can be known while methodology refers to the plan of action in a research study that links research methods and outcomes (Crotty, 1998 as reported in Creswell, 2014; Saunders et. al., 2009). Kothari (2014) posits that research methodology is a way to systematically solve the research problem by governing the choice and use of research methods.

According to Mertens (2015), research methodology describes the overall approach to research design.

This study was guided by the pragmatic philosophical paradigm. This philosophy believes in the use of both qualitative and quantitative data to provide the best understanding of the research problem (Creswell, 2014). Instead of focussing on methods, pragmatists emphasise the research problem and look to all approaches available in collecting and analysing data related to the problem (Creswell, 2009). This helps to neutralize or cancel out the biases of the other methods (Creswell, 2014). Therefore, pragmatists mix different research approaches in the same study in order to better understand the research problem.

This study employed the mixed methods research approach which combines both qualitative and quantitative research strategies in one study (Creswell, 2014; Creswell & Plano, 2011). The researcher collected, analysed and mixed both quantitative and qualitative data in order to provide a comprehensive understanding of the research problem. The basic assumption was that the use of both quantitative and qualitative methods, in combination, provided a better understanding of the research problem and hypotheses than either method by itself. It thus ensured that the overall strength of the study was greater than either qualitative or quantitative methods when used alone.

3.3 Research Design

A research design is the arrangement of conditions for collection and analysis of data (Chandran, 2004; Kothari, 2014; Saunders et al., 2009). The study adopted the convergent parallel mixed methods strategy in which the researcher merged quantitative and qualitative data in order to provide a comprehensive analysis of the research problem (Creswell, 2014). Given its expansiveness, the study was embedded in a cross sectional survey research design. A cross sectional study produces a ‘snapshot’ of a population at a single point in time (Cohen, Manion & Morrison, 2007; Creswell, 2014). Cross sectional surveys use research instruments with the intent of generalizing from a sample to a population (Creswell, 2014). They gather data at a particular point in time with the intention of describing the nature of existing conditions (Creswell, 2014; Cohen et al., 2007).

Owing to the nature of the population that was widely spread, a cross sectional survey was deemed appropriate for gathering both quantitative and qualitative data from the selected members of the population. The current study sought to investigate the relevance of the present PTE Home Science curriculum in Kenya by establishing the extent to which it meets the objectives of Home Science Education. The relevance of the Home Science curriculum offered in PTTCs was established through quantitative (using questionnaires) and qualitative (using interviews and observational) methods.

The researcher collected both forms of data at roughly the same time and then integrated the information collected in the interpretation of the overall results. Any contradictions or incongruent findings were explained in this research design. The researcher chose this strategy because it allowed for collection of both qualitative and quantitative data in the same study at around the same time thus offered a better understanding of the research problem.

Quantitative research approach refers to the study of a population and samples that uses numeric data and statistical procedures in data analysis (Creswell, 2009; Kothari, 2014; Mugenda & Mugenda, 2008). It is a means for testing theories by examining relationships between variables (Creswell, 2009). This approach allowed the researcher to collect facts and study the relationship between the dependent and independent variables. It allowed the researcher to descriptively analyse, predict and test the significance of relationships between the dependent and independent variables of study. It ascribes to the post-positivist deterministic philosophy in which causes probably determine effects or outcomes in a research study (Creswell, 2009). It thus develops an objective view of the research process.

Qualitative research means exploring and understanding the meaning individuals or groups attribute to a phenomenon of study (Creswell, 2009). It relies heavily on verbal data descriptions, categorization and interpretation of a research phenomenon. The researcher organized the data collected into categories and patterns, synthesised them to themes then interpreted the findings to give meaning. Qualitative research ascribes to the constructivist knowledge assumption that individuals seek to understand the world in which they live and work (Creswell, 2014). They thus develop a subjective meaning of their experiences.

The qualitative mode of enquiry was used to seek respondents demographic characteristics and comments from the DOCs and subject specialist from KICD on the relevance of the different components of the PTE Home Science curriculum which were: teacher trainees' attitude towards Home Science, content taught in Home Science Education at PTTCs, the instructional methods used in content delivery, the techniques used to assess the level of trainees' mastery of content and the instructional resources used to facilitate the training process from the DOCs and the subject specialist from KICD. The quantitative mode of enquiry investigated tutors, teacher trainees and primary school teachers' perceptions towards the relevance of these key components of the PTE Home Science curriculum in relation to achievement of the objectives of Home Science Education.

3.4 Location of the Study Site

The study was carried out in PTTCs in Kenya and primary schools within the vicinity. Both public and private PTTCs were involved. The study chose to use PTTCs because this is where the PTE Home Science curriculum is implemented. The choice of primary schools near the PTTCs was informed by their proximity thus the researcher was able to access them easily once at the PTTCs for data collection and their close work relationship with the PTTCs especially during teaching practice. Another institution involved in this study was the KICD.

3.5 Target Population

A population is defined as the entire group of individuals who possess some common observable characteristics that can be studied in a research study (Kombo & Tromp, 2006; Mugenda & Mugenda, 2008; Robson, 2016). This study targeted those PTTCs that were operational since the last review of the current PTE Home Science curriculum in 2004. The PTTCs that met this criterion as indicated by statistics from the MOE (Appendix VI) were 30 in number (19 public and 11 private PTTCs).

The study targeted tutors, teacher trainees and DOCs from these PTTCs, teachers teaching in primary schools near the PTTCs and the subject specialist from KICD. The study's target population thus comprised Home Science specialist at the KICD, DOCs in the 30 PTTCs, 78 tutors teaching Home Science Education at the 30 PTTCs, 6,039 teacher trainees taking Home Science Education in the 30 PTTCs and 78 primary school teachers near the 30 PTTCs who are graduates of Option A subjects from PTTCs in Kenya. Ideally, the target population comprised an average of 6,226 participants. These figures were based on the MOE 2014 establishment and enrolment in the 30 PTTCs in Kenya.

3.6 Accessible Population

The accessible population is a more narrowly defined and manageable population (Catherine, 2009; Mugenda & Mugenda, 2008) identified for use in a research study. It was assumed that all PTTCs in Kenya implement the same Home Science curriculum thus all the PTTCs had an equal chance of participating in the study. Administratively, Kenya was initially divided into 8 provinces namely, Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley, and Western. Each province had at least one PTTC located in it. However, today Kenya is divided into counties. There are 47 counties currently although not all counties have PTTCs in them.

In order to ensure that views from all regions were incorporated, this study opted to use PTTCs located in the eight provinces for study. A sample for any research study should be a true representation of the target population (Kothari, 2014; Mugenda & Mugenda, 2008). Thus, the researcher stratified the 30 PTTCs into public and private categories. This resulted in 19 public and 11 private PTTCs. Their respective proportions in the target population were then computed to give an approximate ratio of 2 public PTTCs to 1 private PTTC. In order to select public PTTCs for participation in the study, one public PTTC from Central, Coast, Eastern, Nyanza, Rift Valley and Western regions were randomly selected from the target population for inclusion in the accessible population. Nairobi region was not included because it did not have a public PTTC. North Eastern region was also left out because of insecurity reasons. This gave a total of 6 public PTTCs.

In order to get a proportionate representation of both public and private PTTCs in the study, their respective ratios of 2:1 in the target population were used to compute the number of private PTTCs that would take part in this study. Based on the 6 public PTTCs identified for study, this gave a total of 3 private PTTCs. The researcher identified Nairobi as one of the regions from which one of the private PTTCs was selected because it was not represented in the selection of public PTTCs. The remaining 2 private PTTCs were then randomly selected from the remaining 10 private PTTCs that excluded Nairobi region. This gave a total of 6 public and 3 private PTTCs for inclusion in the accessible population. This represented 30% of the target population which is considered adequate for study (Mugenda & Mugenda, 2008).

The 9 PTTCs selected had a total of 1,915 (940 males and 975 female) teacher trainees and 23 Home Science tutors. One thousand, five hundred and thirty (1,530) of the teacher trainees of which 737 were male and 793 were female came from public PTTCs and 385 teacher trainees of which 203 were male and 182 female came from the private PTTCs. The accessible population thus comprised of one key Home Science informant from the KICD, 9 DOCs from the 9 PTTCs (6 public and 3 Private PTTCs) identified for study, 23 Home Science tutors from the 9 PTTCs, 1,915 teacher trainees from the 9 PTTCs and 23 primary school teachers who were graduates of PTTCs as shown in Appendix VII. This gave a total of 1,971 participants for the accessible population. Table 3.1 shows the sampling frame for the study.

Table 3.1: Summary of Sampling Frame for the Study

S/NO.	PTTC's	Region	Male Students	Female Students	Total
1.	**A** (Public PTTC)	Western	172	161	333
2.	**B** (Public PTTC)	Rift Valley	88	86	174
3.	**C** (Public PTTC)	Coast	93	106	199
4.	**D** (Public PTTC)	Nyanza	150	136	286
5.	**E** (Public PTTC)	Central	119	100	219
6.	**F** (Public PTTC)	Eastern	115	204	319
	Sub Total		**737**	**793**	**1530**
7.	**G** (Private PTTC)	Nairobi	51	56	107
8.	**H** (Private PTTC)	Nyanza	74	52	126
9	**I** (Private PTTC)	Rift Valley	78	74	152
	Sub Total		**203**	**182**	**385**
	Sub Total		**940**	**975**	**1915**
10.	Tutors				23
11.	Primary School Teachers				23
12.	Deans of Curriculum				9
13.	Key Informant from KICD				1
	Grand Total				**1971**

Source: Modified from Ministry of Education (2014)

The geographical locations of the randomly selected nine PTTCs, from among the 30 PTTCs, are as shown in Figure 3.1.

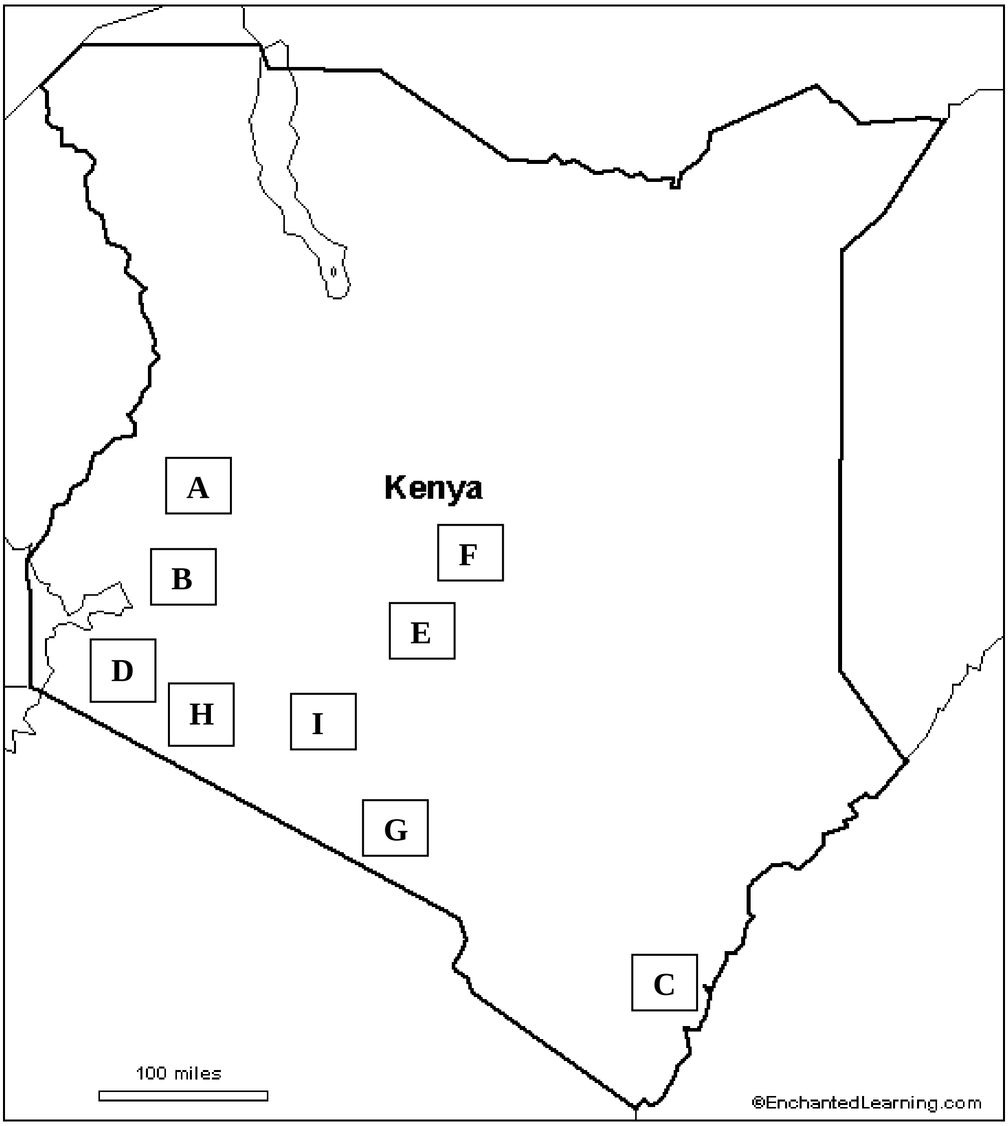

Figure 3.1: Map of Kenya showing Location of Sampled PTTCs

(Source: Modified from Ministry of Education, 2014)

3.7 Sample Size and Sampling Design

A sample is a small group obtained from the accessible population whereas sampling is the process of selecting this sample in a way that it represents the accessible population from which it is selected (Kothari, 2014; Mugenda & Mugenda, 2008). A sample for any research study should be a true representation of the target and accessible population (Best & Khan, 2008; Mugenda & Mugenda, 2008). Sampling on the other hand makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables with a relatively small proportion of the population (Best & Khan, 2008).

3.7.1 Sample of PTTCs

Ideally, the study ought to involve all the PTTCs approved by and registered with the government (Ministry of Education) in Kenya. However, considerations of time, fieldwork costs and accessibility to research sites guided the selection of a sample of the PTTCs to participate in the study. The nine PTTCs selected from different provinces constituted 30% of all the PTTCs in Kenya that were operational since 2004 when the current Home Science curriculum was last reviewed. According to Mugenda and Mugenda (2008), a sample of 10% of a large accessible population is representative enough for use in a descriptive survey study. This sample was therefore considered adequate.

In order to select the specific 9 PTTCs, the researcher limited one PTTC for inclusion in the study from each of the regions identified. In regions with only one PTTC (Coast region), the existing PTTC was purposively selected for participation in the study. In case of regions that had more than one PTTC, simple random sampling technique was used to select one of the PTTCs for inclusion in the study. Names of all PTTCs in each of the regions were written on pieces of paper and folded up into small balls. These balls were placed in a container and shaken up to mix them thoroughly. One of these balls was then picked at a time and opened up to reveal the name of the PTTC in it.

This process was repeated until 6 PTTCs were randomly selected from the public PTTCs' category to participate in this study. Further, names of the other 10 private PTTCs (excluding Nairobi region that had only one private PTTC) were also written on pieces of paper and folded up into small balls. They were then put in a container and shaken up to mix them. One of these balls was picked at a time and opened to reveal the name of the PTTC in it. The name revealed was noted down. This was repeated again to select the second private PTTC for inclusion as a participant in the study. In total, 9 (6 public and 3 private) PTTCs were selected for participation in the study.

3.7.2 Sample of Home Science Specialist at KICD

The Home Science specialist at KICD is in charge of coordinating the development and implementation of the Home Science curriculum in PTTCs in Kenya. This informant was purposively selected to provide information on the present Home Science curriculum implemented in PTTCs in Kenya. Purposive sampling technique was preferred because it allowed the researcher to adhere to the objectives of the study by selecting the respondent who could best answer the research questions or give in-depth information on the study variables (Mugenda and Mugenda, 2008; Ornstein, 2016).

This informant was better placed to comment on attitude towards Home Science, planned curriculum content, instructional resources and methods and the recommended assessment techniques in the current PTE Home Science curriculum in relation to achievement of the objectives of Home Science Education. This informant also highlighted some of the challenges affecting Home Science Education in PTTCs and gave suggestions on how Home Science Education could be improved.

3.7.3 Sample of Deans of Curriculum at PTTCs

Nine DOCs from the 9 PTTCs (6 public and 3 private) selected for study were purposively selected as participants in the current study. This is because they are responsible for supervision of PTE curriculum implementation at their respective PTTCs. It was therefore deemed important to seek their views regarding the relevance of Home Science Education for teacher trainees, the adequacy of human and non human resources for the teaching of Home Science at the respective PTTCs, challenges experienced by their respective institutions in facilitating the teaching of Home Science and their suggestions towards addressing these challenges.

3.7.4 Sample of Home Science Tutors at PTTCs

This study aimed at getting a holistic view regarding the Home Science curriculum offered by PTTCs in relation to the objectives of Home Science Education. Home Science tutors were purposively selected from the 9 (6 public and 3 private) PTTCs as key information resource persons. Out of a total accessible population of 23 Home Science tutors, the researcher sampled all Home Science tutors from the 9 PTTCs selected for participation in the study as respondents. This is because they were few in number thus easy to manage. These tutors gave information regarding planned content in the current Home Science curriculum in PTTCs, the recommended and implemented instructional methods, assessment techniques and resources in relation to achievement of the objectives of Home Science Education. Further, tutors highlighted challenges they face when implementing the curriculum and gave suggestions on possible solutions to these challenges.

3.7.5 Sample of Home Science Teacher Trainees at PTTCs

Teacher trainees were selected from the 9 PTTCs (6 public and 3 private) as participants in the current study. Teacher trainees in Home Science Education at the respective 9 PTTCs were purposively selected as participants on the basis that they possess information related to the Home Science curriculum given that they are the primary consumers of this curriculum. These are usually the second year teacher trainees since Home Science Education is introduced during the second year of study in PTTCs. The 9 PTTCs selected had a total of 1,915 (940 males and 975 female) Home Science teacher trainees. One thousand, five hundred and thirty (737 male and 793 female) of the teacher trainees were from public PTTCs and 385 (203 male and 182 female) from private PTTCs.

The researcher thus first stratified the trainees by type of institution (public or private) and then by gender. This ensured that each of the categories was proportionately represented in the study sample. Further, this ensured that the teacher trainees' sample was representative of the accessible and target population. Teacher trainees were then selected using simple random sampling technique as participants in the study. Out of the accessible population of 1,915 trainees, the researcher sampled 331 of them as respondents for the current study. The Yamane formula (1967) for calculating sample size was used to get this number of student respondents since it is used in cases where population size is known.

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

Where: n = Sample size

N = Population size

e = Level of precision (0.05 or 95% confidence level)

3.7.6 Sample of Teachers from Primary Schools

There was need to collect data from practicing teachers who are graduates of PTTCs thus already had an experience of the PTE Home Science curriculum. This sample included primary school teachers who were graduates of Home Science Education from the PTTCs. The PTTCs selected formed the basis of selecting the primary schools which would be involved in the study. The researcher purposively selected one primary school within the vicinity of the PTTC identified as a participant in the study.

The researcher regarded practicing teachers from the primary schools as better placed to give their assessment on the relevance of the Home Science curriculum offered in PTTCs in relation to the employment opportunities given that they are already practicing in the job market. Thus, they could provide first hand experiences as to whether Home Science objectives were being achieved or not. These primary school teachers were required to have studied Home Science as a subject during their training. Similar to the 23 Home Science tutors at the PTTCs selected for participation in the study, the study targeted 23 primary school teachers. This category of teachers gave information related to the relevance of the components of the Home Science curriculum offered in PTTCs in Kenya and the extent to which they meet the objectives of Home Science education. Table 3.2 shows a summary of the sample size for the study.

Table 3.2: Summary of Sample Size for the Study

S/NO	PTTCs	Region	Accessible population	Male	Female	Total sample size
1.	**A** (Public PTTC)	Western	**333**	30	28	58
2.	**B** (Public PTTC)	Rift Valley	**174**	15	15	30
3.	**C** (Public PTTC)	Coast	**199**	16	18	34
4.	**D** (Public PTTC)	Nyanza	**286**	26	24	49
5.	**E** (Public PTTC)	Central	**219**	21	17	38
6.	**F** (Public PTTC)	Eastern	**319**	20	35	55
	Sub Total		**1530**	**127**	**137**	**264**
7.	**G** (Private PTTC)	Nairobi	**107**	9	10	18
8.	**H** (Private PTTC)	Nyanza	**126**	13	9	22
9.	**I** (Private PTTC)	Rift Valley	**152**	13	13	26
	Sub Total		**385**	**35**	**31**	**67**
	Grand Total		**1915**	**162**	**169**	**331**
10.	PTTC Tutors					**23**
11.	Primary School Teachers					**23**
12.	Deans of Curriculum					**9**
13.	Key Informant from KICD					**1**
	Grand Total					**387**

Source: Modified from Ministry of Education (2014)

3.8 Research Instruments

The study used multiple methods of data collection (triangulation) with the aim of enriching the quality of data and therefore enhancing the validity and reliability of the findings of the study (Cohen et al., 2007). This was deemed necessary since the use of a single method in collecting data is likely to provide a limited view of the complexity of the variables under study (Cohen et al., 2007). Besides, a single method is likely to be biased towards presenting reality in a particular way. It is in this respect that three instruments were used in this study for data collection namely, (a) the self administered questionnaire (b) the semi-structured interview guide and (c) the observation guide.

3.8.1 The Self Administered Questionnaire

The researcher used self administered questionnaires for tutors, teacher trainees and Home Science graduates teaching at primary schools. The researcher chose self administration of questionnaires because it is quicker and cheaper to administer over a geographically widely dispersed region besides facilitating easy derivation of information from respondents (Kothari, 2014). The choice of questionnaires was guided by the nature of the data to be collected and the objectives of the study and covered variables that could not be directly observed. Further, questionnaires enable collection of a lot of information that can provide opinion judgement regarding study variables (Kothari, 2014; Mugenda & Mugenda, 2008).

The questionnaires were structured in a way that they had both open and closed ended questions. Closed ended questions enhance consistency of responses given across respondents besides being popular with the respondents (Marshall & Rossman; 2016; Mugenda & Mugenda, 2008). According to Cohen et al. (2007), closed ended questions limit the breadth of responses given by participants, hence the researcher also considered some open ended questions with the aim of capturing richness, in-depth and freedom of expression from the respondents. The instruments were divided into three parts: Part I consisting of both open and closed ended questions sought respondent’s demographic information. Part II with seven sections had all closed ended questions. In order to obtain the items necessary for evaluating the curriculum in the various sections, considerable time was spent in reviewing the PTE Home Science curriculum. From this review, 48 curriculum items were identified for assessing the curriculum under the various sections. In order to evaluate the PTE Home Science curriculum, attention was focused on the curriculum as a whole. Therefore, the curriculum items were grouped into eight major curricula components of:

A. Teacher trainees’ attitude towards Home Science
B. Planned content in the Home Science Curriculum
C. Instructional resources used in Home Science lessons
D. Instructional methods used to teach Home Science lessons
E. Assessment techniques used to assess teacher trainees
F. The objectives of Home Science Education
G. Factors affecting Home Science Education
H. Suggestions for improving Home Science Education

An assessment of the identified curriculum items served to indicate the extent to which they affected the achievement of the objectives of Home Science education. Therefore, Part II of the questionnaire was divided into six sections: Section A was used to elicit information regarding teacher trainees’ attitude towards Home Science Education, Section B looked at the relevance of planned curriculum content in Home Science Education, Section C explored the relevance of instructional resources used to teach Home Science in PTTCs, Section D assessed the relevance of instructional methods used by Home Science tutors to teach Home Science lessons, Section E investigated the appropriateness of assessment techniques used by Home Science tutors to assess teacher trainees in PTTCs while Section F investigated the extent to which the objectives of Home Science Education were being achieved in PTE. A five-point Likert scale was used to solicit this information. The last part of the questionnaire, Part III solicited information on challenges affecting the teaching of Home Science Education in PTTCs and possible solutions to these challenges.

3.8.2 The Semi-Structured Interview Guide

A semi-structured interview guide was used to collect data from the key informant at KICD and the DOCs. The instrument solicited information regarding the teaching of Home Science in PTTCs with respect to teacher trainees' attitude towards Home Science education, planned curriculum content, instructional resources, instructional methods and techniques used to assess teacher trainees with respect to the objectives of Home Science Education. Challenges affecting the teaching of Home Science at PTTCs and possible solutions to these problems were also sought.

The researcher carried out the interviews in person. During the interview, the researcher made brief notes with the permission of the respondents. This study mainly used personal interview as it allowed the researcher to collect data directly and personally from the respondents. According to Ornstein (2016), this approach has the advantage of being able to probe and allow for detailed descriptions and comprehensiveness as needed.

3.8.3 The Observation Guide

Observation method entails checking out the status of the variables under study, recording this, describing, analyzing and interpreting what has been observed

(Robson, 2016). An observation guide (Appendix IV) was used to provide additional information regarding the other important aspects in the environment that affect the implementation of the Home Science curriculum at the PTTCs participating in the study. This included the availability, appropriateness and adequacy of resources and facilities in the various PTTCs that aid the teaching of Home Science. Observation helped avoid discrepancies between what respondents claimed and what was the actual status of Home Science resources in the PTTCs. Data from observation was used to compare, contrast and supplement information collected from the other instruments.

3.9 Pilot Study

Pre-testing of the research instruments was done in two PTTCs selected by random sampling. The two included one public and one private PTTC in Kenya. This sample was convenient in terms of time and resources. The instruments were tested for their validity and reliability on eliciting relevant information on the research objectives. According to Mugenda and Mugenda (2008), Connelly (2008) and Hair et al. (2006), a sample of between 10% is adequate for piloting in a research study.

Thirty three teacher trainees, three tutors and three primary school teachers were selected to participate in the pilot study. These numbers represented 10% of participants from the estimated sample of 331 teacher trainees, 23 tutors and 23 primary school teachers expected to take part in the study. The responses given were used to compute the Cronbach alpha internal consistency coefficient.

3.9.1 Validity

The validity of an instrument is defined as the degree to which it measures accurately what it is purported to measure, mainly the data anticipated for collection based on the objectives of that study (Cohen et al., 2007; Engel & Shutt, 2005; Kombo & Tromp, 2006; Orodho, 2009). According to Cohen et al. (2007), there are two types of validity; internal and external validity. Internal validity comprises face, content, construct and criterion validity while external validity focuses on the extent to which study findings can be generalized.

Face validity refers to the extent to which an instrument seems to cover concepts it purports to measure. This was established through the review of literature on the variables being studied to determine their appropriateness. Content validity refers to the degree to which the research instrument appropriately represents the content domain it is intended to measure thus adequately covers the topic under study. When an instrument is judged to have high content validity, its content is considered to be congruent with the testing purpose and with prevailing notions of the subject matter being tested (Engel & Shutt, 2005; Kothari, 2014). Through literature review, this study was able to verify that variables under study were adequately covered. The researcher constructed the questionnaires with guidance from research supervisors to address both content and face validity.

Moreover, opinion given by Subject Matter Experts (SMEs) on content validity was computed. The Lawshe (1975) formula was used to gauge how essential a particular item in an instrument was. Three panellists were used to gauge the suitability of specific items in the questionnaire which was computed using the formula:

$$CVR = (n_e - N/2) / (N/2)$$

Where: CVR = content validity ratio

n_e = number of SME panellists indicating 'essential'

N = total number of SME panellists

This formula yielded values ranging between +1 to -1 where positive values indicated at least half subject matter experts rated items as essential hence the instrument would be considered valid for data collection in the study. All items except three in the questionnaire were rated favourably. Out of the three items, two were rephrased while one was extracted from the instrument. All items in the interview and observation guides were rated above 0.3 implying that they were valid for use in data collection.

Construct validity refers to the extent to which a set of items in the research instrument replicate the theorized latent constructs it purports to measure (Kothari, 2014; Pallant 2013). The study achieved this by undertaking a thorough review of the theory that forms the basis of the major themes of the study to establish the chain of evidence of the constructs as well as seeking expert opinion regarding the items in the research instrument. Further, factor analysis test was run on all six variables of the study to determine items that contributed towards explaining variance in the respective variables. All items under each variable were found to have significant contributions explaining variance in the respective variables since they loaded strongly on the identified components with eigenvalues equal to 1 or above.

Therefore, they were retained in the research instrument since they ensured construct validity.

To determine external validity, the researcher ensured that the sample selected for study was as representative as possible of the target population and data collected was triangulated by use of different data collection methods (Engel & Shutt, 2005; Kothari, 2014). By relying on both qualitative and quantitative methods of data collection (triangulation), the study was able to collect comprehensive data for evaluation and interpretation whose findings were generalized to the population from which the sample was drawn.

According to Robson (2016), triangulation refers to using diverse methods and processes of collecting and analyzing data to enhance the credibility and rigor of research. There are four aspects of triangulation, namely: use of more than one method of data collection such as interviews and questionnaires (data triangulation), use of more than one observer in the study (observer triangulation), combining qualitative and quantitative research approaches (methodological triangulation) and using multiple theories or perspectives in research (theory triangulation). This study used two forms of triangulation, namely data triangulation and methodological triangulation in order to enhance the validity of the research instruments.

3.9.2 Reliability

Reliability is the degree of consistency of a research instrument and the accuracy of the target attributes (Engel & Shutt, 2005; Kombo & Tromp, 2006). According to Hair et al. (2006), Cohen et al. (2007) and Connelly (2008), a reliability level is acceptable at 0.7. To determine the reliability of instruments that were used in the current study, the research instruments were piloted in two PTTCs; one public and one private that were not finally included in the study sample. Responses given were checked to ascertain the extent to which they yielded relevant data.

Further, the researcher computed the Cronbach alpha internal consistency coefficient. This coefficient allows for the assessment of consistency of research items in measuring the research variables. The questionnaire yielded Cronbach alpha internal consistency coefficients shown in Table 3.3 for the specific research variables. In case of coefficient values below the threshold, items with values lower than 0.7 were eliminated until the threshold values were attained.

Table 3.3: Reliability Cronbach Alpha Coefficient Results for Study Variables

S/NO.	Study variables	No. of items	Cronbach alpha
1.	Objectives of Home Science Education	6	0.88
2.	Attitude towards Home Science Education	6	0.74
3.	Planned curriculum content	9	0.72
4.	Instructional resources	5	0.73
5.	Instructional methods	7	0.74
6.	Assessment techniques	8	0.83

Source: Research Data (2016)

Qualitative data collection instruments (the interview and observation guide) were also evaluated in order to determine their reliability. The evaluation aimed at determining their trustworthiness and authenticity. According to Mertens (2015), the trustworthiness of a research instrument addresses four aspects; its credibility, transferability, dependability and conformability. Authenticity on the other hand addresses issues of fairness. The trustworthiness and authenticity of qualitative data collected in this study were established by collecting detailed descriptive data and developing a descriptive description out of the data collected.

3.10 Data Collection Procedure

Before proceeding for data collection, the researcher sought clearance from the Dean, School of Education then authorization to conduct research from the National Commission for Science, Technology and Innovation (NACOSTI). Thereafter, the researcher visited the various PTTCs selected for study. First, the researcher reported to the County Director of Education's office for introduction and explained the purpose of the visit and study. The researcher then visited the principal's offices at the various PTTCs and explained the purpose of the visit and research. The researcher met Home Science tutors at the various PTTCs, then the teacher trainees and introduced the purpose of the research. The researcher went on to purposively select Home Science tutors and randomly sampled teacher trainees based on their proportionate numbers and had them sit in a common room.

An introduction of the questionnaires was done and respondents allowed between 30 to 40 minutes to respond to the items therein. The questionnaires were then collected. The researcher interviewed the DOC at the specific PTTCs and using the observation checklist, assessed the status of resources and facilities available for the teaching of Home Science in the various PTTCs. The researcher proceeded to the primary school near the PTTC, carried out the introduction with the head teacher and the teachers who studied Home Science during their PTE training. They were allowed between 30 to 40 minutes to respond to the items in the questionnaires after which the questionnaires were collected.

In relation to the interviews, two visits were made to KICD offices. The first visit was for acquaintance purposes and also for fixing an appointment date and time for the interview. The second visit was made on the appointed day and time for the purpose of conducting the interview with the key informant of Home Science Education at KICD.

3.11 Data Analysis Techniques

According to Robson (2016), data analysis is the process of bringing order and meaning to raw data collected. The study merged both qualitative and quantitative data collected in data analysis (triangulation) with the aim of enriching and enhancing the validity and reliability of the findings of the study (Cohen et al., 2007). Mixed methods research strategy relies on analysing and inferring both qualitative and quantitative data (Cohen et al., 2007; Creswel, 2014; Saunders et al., 2003; Tashakkori & Teddlie, 2010). The study therefore employed both qualitative and quantitative data analysis techniques.

3.11.1 Qualitative Data Analysis

According to Marshall and Rossman (2016), the first step in qualitative data analysis entails data organization and reduction. This data is then organized into categories, theories and patterns before it is concluded and verified. The researcher started by organizing the data and removing what was deemed irrelevant. Data was then categorized from the transcripts by creating labels and codes. The labelled and coded data from interviews was synthesised into themes and interpreted by identifying its meaning and implications.

This data was mainly used to provide information related to the relevance of the components of the PTE Home Science curriculum in meeting the objectives of Home Science Education. Further, it also provided information on the challenges affecting Home Science education and the possible solutions. This information was used to corroborate the quantitative data collected.

3.11.2 Quantitative Data Analysis

Quantitative data from the questionnaires was sorted out and analysed descriptively using the objectives of the study. Descriptive data analysis was employed whereby frequencies and percentages were computed to establish respondents' ratings on teacher trainees' attitude towards Home Science Education, planned curriculum content, instructional resources, instructional methods, assessment techniques and the objectives of Home Science Education.

Descriptive summaries of the quantitative data collected were then done using frequencies and percentages which were graphically presented using tables and figures. To get an in-depth analysis of these ratings, the researcher further recoded the five-point Likert scales into three-point scales and computed the chi square analysis test to establish the existence of any relationships between the responses given by the three categories of respondents: the tutors, teacher trainees and primary school teachers. Besides descriptive analysis, inferential statistics specifically chi square and multiple regression analyses were also used to test the hypotheses of the study. As a prerequisite for regression analysis, factor analysis of the various constructs under the various study variables was carried out.

3.11.3 Factor Analysis

According to Pallant (2013) and Tabachnick and Fidell (2013), factor analysis is a data reduction technique which summarizes a large set of variables using a smaller set of factors or components. It is a technique used to reduce a large number of related variables to a more manageable number prior to further analysis in this case multiple regression analysis. It further explains the patterns of correlation between the variables under study. There are three steps involved in factor analysis; assessment of suitability of data for factor analysis, factor extraction and factor rotation and interpretation (Hair et al., 2010; Pallant, 2013).

In order to establish the suitability of data for factor analysis, the study's sample size and strength of relationship amongst its variables are examined. According to Pallant (2013), a study must have a large sample size of up to 300 respondents for the data collected to be suitable for factor analysis. The sample size for the current study comprised 387 respondents thus fulfilled this requirement. Secondly, an inspection of the correlation matrix should be done to determine the inter-correlations among study variables. It is expected that the correlation coefficients should be greater than 0.3. The SPSS generates two statistical measures to help assess the factorability of study data: Bartlett's Test of Sphericity which should be significant if $p<0.05$ and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) whose index should range from 0 to 1 with 0.6 as the suggested minimum value (Hair et al., 2010; Pallant, 2013; Tabachnick & Fidell, 2013). Thus, variables with KMO values smaller than 0.5 should be omitted from factor analysis one at a time starting with the item bearing the smallest value in every subsequent omission (Hair et al., 2010).

Factor extraction entails the process of determining the smallest number of factors that can be used to best represent the interrelations amongst a set of variables (Pallant, 2013). The Principal Component Analysis (PCA) technique is used to extract these factors. According to Tabachnick and Fidell (2013), the researcher should explore and experiment with the various factors until the best combination of factors has been extracted. In assessing the overall fit of the PCA, factors with an eigenvalue greater than 1.0 or more are retained for further investigation. This value represents the total variance explained by the specific factor (Pallant, 2013; Sheskin, 2007).

Further, Catell's Scree Test which plots the Eigenvalues of the study factors is used to point out factors that contribute the most towards explaining the variance in the set of data. Given that PCA and Scree Test are bound to overestimate the number of components suitable for extraction, the Parallel Analysis (PA) technique which involves comparing the size of Eigenvalues with those obtained from a randomly generated data set of the same size is further used to identify the correct number of components that would finally be retained for analysis.

The final step after identifying the number of components to be retained entails factor interpretation. The factors are first rotated so as to present their pattern of loading which facilitates the interpretation (Pallant, 2013). Therefore, Varimax rotation with Kaiser Normalization was used to minimise the number of items that have high loadings on each of the components. These items were consequently identified for use in multiple regression analysis.

3.11.4 Multiple Regression Analysis

In order to ascertain the effect of the PTE Home Science curriculum on achievement of the objectives of Home Science Education, the researcher carried out multiple regression analysis. Multiple regression analysis is a technique used to explore the relationship between one continuous dependent variable and a number of continuous independent variables (Kothari, 2014; Pallant, 2013). The study chose this technique because it is able to tell how well a set of variables (several independent variables) are able to predict a particular outcome (the dependent variable). This study intended to establish the extent to which teacher trainees' attitude towards Home Science Education, planned curriculum content, instructional resources, instructional methods and assessment techniques affect achievement of the objectives of Home Science Education. Further, multiple regression analysis is able to show the relative contribution of each of the independent variables towards the dependent variable.

The study specifically used standard multiple regression analysis which allowed all independent variables to be entered into an equation simultaneously. Further, each independent variable was evaluated in terms of its predictive influence on the dependent variable over the influence caused by the other independent variables. Therefore, standard multiple regression analysis was able to tell the extent to which each of these independent variables influenced achievement of the objectives of Home Science Education besides showing the combined influence of all five independent variables on the dependent variable.

Thus, the multiple regression model estimated was specified as follows:

$$Y = A + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where: Y represented the predicted value of the dependent variable

A was the Y intercept (value of Y when all the X values are zero)

$X_1....X_5$ represented the five independent variables of the study

$\beta_{1.....}\beta_5$ represented the regression coefficients of proportionality

ε was the error representing the effects of intervening variables $(1 – R^2)$ on the dependent variable.

3.12 Logistical and Ethical Considerations

Researchers have the obligation to treat both the participants and the information they provide with honesty and respect (Catherine, 2009). Research ethics defines what researchers should and should not do when conducting research. Hence researchers have a professional and moral obligation to act ethically. Understandably, individuals and institutions tend to get concerned about granting access to researchers. When it is granted, the researcher has to prove that the study poses no danger to the respondents.

To address this prerequisite, the researcher paid visits to the PTTCs selected for study and explained to the principals, Home Science tutors, Home Science teacher trainees and PTTC graduate teachers teaching at the various primary schools near the PTTCs what the study was all about. This was aimed at creating positive rapport with the respondents. The researcher took time to explain the purpose of the study and the benefits of its findings hence requested participants to voluntarily participate in the study. The researcher also stressed that participants were free to decline participation or even withdraw from the study without any consequences if they felt uncomfortable.

Further, the researcher assured participants of anonymity and confidentiality on the information provided. The essence of anonymity is that information provided by participants should in no way reveal their identity. To observe this, the researcher ensured that respondents' questionnaires did not require them to indicate their names or contacts. Participants were also assured of confidentiality. To achieve this, the researcher assured participants that information gathered would only be used for the current study.

3.13 Summary of the Chapter

This chapter focused on the research methodology used to accomplish study objectives. It presented the philosophical underpinning of the study, research design, area of study, target population, sampling techniques, research instruments, validity and reliability, data collection procedures, data analysis techniques and ethical considerations in conducting the study. It emerged from this chapter that due to the nature of the present study, a convergent parallel mixed methods research approach embedded in the cross-sectional research design was adopted. It is also clear in the chapter that mixed methods data analyses techniques were used to process the data obtained which is normally the case with mixed methods research studies. The next chapter presents, analyses, interprets and discusses the findings of the study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the analysis, interpretation and discussion of results obtained from data collected by use of questionnaires, interviews and observation. This analysis was guided by the specific objectives and hypotheses of the study. This chapter is therefore organized according to the research objectives and hypotheses. Questionnaires were administered to tutors, teacher trainees and primary school teachers. The researcher also used interview guides for DOCs in the various PTTCs that participated in the study and the subject specialist from KICD. The researcher further used an observation guide to assess the status of the environmental context under which the PTE Home Science curriculum is being implemented.

The analysis of data was presented, analysed, interpreted and discussed under the following themes: respondents' demographic characteristics, teacher trainees' attitude towards Home Science Education, relevance of the PTE Home Science curriculum in terms of planned curriculum content, instructional resources, instructional methods and assessment techniques in achieving the objectives of Home Science Education. The results of data collected were presented in pie-charts, bar graphs and tables.

4.2 Questionnaire Return Rate

Different authors recommend different response rates in research studies. Mugenda and Mugenda (2008) posit that a 50% response rate is adequate, 60% is good while 70% and above is very good for data analysis and reporting. Fincham (2008) recommends at least a 60% response rate. Questionnaires were distributed to 22 tutors, 331 teacher trainees and 30 primary school teachers. The questionnaire return rate was 96% for tutors, 96% for teacher trainees and 100% for primary school teachers as shown in Table 4.1. This represents a total of 96% respondents hence considered good enough for use in data analysis.

The high return rate may be attributed to the fact that the questionnaires were given out by the researcher assisted by class tutors and respondents allowed between 30 and 40 minutes responding to the items therein. They were then collected immediately upon completion. Fourteen questionnaires (4%) that were returned blank or incomplete were not considered in data analysis. The return rate of 96% was therefore considered sufficient for data analysis and reporting.

Table 4.1: Questionnaire Response Rate

S/NO.	Respondents	Issued out	Returned	Percentage return rate (%)
1.	Tutors	23	22	96
2.	Teacher trainees	331	318	96
3.	Primary school teachers	30	30	100
4.	**Total**	**384**	**370**	**96**

Source: Research Data (2016)

4.3 Data Screening

Data collected was first screened in preparation for analysis. According to Hair et al. (2010), missing data refers to the unavailability of suitable value(s) on one or more variables in a set of data. The researcher checked for missing values from the data entered in the SPSS program. The results indicated no missing values given the fact that questionnaires that were returned incomplete were not included in the analysis.

The researcher further checked for outliers which are likely to affect the results of data analysis. According to Tabachnick and Fidell (2013), outliers are cases with a standardized residual of more than 3.3 or less than -3.3. Data screening should thus check for both univariate and multivariate outliers. Univariate outliers consist of data that has an extreme value on one variable while multivariate outliers comprise a combination of unusual scores on at least two variables (Pallant, 2013).

The screening process was done using SPSS multiple regression programme which identified fifteen outliers on cases labeled 77, 79, 146, 183, 184, 274, 276, 324, 339, 349, 355, 356, 358, 360 and 361. These cases had values more than 3.3 or less than -3.3. This presence of outliers evoked further inspection using Mahalanobis distances data files by determining the critical chi square value using the number of independent variables as the degrees of freedom and alpha value 0.01 as outlined by Tabachnick and Fidell (2013). According to these authors, it is common to find a number of outliers in a data set when dealing with large study samples.

Under the study's five variables, the critical chi square value was established as 20.52. It is expected that the Mahalanobis-1 values for the affected cases should not exceed this critical value of 20.52. However, according to Pallant (2013) and Tabachnick and Fidell (2013), if just a small percentage of cases out of the total study cases exceed this critical value, then there is no need to take action to address the deficiency. In this study, 9 out of the total 370 cases in the study had chi square values above 20.52. This represented 2.43% of the total number of cases that participated in the study. Given this relatively low percentage, there was no need to correct the outliers. Therefore, data was assumed to be suitable for analysis.

Regarding the normality of data distribution, the researcher carried out the test of normality. The Kolmogorov-Smirnov statistic that is used to assess normality of a distribution was done. According to this test, a non-significant result which represents a value more than 0.05 indicates normality (Field, 2009; Pallant, 2013). The test of normality on study variables yielded significant values of 0.000 for all six variables in the study. This result suggested a violation of the assumption of normality. However, Pallant (2013) asserts that this is quite common with a large study sample which was the case in the current study.

The researcher examined the actual shapes of distribution in the histogram generated for the various study variables and noted that scores appeared reasonably normally distributed. This finding was further supported by the inspection of Normal Probability Plots (Normal Q-Q Plots) in which the observed value for each score is plotted against the expected value from the normal distribution (Appendix V). The results showed a reasonably straight line which suggested normal distribution.

Moreover, the skewness and kurtosis tests that provide information concerning the distribution of continuous variables were also done. Skewness provides an indication of the symmetry of the distribution while kurtosis provides information about the peakedness of the distribution (Pallant, 2013). A skewness value larger than (1) and smaller than (-1) indicates a substantially skewed distribution. On the other hand, kurtosis values exceeding (3) indicate a peaked curve and when the value is below (-3), it indicates a flat curve. The results obtained from this analysis revealed that all variables were normally distributed as shown in Table 4.2.

Table 4.2: Skewness and Kurtosis Tests for Study Variables

Variable	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Objectives of Home Science Education	-.262	.127	-1.409	.253
Attitude towards Home Science Education	1.473	.127	.848	.253
Planned curriculum content	-.628	.127	-1.105	.253
Instructional resources	-.567	.127	-1.028	.253
Instructional methods	-.083	.127	-1.254	.253
Assessment techniques	-.762	.127	-.884	.253

Source: Research data (2016)

4.4 Respondents' Demographic Characteristics

The study gathered information on the demographic characteristics of the respondents. The results are presented in three categories: tutors, teacher trainees and primary school teachers from both the public and private PTTCs.

4.4.1 Demographic Characteristics of Home Science Tutors

The study sought the characteristics of Home Science tutors specifically information on the type of PTTC tutors came from, their sex, age, educational and professional qualifications, subjects trained to teach, teaching experience, duration they intend to continue teaching Home Science and any professional development courses they have undertaken.

Table 4.3 shows that a total of twenty two tutors participated in this study. Eighteen (81.8%) of them were from public and 4 (18.2%) from private PTTCs. Six (27.3%) males and 12(54.5%) females were from public PTTCs and only 4(16%) females and no male participated in the study from the private PTTCs. According to the chi-square analysis, the difference in sex and type of PTTC had no significant relationship

(χ^2=1.833, df=1, p=0.249) thus could not affect the responses given by tutors of either sex or from the public or private PTTCs.

Further, a majority of the tutors 12(54.5%) were aged between 41 and 50 years. Eight of them (36.5%) were aged between 31 and 40 years while 1(4.5%) tutor was aged between 21 and 30 years and another one (4.5%) above 51 years. The high number of tutors aged between 41 and 50 years may be attributed to the fact that most tutors end up in PTTCs after first teaching in secondary schools for several years. There are usually very few tutors posted to teach in PTTCs directly from university during their first posting.

Table 4.3: Tutors' Demographic Characteristics

Variable	Respondent	Frequency	Percentage (%)
Type of PTTC	Public PTTC	18	81.8
	Private	4	18.2
	Total	**22**	**100**
Sex	Male	6	27.3
	Female	16	72.7
	Total	**22**	**100**
Age	21 – 30 years	1	4.5
	31 – 40 years	8	36.5
	41 – 50 years	12	54.5
	Above 51 years	1	4.5
	Total	**22**	**100**

Source: Research Data (2016)

Regarding tutors' background knowledge in Home Science Education, all 22 tutors had background knowledge in Home Science Education either from their master's education 2(9.1%), bachelors education 17(77.3%), secondary school education 1(4.5%) or the primary school education 2(9.1%). This meant that some of them particularly those with background knowledge in Home Science from primary and secondary schools were using the knowledge gained while they were Home Science students to teach Home Science at the PTTCs. This is likely to impart negatively on the quality of training they provide given that they lack the professional aspects required of any tutor teaching in a teacher training institution.

This finding is similar to findings by Lolelea (2011) that a majority of trainers at all levels of primary teacher training education lack the necessary skills and competences to train primary school teachers. This is despite the fact that graduates from PTTCs are expected to teach primary school pupils and yet their teachers are trained at universities to teach in secondary schools. Therefore, the government should consider having teacher training programmes that focus on training tutors to specifically teach in teacher training colleges thus focusing the training on the needs of the primary school child.

Similar to this finding, AED (2008) identified inadequate staff training as one of the challenges that affected the implementation of the PTE curriculum. According to ROK (2008), quality teacher training is mandatory for quality education. Therefore, Home Science tutors need to be well trained for them to teach either in the public or private PTTCs. This, therefore, requires that measures be put in place to ensure that tutors teaching Home Science in the PTTCs, whether public or private, are all adequately trained. Further, constant monitoring on curriculum implementation and evaluation should be exercised to further reinforce this measure.

On tutors' professional qualification, six (27%) of the tutors had a post graduate degree and 16(73%) an undergraduate degree. Out of the six tutors with a post graduate degree, 2(9.1%) had a postgraduate degree in Home Science Education while the remaining 4(18%) had their postgraduate degrees in other areas of specialization besides Home Science Education.

This finding suggests that some Home Science tutors have opted to further their education in other areas of specialization other than in Home Science Education. The uncertainty on the future of Home Science Education in Kenya may be attributed to such decisions made by Home Science tutors. It is good that the government has considered reintroducing aspects of Home Science Education in the proposed new system of education in the country (Basic Education Curriculum Framework, 2017). This will go a long way in re-establishing confidence amongst Home Science tutors and trainees in pursuing Home Science Education now and in the future.

Upon further probing on the subjects tutors have been trained to teach, results shown in Figure 4.1 indicate that 20(90.9%) of the tutors have been trained to teach either Home Science alone 8(36.4%) or Home Science and a second subject that may be Kiswahili 4(18.2%), Geography 2(9.1%), CRE 3(13.6%), Physical Education 1(4.5%) and Agriculture 2(9.1%). The remaining two tutors (9.1%) teach Home Science despite not having trained as Home Science teachers.

The TSC Act of 2012 clause 23(2) provides that no person shall engage in the teaching service unless such a person is registered as a teacher. In order to be registered as a teacher, one is supposed to have successfully trained as a teacher. The two untrained tutors are employed in two of the private PTTCs. This may be interpreted to mean that some private PTTCs are not keen on the professional qualifications of the tutors they employ. Further, TSC which is the professional employer for teachers in Kenya, is not involved in teacher employment in private PTTCs thus this discrepancy. It may be necessary in future to have TSC supervise teacher employment both in public and private PTTCs in the country.

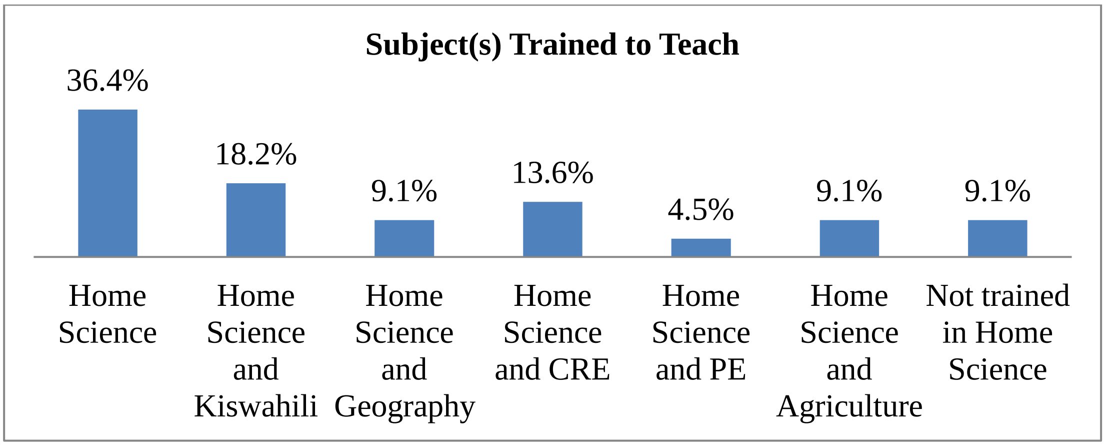

Figure 4.1: Results on Subjects Tutors are Trained to Teach

Regarding tutors' teaching experience, results shown in Figure 4.2 indicate that most of the tutors 14(63.6%) have been teaching Home Science for 10 or more years. This may explain why most of the Home Science tutors 12(54.5%) were aged between 41 and 50 years. This implies that Home Science tutors in PTTCs have had long years of experience in handling the subject thus may be perceived to generally have a better understanding of the curriculum. Another 2(9.1%) of the tutors had been teaching the subject for between 7 to 9 years, 4 to 6 years 2(9.1%), 1 to 3 years 2(9.1%) or less than 1 year 2(9.1%).

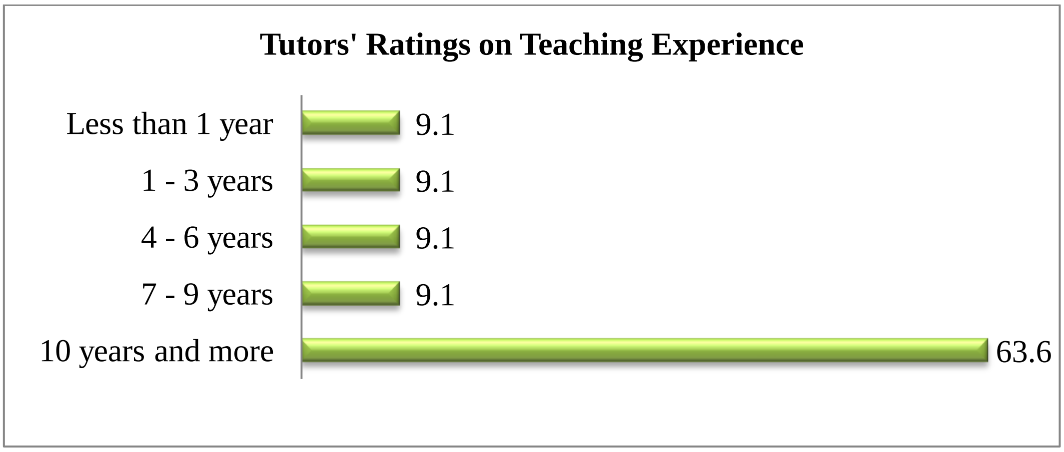

Figure 4.2: Tutors' Teaching Experience

Asked on how long they intend to continue teaching the subject, 4(18.2%) tutors said they intend to teach Home Science for the next 1 to 3 years, 4(18.2%) believed they would teach the subject for 4 to 6 years, 2(9.1%) tutors for at least 10 years and the majority, 12(54.5%) of the tutors intend to teach Home Science for the rest of their career life. This may mean that half the tutors are passionate about teaching Home Science and intend to teach it for as long as they continue serving as teachers. This is good for Home Science Education in general since findings show that most of the tutors are committed to continue sharing Home Science knowledge and skills.

The aim of teacher education is to train teachers who have relevant knowledge, skills, values, attitudes and the ability to identify and deliver the curriculum needs of the learner (ROK, 2008). Mwaka et al. (2014) posit that this can be achieved in three ways; either through pre-service, induction or in-servicing of teachers. Apart from the initial training a teacher gets, induction and in-servicing continuously update teachers with new skills that promote their efficiency in performance.

According to this study's findings, only 4(18.2%) of tutors have undertaken professional development courses. Unfortunately, all four tutors received training just once; 2(9.1%) of them in the 1990s and the other 2(9.1%) in 2004 all at CEMASTEA. This means that the majority of the tutors 18(81.8%) rely on their pre-service training to implement the Home Science curriculum and manage their teaching obligations.

This finding agrees with findings by Kagoda and Ezati (2013) that PTCs experience irregular or the absence of a unified continuous professional development programme to continuously enhance the capacity of teachers to interpret and implement the curriculum effectively. Further, Kisirkoi (2011) studied the **'**Effectiveness of Teacher Advisory Centers (TACs) in teacher professional development in Nairobi County' and established that very few teachers (40%) had attended seminars and workshops during their in-service. Moreover, the ROK (2008b) established that PTE was ineffective in terms of in-servicing of its teachers. This study agrees with Chemutai (2010) and Lolelea (2011) in reaffirming that teacher education should not end at pre-service training but continue even after the teacher graduates and enters into the teaching service as a practicing teacher. This will help keep tutors up-to-date with the unending developments in the teaching profession thus boost their quality in teaching and training.

4.4.2 Demographic Characteristics of Home Science Teacher Trainees

According to Otunga et al. (2011), learner characteristics are an important consideration in any instructional process. Learners in the same class may not be the same in terms of their cognitive abilities, developmental levels, habitual nature or even biological characteristics. Further, the level of the learner determines the quality and quantity of knowledge, skills and attitudes the learner is bringing into the learning setup.

Out of the total 318 teacher trainees that participated in this study, 160(50.3%) were male and 158(49.7%) female. Two hundred and thirty nine (75.2%) trainees (out of which 117(49%) were male and 122(51%) female) came from public PTTCs. The remaining 79(24.8%) teacher trainees out of whom 43(54.4%) were male and 36(45.6%) female came from the private PTTCs. These differences in gender for both the public and private PTTCs had no significant relationship (χ^2=0.399; p=0.437 at $p<0.05$). This, therefore, meant that the difference in type of PTTC respondents came from had no influence on the results they gave as either male or female respondents.

These figures were almost similar to their respective representations in the sampling frame where the expected number of teacher trainees from public PTTCs was 264(79.8%) of which 127(48.1%) should have been male and 137(51.9%) female trainees. From the private PTTCs, the study had targeted a total of 67(20.2%) trainees out of which 35(52.2%) should have represented male trainees and 32(47.8 %) female trainees. The slightly higher percentages in number of teacher trainees from private PTTC may be attributed to a possible increase in enrolment after the PTTCs had already submitted enrolment statistics to the MOEST.

This study also sought teacher trainees’ age and background in Home Science Education. Based on age distribution, 198(62.3%) teacher trainees were aged between 18 and 20 years, 105(33%) between 21 and 30 years and 15(4.7%) between 31 and 40 years. Teacher trainees join PTTCs after secondary school education which is estimated at 18 years. Thus, this factor explains why a majority of the teacher trainees in the current study were aged between 18 and 20 years. Table 4.4 presents these results.

Table 4.4: Teacher Trainees' Demographic Characteristics

Variable	Possible response	Frequency	Percentage
Type of PTTC	Public PTTC	239	75.2
	Private	79	24.8
	Total	**138**	**100**
Sex	Male	160	50.3
	Female	158	49.7
	Total	**138**	**100**
Age	20 years and below	198	62.3
	21 – 30 years	105	33.0
	31 – 40 years	15	4.7
	Total	**318**	**100**
Studied Home Science before PTTC	Yes	39	12.3
	No	279	87.7
	Total	**318**	**100**

Source: Research Data (2016)

On whether teacher trainees had studied Home Science before joining the respective PTTCs, only 39(12.3%) responded in the affirmative while the majority, 279(87.7%) said they first came across Home Science at the PTTCs as shown in Table 4.4. Amongst those that studied Home Science before PTTC level, 17(43.6%) studied the subject at primary school level and 22(56%) at the high school level. This means that 88% of teacher trainees had no background information in Home Science Education. Thus, the subject was first introduced to them at the PTTC level specifically in their second year of study given that this is the time Home Science is introduced to teacher trainees in the PTE curriculum. This finding suggests that Home Science tutors are likely to experience a lot of challenges when introducing and teaching Home Science at PTTCs. Teacher trainees are also disadvantaged in that they have to learn a lot of new information within a short time.

This finding corroborates findings by Mumbi (2012) in the 'critical study on the teaching of Home Science in selected PTTCs in Kenya' which established that teacher trainees enrolled in colleges lacked sound Home Science background which hindered effective training as primary school Home Science teachers. It is, therefore, important that teacher trainees taking option A subjects have background information in Home Science Education for effective training as Home Science teachers. This challenge may be solved with the proposed new education system since teacher trainees will start learning Home Science concepts right from the primary level of education. This will improve continuity through the various levels of study.

4.4.3 Demographic Characteristics of Primary School Teachers

Thirty primary school teachers took part in this study. The study sought their sex, age, educational and professional qualifications besides their teaching experience. Sixteen (53.3%) of them were male and 14(46.7%) female aged between 18 and 20 years 1(3.3%), between 21 and 30 years 12(40%) and between 31 and 40 years 17(56.7%). None of the primary school teachers was aged above 40 years. The majority of them 16(53.3%), had a P1 certificate, 6(20%) a diploma certificate, 5(16.7%) a bachelors degree certificate while the remaining 3(10%) had no qualification certificate.

Similar to results obtained from tutors, primary school teachers with no qualification certificates worked in private primary schools. Just like the private PTTCs, private primary schools also seemed to be employing personnel who are not trained as teachers, thus not qualified to teach in the respective primary schools. This is bound to affect the extent to which curriculum objectives are being achieved. ESQAC and TSC should thus strive to ensure that this is addressed for the sake of providing quality education in schools in Kenya.

Regarding their teaching experience, a reasonable number of the primary school teachers had taught for between 1 and 3 years 13(43.3%). Four (13.3%) primary school teachers had either taught for less than a year or for between 4 and 6 years while 9(30%) of them had been teaching in primary schools for at least 10 years. Table 4.5 shows the demographic characteristics of primary school teachers that participated in the study.

Table 4.5: Primary School Teachers' Demographic Characteristics

Variable	Possible Response	Frequency	Percentage (%)
Type of PTTC	Public PTTC	16	53.3
	Private	14	46.7
	Total	**30**	**100**
Sex	Male	16	53.3
	Female	14	46.7
	Total	**30**	**100**
Age	18 - 20 years	1	3.3
	21 – 30 years	12	40.0
	31 – 40 years	17	56.7
	Total	**30**	**100**
Professional Qualification	Bachelors	5	16.7
	Diploma	6	20.0
	Certificate	16	53.3
	None	3	10.0
	Total	**30**	**100**
Teaching	Less than 1 year	4	6.7
	1 - 3 years	24	80.0
	4 – 6 years	1	3.3
	10 years and more	3	10.0
	Total	**30**	**100**
Employer	TSC	20	66.7
	Private	10	33.3
	Total	**30**	**100**

Source: Research Data (2016)

Further, as shown in Table 4.5, twenty (66.7%) of the primary school teachers are TSC employees while 10(33.3%) are employed in private primary schools. The study also established that only 3(10%) of the primary school teachers had studied Home Science before joining the PTTCs. Out of the three, 1(3%) took Home Science at high school level and the remaining two (7%) at primary school level. The majority of primary school teachers 27(90%) had no background information in Home Science Education thus experienced the subject for the first time at the PTE level of study.

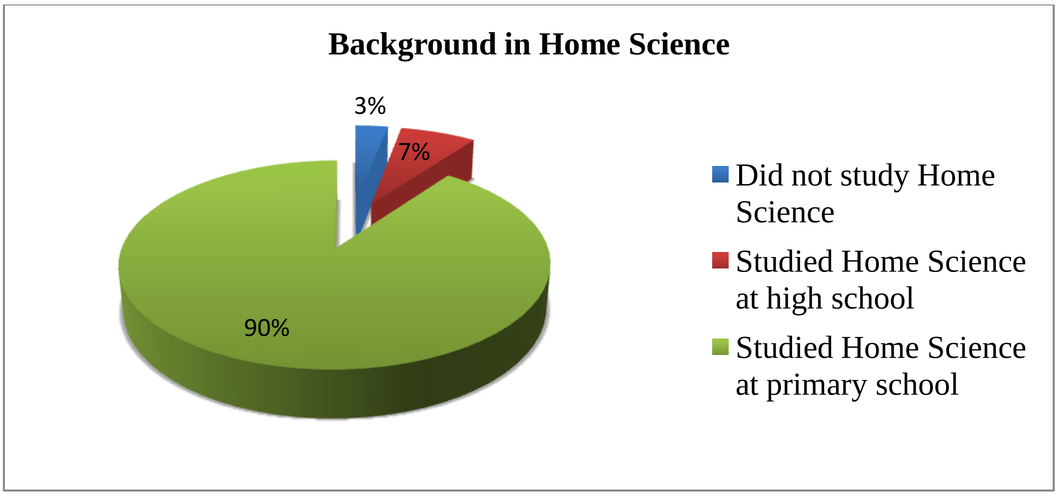

Figure 4.3: Primary School Teachers' Background in Home Science Education

These finding is similar to those of teacher trainees which established that only 39(12.3%) studied Home Science before the PTTC level with 17(43.6%) studying the subject at primary school level and 22(56%) at the high school level. These results show that in total, only 12% (39 teacher trainees and 3 primary school teachers) had background knowledge in the subject which is introduced in their second year of study with expectations that they would specialize as Home Science teachers upon graduation. Background knowledge in a subject is believed to influence a learner's interest and mastery of the content being taught (Mwangi, 2007). Therefore, the importance of background knowledge in the subject cannot be over emphasised.

4.4.4 Environmental Context of Home Science Curriculum Implementation

Using the observation guide, the researcher assessed the status of the other resources besides the Home Science curriculum that facilitate the teaching of Home Science Education in the selected private and public PTTCs. The study established that 6(67%) of the PTTCs have a room that is used as a Home Science laboratory by Home Science tutors and teacher trainees. Three (33%) PTTCs had no laboratories thus Home Science lessons are taught in teacher trainees' respective classrooms. It is however important to note that some of these rooms do not act as appropriate laboratories either because they were too small or established in quite unfriendly environments for learning. This was expected to cause a lot of interference to Home Science lessons conducted in them thus not appropriate for learning.

Further, 6(67%) PTTCs completely lacked useful equipment for use during Home Science lessons like cookers, the refrigerator and sewing machines. Those that had these equipment had inadequate when compared to their respective class sizes. For instance, one PTTC had just two sewing machines for over 200 trainees. Generally, unlike the private PTTCs, public PTTCs were observed to have better equipped Home Science rooms although the large class sizes defeated their usefulness. This finding agrees with that by Wanzala (2013) that there were serious problems with education in Africa regarding the size of classes and availability of up-to-date materials and equipment. Therefore, effort should be made towards ensuring that PTTCs have adequate and spacious rooms, equipment and materials for conducting Home Science lessons.

On staffing, all 9 PTTCs had no laboratory assistant or a technician which was blamed on financial deficits. However, they all had a library although most of the books stocked in the Home Science section were notably outdated. Some of the tutors blamed this on the low rate of publication both print and non-print, especially in the Home Science subject. In fact, one of the DOCs interviewed had this to say: ‘why should the college stock Home Science books when the future of the subject is bleak’. This statement tells a lot about the uncertainty surrounding the subject and the support institutions are bound to accord Home Science tutors, teacher trainees and basically the subject.

The fact that Home Science is not offered in primary schools and offered as an elective subject in the high school curriculum already acts as an impediment to a student who would wish to study the subject. Graduates of PTTCs are supposed to teach at primary schools. Thus they are trained on what they are expected to teach at the primary schools and on how best to teach this content. Consequently, it defeats the purpose of teacher trainees working hard while at the PTTC if they will not be able to practice what they have learnt eventually upon employment. Further, management at PTTCs may not see the value of supporting the subject especially when it is perceived to terminate immediately after PTE examinations.

Thus, the future of the subject needs to be clarified so that Home Science tutors, PTTCs and teacher trainees can have clear expectations of the subject under the PTE curriculum. The government should, therefore, decide whether it wants to offer Home Science as one of the subjects in its curricula and not just some topics or not. If it wants to, then it should have it offered at all levels of education to clear this uncertainty that is imparting negatively on the subject. This will also solve the problem on lack of background knowledge in the subject amongst teacher trainees at the PTE level of study.

Regarding the support offered to Home Science education, 18 tutors from 7 PTTCs (78%) were satisfied that their institutions try to offer them support that facilitates curriculum implementation to a great extent. However, similar to reports by World Bank (2007), ROK (2012) and Kagoda and Ezati (2013), which affirmed that teacher education suffers from low funding, 2 Home Science tutors from 2 PTTCs (22%) were adamant that they never got financial support from institutional management for Home Science lessons.

In fact, one of the DOCs said this, ‘colleges cannot afford extra costs especially on individual subjects. In fact, expensive subjects like Home Science should be removed from the PTE curriculum unless the government chips in to support their funding’. The remaining 2 tutors agreed that they do get financial support from institutional management although it takes a lot of effort to push for it and that when it finally comes, it is usually late. However, they still appreciate this effort and remain optimistic that this practice will improve with time.

All 9 PTTCs in the study had at least a copy of the Home Science syllabus and up to date schemes of work filed by Home Science tutors. However, despite the fact that about half (55%) of the tutors had updated copies of records of work covered, none of them had copies of lesson plans. This, they said was not a requirement for teaching Home Science at the PTTCs. When asked to comment on tutors’ preparation for teaching Home Science lessons, one DOC had this to say; ‘tutors prepare adequately for lessons; check their files and all documents required are there. However, lesson plans are not for PTTCs. Those ones work in primary and secondary schools'.

This finding signifies a misconception on how and what tutors should prepare for lessons. Lesson plans are known to be important documents in lesson preparation and presentation. However, according to this DOC, this is not a requirement at PTTCs. This may be attributed to the fact that PTTC tutors are trained at the universities to teach in secondary schools thus may drop some of the practices used in secondary schools once they get to teacher education at the PTTCs. Under the maintenance of teaching standards by TSC, teachers are expected to adhere to required standards which include possession of the teacher registration certificate, schemes of work, lesson plans, lesson notes and other related documents for improved performance (ROK, 2016). Therefore, HODs, DOCs, TSC and ESQAC who are obligated with the supervision of the implementation of the PTE Home Science curriculum should ensure that all standards of teaching are upheld as expected.

Finally, the classrooms at the various PTTCs were well organized, well lit and ventilated making them ideal for learning although they appeared congested. Congestion seemed a common problem across all 9 PTTCs whether public or private. According to one DOC, this was blamed on the high enrolment rate at the PTTCs. Each classroom was observed to host an average of 45 teacher trainees despite having been designed to host, at most, 30 students. Therefore, there should be strict adherence by the MOEST and the PTTCs to enrolment guidelines which should be based on the available capacity and guidelines on student ratio per classroom in the PTTCs.

The success of any programme or activity requires that all parties involved in its accomplishment carry out their responsibilities effectively. It is, therefore, important that all stakeholders involved in Home Science Education ensure they fulfill their mandate for the success of the program. Sharing of related information and feedback on achievements may be crucial for evaluation purposes. To address this need, the study sought the extent to which various stakeholders visit the PTTCs or share information on Home Science Education. In this case, stakeholders involved subject specialists at ESQAC, KICD, KNEC, TSC and the PTTCs.

Table 4.6: Responses on Sharing of Reports amongst Selected Subject Stakeholders

Respondent	Institution	% Distribution of responses			Total
		Rarely	Never	Just can't tell	
Tutors	**ESQAC**	54.6	31.8	13.6	100
	KICD	31.8	59.1	9.1	100
	KNEC	18.2	72.7	9.1	100
	TSC	27.3	65.9	6.8	100
Teacher trainees	**ESQAC**	22.3	64.1	13.6	100
	KICD	23.2	70.8	6.0	100
	KNEC	18.9	73.8	7.3	100
	TSC	18.2	75.0	6.8	100

Source: Research Data (2016)

As illustrated in Table 4.6, tutors and teacher trainees from both public and private PTTCs reported that subject specialists from ESQAC, KICD, KNEC and TSC either rarely (54.6%) or never (75%) visited the PTTCs or shared ideas on the teaching and learning of Home Science. A few respondents (13.6%) rated this item in the questionnaire as 'just can't tell'. All responses given by tutors and teacher trainees gave significant relationships for ESQAC (χ^2=384.832, df=6, p=0.000), KICD

(χ^2=371.610, df=8, p=0.000), KNEC (χ^2=370.206, df=6, p=0.000) and TSC (χ^2=373.304, df=6, p=0.000) with chi square analysis.

This implied that respondents were in agreement that subject specialists from ESQAC, KICD, KNEC and TSC who are responsible for overseeing the implementation of the PTE Home Science curriculum at different levels hardly, visited or shared their observations with the PTTCs. In other words, each of these entities seemed to be operating on their own spheres irrespective of the effect this was bound to have on the quality of Home Science Education in the country.

There is need for each stakeholder to maintain positive rapport with the rest for PTTCs to implement the best curriculum practices that can improve the quality of Home Science Education offered in PTTCs. As a result, Home Science will benefit from effective curriculum implementation and in turn, improve the quality, relevance and development of Home Science Education in the country.

4.5 Factor Analysis for Study Variables

The relevance of the various components of the PTE Home Science curriculum in influencing the achievement to the objectives of Home Science Education was established using multiple regression analysis. In order to establish their suitability for this test, factor analysis, which is a prerequisite for multiple regression analysis was performed. The analysis was done on the dependent variable of the study which was the objectives of Home Science Education and the independent variables; attitude towards Home Science Education, planned curriculum content, instructional resources, instructional methods and assessment techniques. The results obtained are presented below.

4.5.1 Objectives of Home Science Education Structure

According to Table 4.7, factor analysis was done on attributes related to the objectives of Home Science Education. The six items on the objectives of Home Science Education scale were subjected to Principal Component Analysis (PCA) test. The suitability of data for analysis was assessed first with the inspection of the correlation matrix revealing the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value of 0.913 exceeded the recommended value of 0.6 and the Bartlett's Test of Sphericity reached statistical significance ($p<0.000$).

Principal Component Analysis revealed the presence of three components with Eigenvalues exceeding 1, explaining 35.8%, 34.0% and 28.2% of the variance respectively. An inspection of the Screeplot revealed a clear break after the third component. Using Catell's Scree Test, it was decided to retain three components for further investigation. This was further supported by the results of Parallel Analysis, which showed only three components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (6 variables x 370 respondents).

To aid in the interpretation of these three components, Varimax rotation with Kaiser Normalization was performed. The rotated solution revealed the presence of a simple structure with all three components showing a number of strong loadings. The items 'helps to appreciate the importance of Home Science to the primary school child; improves the standards of living of self, the family and community and enables use of basic principles and skills as a function for further learning loaded on factor one explaining a total of 35.8% variance. Two other items; enables improvisation of materials and formulation of realistic strategies for solving problems in life and enables ability to adapt to new situations and changes in society that loaded on factor two accounted for a total of 34.0% of the variance. The remaining one item; ‘enables the transfer of Home Science knowledge and skills to children’ loaded on component three and explained 28.2% of the variance. Cumulatively, the three components explained a total of 98% of the variance in the objectives of Home Science Education.

Table 4.7: Factor Structure of Attributes on Objectives of Home Science Education

S/NO.	Factor	Loadings	Eigenvalues	Cumulative variance explained (%)
1.	Helps to appreciate the importance of Home Science to the primary school child.	0.770	2.148	35.8
2.	Enables the transfer of Home Science knowledge and skills to children	0.657		
3.	Enables improvisation of materials and formulation of realistic strategies for solving problems in life.	0.656		
4.	Enables ability to adapt to new situations and changes in society.	0.738	2.043	69.8
5.	Improves the standards of living of self, the family and community.	0.671		
6.	Enables use of basic principles and skills as a function for further learning.	0.783	1.694	98.0
	Kaise-Meyer-Olkin MSA	**0.913**		
	Bartlett’s test of sphericity	**χ^2 =4594.299 p<0.000**		

Source: Research Data (2016)

4.5.2 Attitude towards Home Science Education Structure

As shown in Table 4.8, factor analysis was also done on attributes related to teacher trainees' attitude towards Home Science Education. The six items on attitude towards Home Science Education scale were subjected to Principal Component Analysis (PCA) using SPSS version 21. Prior to performing PCA, the suitability of data for analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value was 0.826 exceeding the recommended value of 0.6 and the Bartlett's Test of Sphericity reached statistical significance ($p<0.000$), supporting the factorability of the correlation matrix.

Principal Component Analysis revealed the presence of two components with Eigenvalues exceeding 1, explaining 54.5% and 35.4% of the variance respectively. An inspection of the Screeplot revealed a clear break after the second component. Using Catell's Scree Test, it was decided to retain two components for further investigation. This was further supported by the results of Parallel Analysis, which showed only two components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (6 variables x 348 respondents).

To aid in the interpretation of these two components, Varimax rotation with Kaiser Normalization was performed. The rotated solution revealed the presence of simple structure with both components showing a number of strong loadings and all variables loading substantially on only one component. The attributes 'I like studying Home Science', 'I would advice a friend or relative to study Home Science', 'I would rather Home Science is reintroduced in primary schools' and 'I would rather Home Science is taught from first year in PTE' loaded on factor one explaining a total of 54.5% variance. Items that loaded on factor two were; 'I would share my knowledge in

Home Science with friends' and 'I would study Home Science subject in the future' explaining a total of 35.4% of the variance. Cumulatively, the two components explained a total of 89.9% of the variance explaining teacher trainees' attitude towards Home Science Education.

Table 4.8: Factor Structure of Attributes Related to Attitudes towards Home Science Education

S/NO.	Factor	Loadings	Eigenvalues	Cumulative variance explained (%)
1.	I like studying Home Science	0.889	3.269	54.5
2.	I would advice a friend or relative to study Home Science.	0.834		
3.	I would rather Home Science is reintroduced in primary schools	0.896		
4.	I would rather Home Science is taught from first year in PTE	0.814		
5.	I do share my knowledge in Home Science with friends	0.920	2.126	89.9
6.	I would study Home Science subject in the future	0.859		
	Kaise-Meyer-Olkin MSA	**0.826**		
	Bartlett's test of sphericity	**χ^2 =2707.160 p<0.000**		

Source: Research data (2016)

4.5.3 Planned Curriculum Content Structure

According to Table 4.9, the structure of planned curriculum content items was equally examined using a scale with nine items. Inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above with Kaiser-Meyer-Oklin's value of 0.83 and a statistically significance Bartlett's Test of Sphericity (p<0.000). This scale was then subjected to factor analysis and the Principal Component Analysis revealed three factors with Eigenvalues greater or equal to one which cumulatively explained 86.1% of variance.

Table 4.9: Factor Structure of Attributes Related to Planned Curriculum Content

S/NO.	Factor	Loadings	Eigenvalues	Cumulative variance explained (%)
1.	Content relates to national goals of development	0.888	3.470	38.6
2.	Content motivates further learning	0.882		
3.	Content relates to learners' needs.	0.878		
4.	Content relates to objectives of Home Science Education.	0.668		
5.	Content is up to date	0.622		
6.	Content is adequate for competencies required.	0.917	3.028	72.2
7.	Content relates to learners' needs.	0.887		
8.	Content is applicable to real life situations.	0.826		
9.	Content relates to time allocated for teaching it.	0.930	1.242	86.1
	Kaise-Meyer-Olkin MSA	**0.830**		
	Bartlett's test of sphericity	**χ^2 =3656.345 p<0.000**		

Source: Research Data (2016)

The first factor accounted for 38.6% of the total variance with the second factor accounting for 33.7% while the third factor accounted for 13.8% of the variance in planned curriculum content. An inspection of the Screeplot revealed a clear break after the third component. Using Catell's Scree Test, it was decided to retain three components for further investigation. This was further supported by the results of Parallel Analysis, which showed only three components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (9 variables x 370 respondents).

Varimax rotation with Kaiser Normalization showed that five items, that content relates to national goals of development, that content motivates further learning, that content relates to societal needs, that content relates to objectives of Home Science Education and that content is up to date loaded on factor one thus accounting for 38.6% of the variance. Three items; that content is adequate for competencies required; that content relates to learners' needs and that content is applicable to real life situations loaded on the second component explaining 33.7% of the total variance. The remaining one item; that content relates to time allocated for teaching it, loaded strongly on the third component and accounted for 13.8% of the variance. Cumulatively, the three factors explained a total of 86.1% of the total variance in planned curriculum content.

4.5.4 Instructional Resources Structure

As illustrated in Table 4.10, factor analysis was also done on attributes related to instructional resources used in Home Science Education. The five items on the instructional resources scale were subjected to Principal Component Analysis (PCA). The suitability of data for analysis was assessed first with the inspection of the correlation matrix revealing the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value was 0.888 exceeding the recommended value of 0.6 and the Bartlett's Test of Sphericity reached statistical significance ($p<0.000$), supporting the factorability of the correlation matrix.

The Principal Components Analysis revealed the presence of two components with Eigenvalues exceeding 1, explaining 80.9% and 9.6% of the variance, respectively. Both Catell's Scree and Parallel Analysis tests which showed only two components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (5 variables x 370 respondents) supported the retention of the two components for further investigation.

Table 4.10: Factor Structure of Attributes Related to Instructional Resources

S/NO.	Factor	Loadings	Eigenvalues	Cumulative variance explained (%)
1.	Resources used are appropriate for the topic being taught	0.883	3.045	80.9
2.	Resources used are usually adequate for all learners	0.873		
3.	Resources are usually readily available	0.867		
4.	Resources allow for improvisation	0.858		
5.	Resources allow for use of the local environment	0.933	1.480	90.5
	Kaise-Meyer-Olkin MSA	**0.888**		
	Bartlett's test of sphericity	**χ^2 =1869.890 p<0.000**		

Source: Research Data (2016)

To aid in the interpretation of these two components, Varimax rotation with Kaiser Normalization was performed. The rotated solution revealed the presence of a simple structure with both components showing a number of strong loadings and all variables loading substantially on only one component. The items 'resources used are appropriate for the topic being taught', 'resources used are usually adequate for all learners', 'resources are usually readily available' and 'resources allow for improvisation' loaded on factor one explaining a total of 80.9% variance. The item 'resources allow for use of the local environment' that loaded on factor two accounted for a total of 9.6% of the variance. Cumulatively, the two components explained a total of 90.5% of the variance in instructional resources.

4.5.5 Instructional Methods Structure

As shown in Table 4.11, the instructional methods structure was also examined using a scale with seven items. An inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value was 0.876 exceeding the recommended value of 0.6 and the Bartlett's Test of Sphericity reached statistical significance ($p<0.000$). Principal Component Analysis revealed the presence of three components with Eigenvalues exceeding 1, explaining 39.8%, 34.9% and 19.1% of the variance respectively. An inspection of the Screeplot and an investigation of the results of Parallel Analysis showed only three components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (7 variables x 370 respondents).

When rotated using Varimax with Kaiser Normalization, four items, that instructional methods give learners an opportunity to apply knowledge and skills in the world of work, that they relate well to curriculum content, that they inculcate continued learning abilities in learners and that they are adequate and offer a variety of choice to teachers loaded on factor one. Two attributes; that instructional methods encourage learners' active participation in the learning process and that they are appropriate for learners' needs or level of learners loaded heavily on factor two. The remaining one attribute; that instructional methods take into account the different learners' abilities loaded on component three.

Table 4.11: Factor Structure of Attributes Related to Instructional Methods

S/NO.	Factor	Loadings	Eigenvalues	Cumulative variance explained (%)
1.	Instructional methods give learners an opportunity to apply knowledge and skills in the world of work.	0.839	2.783	39.6
2.	They relate well to curriculum content.	0.782		
3.	They inculcate continued learning abilities in learners.	0.736		
4.	They are adequate and offer a variety of choice to teachers	0.694		
5.	They encourage learners' active participation in the learning process.	0.886	2.442	74.6
6.	They are appropriate for learners' needs or level of learners.	0.779		
7.	They take into account the different learners' abilities.	0.957	1.338	93.8
	Kaise-Meyer-Olkin MSA	**0.876**		
	Bartlett's test of sphericity	**χ^2 =3325.554 p<0.000**		

Source: Research Data (2016)

These results imply that the four items that loaded on factor one explained 39.8% of the total variance with the two items that loaded on factor two explaining 34.9% while the one item that loaded on factor three explained the remaining 19.1% of the total variance. Cumulatively factor one, two and three accounted for 93.8% of the total variance on instructional methods.

4.5.6 Assessment Techniques Structure

According to Table 4.12, assessment techniques structure was also examined using a scale with eight attributes. The suitability of data for analysis was assessed before the inspection of the correlation matrix which revealed the presence of many coefficients of 0.3 and above. The Kaiser-Meyer-Oklin value was 0.851 exceeding the recommended value of 0.6 and the Bartlett's Test of Sphericity reached statistical significance ($p<0.000$), supporting the factorability of the correlation matrix.

Table 4.12: Factor Structure of Attributes Related to Assessment Techniques

S/NO.	Factor	Loadings	Eigenvalues	Cumulative Variance explained (%)
1.	Results obtained from assessment techniques are used for curriculum improvement	0.927	5.343	43.8
2.	Assessment techniques test both knowledge and skills	0.925		
3.	They relate to curriculum objectives.	0.879		
4.	They relate to job market requirements.	0.818		
5.	They are adequate	0.930	1.515	85.7
6.	Tutors use a variety of them.	0.906		
7.	They are valid and reliable.	0.863		
8.	Timely feedback on results is communicated to students and PTTCs	0.763		
	Kaise-Meyer-Olkin MSA	**0.851**		
	Bartlett's test of sphericity	**χ^2 =3187.646 p<0.000**		

Source: Research Data (2016)

This scale was subjected to factor analysis with the Principal Component Analysis revealing two factors with Eigenvalues greater than one which cumulatively explained 85.7% of variance. The first factor accounted for 66.8% of the total variance with the second factor accounting for 18.9% of the variance in assessment techniques. An inspection of the Screeplot revealed a clear break after the second component. Using Catell's Scree Test, it was decided to retain two components for further investigation. This was further supported by the results of Parallel Analysis, which showed only two components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (8 variables x 370 respondents).

When rotated using Varimax with Kaiser Normalization, four attributes, that results obtained from assessment are used for curriculum improvement, that assessment techniques test both knowledge and skills, that they relate to curriculum objectives and that they relate to job market requirements loaded on factor one and accounted for 43.8% of the variance. The other four attributes, that assessment techniques used by tutors are adequate, that tutors use a variety of assessment techniques, that assessment techniques are valid and reliable and that timely feedback on results is communicated to students and PTTCs loaded on the second component explaining 41.9% of the total variance in assessment techniques.

4.5.7 Multiple Regression Analysis

The study was guided by five research hypotheses. Based on the five independent study variables, the researcher aimed at establishing the extent to which they influenced achievement of the objectives of Home Science Education which was the dependent variable in the study as a group and also as individual variables. Standard multiple regression analysis was therefore used to achieve this.

Various assumptions had to be considered for this analysis to be used without any violations. These assumptions were related to the study's sample size, multicollinearity, singularity, outliers, normality, linearity, homoscedasticity and independence of residuals. The standard regression test was run and used to examine the stated assumptions. The first assumption examined was related to the study's sample size. Regression analysis is best used when the study sample is large to allow for generalization. Pallant (2013) recommends at least 300 cases when using regression analysis. This study had 370 respondents which surpassed this guideline. Therefore this first assumption was fulfilled.

The second assumption checked for multicollinearity and singularity. Multicollinearity exists when the independent variables are highly correlated (r=0.9 and above) while singularity occurs when one independent variable is a combination of other independent variables (Pallant, 2013). The correlations output generated using SPSS regression program was used to check for this assumption.

Based on results presented in Table 4.13, all independent variables in the study had a positive and significant relationship with the dependent variable all at 0.01 alpha level. Similarly, all independent variables had a significant positive correlation with each other. Based on the results presented, no independent variable had a combination of the other independent variables while all independent variables had correlation values below 0.9 thus satisfying the second assumption.

Table 4.13: Correlation Results on Major Study Variables

Variables	1	2	3	4	5	6	7
Objectives of Home Science Education	1						
Trainees' Attitude towards Home Science	.518**	1	1				
Planned Curriculum Content	.544**	.382**	.682**	1			
Instructional Resources	.712**	.484**	.695**	.647**	1		
Instructional Methods	.526**	.424**	.509**	.677**	.673**	1	
Assessment Techniques	.681**	.393**	.666**	.735**	.616**	.730**	1

****. Correlation is significant at the 0.01 level (2-tailed).**

Source: Research data (2016)

Regarding outliers, data was screened before analysis could commence. According to Table 4.14, the results of data screening showed nine outlier cases whose Mahalanobis -1 value exceeded the chi square critical value of 20.52. According to Pallant (2013), if just a small percentage of the outliers exceed this critical value, then there is no need for corrective action. The nine outliers accounted for 2.43% of the total cases. As a result, this did not require either deleting the outliers or giving them a score that is high but not too different from the remaining clusters of scores as a corrective measure.

Table 4.14: Results on Data Screening for Outliers

S/NO.	Case number	Mahalanobis value
1.	329	22.81569
2.	332	24. 19275
3.	334	20.53636
4.	350	24.22695
5.	351	26.70199
6.	352	26. 42768
7.	353	30.86019
8.	356	26.23401
9.	357	23.12213

Source: Research data (2016)

In order to check for the normality of data in the distribution, scrutiny of the Normal Probability Plot points (Appendix V) showed cases that seemed to lie in a reasonably diagonal line from bottom left to top right indicating no major deviations from normal distribution. Further, the straight line relationship with the predicted dependent variable was an indication of linearity. Scatter plot of standardized residuals showed that residuals were roughly rectangular distributed with most of them concentrated at the centre as required.

According to the homoscedasticity test, the variance of the residuals about a predicted dependent variable scores should be the same for all predicted scores. The casewise diagnostic output table on unusual cases had one case (case 326) with a residual value of -3.126. The score for this case was 1.50 while the model predicted a value of 3.157 (Appendix V). Casewise diagnostic expects values between 3.0 and -3.0. Thus the model did not predict the scores for this case very well. In order to check if this prediction had any undue influence on study results, the researcher examined Cook's distance from the residual statistics table. According to Pallant (2013) and Tabachnik and Fidell (2013), if the Cook's distance value is more than 1, it poses a problem. In this case the highest Cook's distance value was 0.077 (Appendix V) thus would pose no major problem to study findings.

4.5.8 Interpretation of Standard Multiple Regression Analysis Results

Ones the assumptions had been ascertained, standard multiple regression analysis was done. The regression model summary shown in Table 4.15 presents the R square value which tells how much of the variance in the dependent variable is explained by the model (Pallant, 2013). In this case, the R square value was 0.86 interpreted as 86% when expressed as a percentage. This implies that this model explains 86% of the variance in achievement of the objectives of Home Science Education. In order to assess the statistical significance of this result, it was necessary to look at the ANOVA output which tests the null hypothesis that multiple regression is equal to 0. In this case, the statistical significance was $p=0.000$ implying that the result was statistically significant.

In order to determine the contributions of the independent variables included in the model towards the prediction of the dependent variable, the Coefficient table was examined. The beta values found under standardized coefficients indicate the contributions of each independent variable on the dependent variable. Standardized coefficients provide values for each variable that have been converted to the same scale for the sake of comparing them which is not the case for unstandardized coefficients (Pallant, 2013).

Table 4.15: Standard Multiple Regression Analysis Coefficients Results

Model	Unstandardized Coefficients Beta	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95% Confidence Interval Part	Tolerance	VIF
(Constant)	0.81	0.104		7.781	0.000			
Teacher Trainees' Attitudes	0.065	0.039	0.069	1.66	0.002	0.247	0.568	1.76
Planned Curriculum Content	0.045	0.104	0.004	0.435	0.957	0.003	0.193	7.351
Instructional Resources	0.501	0.123	0.465	0.383	0.000	0.620	0.572	9.242
Instructional Methods	0.137	0.053	0.172	2.571	0.000	0.261	0.183	5.462
Assessment Techniques	0.313	0.088	0.342	3.546	0.000	0.299	0.458	6.186

R^2 = 0.86; P<0.000

Source: Research Data (2016)

Ignoring any negative signs, the independent variables yielded the following beta coefficient values; teacher trainees' attitude towards Home Science Education (β_1=0.069, p=0.002), planned curriculum content (β_2=0.004, p=0.957), instructional resources (β_3=0.465, p=0.000), instructional methods (β_4=0.172, p=0.000) and assessment techniques (β_5=0.342, p=0.000) all at 95% confidence level.

By squaring the part correlation coefficient results presented in Table 4.15, instructional resources were shown to contribute 38.4% towards the total R^2 value of 86%. This meant that the variable instructional resources had a 38.4% unique contribution towards achievement of the objectives of Home Science Education. Therefore, if this variable was removed from the regression model, R^2 would drop by 38.4%. Further, the variable assessment techniques made an 8.94% unique contribution followed by instructional methods (6.81%) then the variable attitude towards Home Science Education (6.1%) towards achievement of the objectives of Home Science Education. In total, the four variables yielded 60.3% statistically significant unique contributions towards achievement of the objectives of Home Science Education.

The remaining one variable which was planned curriculum content had no statistically significant unique contribution towards the dependent variable. The difference of 11.7% between the R^2 value (86%) and the total statistically significant unique contributions of the four independent variables (60.3%) plus the 14% effect of the intervening variables on the dependent variable was explained by the presence of overlaps and shared variance between the independent variables in the study that were reasonably strongly correlated. These findings were therefore used to establish contributions made by the five independent variables towards the dependent variable of the study as discussed below.

4.6 Perceptions towards Achievement of the Objectives of Home Science Education

The dependent variable of the study was achievement of the objectives of Home Science Education. According to KIE (1994), the objectives of teaching Home Science at PTTCs in Kenya include; to help teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development; to enable teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids; to help teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life; to enable teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living, to enable teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community and to enable teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning. Respondents therefore rated these six objectives according to the extent to which they were being achieved as presented next.

4.6.1 Tutors' Perceptions towards Achievement of the Objectives of Home Science Education

As shown in Table 4.16, a total of at least 50% of the tutors felt that five out of the six objectives of Home Science Education were being achieved either to a very great extent or to a great extent. The five objectives were; 'to help teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development' (82%), 'to help teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life' (68%), 'to enable teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living' (77%), 'to enable teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community' (81%), and 'to enable teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning' (50%).

Table 4.16: Tutors' Ratings on Achievement of the Objectives of Home Science Education

S/NO.	Attributes on general objectives of Home Science Education	% Distribution of responses					Total
		VGE	GE	UD	SE	VSE	
1.	Helps to appreciate the importance of Home Science to the primary school child.	12 55%	6 27%	0 0%	4 18%	0 0%	22 100%
2.	Enables the transfer of Home Science knowledge and skills to children	5 23%	4 18%	0 0%	7 32%	6 27%	22 100%
3.	Enables improvisation of materials and formulation of realistic strategies for solving problems in life.	7 32%	8 36%	1 5%	3 14%	3 14%	22 100%
4.	Enables ability to adapt to new situations and changes in society.	8 36%	9 41%	1 5%	3 14%	1 5%	22 100%
5.	Improves the standards of living of self, the family and community.	8 36%	10 45%	0 0%	2 9%	2 9%	22 100%
6.	Enables use of basic principles and skills as a function for further learning.	6 27%	5 23%	2 9%	8 36%	1 5%	22 100%

VGE – Very Great Extent; GE - Great Extent; UD – Undecided; SE – Small Extent, VSE – Very Small Extent

Source: Research Data (2016)

The only objective rated (41%) by tutors was 'to enable teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids'. This may be attributed to the fact that graduates of Home Science Education at PTTCs do not get the opportunity to teach Home Science at primary schools given that the subject is not offered in the primary school curriculum thus could not achieve this objective to a great extent.

4.6.2 Teacher Trainees' Perceptions towards Achievement of the Objectives of Home Science Education

According to Table 4.17, at least 50% of the teacher trainees were of the opinion that four out of the six objectives of Home Science Education are currently being achieved either to a very great extent or to a great extent.

Table 4.17: Teacher Trainees' Ratings on Achievement of the Objectives of Home Science Education

S/NO.	Objectives of Home Science Education	% Distribution of responses					Total
		VGE	GE	UD	SE	VSE	
1.	Helps to appreciate the importance of Home Science to the primary school child.	123 39%	68 21%	46 14%	53 17%	28 9%	318 100%
2.	Enables the transfer of Home Science knowledge and skills to children	87 27%	55 17%	51 16%	114 36%	11 3%	318 100%
3.	Enables improvisation of materials and formulation of realistic strategies for solving problems in life.	76 24%	83 26%	40 13%	65 20%	54 17%	318 100%
4.	Enables ability to adapt to new situations and changes in society.	83 26%	62 19%	33 10%	76 24%	64 20%	318 100%
5.	Improves the standards of living of self, the family and community.	102 32%	75 24%	23 7%	53 17%	65 20%	318 100%
6.	Enables use of basic principles and skills as a function for further learning.	99 31%	81 25%	33 10%	43 14%	62 19%	318 100%

VGE – Very Great Extent; GE - Great Extent; UD – Undecided; SE – Small Extent, VSE – Very Small Extent

Source: Research Data (2016)

However, the objectives 'enable the transfer of Home Science knowledge and skills to children' and 'enables the ability to adapt to new situations and changes in society' were rated below 50%. Generally, a total of over 50% of the teacher trainees were undecided or felt that these two objectives are either achieved to a small extent or to a very small extent.

4.6.3 Primary School Teachers' Perceptions towards Achievement of the Objectives of Home Science Education

As presented in Table 4.18, the objective 'enables improvisation of materials and formulation of realistic strategies for solving problems in life' was being achieved to a 73% extent while 'improves the standards of living of self, the family and community' was being achieved to a 74% extent as per primary school teachers' perceptions.

Table 4.18: Primary School Teachers' Ratings on Achievement of the Objectives of Home Science Education

S/NO.	Objectives of Home Science Education	% Distribution of responses					
		VGE	GE	UD	SE	VSE	Total
1.	Helps to appreciate the importance of Home Science to the primary school child.	12 40%	5 17%	2 7%	6 20%	5 17%	30 100%
2.	Enables the transfer of Home Science knowledge and skills to children	7 23%	6 20%	3 10%	7 23%	7 23%	30 100%
3.	Enables improvisation of materials and formulation of realistic strategies for solving problems in life.	13 43%	9 30%	5 17%	2 7%	1 3%	30 100%
4.	Enables ability to adapt to new situations and changes in society.	11 37%	7 23%	3 10%	5 17%	4 13%	30 100%
5.	Improves the standards of living of self, the family and community.	14 47%	8 27%	1 3%	4 13%	3 10%	30 100%
6.	Enables use of basic principles and skills as a function for further learning.	11 37%	6 20%	4 13%	4 13%	5 17%	30 100%

VGE – Very Great Extent; GE - Great Extent; UD – Undecided; SE – Small Extent, VSE – Very Small Extent

Source: Research Data (2016)

Similar to tutors and teacher trainees, 46% of the primary school teachers felt that the objective ‘enables the transfer of Home Science knowledge and skills to children’ was being achieved to a small extent (23%) and to a very small extent (23%). Further, 10% of primary school teachers were undecided about this attribute. This meant that they were not sure on the extent to which this objective was being achieved.

4.6.4 Relationship between Respondents Perceptions towards Extent of Achievement of the Objectives of Home Science Education

As illustrated in Table 4.19, a chi square analysis test was done to establish if there was any significant relationship in ratings given by tutors, teacher trainees and primary school teachers on the extent to which the objectives of Home Science Education were being achieved. Results indicated that there was a significant relationship between respondents’ ratings on only one objective.

The objective ‘enables the transfer of Home Science knowledge and skills to children’ yielded the chi square result (χ^2=38.093, df=8, p=0.000) at 95% confidence level and was rated similarly by the three categories of respondents. In total, 56% of the respondents disagreed (41%) or were undecided (15%) on the extent to which Home Science Education enables teacher trainees transfer Home Science knowledge and skills to children. This implies that tutors, teacher trainees and primary school teachers were in agreement that this objective was being achieved only to a small extent. Further, the three categories of respondents perceived the extent to which the remaining five objectives of Home Science Education were being achieved differently.

Table 4.19: Chi Square Results on Perceptions towards Achievement of the Objectives of Home Science Education

S/NO	Course objectives	Extent of achievement	% Distribution	χ^2	df	Sig
1.	Helps to appreciate the importance of Home Science to the primary school child.	Great Extent	226 (61%)			
		Undecided	48 (13%)	10.477	8	0.233
		Small Extent	96 (26%)			
		Total	**370 (100%)**			
2.	Enables the transfer of Home Science knowledge and skills to children	Great Extent	163 (44%)			
		Undecided	55 (15%)	38.093	8	0.000
		Small Extent	152 (41%)			
		Total	**370 (100%)**			
3.	Enables improvisation of materials and formulation of realistic strategies for solving problems in life.	Great Extent	196 (53%)			
		Undecided	44 (12%)	13.162	8	0.106
		Small Extent	130 (35%)			
		Total	**370 (100%)**			
4.	Enables ability to adapt to new situations and changes in society.	Great Extent	181 (49%)			
		Undecided	37 (10%)	12.631	8	0.125
		Small Extent	152 (41%)			
		Total	**370 (100%)**			
5.	Improves the standards of living of self, the family and community.	Great Extent	218 (59%)			
		Undecided	22 (6%)	10.032	8	0.263
		Small Extent	130 (35%)			
		Total	**370 (100%)**			
6.	Enables use of basic principles and skills as a function for further learning.	Great Extent	207 (56%)			
		Undecided	41 (11%)	10.867	8	0.209
		Small Extent	122 (33%)			
		Total	**370 (100%)**			

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

Therefore, all ratings given on these five objectives were not significantly related. In general, the findings indicated that study respondents were of the opinion that the objectives ‘helps to appreciate the importance of Home Science to the primary school child' (61%), 'enable improvisation of materials and formulation of realistic strategies for solving problems in life' (53%), 'improves the standards of living of self, the family and community' (59%) and 'enable use of basic principles and skills as a function for further learning' (56%) are achieved to a great extent. On the other hand, the remaining objective 'enables ability to adapt to new situations and changes in society' (49%) is only being achieved to a small extent.

4.7 Effects of Attitude towards Home Science on Achievement of the Objectives of Home Science Education

The first objective of the study was to establish the effect of teacher trainees' attitudes towards Home Science on achievement of the objectives of Home Science Education. Thus, this study sought respondents' perceptions towards attributes related to teacher trainees' attitude towards Home Science Education. A five-point Likert scale of strongly agree (SA), agree (A), not sure (NS), disagree (D) and strongly disagree (SD) was used to solicit this information from teacher trainees and primary school teachers and gave the following results.

4.7.1 Teacher Trainees' Perceptions towards Attributes on Attitude towards Home Science Education

According to Table 4.20, at least 50% of the respondents had positive perceptions towards Home Science Education. For instance, a total of 70% of the teacher trainees like studying the subject, 61% would advice a friend or relative to study the subject, 51% felt free to share knowledge and skills acquired from Home Science Education with friends, 50% would consider furthering their education in Home Science, 84% would rather Home Science is reintroduced in primary schools in the country while

74% would prefer that Home Science is taught to teacher trainees right from their first year of training in PTTCs.

Table 4.20: Teacher Trainees' Perceptions towards Home Science Education

S/NO	Attributes on perceptions towards Home Science	SA	A	NS	D	SD	Total
1.	I like studying Home Science.	124 39%	99 31%	34 11%	38 12%	23 7%	318 100%
2.	I would advice a friend or relative to study Home Science.	94 30%	99 31%	54 17%	34 11%	37 12%	318 100%
3.	I do share my knowledge in Home Science with friends	76 24%	87 27%	56 18%	65 20%	34 11%	318 100%
4.	I would study Home Science subject in the future.	88 28%	70 22%	67 21%	44 14%	49 15%	318 100%
5.	I would rather Home Science is reintroduced in primary schools.	123 39%	143 45%	27 8%	21 7%	4 1%	318 100%
6.	I would rather Home Science is taught from first year in PTE.	134 42%	102 32%	12 4%	54 17%	16 5%	318 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

4.7.2 Primary School Teachers' Perceptions towards Attributes on Attitude towards Home Science Education

Based on the responses given by primary school teachers as shown in Table 4.21, a total of 67% of the primary school teachers liked studying Home Science at the PTTCs. Further, 57% of them would be comfortable advising their friends or relatives to study the subject while another 60% would further their education in Home Science in the future. Seventy three percent of the primary school teachers prefer that Home

Science is reintroduced in primary schools in the country while another 83% would rather Home Science is introduced during their first year of training at the PTTCs.

On the contrary, a total of 53% of the primary school teachers (23% not sure, 10% disagreed and 20% strongly disagreed) negated the fact that they would share knowledge and skills acquired from Home Science Education with friends. This may be interpreted to mean that they were either not confident of their competencies in the subject or they just did not value such competencies hence did not see the need to share with friends. There is therefore need to establish the exact reasons for such perception.

Table 4.21: Primary School Teachers' Perceptions towards Home Science Education

S/NO	Attributes on perceptions towards Home Science	SA	A	NS	D	SD	Total
1.	I like studying Home Science.	12 40%	8 27%	2 7%	5 17%	3 10%	30 100%
2.	I would advice a friend or relative to study Home Science.	8 27%	9 30%	4 13%	4 13%	5 17%	30 100%
3.	I do share my knowledge in Home Science with friends	6 20%	8 27%	7 23%	3 10%	6 20%	30 100%
4.	I would study Home Science subject in the future.	9 30%	9 30%	4 13%	2 7%	6 20%	30 100%
5.	I would rather Home Science is reintroduced in primary schools.	12 40%	10 33%	2 7%	2 7%	4 13%	30 100%
6.	I would rather Home Science is taught from first year in PTE.	13 43%	12 40%	1 3%	4 13%	0 0%	30 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

4.7.3 Relationship on Respondents' Perceptions towards Attributes on Attitude towards Home Science Education

As shown in Table 4.22, a chi square analysis was done to establish whether these differences in ratings between teacher trainees and primary school teachers had a significant relationship. The analysis showed significant relationships on the ratings given by both categories of respondents on all six attributes at 95% confidence level. This therefore meant that they perceived the six attributes similarly. Basically, more than half of the respondents agreed with all six attributes related to teacher trainees' attitude towards Home Science Education.

On average, the study respondents opined that they like Home Science subject (70%), they would advice a friend or relative to study the subject (60%), would share knowledge gained from Home Science Education with friends (51%), would study Home Science subject in the future (51%), would rather that Home Science is reintroduced in primary schools (83%) and that Home Science be taught right from their first year of study (75%). This finding implied that teacher trainees at PTTCs perceived these six attribute positively thus had a positive attitude towards Home Science Education.

Table 4.22: Chi Square Results on Perceptions towards Attributes on Attitudes towards Home Science

S/NO	Attributes on attitudes towards Home Science	Extent of agreement	Count & % Distribution	χ^2	df	Sig
1.	I like studying Home Science.	Agree	243 (70%)	406.614	5	0.000
		Undecided	36(10%)			
		Disagree	69 (20%)			
		Total	**348 (100%)**			
2.	I would advice a friend or relative to study Home Science.	Agree	210 (60%)	406.478	5	0.000
		Undecided	58 (17%)			
		Disagree	80 (23%)			
		Total	**348 (100%)**			
3.	I do share my knowledge in Home Science with friends	Agree	177 (51%)	377.657	5	0.000
		Undecided	63 (18%)			
		Disagree	108 (31%)			
		Total	**348 (100%)**			
4.	I would study Home Science subject in the future.	Agree	176 (51%)	392.808	5	0.000
		Undecided	71 (20%)			
		Disagree	101 (29%)			
		Total	**348 (100%)**			
5.	I would rather Home Science is reintroduced in primary schools.	Agree	288 (83%)	402.574	5	0.000
		Undecided	29 (8%)			
		Disagree	31 (9%)			
		Total	**348 (100%)**			
6.	I would rather Home Science is taught from first year in PTE.	Agree	261 (75%)	408.963	5	0.000
		Undecided	13 (4%)			
		Disagree	74 (21%)			
		Total	**348 (100%)**			

Source: Research Data (2016)

It is notable that this positive attitude does not change even after completion of PTE despite the fact that Home Science is not offered in the primary schools where PTE graduates are eventually employed to teach. It will, therefore, be meaningful if graduates of Home Science Education from PTTCs are able to practice the competences acquired from Home Science Education in their world of work which is at the primary schools in which they teach. To confirm this finding, the KICD informant had this to say:

> The major hurdle encountered in justifying Home Science Education in the PTE curriculum has had to do with people's attitude towards the subject. Students have not even been the problem. On the contrary, society feels that one does not have to go to school to study Home Science. They feel that Home Science offers skills that anyone can learn even from home. Moreover, others wonder why Home Science is taught to men when all its content relates to women chores.

This confirms that Home Science students at PTTCs have a positive attitude towards the subject although society feels otherwise. It is evident that most people perceive the subject as simple and for girls other than boys. This is despite the competences Home Science students are likely to acquire upon completion of education at their specific levels of study. This calls for a lot of awareness creation in the society to help demystify such misinformed perceptions about Home Science Education. The benefits of studying the subject have been linked to self reliance and self employment whose effects are bound to trickle down from individuals to families and the general community.

Based on this result, it was necessary to test the first hypothesis of the study which aimed at establishing how teacher trainees' attitude towards Home Science affects achievement of the objectives of Home Science Education. The standard multiple regression analysis yielded the result (β=0.069, p=0.002) at alpha level 0.05. This meant that teacher trainees' attitude towards Home Science had a significant influence on achievement of the objectives of Home Science Education. As a result, the null hypothesis that teacher trainees' attitude towards Home Science does not significantly affect achievement of the objectives of Home Science Education was rejected.

Instead, the result indicated that a unit change in teacher trainees' attitude towards Home Science Education caused a significant 0.069 unit change in achievement of the objectives of Home Science Education. Based on the part correlation coefficient result, the 0.069 unit change translates to a 6.1% unique contribution towards achievement of the objectives of Home Science Education. Based on this finding, it can be concluded that teacher trainees in PTTCs have a positive attitude towards Home Science Education which makes a significant contribution of 6.1% towards achievement of the objectives of Home Science Education.

These finding agrees with those by Serem (2011) who established that students and teachers of Home Science had a positive attitude towards the subject although they disliked clothing and textiles which is one of the units in the PTE Home Science curriculum. However, this finding contravenes findings by Sang (2002) who found out that students dislike Home Science Education because of its practical nature especially clothing and textiles which they said was difficult to pursue.

Clothing and textiles is a vital concept given that human beings may feel uncomfortable walking around naked or in clothes they do not like. Research has shown that self confidence and self esteem are influenced by the clothes one is wearing, their friends' views regarding the clothes worn and how comfortable they feel in the same clothes (Sempele, 2016). Therefore, it is important that attitude towards Home Science Education particularly clothing and textiles is addressed so as to make learners understand its usefulness and appreciate its value in life.

It is the high school students who finally join the PTTCs to pursue Home Science Education implying that if they come in with a negative attitude towards the subject, this is likely to affect the results of the implementation of the PTE Home Science curriculum at the PTTCs. So far teacher trainees have a positive attitude towards the subject which should be nurtured if Home Science Education is expected to do well in the country and the world at large.

4.8 Effects of Planned Curriculum Content on Achievement of the Objectives of Home Science Education

The second objective of the study was to establish effects of planned curriculum content on achievement of the objectives of Home Science Education. Planned content in the PTE Home Science curriculum is classified under four basic units: Home Management; Food and Nutrition; Clothing and Textile and Maternal and Child Health Care. Respondents were therefore required to rate nine items on planned content in the PTE Home Science curriculum against a five-point Likert scale of strongly agree (SA), agree (A), undecided (UD), disagree (D) and strongly disagree (SD). The results obtained are presented below.

4.8.1 Tutors' Perceptions towards Attributes on Planned Curriculum Content

As illustrated in Table 4.23, a total of 63% of the tutors disagreed that planned curriculum content is adequate for the competencies required while another 63% either strongly agreed (36%) or agreed (27%) that planned curriculum content relates to learners' needs. Further, a total of 64% of the respondents were in agreement that planned content relates to societal needs with 27% disagreeing. On whether planned content relates to the objectives of Home Science Education, 50% of the tutors disagreed while 45% agreed to this attribute. Sixty eight percent of the tutors opined that planned curriculum content is applicable to real life situation despite the fact that 50% felt that this content is not up to date.

Table 4.23: Tutors' Ratings on Attributes Related to Planned Curriculum Content

S/NO.	Attributes on planned curriculum content	Count and % distribution of responses					Total
		SA	A	UD	D	SD	
1.	Content is adequate for competencies required.	5 23%	3 14%	0 0%	6 27%	8 36%	22 100%
2.	Content relates to learners' needs.	8 36%	6 27%	0 0%	6 27%	2 9%	22 100%
3.	Content relates to societal needs.	9 41%	5 23%	2 9%	4 18%	2 9%	22 100%
4.	Content relates to objectives of Home Science Education.	4 18%	6 27%	1 5%	6 27%	5 23%	22 100%
5.	Content is applicable to real life situations.	6 27%	9 41%	2 9%	3 14%	2 9%	22 100%
6.	Content is up to date	3 14%	4 18%	4 18%	7 32%	4 18%	22 100%
7.	Content relates to time allocated for teaching it.	0 0%	2 9%	2 9%	8 36%	10 45%	22 100%
8.	Content motivates further learning	3 14%	5 22%	5 23%	6 27%	3 14%	22 100%
9.	Content relates to national goals of development	6 27%	8 36%	2 9%	5 23%	1 5%	22 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD - Strongly Disagree

Source: Research Data (2016)

Moreover, a majority of the tutors (81%) disagreed that planned curriculum content relates to time allocated for teaching it while the remaining 18% were either undecided (9%) or in agreement (9%) with the same attribute. A total of 41% of the tutors disagreed that planned content motivates further learning while another 63% averred that this content relates to the national goals of development. Tutors generally agreed with 4 out of the 9 attributes on planned curriculum content.

4.8.2 Teacher Trainees' Perceptions towards Attributes on Planned Curriculum Content

According to Table 4.24, 53% of the teacher trainees were of the opinion that planned curriculum content in the PTE Home Science curriculum is adequate for the competencies required and relates to learners' needs. On the contrary, 41% felt that this content does not relate to societal needs and neither does it relate to the objectives of Home Science Education.

Table 4.24: Teacher Trainees' Ratings on Attributes Related to Planned Curriculum Content

S/NO.	Attributes on planned curriculum content	Count and % distribution of responses					Total
		SA	A	UD	D	SD	
1.	Content is adequate for competencies required.	102 32%	66 21%	42 13%	56 18%	52 16%	318 100%
2.	Content relates to learners' needs.	98 31%	70 22%	32 10%	64 20%	54 17%	318 100%
3.	Content relates to societal needs.	68 21%	54 17%	66 21%	55 17%	75 24%	318 100%
4.	Content relates to objectives of Home Science Education.	76 24%	68 21%	44 14%	52 16%	78 25%	318 100%
5.	Content is applicable to real life situations.	111 35%	78 25%	31 10%	55 17%	43 14%	318 100%
6.	Content is up to date	54 17%	44 14%	36 11%	86 27%	98 31%	318 100%
7.	Content relates to time allocated for teaching it.	31 10%	23 7%	45 14%	102 32%	117 37%	318 100%
8.	Content motivates further learning	63 20%	49 15%	54 17%	75 24%	77 24%	318 100%
9.	Content relates to national goals of development	65 20%	55 17%	67 21%	87 27%	44 14%	318 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD - Strongly Disagree

Source: Research Data (2016)

A higher percentage (60%) of the respondents opined that planned content is applicable to real life situations while another 58% disagreed that planned curriculum content is up to date. Most of the teacher trainees (69%) disagreed that planned curriculum content relates to the time allocated for teaching it while another 48% disagreed that this content motivates further learning. Further, twenty one percent of these respondents were not sure that planned content relates to national goals of development. Generally, teacher trainees agreed with 3 out of 9 attributes on planned curriculum content by rating them above 50%.

4.8.3 Primary School Teachers' Perceptions towards Attributes on Planned Curriculum Content

As shown in Table 4.25, a total of 57% of the primary school teachers were of the opinion that planned curriculum content is adequate for competencies required of Home Science graduates and that this content relates to learners' needs. On the contrary, 50% of these respondents disagreed that planned curriculum content relates to societal needs while 60% believed that this content relates to the objectives of Home Science Education.

Most of the primary school teachers (67%) agreed that planned content offered in the PTE Home Science curriculum provides knowledge and skills that are applicable to real life situations. This may imply that primary school teachers could be applying the competencies gained from Home Science Education in their real life experiences despite Home Science not being offered as one of the subjects in the primary school curriculum.

Table 4.25: Primary School Teachers' Ratings on Attributes Related to Planned Curriculum Content

S/NO.	Attributes on planned curriculum content	Count and % distribution of responses					Total
		SA	A	UD	D	SD	
1.	Content is adequate for competencies required.	8 27%	9 30%	2 7%	6 20%	5 17%	30 100%
2.	Content relates to learners' needs.	8 27%	9 30%	2 7%	9 30%	2 7%	30 100%
3.	Content relates to societal needs.	7 23%	7 23%	1 3%	6 20%	9 30%	30 100%
4.	Content relates to objectives of Home Science Education.	11 37%	7 23%	3 10%	7 23%	2 7%	30 100%
5.	Content is applicable to real life situations.	8 27%	12 40%	1 3%	6 20%	3 10%	30 100%
6.	Content is up to date	5 17%	4 13%	4 13%	9 30%	8 27%	30 100%
7.	Content relates to time allocated for teaching it.	3 10%	2 7%	4 13%	11 37%	10 33%	30 100%
8.	Content motivates further learning	4 13%	6 20%	5 17%	7 23%	8 27%	30 100%
9.	Content relates to national goals of development	5 17%	8 27%	5 17%	8 27%	4 13%	30 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD - Strongly Disagree

Source: Research Data (2016)

Similar to 50% tutors (Table 4.23) and 58% teacher trainees (Table 4.24) who disapproved the attribute 'content is up to date', 57% of the primary school teachers also negated this attribute. Furthermore, a majority of the teacher trainees (70%) opined that planned content does not relate to the time allocated for teaching it implying that the curriculum is overloaded. Half the teacher trainees (50%) believed that this content does not motivate further learning while another 44% felt that planned content relates to national goals of development. In summary, primary school teachers supported 4 out of 9 attributes on planned curriculum content.

4.8.4 Relationship between Respondents' Perceptions towards Attributes on Planned Curriculum Content

In order to get a clearer picture of these ratings given by the three categories of study respondents, a chi square test was done as shown in Table 4.26. The results revealed that there was no significant relationship on tutors', teacher trainees' and primary school teachers' ratings on all 9 attributes related to planned curriculum content. This implied that the three categories of respondents differed on their views regarding the nine attributes. For instance, despite the fact that almost equal percentages of the tutors (41%), teacher trainees (48%), and primary school teachers (50%) were dissatisfied with the attribute 'content motivates further learning', their ratings were not significantly related (χ^2=3.524, df=8, p=0.897) at 0.05 alpha level.

Generally, this finding established that most (6 out of 9) of the attributes on planned curriculum content were disapproved by the respondents. For instance, more than half the respondents were either undecided or felt that the following six attributes on planned curriculum content were being achieved to a small extent; content relates to societal needs (60%), relates to objectives of Home Science Education (54%), is up to date (69%), relates to time allocated for teaching it (84%), motivates further learning (65%) and relates to the national goals of development (60%).

Table 4.26: Chi Square Results on Perceptions towards Attributes on Planned Curriculum Content

S/NO	Attributes on planned curriculum content	Extent of agreement	Count & % Distribution	χ^2	df	Sig
1.	Content is adequate for competencies required	Great Extent	193 (52%)	12.350	8	0.136
		Undecided	44 (12%)			
		Small Extent	133 (36%)			
		Total	**370 (100%)**			
2.	Content relates to learners' needs	Great Extent	199 (54%)	7.974	8	0.436
		Undecided	34 (9%)			
		Small Extent	137 (37%)			
		Total	**370 (100%)**			
3.	Content relates to societal needs	Great Extent	150 (40%)	12.622	8	0.126
		Undecided	69 (19%)			
		Small Extent	151 (41%)			
		Total	**370 (100%)**			
4.	Content relates to objectives of Home Science Education	Great Extent	172 (46%)	9.979	8	0.267
		Undecided	48 (13%)			
		Small Extent	150 (41%)			
		Total	**370 (100%)**			
5.	Content is applicable to real life situations.	Great Extent	224 (61%)	7.107	8	0.525
		Undecided	34 (9%)			
		Small Extent	112 (30%)			
		Total	**370 (100%)**			
6.	Content is up to date	Great Extent	114 (31%)	2.746	8	0.949
		Undecided	44 (12%)			
		Small Extent	212 (57%)			
		Total	**370 (100%)**			
7.	Content relates to time allocated for teaching it.	Great Extent	61 (16%)	3.463	8	0.902
		Undecided	51 (14%)			
		Small Extent	258 (70%)			
		Total	**370 (100%)**			
8.	Content motivates further learning	Great Extent	130 (35%)	3.524	8	0.897
		Undecided	64 (17%)			
		Small Extent	176 (48%)			
		Total	**370 (100%)**			
9.	Content relates to national goals of development	Great Extent	147(40%)	8.720	8	0.366
		Undecided	74 (20%)			
		Small Extent	149 (40%)			
		Total	**370 (100%)**			

Source: Research Data (2016)

As a result, only three attributes on planned curriculum content were rated in the affirmative. Slightly over 50% of the respondents agreed that planned curriculum content is adequate for competencies required (52%), relates to learners' needs (54%) and that content is applicable to real life situations (61%). This was despite the fact that there was no significant relationship in the ratings given by the three categories of respondents in the study.

When asked to comment on planned curriculum content in the PTE Home Science curriculum, the subject specialist from KICD had this to say:

> There is a lot that can be taught in Home Science Education. However, the curriculum is clear on what should be taught. In fact, it goes further to offer guidelines to tutors regarding the scope of content to be taught through the specific curriculum objectives. Content is usually developed with consideration to the amount of time available for teaching it. Therefore the claim that content is wide is not sincere. Maybe tutors are teaching too much than expected although colleges too have a lot of activities like TP, ball games, drama to name a few in their calendar which could be eating up into the teaching time.

This comment refutes the claim that the PTE Home Science curriculum is overloaded. Instead, it confirms that there are several other factors that may be contributing to the perception that the PTE Home Science curriculum is overloaded. For instance, teaching practice is done three times in PTE. The first TP is planned for during the first year of study while the remaining two are programmed during the second year of training. Each TP session lasts approximately 3 weeks plus another 1 week for planning and preparation. This therefore means that each TP session takes away about 4 weeks from the teaching calendar translating to approximately 12 weeks for the three TP sessions almost equivalent to a whole term in the college calendar.

This time is, however, not accounted for in the curriculum which is bound to interfere with the amount of time allocated for teaching the various subjects in the PTE curriculum. Further, Home Science is a practical oriented subject which means it is likely that Home Science tutors would take much longer to cover what they are expected to teach. KICD should consider reviewing the curriculum to factor in the aspect of TP and co-curricular activities in PTE. This will ensure that tutors in PTTCs have adequate time to teach what they are supposed to comfortably and using the most appropriate instructional methods and not worrying about the time available for teaching.

As a result of this finding, it was deemed necessary to establish the effect planned curriculum content would have on achievement of the objectives of Home Science Education. The second hypothesis of the study that planned content in the primary teacher education Home Science curriculum does not significantly affect achievement of the objectives of Home Science Education was tested. The standard multiple regression analysis result obtained was $\beta=0.004$, $p=0.957$. This showed that planned curriculum content had a non-significant unique contribution on achievement of the objectives of Home Science Education. Therefore, this finding failed to reject the null hypothesis at 95% confidence level.

The beta value obtained ($\beta=0.004$) indicated that a unit change in planned curriculum content caused a non-significant 0.004 change in achievement of the objectives of Home Science Education. This result supports the idea that planned curriculum content is adequate for competencies required (52%), relates to learners' needs (54%) and that it is applicable to real life situations (61%). However, this content does not relate to societal needs (60%) or the general course objectives (54%). Further, it is not up to date (69%), does not relate to the time allocated for teaching it (84%), it does not motivate further learning (65%) or relate to the national goals of development (60%). Otherwise, it would have imparted positively and significantly towards achievement of the objectives of Home Science Education.

This findings corroborates those by Nyangara et al. (2010a), on the need for review of Home Science Education in Kenya, which showed that Home Science Education had evolved in terms of structure but very little in terms of the content itself and Mberengwa (2004), who established that the Home Economics curriculum in Zimbabwe had very little change in content despite changes in the course names. Further, KIE in its summative evaluation of the primary (2011a) and secondary (2011b) school curricula, identified that the achievement of curriculum objectives had been constrained by non-coverage of syllabi in some subjects due to heavy workload for the teachers and high pupil-teacher ratio. The evaluation noted that some subjects had difficult and broad content.

This finding confirms that Home Science is one of the subjects perceived to have a broad curriculum. The current PTE curriculum was last reviewed in the year 2004. It is therefore important that KICD and other stakeholders consider reviewing the curriculum with the aim of making content relevant and manageable. The review should ensure that planned curriculum content relates to societal needs and the general course objectives. Further, curriculum content should be updated to take note of dynamic changes in the world today, the time required for teaching this content, make it able to motivate further learning in teacher trainees and ensure it relates to the national goals of development. This will help make planned content relevant for Home Science Education in PTTCs through making significant contributions towards Home Science Education generally.

4.9 Effect of Instructional Resources on Achievement of the Objectives of Home Science Education

The third objective of the study was to establish the effect of instructional resources on achievement of the objectives of Home Science Education. The Home Science curriculum for PTTCs has a list of recommended instructional resources aimed at guiding tutors on the possible resources to use when teaching Home Science lessons. These resources are classified into needlework tools and equipment, sewing notions, cleaning equipment and materials, cooking tools and equipment, laundry equipment and materials, labour saving equipment, oven equipment and safety equipment. Various items are listed under each category as possible resources.

Respondents therefore rated various attributes related to instructional resources according to their adequacy, availability, appropriateness, frequency in use and extent of improvisation by Home Science tutors against a five-point Likert scale of very satisfied (VS), satisfied (S), undecided (UD), dissatisfied (D) and very dissatisfied (VD) as presented below.

4.9.1 Tutors' Perceptions towards Attributes on Instructional Resources

According to Table 4.27, 68% of the tutors were dissatisfied that teaching and learning resources are usually adequate for all learners and that they are readily available for use in teaching (91%). For 60% of the tutors, resources used to teach Home Science are usually appropriate for the topics being taught and that 64% of Home Science tutors take the effort to improvise teaching and learning resources for

Home Science lessons. Nevertheless, 64% of the tutors were of the opinion that recommended resources do not allow for use of the local environment.

Table 4.27: Tutors' Ratings on Attributes Related to Instructional Resources

S/NO	Attributes on instructional resources	% Distribution of responses VS	S	UD	D	VD	Total
1.	Resources used are usually adequate for all learners	0 0%	7 32%	0 0%	8 36%	7 32%	22 100%
2.	Resources are usually readily available	0 0%	2 9%	0 0%	12 55%	8 36%	22 100%
3.	Resources used are appropriate for the topic being taught	1 5%	12 55%	0 0%	4 18%	5 23%	22 100%
4.	Resources allow for improvisation	4 18%	10 46%	0 0%	8 36%	0 0%	22 100%
5.	Resources allow for use of the local environment	2 9%	4 18%	2 9%	8 36%	6 28%	22 100%

VS – Very satisfied; S – Satisfied; UD– Undecided; D – Dissatisfied and VD – Very dissatisfied

Source: Research Data (2016)

This finding implies that some of the resources tutors are supposed to use for Home Science lessons do not relate to the local environment, hence they do not allow for the use of the local environment in case of inadequacies. This seems to suggest that part of the content planned for teaching in the curriculum is not localized hence not allowing for use of the local environment. The study recommends that KICD tries as much as possible to plan for topics that relate to learners' local environment. This will enable tutors use and refer to the local environment when teaching hence boost teacher trainees' level of understanding.

4.9.2 Teacher Trainees' Perceptions towards Attributes on Instructional Resources

As shown in Table 4.28, 62% of the teacher trainees shared similar views as the tutors that instructional resources are inadequate. Moreover, a high percentage of teacher trainees (72%) were not satisfied that these resources are readily available for teaching as required. However, 59% of them shared the opinion that resources are appropriate for the topics being taught and that they allow for improvisation (52%). However, 20% were dissatisfied and 31% very dissatisfied that instructional resources allow for use of the local environment with 16% of them rating this attribute as undecided.

Table 4.28: Teacher Trainees' Ratings on Attributes Related to Instructional Resources

S/NO	Attributes on instructional resources	% Distribution of responses					Total
		VS	S	UD	D	VD	
1.	Resources used are usually adequate for all learners	41 13%	79 25%	1 0%	40 13%	157 49%	318 100%
2.	Resources are usually readily available	24 8%	64 20%	0 0%	93 29%	137 43%	318 100%
3.	Resources used are appropriate for the topic being taught.	80 25%	108 34%	11 4%	57 18%	62 20%	318 100%
4.	Resources allow for improvisation.	76 24%	90 28%	2 1%	77 25%	73 23%	318 100%
5.	Resources allow for use of the local environment	58 18%	47 15%	51 16%	63 20%	99 31%	318 100%

VS – Very satisfied; S – Satisfied; UD– Undecided; D – Dissatisfied and VD – Very dissatisfied

Source: Research Data (2016)

This therefore meant that despite the inadequacy and unavailability of instructional resources for Home Science lessons, tutors try addressing these hindrances by improvising on some of the resources required for the various lessons and topics.

4.9.3 Primary School Teachers' Perceptions towards Attributes on Instructional Resources

According to Table 4.29, primary school teachers were also asked to rate the 5 attributes related to instructional resources on the extent to which they satisfied their expectations. The results obtained indicated that according to primary school teachers, instructional resources for Home Science lessons at PTTCs were inadequate (70%) and rarely available (80%). Moreover, they were dissatisfied (23%) and very dissatisfied (27%) that instructional resources used by Home Science tutors were usually appropriate for the topic being taught.

Table 4.29: Primary School Teachers' Ratings on Attributes Related to Instructional Resources

Primary school teachers (n = 30)							
1.	Resources used are usually adequate for all learners	3 10%	6 20%	0 0%	13 43%	8 27%	30 100%
2.	Resources are usually readily available	2 7%	2 7%	2 7%	8 27%	16 53%	30 100%
3.	Resources used are appropriate for the topic being taught	3 10%	11 37%	1 3%	7 23%	8 27%	30 100%
4.	Resources allow for improvisation	2 7%	15 50%	0 0%	12 40%	1 3%	30 100%
5.	Resources allow for use of the local environment	6 20%	7 23%	4 13%	7 23%	6 20%	30 100%

VS – Very satisfied; S – Satisfied; UD– Undecided; D – Dissatisfied and VD – Very dissatisfied

Source: Research Data (2016)

A total of 57% of the primary school teachers were satisfied that instructional resources allowed for improvisation while the remaining 43% negated this attribute. Further, an equal percentage (43%) of the respondents were either satisfied or dissatisfied with the fact that instructional resources allowed for use of the local environment by Home Science tutors. The remaining 13% of the respondents were undecided whether indeed instructional resources allowed or did not allow for use of the local environment. Similar to ratings by tutors and teacher trainees, primary school teachers also opined that instructional resources do not allow for use of the local environment thus limiting teachers' options in case resources were inadequate or unavailable.

4.9.4 Relationship between Respondents' Perceptions towards Attributes on Instructional Resources

As shown in Table 4.30, a chi square analysis test was done to establish any significant relationships in the ratings given by tutors, teacher trainees and primary school teachers on relevance of the instructional resources used by Home Science tutors in meeting the objectives of Home Science Education. The results showed that there is a significant relationship between ratings given by the three categories of respondents on the attributes 'resources used are usually adequate for all learners' (χ^2=29.307, df=8, p=0.000), 'resources are usually readily available' (χ^2=38.373, df=8, p=0.000), and 'resources allow for improvisation' (χ^2=24.237, df=8, p=0.002). This therefore meant that the study respondents perceived and rated these three attributes similarly.

However, the three categories of respondents differed on their ratings regarding the remaining 2 attributes. The 2 exceptional attributes; 'resources used are appropriate for the topics being taught' and 'resources allow for use of the local environment' yielded the chi square results (χ^2=10.647, df=8, p=0.223) and (χ^2=7.103, df=8, p=0.526) respectively at 0.05 alpha level.

Table 4.30: Chi Square Results on Perceptions towards Attributes on Instructional Resources

S/NO	Attributes on instructional resources	Extent of achievement	Count & % Distribution	χ^2	df	Sig
1.	Resources used are usually adequate for all learners	Satisfied	136 (36%)	29.307	8	0.000
		Not sure	2 (1%)			
		Dissatisfied	232 (63%)			
		Total	**370 (100%)**			
2.	Resources are usually readily available	Satisfied	94 (25%)	38.373	8	0.000
		Not sure	2 (1%)			
		Dissatisfied	274 (74%)			
		Total	**370 (100%)**			
3.	Resources used are appropriate for the topic being taught	Satisfied	215 (58%)	10.647	8	0.223
		Not sure	12 (3%)			
		Dissatisfied	143 (39%)			
		Total	**370 (100%)**			
4.	Resources allow for improvisation	Satisfied	197 (53%)	24.237	8	0.002
		Not sure	2 (1%)			
		Dissatisfied	171 (46%)			
		Total	**370 (100%)**			
5.	Resources allow for use of the local environment	Satisfied	124 (34%)	7.103	8	0.526
		Not sure	57 (15%)			
		Dissatisfied	189 (51%)			
		Total	**370 (100%)**			

Source: Research Data (2016)

These results imply that tutors, teacher trainees and primary school teachers had different views as far as instructional resources used for Home Science lessons were appropriate and allowed for use of the local environment. In fact, one the DOCs interviewed had this to say;

> One of the major problems we experience as a PTTC is that teacher trainees' enrolment is quite high compared to the facilities we have for learning. Tutors struggle to organize practical lessons for overcrowded classes yet management can only afford a few resources per lesson per subject. This has rendered the available resources inadequate for conducting successful lessons by our tutors.

This comment confirms respondents' ratings on the inadequacy of instructional resources. Generally, this finding indicates that study respondents were satisfied that instructional resources used by Home Science tutors are appropriate for the topics being taught (58%) and that they allow for improvisation (53%). However, they were either not sure or dissatisfied that instructional resources are usually adequate for all learners (64%), that they are usually readily available (75%) and that they allow for use of the local environment (66%). Further, the key informant from KICD had this to share regarding instructional resources for Home Science lessons at PTTCs.

> Tutors should be able to make correct judgement regarding the practices that will ensure lessons are planned in the best way possible for achievement of the lesson objectives. During lesson planning, the tutor should also plan for the required instructional resources to ensure that they are available and enough for the learners. The use of the local environment and improvisation can help the teacher achieve this. After all, the syllabus only gives suggestions to the teacher which does not mean it is the only way the teacher can teach the various lessons.

This comment reiterates the importance of adequate lesson planning before tutors get to teach the various lessons. However, KICD should also note the mismatch between the content in the curriculum and the local environment. The two should relate well to enable tutors use either of them adequately when need arises. Based on these results, the third research hypothesis of the study was tested to establish whether instructional resources had any significant effect on achievement of the objectives of Home Science Education.

The regression analysis result showed that instructional resources had a significant relationship with objectives of Home Science Education ($\beta=0.465$, $p=0.000$). This null hypothesis was thus rejected at alpha level 0.05. This result implies that a unit change in instructional resources was likely to cause a 0.465 unit change in achievement of the objectives of Home Science Education. Further, according to the part correlation coefficient result, the curriculum component instructional resources made a 38.4% unique contribution towards achievement of the objectives of Home Science Education. In fact, instructional resources had the greatest contribution compared to the other curriculum components towards achieving the objectives of Home Science Education.

This finding supports the fact that instructional resources used by Home Science tutors in PTTCs are appropriate for the topics being taught (58%) and that they allow for improvisation (53%). Nevertheless, they are usually inadequate for all learners (64%), not readily available (75%) and that they hardly allow for use of the local environment (66%). If these issues were to be addressed, then instructional resources would have an even higher contribution towards achievement of the objectives of Home Science Education.

These findings agree with findings by AED (2008) which reported that the PTE curriculum was ineffective in the use of teaching and learning resources. Further, Mberengwa (2004) and KIE (2011a) affirmed that the PTE curriculum is inadequate in terms of resource allocation while KNHCR (2007) asserted that the curriculum was also inadequate in enhancing creativity, adoption, adaptation and usage of knowledge and skills.

Kagoda and Ezati (2013), in their study on the ‘contribution of primary teacher education curriculum to quality primary education in Uganda’ also established that PTCs experience inadequate teaching and learning materials and infrastructure which are key for effective training. Further, according to Oguta (2014), there is a general outcry from teachers on lack of basic resources like textbooks that hinder effective planning and use of instructional resources. Whether this is as a result of books missing in the market, lack of funding from institutional management, corruption or poor planning amongst Home Science tutors, they should strive to provide instructional resources for the lessons they plan to teach. This study thus suggests improvisation as one of the possible ways of achieving this milestone.

4.10 Effect of Instructional Methods on Achievement of the Objectives of Home Science Education

The fourth objective of the study was to establish the effect of instructional methods on achievement of the objectives of Home Science Education. Respondents were thus required to give their views regarding the frequency with which tutors use the recommended instructional methods for teaching Home Science lessons and rate seven attributes related to instructional methods against a five-point Likert scale of strongly agree (SA), agree (A), not sure (NS), disagree (D) and strongly disagree (SD).

4.10.1 Respondents' Perceptions on Frequency in use of Instructional Methods by Home Science Tutors

According to results presented in Table 4.31, the observation method of teaching was popular to a total of 52% of Home Science tutors in PTTCs. Further, a total of 71% of the tutors preferred using group work (very frequently 41% and frequently 30%) when teaching while practical work was either rarely (21%) or never (30%) used by Home Science tutors. Moreover, a total of 78% of the respondents agreed that the use of a resource person was the least popular (rarely 22% and never 56%) instructional method among Home Science tutors. Further, the use of field visits as a teaching method was either rarely (20%) or never (48%) used by Home Science tutors while group and class discussions seemed a popular method according to a total of 65% of the respondents.

The lecture method of instruction was a preferred method of teaching according to 76% of the respondents who also felt that project work was only used sometimes (22%) in Home Science Education at the PTTCs. Respondents in the study perceived the use of role play as rare (60%) compared to question and answer method which they rated as the most popular (89%) instructional method amongst Home Science tutors at the PTTCs.

Table 4.31: Respondent' Ratings on Frequency in Use of Instructional Methods

S/NO.	Instructional method	VF	F	S	R	N	Total	χ^2
1.	Observation	119 (32%)	74 (20%)	70 (19%)	78 (21%)	29 (8%)	370 (100%)	36.566 P=0.000
2.	Group work	154 (41%)	113 (30%)	61 (17%)	35 (10%)	7 (2%)	370 (100%)	7.312 P=0.120
3.	Practical work	73 (20%)	71 (19%)	39 (10%)	77 21%)	110 (30%)	370 (100%)	15.141 P=0.004
4.	Resource person	16 (4%)	37 (10%)	29 (8%)	83 (22%)	205 (56%)	370 (100%)	58.331 P=0.000
5.	Field visits	28 (8%)	36 (10%)	54 (14%)	73 (20%)	179 (48%)	370 (100%)	62.361 P=0.000
6.	Group and class discussions	150 (41%)	84 (23%)	59 (16%)	54 (15%)	23 (6%)	370 (100%)	9.700 P=0.046
7.	Lecture method	169 (46%)	109 (30%)	57 (15%)	33 (8%)	2 (1%)	370 (100%)	24.939 P=0.000
8.	Project work	81 (22%)	65 (17%)	81 (22%)	51 (14%)	92 (25%)	370 (100%)	36.701 P=0.000
9.	Role play	48 (13%)	48 (13%)	52 (14%)	101 (27%)	121 (33%)	370 (100%)	24.829 P=0.000
10.	Question and answer	260 (70%)	69 (19%)	23 (6%)	13 (4%)	5 (1%)	370 (100%)	13.213 P=0.010

df = 4

VF – Very Frequently; F – Frequently; S – Sometimes; R – Rarely; N - Never

Source: Research Data (2016)

The chi square analysis results for level of participants and instructional methods yielded significant relationships with 9 out of 10 instructional methods implying that tutors, teacher trainees and primary school teachers rated the frequency with which Home Science tutors use the nine instructional methods similarly. The exceptional method was use of group work that yielded the result (χ^2=7.312, df=4, p=0.120) implying that the three categories of respondents perceived this attribute differently. Based on these finding, Home Science tutors seemed to prefer teaching using question and answer method (89%) followed by lecture method (76%) then group work (71%). On the other hand, the use of resource persons was rated the least preferred method of teaching (14%) followed by field visits (18%), role play (26%) and practical work (39%).

This may be attributed to the fact that field visits, use of resource persons and practicals require reasonable amount of finances that may cause Home Science tutors to opt out of using them since they are bound to involve long processes which may in turn slow down the learning process on a curriculum they already perceive to be overloaded. Furthermore, data collected using the observation guide showed that a good number of PTTCs experienced challenges related to financing practical lessons. This finding was similar to findings by Mberengwa (2004) who also found out that lecture method continued to be popular amongst Home Economics teachers in Zimbabwe.

Further, Ogwo and Oranu (2006) established that teachers rarely use excursions and fieldtrips and instead use uninteresting methods to teach. Currently, KNEC only assesses theoretical knowledge acquired by Home Science trainees with no provision for practical evaluation despite the fact that Home Science is a vocational subject and that its graduates should acquire adequate and relevant skills on what they were taught in order to apply the same in their real life experiences.

This has contributed to tutors ignoring the practical aspects of Home Science Education and focussing more on the theoretical bit for the sake of passing KNEC examinations. Emphasis of theory work has further been blamed for inappropriate development of practical and technological skills necessary for self-reliance and economic progress (Mwaniki, 2006). Thus, this finding shows that basically Home Science tutors frequently use teacher-centered instructional methods compared to the learner-centered methods. This practice should be changed so that tutors use more of the learner-centered methods of instruction than the teacher-centered methods.

Tutors, teacher trainees and primary school teachers were further asked to rate the following seven attributes related to instructional methods used in the teaching of Home Science in PTTCs according to the extent to which they agreed or disagreed with them. A five-point Likert scale of strongly agree (SA), agree (A), not sure (NS), disagree (D) and strongly disagree (SD) was used to yield the results presented next.

4.10.2 Tutors' Perceptions towards Attributes Related to Instructional Methods

According to Table 4.32, Home Science tutors were of the opinion that instructional methods recommended for use in the Home Science curriculum are adequate and offer them a variety to choose from (63%), are appropriate for learners' needs and level of learning (54%), relate well to planned curriculum content (68%), encourage active learner participation (63%), offer learners an opportunity for further learning (59%) and give learners competencies that are applicable in the world of work (59%).

However, 54% of the tutors believed that these instructional methods do not consider the different learners' abilities thus seem to neglect individualised attention required of the different learners. Further, tutors disagreed (18%) and strongly disagreed (14%) that instructional methods used to teach Home Science lessons provide an opportunity for learners to participate actively in the learning process. This confirms the finding that Home Science tutors prefer using teacher-centred instructional methods like lecturing which was rated as the most preferred method hence not offering learners the opportunity to participate actively in the learning process.

Table 4.32: Tutors' Ratings on Attributes Related to Instructional Methods

S/NO.	Attributes on instructional methods	SA	A	UD	D	SD	Total
1.	Teaching methods are adequate and offer a variety of choice to teachers.	8 36%	6 27%	0 0%	3 14%	5 23%	22 100%
2.	They are appropriate for learners' needs or level of learners.	6 27%	6 27%	2 9%	4 19%	4 18%	22 100%
3.	They relate well to curriculum content.	7 32%	8 36%	0 0%	5 23%	2 9%	22 100%
4.	They encourage learners' active participation in the learning process.	6 27%	8 36%	1 5%	4 18%	3 14%	22 100%
5.	They inculcate continued learning abilities in learners.	5 23%	8 36%	4 18%	3 14%	2 9%	22 100%
6.	They give learners an opportunity to apply knowledge and skills in the world of work.	5 23%	8 36%	2 9%	4 18%	3 14%	22 100%
7.	They take into account the different learners' abilities.	4 18%	3 14%	3 14%	8 36%	4 18%	22 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

4.10.3 Teacher Trainees' Perceptions towards Attributes on Instructional Methods

Based on the results shown in Table 4.33, more than half of the teacher trainees (57%) believed that instructional methods are adequate and offer tutors a variety to choose from, are appropriate for learners' level of understanding (58%), relate to curriculum content (55%), encourage active learners participation in the learning process (62%)

besides giving learners an opportunity to apply the competencies acquired in the world of work (54%).

Table 4.33: Teacher Trainees' Ratings on Attributes Related to Instructional Methods

S/NO.	Attributes on instructional methods	SA	A	UD	D	SD	Total
1.	Teaching methods are adequate and offer a variety of choice to teachers.	99 31%	83 26%	43 14%	48 15%	45 14%	318 100%
2.	They are appropriate for learners' needs or level of learners.	87 27%	97 31%	44 14%	53 17%	37 11%	318 100%
3.	They relate well to curriculum content.	97 31%	77 24%	51 16%	51 16%	42 13%	318 100%
4.	They encourage learners' active participation in the learning process.	101 32%	95 30%	32 10%	67 21%	23 7%	318 100%
5.	They inculcate continued learning abilities in learners.	79 25%	67 21%	70 22%	57 18%	45 14%	318 100%
6.	They give learners an opportunity to apply knowledge and skills in the world of work.	93 29%	81 25%	39 13%	61 19%	44 14%	318 100%
7.	They take into account the different learners' abilities.	54 17%	47 15%	81 25%	93 29%	43 14%	318 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

Contrary to 59% of the Home Science tutors' views (Table 4.32) that instructional methods inculcate in trainees continued learning abilities, less than half (46%) of the teacher trainees shared this view. Further, twenty two percent were not sure about this attribute while the remaining 32% either disagreed (18%) or strongly disagreed (14%) with the same attribute. Moreover, 25% of the teacher trainees were undecided on the fact that instructional methods take into account the fact that different learners have different abilities worth consideration during teaching with 32% rating this attribute in the affirmative and the remaining 43% negating the same attribute. On average, teacher trainees agreed with 5 out of 7 of the attributes on instructional methods.

4.10.4 Primary School Teachers' Perceptions towards Attributes on Instructional Methods

According to Table 4.34, higher percentages (over 50%) of primary school teachers strongly disagreed, disagreed or were not sure about these seven attributes on instructional methods when compared to those that either agreed or strongly agreed with the same attributes. For instance, in total, primary school teachers felt that instructional methods used by Home Science tutors were not adequate (51%), not appropriate for learners' level of learning (70%), do not relate to curriculum content (53%), do not encourage active learners participation in the learning process (53%), do not inculcate continued learning abilities for trainees (74%), do not give trainees the opportunity to apply competencies acquired in the world of work (54%) or give consideration to the different trainees learning abilities (74%). Generally, most primary school teachers seemed to disagree with all these attributes on instructional methods used to teach Home Science lessons in PTTCs.

It is important to note that these are practicing teachers who have already experienced the PTE Home Science curriculum. The fact that they disagreed with all 7 attributes on instructional methods is worth noting in that they are better placed to describe the outcome of the curriculum they went through. It is thus important that further research is done to get deeper insight on the shortcomings of the instructional methods used by Home Science tutors in PTTCs from the graduates' perspective. Only then would effort be directed towards improving instruction in Home Science Education.

Table 4.34: Primary School Teachers' Ratings on Attributes Related to Instructional Methods

S/NO.	Attributes on instructional methods	SA	A	UD	D	SD	Total
1.	Teaching methods are adequate and offer a variety of choice to teachers.	7 22%	8 27%	4 13%	6 21%	5 17%	30 100%
2.	They are appropriate for learners' needs or level of learners.	3 10%	6 20%	8 27%	6 20%	7 23%	30 100%
3.	They relate well to curriculum content.	6 20%	8 27%	4 13%	5 17%	7 23%	30 100%
4.	They encourage learners' active participation in the learning process.	3 10%	5 17%	9 10%	8 27%	5 16%	30 100%
5.	They inculcate continued learning abilities in learners.	2 6%	6 20%	5 17%	8 27%	9 30%	30 100%
6.	They give learners an opportunity to apply knowledge and skills in the world of work.	7 23%	7 23%	4 13%	8 27%	4 14%	30 100%
7.	They take into account the different learners' abilities.	3 10%	5 17%	8 27%	8 27%	6 20%	30 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

4.10.5 Relationship between Respondents' Perceptions towards Attributes on Instructional Methods used in Home Science Education

As shown in Table 4.35, a chi square test was run to establish whether these ratings given by primary school teachers were significantly different from those of tutors and teacher trainees. The result yielded a significant relationship (χ^2=21.215, df=8, p=0.007) on tutors, teacher trainees and primary school teachers ratings regarding the attribute 'instructional methods encourage learners' active participation in the learning process'. The three categories of respondents, therefore, perceived this exceptional attribute similarly agreeing that it is achieved to a great extent (59%).

However, all categories of respondents differed in the way they perceived the remaining 6 attributes on instructional methods that included; instructional methods are adequate and offer a variety of choice to tutors (χ^2=5.326, df=8, p=0.722), are appropriate for learners' needs (χ^2=11.420, df=8, p=0.179), relate well to curriculum content (χ^2=8.874, df=8, p=0.353), inculcate continued learning abilities in learners (χ^2=13.169, df=8, p=0.106), give learners the opportunity to apply competencies acquired from training in the world of work (χ^2=2.647, df=8, p=0.955) and take into account different learners' abilities (χ^2=3.629, df=8, p=0.889). The chi square results thus showed no significant relationships in respondents' perceptions towards the 6 attributes implying that each category perceived the stated attributes differently.

Generally, tutors, teacher trainees and primary school teachers were in agreement that instructional methods used by Home Science tutors to teach Home Science lessons are adequate and offer a variety of choice to tutors (57%), are appropriate for learners' needs or level of learners (55%), relate well to curriculum content (55%), encourage learners' active participation in the learning process (59%) and give learners an opportunity to apply knowledge and skills in the world of work (54%) to a great extent by rating each of the attributes slightly above 50%.

However, they disagreed that instructional methods inculcate continued learning abilities in learners (45%) and take into account the different learners' abilities (31%). According to study respondents, instructional methods do not create in teacher trainees the urge and ability to continue learning even after PTE and neither do they give consideration to the fact that different learners have different abilities thus should be handled differently despite the fact that these are important factors that every education system should strive to address.

Table 4.35: Chi Square Results on Perceptions towards Attributes on Instructional Methods

S/NO	Attributes on instructional methods	Extent of achievement	Count & % Distribution	χ^2	df	Sig
1.	Instructional methods are adequate and offer a variety of choice to tutors	Great Extent	211 (57%)	5.326	8	0.722
		Undecided	47(13%)			
		Small Extent	112 (30%)			
		Total	**370 (100%)**			
2.	They are appropriate for learners' needs or level of learners	Great Extent	205 (55%)	11.420	8	0.179
		Undecided	54 (15%)			
		Small Extent	111 (30%)			
		Total	**370 (100%)**			
3.	They relate well to curriculum content	Great Extent	203 (55%)	8.874	8	0.353
		Undecided	55 (15%)			
		Small Extent	112 (30%)			
		Total	**370 (100%)**			
4.	They encourage learners' active participation in the learning process	Great Extent	218 (59%)	21.215	8	0.007
		Undecided	42 (11%)			
		Small Extent	110 (30%)			
		Total	**370 (100%)**			
5.	They inculcate continued learning abilities in learners	Great Extent	167 (45%)	13.169	8	0.106
		Undecided	79 (21%)			
		Small Extent	124(34%)			
		Total	**370 (100%)**			
6.	They give learners an opportunity to apply knowledge and skills in the world of work	Great Extent	201 (54%)	2.647	8	0.955
		Undecided	45 (12%)			
		Small Extent	124 (34%)			
		Total	**370 (100%)**			
7.	They take into account the different learners' abilities	Great Extent	116 (31%)	3.629	8	0.889
		Undecided	92 (25%)			
		Small Extent	162 (44%)			
		Total	**370 (100%)**			

Source: Research Data (2016)

The KICD subject specialist had this to say about recommended instructional methods in the PTE Home Science curriculum:

> What we have in the syllabus are just recommended instructional methods. It is the tutor who should decide which methods to use and when to use them. However, the method chosen should be appropriate for learner's abilities and the intended outcomes of the lesson. This therefore requires that Home Science tutors understand the content to be taught well enough and plan for the teaching adequately in order to achieve the specific lesson and course objectives.

On whether instructional methods affect the achievement of the objectives of Home Science Education, the fourth hypothesis of the study was tested. Regression analysis on instructional methods and objectives of Home Science Education gave the result ($\beta=0.172$, $p=0.000$). This indicated that instructional methods used by Home Science tutors to teach Home Science lessons had a significant effect on achievement of the objectives of Home Science Education. Therefore, the null hypothesis that instructional methods used by tutors to implement the Home Science curriculum in teacher training colleges do not significantly affect achievement of the objectives of Home Science Education was rejected at 0.05 alpha level.

This finding implies that a unit change in instructional methods resulted in 0.172 unit change in achievement of the objectives of Home Science Education. In fact, according to the part correlation coefficient, instructional methods were found to make a 6.81% unique contribution towards achievement of the objectives of Home Science Education. This finding implies that instructional methods used by tutors at PTTCs to implement the PTE Home Science curriculum are adequate offering a variety for tutors to choose from (57%) and appropriate for the level of learners (55%).

Moreover, they relate well to curriculum content (55%), encourage learners' active participation in the learning process (59%) besides giving them an opportunity to apply knowledge and skills gained in the world of work (54%). However, instructional methods hardly inculcate continued learning abilities in learners (55%) or take into account the different trainees' learning abilities (69%). If these issues were addressed, instructional methods would then result in a higher unique contribution towards achievement of the objectives of Home Science Education.

This finding corroborates findings by Mberengwa (2004) and Mumbi (2012) who established that the methods of preparing teacher trainees for teaching in PTTCs were inadequately done by Home Science tutors with the practical aspect of Home Science Education not being adequately examined. This, the authors argue, has led to the practical component in the syllabus being ignored during teaching. Further, a World Bank Report (2004a) and ROK (2012) assert that teacher training education suffers from over-emphasis on content and passing examinations rather than on pedagogical skills while KIE (2011b) and Kagoda and Ezati (2013) agree that the methods tutors use in PTTCs to train teachers are teacher-centered dominated by lecture method and less emphasis if any is placed on child-centered methods. Further, Wanzala (2013) also noted that education in Africa has serious problems to do with the quality of instruction offered.

Moreover, society seems interested more in the final grade trainees get and not much on what they can do after training. Home Science is a vocational subject thus emphasis should be on the competences trainees acquire hence instructional methods chosen during teaching should aim at achieving such competencies. It is the tutor's responsibility to select the most appropriate instructional methods for specific lessons and topics to be taught.

Much has to be done to address this challenge of Home Science tutors using more of the teacher centered than the learner centered methods of teaching. In-servicing of Home Science tutors on instructional approaches, strategies and methods might help them appreciate and use more of the learner-centered methods of instruction which should be the direction taken in curriculum implementation in the 21^{st} century. This will contribute towards training independent learners with capacity for problem solving, decision making, creative thinking, critical thinking and intellectual curiosity.

4.11 Effect of Assessment Techniques on Achievement of the Objectives of Home Science Education

The fifth and final objective of the study was to find out the influence of assessment techniques on achievement of the objectives of Home Science Education. One important step in the implementation of the Home Science curriculum is assessing the extent to which teacher trainees have mastered content taught which determines the extent to which curriculum objectives have been achieved in turn establishing the extent to which the course objectives are being achieved. Tutors at the PTTCs evaluate teacher trainees using different assessment techniques suggested in the curriculum that include practical work, project work, field trip reports, oral questions, quizzes, written tests and examinations and group reports.

They also use several examinations that include Continuous Assessment Tests (CATs), Mid-course and Mock examinations. The Kenya National Examination Council then administers the final PTE examination at the end of the two year programme. Therefore, the study sought information regarding the frequency with which Home Science tutors use the recommended assessment techniques to evaluate teacher trainees in PTTCs and respondents perceptions towards attributes related to assessment techniques.

4.11.1 Respondents' Perceptions on Frequency in Use of Assessment Techniques by Home Science Tutors

According to results presented in Table 4.36, the use of practical work to assess teacher trainees at PTTCs was an unpopular technique to a total of 43% of the respondents with 24% of them feeling that this technique was only used sometimes. Further, a total of 47% (rarely 16% and never 31%) of the respondents believed that Home Science tutors preferred using project work to assess teacher trainees while field trip reports were either rarely (24%) or never (44%) used as assessment techniques for Home Science lessons.

Moreover, a total of 77% of the respondents agreed that the use of oral questions was a popular (very frequently 57% and frequently 20%) assessment technique among Home Science tutors in PTTCs. Other popular assessment techniques included the use of quizzes (a total of 79%), written tests (a total of 77%) and end term examinations (a total of 89%) according to study respondents. Group reports were unpopularly used by Home Science tutors according to a total of 62% (27% sometimes, 15% rarely and 20% never) of the respondents.

The chi square analysis results for participants and assessment techniques yielded significant relationships for seven out of eight attributes. This implied that respondents perceived these seven attributes similarly thus rated them equally. The exceptional attribute was the use of oral questions in the assessment of teacher trainees which yielded the result (χ^2=14.513, df=4, p=0.083). This therefore meant that tutors, teacher trainees and primary school teachers perceived the frequency with which Home Science tutors used this technique differently.

Table 4.36: Respondents' Ratings on Frequency in Use of Assessment Techniques

S/NO.	Assessment Tchnique	VF	F	S	R	N	Total	χ^2
1.	Practical work	73 (20%)	51 (13%)	88 (24%)	45 (12%)	113 (31%)	370 (100%)	22.300 P=0.000
2.	Project work	67 (18%)	59 (16%)	71 (19%)	60 (16%)	113 (31%)	370 (100%)	11.839 P=0.019
3.	Field trip reports	17 (5%)	57 (15%)	46 (12%)	89 24%)	161 (44%)	370 (100%)	58.230 P=0.000
4.	Oral questions	210 (57%)	75 (20%)	54 (15%)	17 (4%)	14 (4%)	370 (100%)	14.513 P=0.083
5.	Quizzes	168 (45%)	125 (34%)	40 (11%)	30 (8%)	7 (2%)	370 (100%)	13.563 P=0.009
6.	Group reports	66 (18%)	74 (20%)	98 (27%)	57 (15%)	75 (20%)	370 (100%)	11.113 P=0.025
7.	Written tests	166 (45%)	117 (32%)	55 (15%)	21 (5%)	11 (3%)	370 (100%)	19.203 P=0.001
8.	End term examinations	212 (57%)	114 (32%)	21 (5%)	18 (5%)	5 (1%)	370 (100%)	15.730 P=0.003

df = 7

VF – Very Frequently; F – Frequently; S – Sometimes; R – Rarely; N - Never

Source: Research Data (2016)

Generally, Home Science tutors seem to prefer using end term examinations (89%), quizzes (79%), oral questions (77%) and written questions (77%) to assess teacher trainees at PTTCs. On the contrary, the use of field visit reports was rated the least popular assessment technique by a total of 80% of the respondents followed by practical work (67%), project work (66%) and group reports (62%).

Similar to this finding are the KIE summative evaluation reports on the primary and secondary school curricula, which established that the most widespread method of assessment was through written tests which were administered continuously during the term and at the end of term or year. This finding may be attributed to the fact that end of term examinations are programmed in the college calendar which must be adhered to diligently. Mid-course, mock, PTE and continuous assessment tests are programmed for end of every term in the college calendar thus must be given as scheduled, thus came out as the most popular assessment techniques.

It is notable that just like the low ratings given on the use of field visits as a method of instruction, all three categories of respondents agreed that field visit reports were also rarely used to assess teacher trainees at PTTCs. The DOCs confirmed this finding by agreeing that PTTCs have a hard time financing Home Science lessons which according to them, its practical nature makes it an expensive subject to facilitate given the large classes at the PTTCs.

4.11.2 Tutors' Perceptions towards Attributes Related to Assessment Techniques

Respondents were further required to rate eight attributes related to assessment techniques according to the extent to which they agreed with them. According to Table 4.37, assessment techniques used in evaluating the PTE Home Science curriculum are adequate (64%), provide a variety for tutors to choose from (59%), test both knowledge and skills (55%) and offer results that are used to improve the curriculum (59%) according to Home Science tutors.

Table 4.37: Tutors' Ratings on Attributes Related to Assessment Techniques

S/NO.	Attributes on assessment techniques	SA	A	UD	D	SD	Total
1.	Assessment techniques used by tutors are adequate.	7 32%	7 32%	1 5%	3 14%	4 18%	22 100%
2.	Tutors use a variety of them.	7 32%	6 27%	1 5%	4 18%	4 18%	22 100%
3.	They relate to job market requirements.	5 23%	4 18%	3 14%	6 27%	4 18%	22 100%
4.	They relate to curriculum objectives.	3 14%	3 14%	4 18%	8 36%	4 18%	22 100%
5.	They are valid and reliable.	4 18%	4 18%	6 27%	5 23%	3 14%	22 100%
6.	They test both knowledge and skills.	5 23%	7 32%	2 9%	5 23%	3 14%	22 100%
7.	Timely feedback on results is communicated to students and PTTCs.	3 14%	2 9%	3 14%	9 41%	5 23%	22 100%
8.	Results obtained are used for curriculum improvement.	5 23%	8 36%	1 5%	4 18%	4 18%	22 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

However, 64% of the tutors shared the opinion that feedback on results obtained is not usually communicated to students and PTTCs on time. This confirms the finding that stakeholders in Home Science Education hardly share information that would help improve the status of the subject. Further, 54% of the tutors felt that assessment techniques do not relate to curriculum objectives and neither do they relate to job market requirements (45%) while 14% rated this attribute undecided. This finding may imply that, according to a total of 59% tutors, the competences teacher trainees acquire during training do not address the demands of the labour market thus causing a mismatch. Further, 27% of the tutors were undecided on the extent to which assessment techniques are valid and reliable.

4.11.3 Teacher Trainees' Perceptions towards Attributes Related to Assessment Techniques

Teacher trainees were also required to rate the eight attributes on assessment techniques based on their degree of agreement or disagreement with each. As illustrated in Table 4.38, teacher trainees were of the opinion that assessment techniques used to evaluate their performance were adequate (52%), tutors used a variety of them (51%) and that they did test both knowledge and skills (50%).

Table 4.38: Teacher Trainees' Ratings on Attributes Related to Assessment Techniques

S/NO.	Attributes on assessment techniques	SA	A	UD	D	SD	Total
1.	Assessment techniques used by tutors are adequate.	76 24%	89 28%	31 10%	53 17%	69 22%	318 100%
2.	Tutors use a variety of them.	99 31%	64 20%	40 13%	65 20%	50 16%	318 100%
3.	They relate to job market requirements.	41 13%	53 17%	47 15%	78 25%	99 31%	318 100%
4.	They relate to curriculum objectives.	57 18%	61 19%	42 13%	81 25%	77 24%	318 100%
5.	They are valid and reliable.	44 14%	48 15%	71 22%	79 25%	76 24%	318 100%
6.	They test both knowledge and skills.	82 26%	77 24%	21 7%	73 23%	65 20%	318 100%
7.	Timely feedback on results is communicated to students and PTTCs.	43 14%	37 12%	87 27%	53 17%	98 31%	318 100%
8.	Results obtained are used for curriculum improvement.	78 25%	74 23%	20 6%	76 24%	70 22%	318 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

Despite these ratings by teacher trainees, they also strongly felt that in total, assessment techniques hardly related to job market requirements (71%), curriculum objectives (62%) and that they were usually not valid and reliable (71%). Further, results obtained from assessment were rarely used for curriculum improvement according to 52% of the teacher trainees and neither were they communicated to students and PTTCs on time (75%). On average, teacher trainees agreed with 3 out of the 8 attributes on assessment techniques.

4.11.4 Primary School Teachers' Perceptions towards Attributes Related to Assessment Techniques

Primary school teachers who are former graduates of the PTTCs were also asked to give their views regarding assessment techniques tutors used to evaluate them back in their respective colleges. According to the results presented in Table 4.39, assessment techniques were considered adequate by 47% of the respondents. Forty three percent were dissatisfied that tutors used a variety of them while more than half the respondents (53%) opined that assessment techniques did not relate to job market requirements.

Thirty percent of the primary school teachers agreed that assessment techniques relate to curriculum objectives while 44% negated this attribute. Assessment techniques were not valid and reliable according to 50% of the respondents although 44% believed that feedback on results obtained during assessment were communicated to students and PTTCs on time besides being used for curriculum improvement (40%). This finding implies that half of the primary school teachers believed that assessment instruments used by Home Science tutors to evaluate them hardly did test exactly what they were supposed to thus not consistent with what was expected of them by the Home Science curriculum. This seems to suggest that either Home Science tutors test content they have not taught or content that is not planned for in the curriculum.

This calls for adequate supervision of the teaching and assessment by the HODs. Moderation of examinations would also help boost the validity and reliability of the test items in the examinations.

Table 4.39: Primary School Teachers' Ratings on Attributes Related to Assessment Techniques

S/NO.	Attributes on assessment techniques	SA	A	UD	D	SD	Total
1.	Assessment techniques used by tutors are adequate.	6 20%	8 27%	5 17%	6 20%	5 17%	30 100%
2.	Tutors use a variety of them.	3 10%	6 20%	8 27%	6 20%	7 23%	30 100%
3.	They relate to job market requirements.	3 10%	5 17%	6 20%	9 30%	7 23%	30 100%
4.	They relate to curriculum objectives.	4 13%	5 17%	8 27%	8 27%	5 17%	30 100%
5.	They are valid and reliable.	2 7%	4 13%	9 30%	8 27%	7 23%	30 100%
6.	They test both knowledge and skills.	4 13%	4 13%	4 13%	10 33%	8 27%	30 100%
7.	Timely feedback on results is communicated to students and PTTCs.	4 13%	6 20%	7 23%	8 27%	5 17%	30 100%
8.	Results obtained are used for curriculum improvement.	5 17%	7 23%	5 17%	8 27%	5 17%	30 100%

SA – Strongly Agree; A - Agree; UD – Undecided; D – Disagree and SD – Strongly Disagree

Source: Research Data (2016)

4.11.5 Relationship between Respondents' Perceptions towards Attributes Related to Assessment Techniques

In order to establish any significant relationships in respondents' ratings on the techniques used by Home Science tutors to assess Home Science teacher trainees, a chi square analysis was done. Based on the results presented in Table 4.40, tutors, teacher trainees and primary school teachers rated the different attributes on techniques used by Home Science tutors to assess teacher trainees in different percentages.

Table 4.40: Chi Square Results on Perceptions towards Assessment Techniques

S/NO	Attributes on assessment techniques	Extent of achievement	Count & % Distribution	χ^2	df	Sig
1.	Assessment techniques used by tutors are adequate.	Great Extent	193 (52%)	3.639	8	0.888
		Undecided	37(10%)			
		Small Extent	140 (38%)			
		Total	**370 (100%)**			
2.	Tutors use a variety of them.	Great Extent	185 (50%)	11.808	8	0.160
		Undecided	49 (13%)			
		Small Extent	136 (37%)			
		Total	**370 (100%)**			
3.	They relate to job market requirements	Great Extent	111 (30%)	4.298	8	0.829
		Undecided	56 (15%)			
		Small Extent	203 (55%)			
		Total	**370 (100%)**			
4.	They relate to curriculum objectives	Great Extent	133 (36%)	6.396	8	0.603
		Undecided	54 (15%)			
		Small Extent	183 (49%)			
		Total	**370(100%)**			
5.	They are valid and reliable	Great Extent	106 (29%)	3.490	8	0.900
		Undecided	86 (23%)			
		Small Extent	178 (48%)			
		Total	**370 (100%)**			
6.	They test both knowledge and skills	Great Extent	179 (48%)	7.878	8	0.445
		Undecided	27 (8%)			
		Small Extent	164 (44%)			
		Total	**370 (100%)**			
7.	Timely feedback on results is communicated to students and PTTCs.	Great Extent	95 (26%)	12.984	8	0.112
		Undecided	97 (26%)			
		Small Extent	178 (48%)			
		Total	**370 (100%)**			
8.	Results obtained are used for curriculum improvement	Great Extent	177 (48%)	7.477	8	0.486
		Undecided	26 (7%)			
		Small Extent	167 (45%)			
		Total	**370 (100%)**			

Source: Research Data (2016)

However, these differences were not significant since the chi square test results gave statistically non-significant relationships with all eight attributes at 0.05 alpha level. This, therefore, meant that the three categories of respondents perceived the eight attributes on assessment techniques differently. For instance, different percentages of tutors (64%) Table 4.37, teacher trainees (52%) Table 4.38 and primary school teachers (47%) Table 4.39 rated the attribute 'assessment techniques are adequate' to the affirmative. However, these ratings had no significant relationship. Just like the comment regarding the recommended instructional methods in the PTE Home Science syllabus, the key informant from KICD noted that the syllabus only makes recommendations on some of the suitable techniques that can be used to assess teacher trainees. Therefore, it is the tutor's responsibility to choose and plan for the most appropriate techniques for the specific topics being taught.

Generally, according to Table 4.40, respondents agreed that assessment techniques used by Home Science tutors are adequate (52%) and that tutors use a variety of them (50%) to a great extent. On the contrary, they disagreed that assessment techniques relate to job market requirements (70%), relate to curriculum objectives (64%), are valid and reliable (71%), test both knowledge and skills (52%), that timely feedback on results is communicated to students and PTTCs (74%) and that results obtained are used for curriculum improvement (52%). The fact that these attributes were rated above 50% meant that they were being achieved only to a small extent.

In order to establish the effect of assessment techniques on achievement of the objectives of Home Science Education, the fifth and final hypothesis of the study was tested. The study hypothesized that assessment techniques used to assess Home

Science teacher trainees do not significantly affect achievement of the objectives of Home Science Education. The regression result ($\beta=0.342$, $p=0.000$) refuted this claim and confirmed that indeed there is a significant relationship between assessment techniques and achievement of the objectives of Home Science Education. The null hypothesis was thus rejected at 95% confidence level. This result implied that a unit change in assessment techniques would result in 0.342 unit change in achievement of the objectives of Home Science Education.

Further, part correlation coefficient results showed that assessment techniques made the second highest (8.94%) unique contribution after instructional resources (38.4%) towards achievement of the objectives of Home Science Education. These results suggested that assessment techniques used by Home Science tutors are adequate (52%) and offer a variety of choice to the tutors (50%). However, these techniques do not relate to job market requirements (70%) or to curriculum objectives (64%). Further, they are hardly valid and reliable (71%) and neither test both knowledge and skills (52%). Moreover, feedback on results is rarely communicated to students and PTTCs on time (74%) and that results obtained are rarely used for curriculum improvement (52%).

This finding is similar to findings by AED (2008) which established that the PTE curriculum was ineffective in evaluating its students and KIE (2011b) and Kagoda and Ezati (2013) who established that the PTE curriculum is examination oriented thus each college trains teacher trainees to pass the national examinations rather than helping them become quality primary school teachers. This means that Home Science Education in PTTCs is not equipping teacher trainees with the competences they require thus creating a gap between the labour market and training in institutions of learning, a view shared by Nyerere (2009) and Wanzala (2013).

Therefore, in order to ensure that assessment techniques contribute highly towards the achievement of the objectives of Home Science Education, teacher trainees should be examined on what is planned for in the curriculum and the provision of feedback on these examinations should be done on time so that it can be used for curriculum improvement. Focus during examinations should be geared towards providing and assessing skills applicable in the job market and not just passing examinations.

4.11.6 Respondents' Preferred Mode of Examination in PTE

Primary teacher training colleges rely on the use of Continuous Assessment Tests (CATs), mid-course, mock and PTE examinations for trainees' evaluation during training. Tutors administer CATs at the end of every term, mid-course at the end of first year and mock examinations at the end of second term in second year while KNEC administers PTE examination at the end of the two year programme. Based on this information, respondents were requested to give their opinion regarding their preferred mode of evaluation.

Looking at the results presented in Figure 4.4, tutors would prefer that teacher trainees sat for CATs and PTE examination [8(36%)] only rather than end of term plus PTE examination [5(23%)]. Another 4(18%) of the tutors agreed that giving teacher trainees 'CATs only' should be an adequate assessment technique in Home Science Education while only 2(9%) were convinced that the current practice of using CATs, end term and PTE examination was still the most preferred mode. Those that believed in the use of PTE examination only were 3(14%).

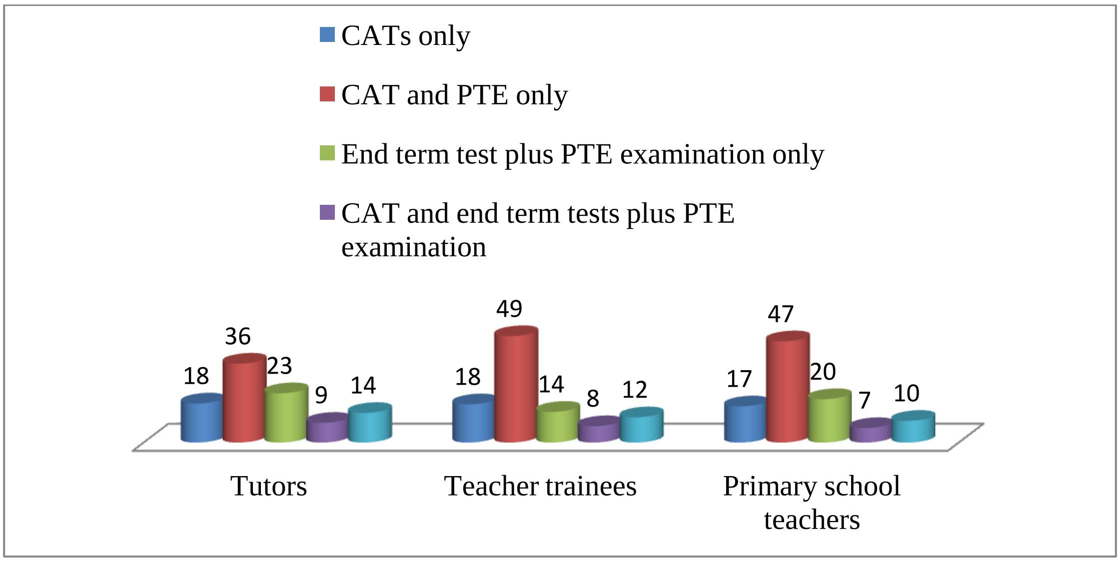

Figure 4.4: Respondents Ratings on Preferred Mode of Assessment

Similar to tutors' perceptions, 156(49%) of the teacher trainees were of the opinion that they should be assessed using CATs and PTE examination only. Further, 56(18%) shared the opinion that they should be assessed using CATs only, 45(14%) would prefer end term plus PTE examination, while only 24(8%) support the current practice at PTTCs where they basically sit for CATs, end term plus PTE examination. The remaining 37(12%) felt that 'PTE examination only' was an adequate mode of assessment.

Just like tutors and teacher trainees, the use of CATs and final PTE examination only emerged as the popular choice for 14(47%) primary school teachers too. End term test plus PTE examination was a preferred choice for 6(20%) of the primary school teachers while 'CATs only' remained popular to 5(17%) primary school teachers. Similar to the other respondents, the use of CATs, end term and PTE examinations was the least 2(7%) popular mode of assessment for teacher trainees according to primary school teachers.

It is apparent that tutors, teacher trainees and primary school teachers prefer the use of 'CATs and PTE examination only', for trainees' assessment at PTTCs. Further, the use of CATs, end term and PTE examination, which is the current practice in PTTCs, came out as the least preferred mode of assessment amongst all three categories of respondents. Whether using CATs and PTE as the only modes of assessment in PTTCs will give a viable evaluation measure remains to be established given that CATs usually cover a narrow scope of content thus raising issues on whether the teacher trainees will be qualified to proceed to the next year of study based on their performance in the CAT examination only.

Currently, mid course which is administered at the end of first year is used to determine if a teacher trainee should proceed to second year or repeat the first year of study. This finding seemed to suggest that end of term examinations which include mid course and mock examinations are not popular choices for the respondents. Respondents seemed to disapprove their use in evaluating teacher trainees. This may be reflected in the anxiety that end of term examinations create in teacher trainees.

In fact, as one of the DOCs put it,

> Some trainees have unfortunately committed suicide while others have abandoned the course all together for fear of being forced to repeat first year after failing in more than four subjects in the midcourse examination. As if this is not enough, tutors too have to deal with a lot of marking given the large classes and low staffing rates.

This may require further research that will give deeper insights on the most effective modes of assessment in Home Science Education as offered in PTTCs.

4.11.7 Challenges Affecting Home Science Education in PTE

According to Otunga, et al. (2011), curriculum evaluation seeks to identify curriculum weaknesses and strengths and offer suggestions for improvement in the curriculum development and implementation processes so as to ensure it meets its objectives. Respondents were therefore asked to identify challenges affecting the teaching of Home Science in PTTCs and give suggestions for improvement. The results are presented in Table 4.41.

Study respondents believed that society has a negative attitude towards Home Science Education (49%) besides considering it a subject for women (32%). Regarding planned curriculum content, most of the respondents were of the opinion that there is very little time for teaching the whole syllabus (88%) and that it was too wide (65%). The fact that students lack background information in Home Science (41%) and that the subject is not taught in primary schools (27%) came out as key challenges too.

Regarding instructional resources, the majority of study respondents felt that resources are inadequate (92%) and that tutors lack innovative skills (31%). In terms of instructional methods used to teach Home Science lessons, respondents felt that they were inappropriate for adult learners (47%) and paid little attention to learners as individuals (8%). Further, Home Science tutors tend to overuse the lecture method of teaching (41%) and prepare less (20%) for lessons. The fact that KNEC does not evaluate practical work in PTE examinations was a problem to 64% of the respondents. Further, respondents opined that examinations offered in PTE are too many (31%) besides the fact that they do not relate to what should be covered in the syllabus (39%).

Table 4.41: Challenges Affecting Home Science Education

S/NO.	Curriculum challenges	Count & %
Challenges related to attitude towards Home Science Education		
1.	Negative attitude towards the subject	181 (49%)
2.	Considered a women's subject	118 (32%)
Challenges related to planned curriculum content		
1.	Inadequate teaching time	326 (88%)
2.	Wide syllabus	241 (65%)
3.	Students lack background information	152 (41%)
4.	Subject not taught in primary school	100 (27%)
Challenges related to instructional resources		
1.	Lack of teaching resources	340 (92%)
2.	Inadequate support and funding	126 (34%)
3.	Lack of innovative skills	115 (31%)
4.	Use of unsafe teaching resources	78 (21%)
Challenges related to instructional methods		
1.	Inappropriate teaching methods for adult	174 (47%)
2.	Over use of lecture method	152 (41%)
3.	Inadequate content mastery	74 (20%)
4.	Lack individual attention	30 (8%)
Challenges related to assessment techniques		
1.	No practical assessment in PTE	237 (64%)
2.	Setting questions outside the syllabus	144 (39%)
3.	Too many examinations	115 (31%)
Other general challenges		
1.	Inadequate staff	263 (71%)
2.	Big classes	200 (54%)
3.	Disruptions from other college activities	74 (45%)
4.	Lack of staff commitment	52 (14%)
5.	Students' absenteeism	41 (11%)

Source: Research Data (2016)

Other general challenges identified by the respondents as affecting Home Science Education included lack of adequate teaching staff (71%) and the fact that classes are too big (54%) besides disruptions from other college activities (45%). This seems to imply that based on enrolment rates at the PTTC and the congested college calendar, Home science tutors experience challenges in organizing and managing lessons particularly practical lessons.

These findings are similar to findings that PTE has challenges related to planning of the PTE syllabi, staff training, development of teaching and learning resources and evaluation and support of curriculum implementation by AED (2008), inadequate resource allocation (KNCHR, 2007), lack of resources creation, adoption, adaptation and usage of knowledge, matching skills with contemporary demands (ROK, 2008; ROK, 2007), insufficient in-servicing of teachers (Lolelea, 2011) and in adopting alternative appropriate methods of curriculum delivery (ROK, 2007).

Further, Arubayi and Obunadike (2011) identified other challenges as wide syllabus, difficult tests and topics, lack of excursions and fieldtrips and uninteresting methods of teaching. Telewa (2009) avers that the major constraints faced by Home Science teachers include: inadequate teaching resources, limited time allocated for teaching Home Science, lack of induction courses, wide curriculum scope and large classes.

In Uganda, Kagoda and Ezati (2013) found that PTCs experience limited government funding, inadequate teaching and learning materials and infrastructure, the absence of a unified continuous professional development programme, use of teacher-centered methods dominated by lecture method, the curriculum is examination oriented and that the curriculum of PTC does not include some of the subjects taught in primary schools. These findings seem to imply that PTE programmes experience almost similar challenges no matter the country in which the programme is being implemented.

4.11.8 Suggestions towards Improving Home Science Education

Respondents were further required to give suggestions that would help improve Home Science Education particularly in PTTCs in Kenya. Eighty percent (80%) suggested that management in the various PTTCs should strive to ensure that instructional resources are available and adequate. Moreover, PTTCs should allocate more time for Home Science lessons (75%), ensure guidance and counselling on course choices and generally the benefits of Home Science Education (45%) besides reducing college activities (44%) so as to create more time for teaching as shown in Figure 4.5. Further, respondents were of the opinion that tutors' work should be supervised (24%) to ensure they adhere to set guidelines and that examinations should reflect the expectations of the syllabus (41%). Lastly, thirty seven percent (37%) of the respondents believed that the PTE Home Science curriculum should be reviewed.

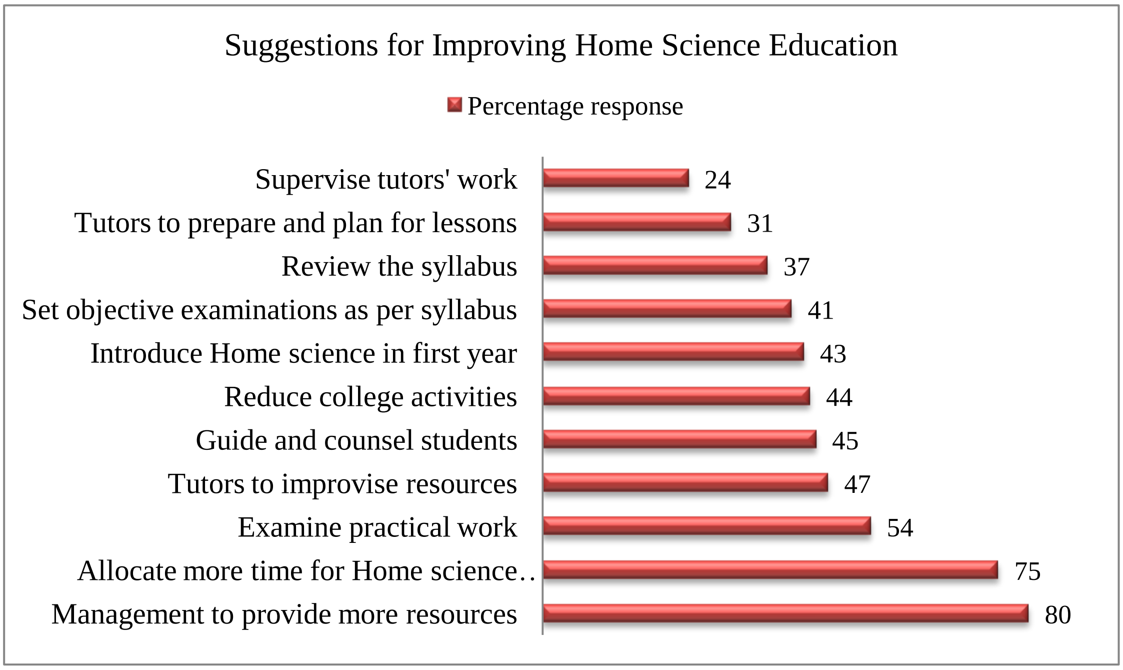

Figure 4.5: Suggestions for Improving the PTE Home Science Curriculum

4.12 Results of Hypotheses Testing

This study sought the relevance of the PTE Home Science curriculum by examining the extent to which the curriculum affects achievement of the objectives of Home Science Education. Various components of the PTE Home Science curriculum were used to assess the relevance of the curriculum in achieving the objectives of Home Science Education. They included; teacher trainees' attitude towards Home Science, planned curriculum content, instructional resources, instructional methods and assessment techniques used in Home Science Education.

According to Table 4.42, results showed that four independent variables: teacher trainees' attitude towards Home Science ($\beta=0.069$, $p=0.002$), instructional resources ($\beta=0.465$, $p=0.000$), instructional methods ($\beta=0.172$, $p=0.000$) and assessment techniques ($\beta=0.342$, $p=0.000$) used during Home Science lessons made significant unique contributions towards achievement of the objectives of Home Science Education. On the contrary, planned curriculum content ($\beta=0.004$, $p=0.957$) had a non-significant contribution in predicting the dependent variable of the study.

The part correlation coefficients results showed that instructional resources contributed 38.4% towards the total R^2 value of 86%. Further, the variable assessment techniques made an 8.94% unique contribution followed by instructional methods (6.81%) and teacher trainees' attitude (6.1%) towards achievement of the objectives of Home Science Education.

Table 4.42: Summary of Results of Hypotheses Testing

S/NO.	Hypothesised relationship	Estimates (β)	p-value	Contribution (%)	Verdict
1.	**H_{O1}:** Teacher trainees' attitude towards Home Science does not affect achievement of the objectives of Home Science Education.	0.069	0.002	6.1%	Rejected
2.	**H_{O2}:** Planned content in the primary teacher education Home Science curriculum does not affect achievement of the objectives of Home Science Education.	0.004	0.957	Non-significant	Failed to reject
3.	**H_{O3}:** Instructional resources used by Home Science tutors have no effect on achievement of the objectives of Home Science Education.	0.465	0.000	38.4%	Rejected
4.	**H_{O4}:** Instructional methods used by tutors to implement the Home Science curriculum in teacher training colleges do not affect achievement of the objectives of Home Science Education.	0.172	0.000	6.81%	Rejected
5.	**H_{O5}:** The assessment techniques used to assess Home Science teacher trainees do not affect achievement of objectives of Home Science Education.	0.342	0.000	8.94%	Rejected

$p<0.05$

Source: Research Data (2016)

These results indicated that the present PTE Home Science curriculum makes a significant contribution of 86% towards achievement of the objectives of Home Science Education implying that the objectives of Home Science Education are being achieved to 86% extent at $p<0.05$. Further, the intervening variables made a unique contribution of 14% towards achievement of objectives of the Home Science Education. Therefore, the regression equation ($y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \varepsilon$) on the extent to which the PTE Home Science curriculum offered in PTTCs in Kenya meets the objectives of Home Science Education is stated as follows:

$$y = 0.810 + 0.069X_1 + -0.004X_2 + 0.465X_3 + 0.172X_4 + 0.342X_5 + 0.140$$

Where: y represents the dependent variable

$X_1 \ldots X_5$ represent the independent variables

α is the intercept

$\beta_{1 \ldots} \beta_5$ represents the coefficients of proportionality and

ε represents the error caused by intervening variables $(1 - R^2)$

4.13 Results of Hypothesized Conceptual Framework

In this section, the researcher attempted to consolidate the findings of this study to construct an original contribution towards improving the status of Home Science Education in Kenya. The study evaluated the PTE Home Science curriculum to assess the extent to which it meets the objectives of Home Science Education. Using the theoretical framework that guided the study (Stufflebeam's Context, Input, Process and Product Model of Evaluation), each variable was classified according to the point in which it contributes to curriculum implementation in the evaluation process.

The evaluation process involved four stages; the context, input, process and product evaluation stages. Thus, the independent variable; teacher trainees' attitude towards Home Science Education was categorized under context of evaluation while planned curriculum content and instructional resources were categorized under inputs of evaluation. On the other hand, the remaining two independent variables; instructional methods and instructional techniques were taken as components in process evaluation. The dependent variable of study which was achievement of the objectives of Home Science Education formed the product of evaluation. The intervening variables in the study formed part of the context of curriculum evaluation.

Based on the regression analysis results, the study established that independent variables yielded the following beta coefficient values; trainees' attitude towards Home Science (β=0.069, p=0.002), planned curriculum content (β=0.004, p=0.957), instructional resources (β=0.465, p=0.000), instructional methods (β=0.172, p=0.000) and assessment techniques (β=0.342, p=0.000) all at 95% confidence level. Further, based on the R^2 value of 86%, the intervening variables contributed 14% ($R^2 - 1$) of the variance in the dependent variable of the study.

These findings indicate that teacher trainees' attitude towards Home Science, instructional resources, instructional methods and assessment techniques used in Home Science Education each had a significant unique contribution towards achievement of the objectives of Home Science Education. On the other hand, the variable planned curriculum content had a non-significant unique contribution towards achievement of the objectives of Home Science Education. As a result, the hypothesized model is summarized as shown in Figure 4.6 below.

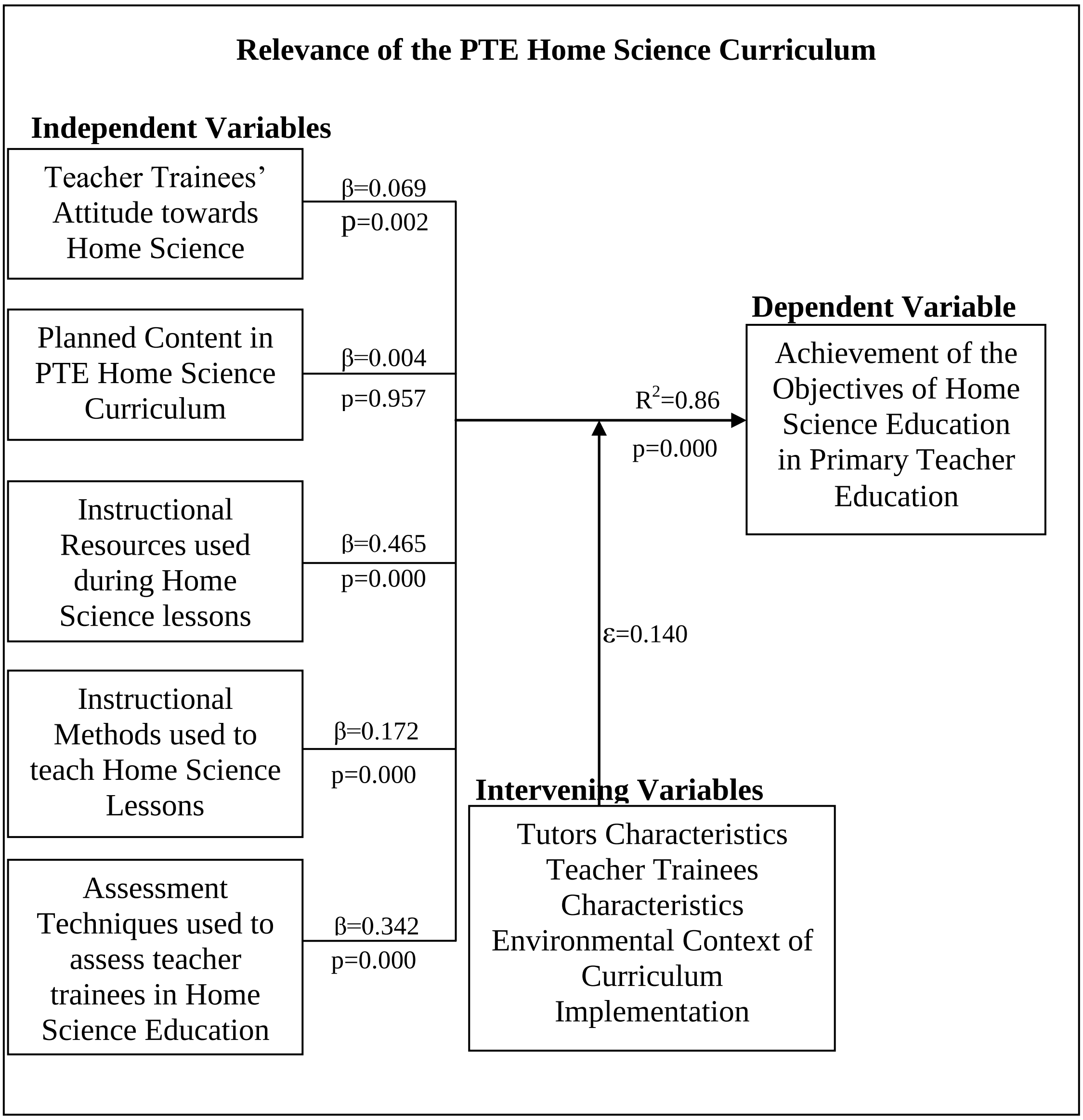

Figure 4.6: Hypothesised Conceptual Model

4.14 Hypothesized Model of a Relevant PTE Home Science Curriculum

Therefore, based on the findings obtained from data analysis, this study proposes the following model as a guide for improving PTE Home Science Education in PTTCs. Besides the other factors like adequate facilities and support from management likely to influence curriculum implementation positively, the context of curriculum implementation should also include positive teacher trainees' and societal attitudes towards the subject while the inputs of a relevant PTE Home Science curriculum should include; adequate and up-to-date curriculum content that relates well to learners, societal and national development needs and appropriate, adequate and available instructional resources that allow for improvisation and use of the local environment.

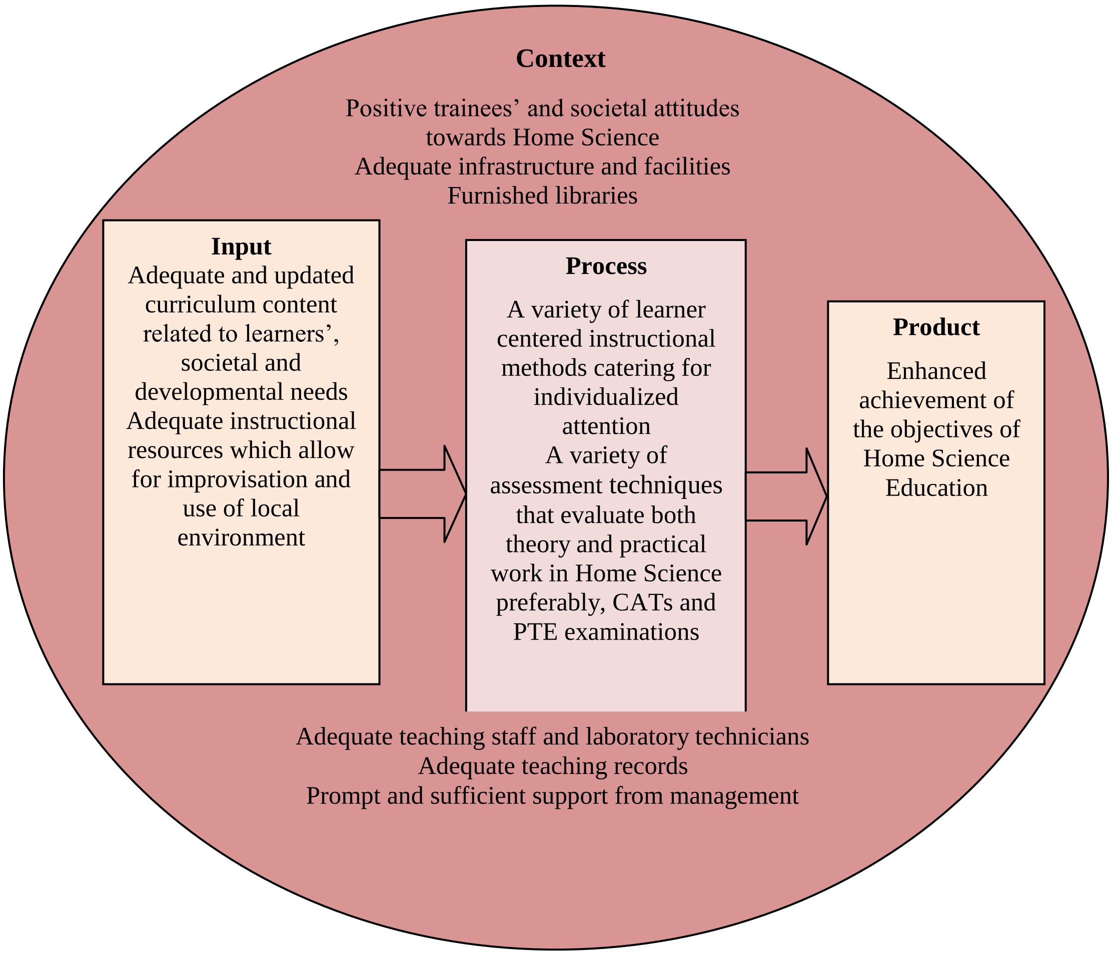

Figure 4.7: Model for a Relevant PTE Home Science Curriculum

The process stage of curriculum implementation should include a variety of learner-centered instructional methods that cater for individualized adult learners' needs and a variety of assessment techniques that test both knowledge and skills acquired by the trainees preferably by use of CATS and the PTE examination. As a result, the output from the context, input and process considerations in the implementation of the PTE Home Science curriculum will result in a relevant product in this case achievement of the objectives of Home Science Education to a great extent. The study thus suggests the framework shown in Figure 4.7 as a guide towards relevant Home Science Education in PTTCs in Kenya.

4.15 Summary of the Chapter

This chapter addressed presentation, analysis, interpretation and discussion of the data collected. The organization was in such a way that information from respondents was analysed and reported as per the research objectives and hypotheses. Demographic information about respondents was presented first to facilitate data analysis and reporting. Next, factor analysis was done to establish the suitability of the various scales in measuring the study variables.

The CIPP model of evaluation was used to identify and organize the study variables in the PTE Home Science curriculum evaluation process. Based on context of evaluation, the study sought information on factors likely to influence the outcome of the Home Science curriculum implementation process. This included, teacher trainees' attitude towards Home Science, respondents demographic information that included; information on the type of PTTC (private or public) respondents came from, their age, sex, background in Home Science Education, educational and professional qualification, teaching experience, adequacy of learning facilities, availability of teaching and learning equipment and materials, tutors' instructional records, staffing and the general support offered by institutional management to Home Science tutors.

The input process of evaluation included information related to planned curriculum content and the use of instructional resources by Home Science tutors to teach Home Science lessons at the PTTCs. Regarding the process of evaluation, the study sought information on instructional methods and assessment techniques used by Home Science tutors at PTTCs. The final stage of evaluation looked at the product of evaluation in this case the extent to which the objectives of Home Science Education are being achieved. The following were findings of the chapter: On the context under which the PTE Home Science curriculum is implemented, most PTTCs had near adequate facilities and manpower to implement the curriculum. Over 60% had a Home Science room although many PTTCs lacked adequate equipment and materials for use during practical lessons. Staffing was a challenge as none had a laboratory technician. Most PTTCs (72.7%) offered their tutors financial support although not promptly for Home Science lessons. Moreover, tutors had most of their instructional records except the lesson plans which they felt were not a requirement at the PTTC level of education.

As far as the achievement of the objectives of Home Science Education was concerned, respondents were of the opinion that four out of six objective of Home Science Education are being achieved to a great extent. The remaining two objectives are achieved only to a small extent. Regarding the influence of teacher trainees' attitude towards Home Science Education on achievement of the objectives of Home Science Education, majority of teacher trainees and primary school teachers (over 50%) perceived Home Science Education positively during and even after training. Further, teacher trainees' attitude towards Home Science Education had a significant contribution (β=0.069, p=0.002) towards achievement of the objectives of Home Science Education at alpha level 0.05.

On perceptions towards the influence of planned curriculum content on achievement of the objectives of Home Science Education, majority of the respondents (over 50%) opined that content is adequate for competencies required, relates to learners needs and is applicable to real life situations. However, planned curriculum content does not relate to societal needs or time allocated for teaching it. Further, it is out dated, does not motivate further learning and neither does it relate to national development goals. Therefore, planned curriculum content was found to have no significant unique contribution towards achievement of the objectives of Home Science Education.

Regarding the influence of instructional resources on achievement of the objectives of Home Science Education, over 50% of the respondents felt that instructional resources were appropriate for topics being taught and that they allowed for improvisation. However, they disagreed that instructional resources were usually adequate for all learners, readily available and that they allowed for use of the local environment. Instructional resources were found to have a statistically significant unique contribution (β=0.465, p=0.000) towards achievement of the objectives of Home Science Education.

As far as instructional methods used by tutors to teach Home Science at PTTCs was concerned, respondents agreed that tutors preferred using question and answer, lecture method, group work activities, group or class discussions, observation method, project work, practical work, role play, field visits and the use of resource persons in that order. Most of the respondents (at least 50%) felt that instructional methods are adequate and offer a variety of choice to tutors, appropriate for learners' needs, relate well to curriculum content, encourage learners' active participation in the learning process and give learners an opportunity to apply knowledge and skills in the world of work to a great extent. However, instructional methods hardly inculcate continued learning abilities in learners nor take into account the different learners' abilities. All in all, the regression analysis result (β=0.116, p=0.011) indicated that instructional methods had a significant unique contribution towards achievement of the objectives of Home Science Education.

On the frequency with which tutors used the recommended assessment techniques to evaluate teacher trainees' performance, respondents felt that end term examinations, continuous assessment tests, oral questions, quizzes, use of group reports, practical work, project work and field trip reports were popular assessment techniques for Home Science tutors in that order. Moreover, respondents opined that assessment techniques are adequate and that tutors use a variety of them to a great extent.

However, they disagreed that assessment techniques relate to job market requirements, relate to curriculum objectives, are valid and reliable, test both knowledge and skills, that timely feedback on results is communicated to students and PTTCs and that results obtained are used for curriculum improvement. Further, respondents would prefer CATs and PTE examinations as modes of examining teacher trainees at PTTCs. The regression result (β=0.237, p=0.000) showed that assessment techniques had a significant unique contribution towards achievement of the objectives of Home Science Education.

Based on the R square value in the standard multiple regression test of 0.86, the PTE Home Science curriculum explains 86% of the variance in achievement of the objectives of Home Science Education at 95% confidence level. The multiple regression analysis established the following unique contributions of the independent variables on the dependent variable; teacher trainees' attitude towards Home Science Education (β=0.069, p=0.002), planned curriculum content (β=0.004, p=0.957), instructional resources (β=0.465, p=0.000), instructional methods (β=0.172, p=0.000) and assessment techniques (β=0.342, p=0.000) all at 95% confidence level. This indicates that instructional resources made the greatest significant contribution towards achievement of the objectives of Home Science Education. Assessment techniques were second followed by instructional methods then teacher trainees' attitude towards Home Science Education. Planned curriculum content had no significant contribution towards achievement of the objectives of Home Science Education. Further, the intervening variables made a 14% unique contribution towards predicting the dependent variable.

In summary, based on the various ratings given by study respondents, various factors were identified as challenges that affect the teaching of Home Science at PTTCs. This includes negative societal attitude towards the subject, inadequate time allocated for teaching the subject, an overloaded curriculum, use of inappropriate teaching methods, lack of practical assessment in PTE examination, inadequate staffing and instructional resources besides the big classes at the PTTCs. Some of the possible solutions suggested for these challenges include: prompt and adequate support from institutional management, allocation of more time for Home Science lessons, improvisation of instructional resources, guidance and counselling, review of the

Home Science curriculum and adequate preparation by Home Science tutors for their lessons. The following chapter presents the summary of study findings, conclusions and recommendations.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study investigated the relevance of the PTE Home Science curriculum offered in PTTCs in Kenya in terms of the extent to which it meets the objectives of Home Science Education. The objectives of the study intended to establish the extent to which teacher trainees' attitude towards Home Science, planned curriculum content, instructional resources, instructional methods and assessment techniques used in Home Science Education affected achievement of the objectives of Home Science Education.

The respondents of the study included tutors, teacher trainees and primary school teachers involved in Home Science Education from both private and public PTTCs, DOCs from PTTCs and the curriculum specialist from KICD. The instruments used to collect data included questionnaires, interview and observation guides. In this chapter, major findings of the study are discussed and conclusions from the findings drawn in an attempt to answer the research hypotheses. This chapter will also give recommendations and the possible course of actions to be made and finally suggestions for further research which the current study did not address.

5.2 Summary of Findings

There were several findings that emerged from assessing the relevance of the PTE Home Science curriculum offered in PTTCs in Kenya towards meeting the objectives of Home Science Education. These findings offer significant guidelines to teacher trainees, tutors, PTTC administration, ESQAC, KICD, TSC, KNEC and the community related to Home Science Education in PTE.

5.2.1 Effect of Teacher Trainees' Attitude on Achievement of the Objectives of Home Science Education

The first objective of the study was to establish the extent to which teacher trainees' attitude towards Home Science affect achievement of the objectives of Home Science Education. The study findings revealed that a majority of the respondents have a positive attitude towards the subject in that they like studying it, they would advice a friend or relative to study Home Science, felt free to share knowledge and skills acquired from Home Science Education with friends, would consider furthering their education in Home Science, would rather Home Science was reintroduced as a separate subject in primary schools and that it should be taught starting from first year in PTTCs unlike the current practice where it is introduced in the second year of study.

The multiple regression analysis result ($\beta=0.069$, $p=0.002$) showed that teacher trainees' attitude towards Home Science Education had a significant influence on achievement of the objectives of Home Science Education. The study thus rejected the null hypothesis that teacher trainees' attitude towards Home Science does not affect achievement of the objectives of Home Science Education at alpha level 0.05. Instead, the result indicated that a unit change in teacher trainees' attitude towards Home Science Education caused a significant 0.069 unit change in achievement of the objectives of Home Science Education. This change translated to a 6.1% unique contribution of teacher trainees' attitude towards Home Science on achievement of the objectives of Home Science Education.

5.2.2 Effect of Planned Curriculum Content on Achievement of the Objectives of Home Science Education

The second objective of the study was to determine the effect of planned curriculum content on the objectives of Home Science Education. Results obtained indicated that a majority of the respondents concurred that planned curriculum content is adequate for competencies required, relates to learners' needs and is applicable to real life situations. However, they disagreed that planned curriculum content relates to societal needs and objectives of Home Science Education, that it is up to date, relates to time allocated for teaching it, motivates further learning and relates to the national goals of development.

Consequently, the research hypothesis that planned curriculum content in the primary teacher education Home Science curriculum does not significantly affect achievement of the objectives of Home Science Education was not rejected since multiple regression analysis result ($\beta=0.004$, $p=0.957$) showed that planned curriculum content had a non-significant unique contribution on achievement of the objectives of Home Science Education. The beta value obtained indicated that a unit change in planned curriculum content caused a non-significant 0.004 unit change in achievement of the objectives of Home Science Education.

5.2.3 Effect of Instructional Resources on Achievement of the Objectives of Home Science Education

The third objective of the study aimed at establishing the effect of instructional resources on achievement of the objectives of Home Science Education. The study findings indicated that respondents were in agreement that instructional resources used by Home Science tutors were appropriate for the topics being taught and that resources allowed for improvisation. However, instructional resources were usually inadequate given the number of learners, not readily available and that they did not allow for use of the local environment.

Upon testing the third hypothesis of the study, that instructional resources used by Home Science tutors have no significant effect on achievement of the objectives of Home Science Education, the regression result ($\beta=0.465$, $p=0.000$) showed that in fact instructional resources had a significant relationship with objectives of Home Science Education implying that a unit change in instructional resources was likely to cause a 0.465 unit change translating to a 38.4% contribution towards achievement of the objectives of Home Science Education.

5.2.4 Effect of Instructional Methods on Achievement of the Objectives of Home Science Education

The fourth objective of the study was to determine the effect of instructional methods on achievement of the objectives of Home Science Education. Regarding the frequency with which Home Science tutors use the various recommended instructional methods to teach, respondents were of the opinion that Home Science tutors prefer using question and answer, lecture method, group work activities, group or class discussions, observations, project work, practical work, role play, field visits and resource persons in that order.

Further, a majority of the tutors, teacher trainees and primary school teachers were in agreement that instructional methods used by Home Science tutors to teach Home Science lessons are adequate and offer a variety of choice to tutors, are appropriate for learners' needs or level of learning, relate well to curriculum content, encourage learners' active participation in the learning process and give learners an opportunity to apply the acquired knowledge and skills in the world of work to a great extent.

However, they negated the fact that instructional methods inculcate continued learning abilities in learners and take into account the different learners' abilities. The regression analysis on instructional methods and objectives of Home Science Education yielded the result ($\beta=0.172$, $p=0.000$). This indicated that instructional methods used by Home Science tutors to teach Home Science lessons had a significant contribution towards achievement of the objectives of Home Science Education. The null hypothesis of the study that instructional methods used by Home Science tutors to implement the Home Science curriculum in teacher training colleges do not affect achievement of the objectives of Home Science Education was thus rejected at 0.05 alpha level. Instead, the results showed that instructional methods made a 6.81% unique contribution towards achievement of the objectives of Home Science Education.

5.2.5 Effect of Assessment Techniques on Achievement of the Objectives of Home Science Education

The final objective of the study aimed at finding out the effect of assessment techniques on achievement of the objectives of Home Science Education. Respondents were required to rate the frequency with which Home Science tutors used the various recommended assessment techniques in trainees' assessment. Results obtained indicated that tutors preferred end term examinations, continuous assessment tests, oral questions, quizzes, group reports, practical work, project work and field trip reports, in that order to evaluate their learners.

Regarding the relevance of assessment techniques in meeting the objectives of Home Science Education, respondents agreed that assessment techniques used by Home Science tutors are adequate and that tutors use a variety of them to a great extent. On the contrary, they disagreed that assessment techniques relate to job market requirements, relate to curriculum objectives, are valid and reliable, test both knowledge and skills, that timely feedback on results is communicated to students and PTTCs and that results obtained are used for curriculum improvement.

The regression result (β=0.342, p=0.000) meant that there was a significant contribution made by assessment techniques towards achievement of the objectives of Home Science Education. The null hypothesis was thus rejected at 95% confidence level. This result implied that a unit change in assessment techniques resulted in 0.342 unit change representing a total of 8.94% contribution towards achievement of the objectives of Home Science Education.

5.2.6 Challenges Affecting the Teaching of Home Science

The study also established that there are various challenges affecting the teaching of Home Science. Based on attitudes towards the subject, respondents believed that society has a negative attitude towards Home Science Education. Regarding planned curriculum content, most of the respondents were of the opinion that there is very little time for teaching the whole syllabus, that it is too wide, most trainees lack background information in the subject and that the subject is not taught in primary schools thus no point offering it in PTE. On instructional resources, most respondents felt that resources are inadequate and that tutors lack innovative skills. Further, tutors receive inadequate support and funding from institutional management and some of the resources used are perceived not to be safe.

In terms of instructional methods used to teach Home Science lessons, respondents felt that they were inappropriate for adult learners, paid little attention to learners as individuals, tutors tend to overuse the lecture method of teaching besides not preparing well for the lessons. Moreover, the fact that KNEC does not evaluate practical work in PTE examinations was perceived as a shortcoming related to assessment techniques by the respondents and that examinations offered in PTTCs are too many besides the fact that they hardly relate to what should be covered in the syllabus. Other general challenges identified by the respondents as affecting Home Science Education in PTTCs included lack of adequate teaching staff, big classes, lack of staff commitment to teaching, high rates of teacher trainees' absenteeism besides disruptions from the many college activities.

5.2.7 Possible Solutions for Improving Home Science Education

Suggestions given for improving Home Science Education in PTTCs were: that management in the various PTTCs strive to ensure that instructional resources are available and adequate, that more time is allocated for Home Science lessons, that guidance and counselling is offered regarding course choices and generally the benefits of Home Science Education to teacher trainees, that college activities are reduced, that tutors' work is effectively supervised to ensure they adhere to set guidelines, that examinations should reflect the expectations of the syllabus and that PTE Home Science curriculum be reviewed.

5.3 Conclusions and Implications of the Findings

Teacher trainees have a positive attitude towards Home Science which has a significant unique contribution towards achievement of the objectives of Home Science Education. The implication of this conclusion is that actions that can help sustain this positive attitude be implemented. For instance, enhanced societal sensitization on the benefits of Home Science Education to the graduates, their families, communities and society at large, is likely to improve societal attitudes towards the subject. This will ensure that sustained positive attitudes towards the subject by both society and teacher trainees will have an even higher unique contribution towards achieving the objectives of Home Science Education.

Planned curriculum content has no significant unique contribution towards achievement of the objectives of Home Science Education despite the fact that it is adequate for competencies required, relates to learners' needs and is applicable to real life situations. This is because it does not relate to societal needs and objectives of Home Science Education, it is not up to date, it does not relate to time allocated for teaching it, it does not motivate further learning and it does not relate to the national goals of development. This finding confirms that the current PTE Home Science curriculum is due for review. Therefore, these issues need to be addressed through a curriculum review for planned curriculum content to have a significant unique contribution towards achievement of the objectives of Home Science Education.

Instructional resources used by Home Science tutors make a unique significant contribution towards achievement of the objectives of Home Science Education given that they are appropriate for the topics being taught and that they allow for improvisation. This implies that if Home Science tutors ensured that instructional resources were also adequate for all learners being taught, that they were readily available and that they made an effort to improvise resources that are missing, then instructional resources would have an even greater significant unique contribution towards achievement of the objectives of Home Science Education.

Instructional methods used to teach Home Science lessons make a significant unique contribution towards achievement of the objectives of Home Science Education since they are adequate, appropriate for learners' needs, relate to curriculum content, encourage active learners' participation and give learners an opportunity to apply knowledge and skills gained in the world of work. However, instructional methods chosen by tutors should also be able to inculcate continued learning abilities in learners and take into account the different learners' abilities. This will ensure that the unique contribution made by instructional resources towards achievement of the objectives of Home Science Education is improved.

Finally, assessment techniques Home Science tutors use to evaluate teacher trainees significantly contribute towards achievement of the objectives of Home Science Education. These techniques are adequate and provide a variety of choice for tutors. However, if effort is made to ensure that they also relate to job market requirements and curriculum objectives, are valid and reliable, test both knowledge and skills, that timely feedback on results is communicated to students and PTTCs and that results obtained are used for curriculum improvement, this percentage in contribution would even be higher.

5.4 Recommendations

Based on the findings of this study, the following recommendations are made. On the first objective of the study, the findings revealed that teacher trainees have a positive attitude towards Home Science Education which has a significant unique contribution towards achievement of the objectives of Home Science Education. The recommendation made by the study is that the Ministry of Education, Home Science tutors and teacher trainees should sensitize the general society on the benefits of Home Science Education so as to improve societal perceptions towards the subject. This will make them embrace Home Science Education and appreciate its benefits to its trainees, their families, the community and society at large. In turn, Home Science Education will be successful thus achieving its objectives to a great extent.

On the second objective, findings revealed that planned curriculum content in the PTE Home Science curriculum had no significant unique contribution towards achievement of the objectives of Home Science Education. The study recommends that KICD reviews the current curriculum so as to improve on its content to make it up to date and relevant for the needs of the society. Emphasise should be given to its adequacy in relation to the time required for teaching it. Preferably, Home Science should be re-introduced in the primary school curriculum and in the first year of study in the PTE curriculum for adequate coverage. KICD should also be more proactive in regularly reviewing the curriculum at least at the completion of every curriculum cycle so as to ensure that it remains relevant and achievable. This will help improve the contribution made by planned curriculum content towards achieving the objectives of Home Science Education.

On the third objective, findings revealed that instructional resources used for Home Science Education make the greatest unique contribution towards achievement of the objectives of Home Science Education. The study recommends that institutional managers should consistently and promptly offer support to Home Science tutors for effective lesson delivery to improve on this contribution. If possible, government should also step in to support the PTTCs in financing the subject. Home Science tutors should also improvise as much as possible besides making use of the local environment they find themselves in. This will improve the contributions made by instructional resources towards achieving the objectives of Home Science Education.

On the fourth objective, findings revealed that instructional methods used to teach Home Science lessons make a significant unique contribution towards achievement of the objectives of Home Science Education. The study recommends that teaching in PTTCs be made more interactive. Home Science tutors should embrace the use of more learner-centred methods of teaching and ensure that they address the needs of individual learners hence producing independent learners with capacity for problem solving, decision making, creativity, critical thinking, intellectual curiosity and self motivation for further learning.

On the fifth objective, findings revealed that assessment techniques used to evaluate teacher trainees in PTTCs made significant unique contributions towards achievement of the objectives of Home Science Education. The success of PTE Home Science curriculum has traditionally been judged by the grades teacher trainees get in PTE examinations. This study recommends a paradigm shift so that PTE evaluation is done in terms of how well teacher trainees get equipped with both knowledge and skills of Home Science Education and ultimately how well they use these competencies to improve their standards of living and that of their families and the general society.

The study thus recommends that KICD and Home Science tutors adapt assessment techniques that allow learners to practice skills learnt rather than just recalling learnt content. Further, KNEC should examine practical work in PTE examinations given that Home Science is a vocational subject which requires that its graduates acquire both knowledge and skills. Finally all the stakeholders involved in PTE in Kenya should closely monitor and evaluate progress made towards addressing the relevance of Home Science Education in relation to contemporary challenges in the world today.

5.5 Suggestions for Further Research

The purpose of the study was to to determine the relevance of the PTE Home Science curriculum in meeting the objectives of Home Science Education. This study makes the following suggestions as areas for further research:

First, with technological advancement in the world today, future research studies should explore the effects of integrating ICT in the teaching of Home Science in PTTCs in Kenya.

Secondly, with the East African Community protocol, the study suggests that future researchers compare PTE Home Science Education in the East African Community states with the aim of adopting the best practices.

Thirdly, future studies should consider a comparative evaluation study on the PTE Home Science curriculum based on various parameters for instance private versus public PTTCs or urban versus rural based PTTCs.

Fourthly, other research approaches like the longitudinal approach in data collection could be used to further evaluate the relevance of the PTE Home Science curriculum.

Also, experimental studies should be planned to investigate how best the various components of the PTE Home Science curriculum can be used to have greater contributions towards achievement of the objectives of Home Science Education.

The researcher is confident that these areas would further complement and enrich the gains made in this study.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

I am a Doctor of Philosophy student in the department of Curriculum, Instruction and Educational Psychology, University of Eldoret. I am undertaking a research study on *"An Evaluation of the Primary Teacher Education Home Science Curriculum*" focusing on selected Primary Teacher Training Colleges in Kenya.

You have been selected to participate in this study. All the information provided in the questionnaire or interview guide will be used for the purpose of this study only and will be treated as confidential. It will then be used to make recommendations on the improvement of Home Science Education in Kenya.

Your cooperation and assistance will be highly appreciated. Let me take this opportunity to thank you in advance for taking part in this study.

Yours Faithfully,

Catherine Nairesiae Letoya Sempele

APPENDIX II: QUESTIONNAIRES

QUESTIONNAIRE A: FOR TUTORS TEACHING HOME SCIENCE EDUCATION IN PRIMARY TEACHER TRAINING COLLEGES (PTTCs) IN KENYA

This questionnaire is for tutors teaching Home Science in PTTCs in Kenya. Tutors play a significant role in curriculum implementation. The questionnaire is seeking tutors' perceptions towards the relevance of the PTE Home Science curriculum. It also seeks suggestions towards improving Home Science Education in Kenya. This information will assist in ensuring that the PTE Home Science curriculum meets the objectives of Home Science Education thus producing graduates with relevant knowledge and skills for the labour market. Information provided will be treated as confidential and will be used for research purposes only.

PART I: BACKGROUND INFORMATION

(Tick (√) and write as appropriate)

1. Your sex: Male ( ) Female ( )
2. Your age
   i. 20 years and below ( )
   ii. Between 21 and 30 years ( )
   iii. Between 31 and 40 years ( )
   iv. Between 41 and 50 years ( )
   v. Above 51 years ( )

3. a) Did you study Home Science during your education? Yes ( ) No ( )
   b) If your answer in 6 above is yes, indicate the level(s) during which you studied Home Science ……………………...
      b) If your answer above is M. ed or PhD degree, indicate your area of specialization...
4. What subject(s) have you been trained to teach?
   ……………………………………………………………………………...…
   ……………………………………………………………………...………
5. Your teaching experience:
   i. Less than a year ( )
   ii. 1 - 3 years ( )

iii. 4 - 6 years ( )
iv. 7 - 9 years ( )
v. 10 years or more ( )

6. How long do you intend to continue teaching Home Science?

i. 1 - 3 years ( )
ii. 4 - 6 years ( )
iii. At least 10 years ( )
iv. For the rest of my professional career ( )

7. a) Have you attended in-service/refresher/updating courses in Home Science education during your term as a Home Science tutor? Yes ( ) No ( )

b) If your answer is 'yes', indicate the following:

i. How many times attended ………………………………………….
ii. When (year) attended …………………………………….................
iii. Where attended ……………………………………………………...

8. How often do the following visit your institution or share information/reports with you as teachers of Home Science at PTTC's? *Tick where appropriate*

S/NO.	Institution	QO	O	R	N	JCT
i.	Education Standards and Quality Assurance Council (ESQAC)					
ii.	Kenya Institute of Curriculum Development (KICD)					
iii.	Kenya National Examinations Council (KNEC)					
iv.	Teachers Service Commission (TSC)					

Key: QO – Quite Often, O – Often, R – Rarely, N – Never, JCT – Just Can't Tell

PART II: Relevance of the PTE Home Science curriculum in meeting the objectives of Home Science Education

SECTION A: Relevance of planned curriculum content

9. In general, what is your opinion regarding the relevance of planned curriculum content in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	Planned curriculum content	SA	A	UD	D	SD
i.	Content is adequate for competencies required.					

ii.	Content relates to learners’ needs.					
iii.	Content relates to societal needs.					
iv.	Content relates to objectives of Home Science Education.					
v.	Content is applicable to real life situations.					
vi.	Content is up to date.					
vii.	Content relates to time allocated for teaching it.					
viii.	Content motivates further learning.					
ix.	Content relates to national goals of development.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

<u>SECTION B: Relevance of instructional resources</u>

10. In general, what is your opinion regarding the relevance of instructional resources in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	Recommended instructional resources	SA	A	UD	D	SD
i.	Resources used are usually adequate for all learners.					
ii.	Resources are usually readily available.					
iii.	Resources used are appropriate for the topic being taught.					
iv.	Resources allow for improvisation.					
v.	Resources allow for use of the local environment.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly, Disagree

<u>SECTION C: Relevance of instructional methods</u>

11. a) In general, rate the following instructional methods based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Instructional method	Frequency of use				
		VF	**F**	**S**	**R**	**N**

i.	Use of observation method.					
ii.	Use of group work activities.					
iii.	Use of practical work.					
iv.	Use of resource persons.					
v.	Use of field visits.					
vi.	Use of lecture method.					
vii.	Use of class or group discussions.					
viii.	Use of project work.					
ix.	Use of role play.					
x.	Use of question and answer method.					

Key: VF – Very Frequently, F – Frequently, S – Sometimes, R – Rarely, N – Never

b) In general, what is your opinion regarding the relevance of instructional methods in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	**Instructional methods**	**SA**	**A**	**UD**	**D**	**SD**
i.	Instructional methods are adequate and offer a variety of choice to teachers.					
ii.	Instructional methods are appropriate for learners' needs or level of learners.					
iii.	They relate well to curriculum content.					
iv.	Instructional methods encourage learners' active participation in the learning process.					
v.	Instructional methods inculcate continued learning abilities in learners.					
vi.	Instructional methods give learners an opportunity to apply knowledge and skills in the world of work.					
vii.	Instructional methods take into account the different learners' abilities.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

SECTION D: Relevance of assessment techniques

a) In general, rate the following assessment techniques based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Assessment Techniques Used	Frequency of Use				
		VFRQ	FRQ	SOM	Rarely	Never
i.	Use of project work					
ii.	Use of practical work					
iii.	Use of field trip reports					
iv.	Use of oral questions					
v.	Use of quizzes					
vi.	Use of continuous assessment tests					
vii.	Use of group reports					
viii.	Use of end of term examinations					

Key: VF – Very Frequently, F – Frequently, S – Sometimes

b) In general, what is your opinion regarding the relevance of assessment techniques used by Home Science tutors in meeting the objectives of Home Science education? *Kindly tick where appropriate*

S/NO.	Recommended assessment techniques	SA	A	UD	D	SD
i.	Assessment techniques used by tutors are adequate.					
ii.	Tutors use a variety of assessment techniques.					
iii.	Assessment techniques relate to job market requirements.					
iv.	Assessment techniques relate to curriculum objectives.					
v.	Assessment techniques are valid and reliable.					
vi.	Assessment techniques test both knowledge and skills.					
vii.	Timely feedback on results is communicated to students and PTTCs.					
viii.	Results obtained are used for curriculum improvement.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

c) People may have different views about the modes of assessment of teacher trainees during training at PTTTs. Which is your most preferred mode?

i. Use continuous assessment tests only ( )
ii. Use end term tests plus PTE exam ( )
iii. Use continuous assessment, End Term Tests Plus PTE Exam ( )
iv. Use PTE Exam only ( )
v. Just can't tell ( )

SECTION E: Achievement of Objectives of Home Science Education

12. a) In general, what is your opinion regarding to the extent to which the following objectives of Home Science Education are being achieved?

(Kindly tick where appropriate)

S/NO.	Objectives of Home Science Education	VGE	GE	UD	SE	VSE
i.	Helps teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development.					
ii.	Enables teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids.					
iii.	Helps teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life.					
iv.	Enables teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living.					
v.	Enables teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community.					
vi.	Enables teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

PART III: Challenges affecting Home Science Education in Kenya and the possible solutions

13. Kindly give your opinion on challenges affecting Home Science Education in Kenya and suggest possible solutions to these factors.

    a) Challenges

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

    b) Possible solutions

…………………………………………………………………………………………

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…………………………………………………………………………………………

…………………………………………………………………………………………

Thank you very much for your patience, co-operation, and timely assistance.

Your contribution has been so great.

QUESTIONNAIRE B: FOR TEACHER TRAINEES TAKING HOME SCIENCE EDUCATION IN PRIMARY TEACHER TRAINING COLLEGES (PTTC's) IN KENYA

This questionnaire is seeking teacher trainees' perceptions towards the relevance of the PTE Home Science curriculum. It also seeks suggestions aimed at improving Home Science Education in Kenya. This information will assist in ensuring that the Home Science curriculum meets the objectives of Home Science Education thus producing graduates with relevant knowledge and skills for the labour market. Information provided will be treated as confidential and will be used for research purposes only.

PART I: BACKGROUND INFORMATION

(Tick (√) and write as appropriate)

1. Your sex: Male ( ) Female ( )

2. Your age
   i. 20 years and below ( )
   ii. Between 21 and 30 years ( )
   iii. Between 31 and 40 years ( )
   iv. Between 41 and 50 years ( )
   v. Above 51 years ( )

3. a) Did you study Home Science before your Primary Teacher Education level? Yes ( ) No ( )

   b) If your answer in 3 above is yes, indicate the level(s) during which you studied Home Science …………………………………………

   c) How often do the following visit your institution or share information/reports with you as teacher trainees in Home Science at PTTC's?

   Kindly tick where appropriate

S/NO.	Institution	QO	O	R	N	JCT
i.	Education Standards and Quality Assurance Council (ESQAC)					
ii.	Kenya Institute of Curriculum Development (KICD)					
iii.	Kenya National Examinations Council (KNEC)					
iv.	Teachers Service Commission (TSC)					

Key: QO – Quite Often, O – Often, R – Rarely, N – Never, JCT – Just Can't Tell

PART II: Relevance of the PTE Home Science curriculum in meeting the objectives of Home Science Education

SECTION A: Attitude towards Home Science Education

4. The following attributes relate to attitude towards Home Science Education at PTTCs in Kenya? *Kindly tick where appropriate*

S/NO.	Attributes on attitude towards Home Science Education	YES	NOT SURE	NO
i.	I like studying Home Science			
ii.	I would advice a friend or relative to study Home Science			
iii.	I do share my knowledge in Home Science with friends			
iv.	I would study Home Science subject in the future			
v.	I would rather Home Science is reintroduced in primary schools			
vi.	I would rather Home Science is taught from first year in PTE			

SECTION B: Relevance of planned curriculum content

5. In general, what is your opinion regarding the relevance of planned curriculum content in meeting the objectives of Home Science Education?
(Kindly tick where appropriate)

S/NO.	Planned curriculum content	SA	A	UD	D	SD
i.	Content is adequate for competencies required.					
ii.	Content relates to learners' needs.					
iii.	Content relates to societal needs.					
iv.	Content relates to objectives of Home Science Education.					
v.	Content is applicable to real life situations.					
vi.	Content is up to date.					
vii.	Content relates to time allocated for teaching it.					
viii.	Content motivates further learning.					
ix.	Content relates to national goals of development.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

SECTION C: Relevance of instructional resources

6. In general, what is your opinion regarding the relevance of instructional resources in meeting the general objectives of Home Science Education? *(Kindly tick where appropriate)*

S/NO.	Recommended instructional resources	SA	A	UD	D	SD
i.	Resources used are usually adequate for all learners.					
ii.	Resources are usually readily available.					
iii.	Resources used are appropriate for the topic being taught.					
iv.	Resources allow for improvisation.					
v.	Resources allow for use of the local environment.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly, Disagree

SECTION D: Relevance of instructional methods

7. a) In general, rate the following instructional methods based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Instructional method	Frequency of use				
		VF	F	S	R	N
i.	Use of observation method.					
ii.	Use of Use of group work activities.					
iii.	Use of practical work.					
iv.	Use of resource persons.					
v.	Use of field visits.					
vi.	Use of lecture method.					
vii.	Use of class or group discussions.					
viii.	Use of project work.					
ix.	Use of role play.					
x.	Use of question and answer					

	method.					

Key: VF – Very Frequently, F – Frequently, S – Sometimes, R – Rarely, N – Never

b) In general, what is your opinion regarding the relevance of instructional methods in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	Instructional methods	SA	A	UD	D	SD
i.	Instructional methods are adequate and offer a variety of choice to teachers.					
ii.	Instructional methods are appropriate for learners' needs or level of learners.					
iii.	They relate well to curriculum content.					
iv.	Instructional methods encourage learners' active participation in the learning process.					
v.	Instructional methods inculcate continued learning abilities in learners.					
vi.	Instructional methods give learners an opportunity to apply knowledge and skills in the world of work.					
vii.	Instructional methods take into account the different learners' abilities.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

<u>SECTION E: Relevance of assessment techniques</u>

8.a) In general, rate the following assessment techniques based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Assessment Techniques Used	Frequency of Use				
		VFRQ	FRQ	SOM	Rarely	Never
i.	Use of project work					
ii.	Use of practical work					
iii.	Use of field trip reports					
iv.	Use of oral questions					
v.	Use of quizzes					
vi.	Use of continuous assessment					

	tests					
vii.	Use of group reports					
viii.	Use of end of term examinations					

Key: VF – Very Frequently, F – Frequently, S – Sometimes

b) In general, what is your opinion regarding the relevance of assessment techniques used by Home Science tutors in meeting the general objectives of Home Science education? *Kindly tick where appropriate*

S/NO.	Recommended assessment techniques	SA	A	UD	D	SD
i.	Assessment techniques used by tutors are adequate.					
ii.	Tutors use a variety of assessment techniques.					
iii.	Assessment techniques relate to job market requirements.					
iv.	Assessment techniques relate to curriculum objectives.					
v.	Assessment techniques are valid and reliable.					
vi.	Assessment techniques test both knowledge and skills.					
vii.	Timely feedback on results is communicated to students and PTTCs.					
viii.	Results obtained are used for curriculum improvement.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

d) People may have different views about the modes of assessment of teacher trainees during training at PTTTs. Which is your most preferred mode?

i. Use continuous assessment tests only ( )
ii. Use end term tests plus PTE exam ( )
iii. Use continuous assessment, End Term Tests Plus PTE Exam ( )
iv. Use PTE Exam only ( )
v. Just can't tell ( )

<u>SECTION F: Achievement of Objectives of Home Science Education</u>

9. a) In general, what is your opinion regarding to the extent to which the following objectives of Home Science Education are being achieved?
(Kindly tick where appropriate)

S/NO.	Objectives of Home Science Education	VGE	GE	UD	SE	VSE
i.	Helps teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development.					
ii.	Enables teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids.					
iii.	Helps teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life.					
iv.	Enables teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living.					
v.	Enables teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community.					
vi.	Enables teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

PART III: Challenges affecting Home Science Education in Kenya and possible the solutions

10. Kindly give your opinion on challenges affecting Home Science Education in Kenya and suggest possible solutions to these factors.

    a) Challenges

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

    b) Possible solutions

…………………………………………………………………………………………

…………………………………………………………………………………………

………………………………………………………………………………………

Thank you very much for your patience, co-operation, and timely assistance.

Your contribution has been so great.

QUESTIONNAIRE C: TEACHERS TEACHING AT PRIMARY SCHOOLS IN KENYA

This questionnaire is for primary school teachers teaching at primary schools in Kenya. The study targets graduates of PTTC's trained in Home Science Education. The questionnaire is seeking their perceptions towards the relevance of the PTE Home Science curriculum. It also seeks suggestions towards improving Home Science Education in Kenya. This information will assist in ensuring that the Home Science curriculum meets the general objectives of Home Science Education thus producing graduates with relevant knowledge and skills for the labour market. Information provided will be treated as confidential and will be used for research purposes only.

PART I: BACKGROUND INFORMATION

(Tick (√) and write as appropriate)

1. Your sex Male ( ) Female ( )
2. Your age
   - i. 20 years and below ( )
   - ii. Between 21 and 30 years ( )
   - iii. Between 31 and 40 years ( )
   - iv. Between 41 and 50 years ( )
   - v. Above 51 years ( )
3. Your highest level of professional qualification:
   - i. None ( )
   - ii. P1 Certificate ( )
   - iii. Diploma ( )
   - iv. B.Ed ( )
   - v. M. Ed ( )
   - vi. PhD ( )
4. Your teaching experience:
   - i. Less than a year ( )
   - ii. 1 - 3 years ( )
   - iii. 4 - 6 years ( )
   - iv. 7 - 9 years ( )
   - v. 10 years or more ( )
5. Who is your employer? …………………………………………………………..
6. a) Did you study Home Science during your education? Yes ( ) No ( )

a) If your answer in 6 above is yes, indicate the level(s) during which you studied Home Science …………………………..…………........

PART II: Relevance of the PTE Home Science curriculum in meeting the objectives of Home Science Education

SECTION A: Attitude towards Home Science Education

7. The following attributes relate to attitudes towards Home Science Education at PTTCs in Kenya? *Kindly tick where appropriate*

S/NO.	Attributes on attitudes towards Home Science Education	YES	NOT SURE	NO
i.	I like studying Home Science.			
ii.	I would advice a friend or relative to study Home Science.			
iii.	I do share my knowledge in Home Science with friends.			
iv.	I would study Home Science subject in the future.			
v.	I would rather Home Science is reintroduced in primary schools.			
vi.	I would rather Home Science is taught from first year in PTE.			

SECTION B: Relevance of planned curriculum content

8. In general, what is your opinion regarding the relevance of planned curriculum content in meeting the objectives of Home Science Education? *(Kindly tick where appropriate)*

S/NO.	Planned curriculum content	SA	A	UD	D	SD
i.	Content is adequate for competencies required.					
ii.	Content relates to learners' needs.					
iii.	Content relates to societal needs.					
iv.	Content relates to objectives of Home Science Education.					
v.	Content is applicable to real life situations.					
vi.	Content is up to date.					
vii.	Content relates to time allocated for teaching it.					
viii.	Content motivates further learning.					

ix.	Content relates to national goals of development.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

SECTION C: Relevance of instructional resources

9. In general, what is your opinion regarding the relevance of instructional resources in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	Recommended instructional resources	SA	A	UD	D	SD
i.	Resources used are usually adequate for all learners.					
ii.	Resources are usually readily available.					
iii.	Resources used are appropriate for the topic being taught.					
iv.	Resources allow for improvisation.					
v.	Resources allow for use of the local environment.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly, Disagree

SECTION D: Relevance of instructional methods

10. a) In general, rate the following instructional methods based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Instructional method	Frequency of use				
		VF	F	S	R	N
i.	Use of observation method.					
ii.	Use of Use of group work activities.					
iii.	Use of practical work.					
iv.	Use of resource persons.					
v.	Use of field visits.					
vi.	Use of lecture method.					
vii.	Use of class or group discussions.					
viii.	Use of project work.					
ix.	Use of role play.					
x.	Use of question and answer					

	method.					

Key: VF – Very Frequently, F – Frequently, S – Sometimes, R – Rarely, N – Never

b) In general, what is your opinion regarding the relevance of instructional methods in meeting the objectives of Home Science Education?

(Kindly tick where appropriate)

S/NO.	Instructional methods	SA	A	UD	D	SD
i.	Instructional methods are adequate and offer a variety of choice to teachers.					
ii.	Instructional methods are appropriate for learners' needs or level of learners.					
iii.	They relate well to curriculum content.					
iv.	Instructional methods encourage learners' active participation in the learning process.					
v.	Instructional methods inculcate continued learning abilities in learners.					
vi.	Instructional methods give learners an opportunity to apply knowledge and skills in the world of work.					
vii.	Instructional methods take into account the different learners' abilities.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

SECTION E: Relevance of assessment techniques

11. a) In general, rate the following assessment techniques based on the frequency with which Home Science tutors use them when teaching in PTTCs.

(Kindly tick where appropriate)

S/NO.	Assessment Techniques Used	Frequency of Use				
		VFRQ	FRQ	SOM	Rarely	Never
i.	Use of project work.					
ii.	Use of practical work.					
iii.	Use of field trip reports.					
iv.	Use of oral questions.					

v.	Use of quizzes.					
vi.	Use of continuous assessment tests.					
vii.	Use of group reports.					
viii.	Use of end of term examinations.					

Key: VF – Very Frequently, F – Frequently, S – Sometimes

b) In general, what is your opinion regarding the relevance of assessment techniques used by Home Science tutors in meeting the objectives of Home Science education? *Kindly tick where appropriate*

S/NO.	**Recommended assessment techniques**	**SA**	**A**	**UD**	**D**	**SD**
i.	Assessment techniques used by tutors are adequate.					
ii.	Tutors use a variety of assessment techniques.					
iii.	Assessment techniques relate to job market requirements.					
iv.	Assessment techniques relate to curriculum objectives.					
v.	Assessment techniques are valid and reliable.					
vi.	Assessment techniques test both knowledge and skills.					
vii.	Timely feedback on results is communicated to students and PTTCs.					
viii.	Results obtained are used for curriculum improvement.					

SA – Strongly Agree, A – Agree, UD – Undecided, D – Disagree, SD – Strongly Disagree

c) People may have different views about the modes of assessment of teacher trainees during training at PTTTs. Which is your most preferred mode?

i. Use continuous assessment tests only ( )
ii. Use end term tests plus PTE exam ( )
iii. Use continuous assessment, End Term Tests Plus PTE Exam ( )
iv. Use PTE Exam only ( )
v. Just can't tell ( )

SECTION F: Achievement of Objectives of Home Science Education

12. a) In general, what is your opinion regarding to the extent to which the following objectives of Home Science Education are being achieved?

(Kindly tick where appropriate)

S/NO.	Objectives of Home Science Education	VGE	GE	UD	SE	VSE
i.	Helps teacher trainees understand and appreciate the importance of Home Science to the primary school child especially in relation to food, clothing, shelter and overall development.					
ii.	Enables teacher trainees transfer Home Science knowledge and skills to children using appropriate methods and learning aids.					
iii.	Helps teacher trainees use acquired knowledge and skills to improvise materials and formulate realistic strategies for solving problems in life.					
iv.	Enables teacher trainees express their desire and ability to adapt to new situations and changes in society in relation to home and family living.					
v.	Enables teacher trainees apply the knowledge and skills of Home Science to improve the standards of living of self, the family and members of the community.					
vi.	Enables teacher trainees use the basic principles and skills acquired in Home Science as a function for further learning.					

VGE – Very Great Extent; GE - Great Extent; UD – Undecided; SE – Small Extent, VSE – Very Small Extent

PART III: Challenges affecting Home Science Education in Kenya and the possible solutions

13. Kindly give your opinion on challenges affecting Home Science Education in Kenya and suggest possible solutions to these factors.

a) Challenges

....

....

....

b) Possible solutions

....

....

....

Thank you very much for your patience, co-operation, and timely assistance.

Your contribution has been so great.

APPENDIX III: INTERVIEW GUIDES

INTERVIEW GUIDE A: FOR THE KEY INFORMANT OF HOME SCIENCE EDUCATION AT THE KENYA INSTITUTE OF CURRICULUM DEVELOPMENT (KICD)

This interview guide is for the Home Science specialist at the KICD, Primary Teacher Education section. This is the department that developed the Home Science curriculum offered in PTTC's thus clearly understands it. The schedule is seeking information on teacher trainees attitude towards Home Science Education, the relevance of planned curriculum content, recommended instructional resources, instructional methods and assessment techniques used in meeting the objectives of Home Science Education. It also seeks opinion on challenges affecting Home Science Education in Kenya and the possible solutions.

1. What are your comments regarding teacher trainees' attitude towards Home Science Education offered in PTTCs in Kenya?

2. Comment on the extent to which the following components of the PTE Home Science curriculum.
   a) Planned curriculum content.
   b) Recommended instructional resources.
   c) Recommended instructional methods.
   d) Recommended assessment techniques.
   e) The objectives of Home Science Education.
3. Identify challenges that affect Home Science Education in Kenya.

4. Suggest possible solutions to the challenges identified.

Thank you very much for your patience, co-operation, and timely assistance.

Your contribution has been so great.

INTERVIEW GUIDE B: FOR DEANS OF CURRICULUM IN PRIMARY TEACHER TRAINING COLLEGES IN KENYA

This interview guide is for the Deans of Curriculum in the various Primary Teacher Training Colleges in Kenya. Deans oversee the implementation of the Home Science curriculum in PTTC's. The schedule is seeking information related to the implementation of the PTE Home Science curriculum in the various PTTCs. It also seeks information regarding the challenges affecting Home Science Education and the possible solutions. This information will assist in ensuring that Home Science Education meets its objectives and produces graduates with competences appropriate for the labour market.

1. What is the relationship between Home Science tutors' enrolment and Home Science teacher trainees in your institution?
2. What is the status of facilities required for Home Science Education in your institution?
3. How much support does your institution offer Home Science tutors?
4. Identify challenges that affect Home Science Education in Kenya.
5. Suggest possible solutions to the challenges identified.

Thank you very much for your patience, co-operation, and timely assistance. Your contribution has been so great.

APPENDIX IV: OBSERVATION GUIDE

During this session, direct observation was carried out. The observation focused on physical facilities used for Home Science Education in PTTC's. The researcher focused mainly on trying to establish whether the learning facilities are sufficient for the teaching of Home Science in the PTTCs.

S/NO.	**Environmental Context**	**Yes**	**No**	**Remarks**
1.	The institution has a Home Science laboratory.			
2.	The institution has a laboratory assistant for Home Science lessons.			
3.	There is a library in the institution with a Home Science section in it.			
4.	Tutors get enough and timely support from management on the acquisition and preparation of instructional resources.			
5.	Tutors have a copy of the syllabus.			
6.	Tutors have teacher's guide(s).			
7.	Tutors have updated schemes of work, records of work covered and copies of lesson plans used in Home Science lessons.			
8.	Classrooms are well organized, lit and ventilated.			
9.	Generally, the institution has adequate instructional resources for Home Science lessons.			

APPENDIX V: STANDARD MULTIPLE REGRESSION OUTPUT

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	RESOURCES, ATTITUDES, METHODS, ASSESSMENT, CONTENT[b]	.	Enter

a. Dependent Variable: HOME SCIENCE OBJECTIVES

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.927[a]	.860	.858	.53001

a. Predictors: (Constant), RESOURCES, ATTITUDES, METHODS, ASSESSMENT, CONTENT

b. Dependent Variable: HOME SCIENCE OBJECTIVES

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	628.915	5	125.783	447.767	.000[b]
	Residual	102.252	364	.281		
	Total	731.167	369			

a. Dependent Variable: OBJECTIVES OF HOME SCIENCE

b. Predictors: (Constant), RESOURCES, ATTITUDE, METHODS, ASSESSMENT, CONTENT

Casewise Diagnostics[a]

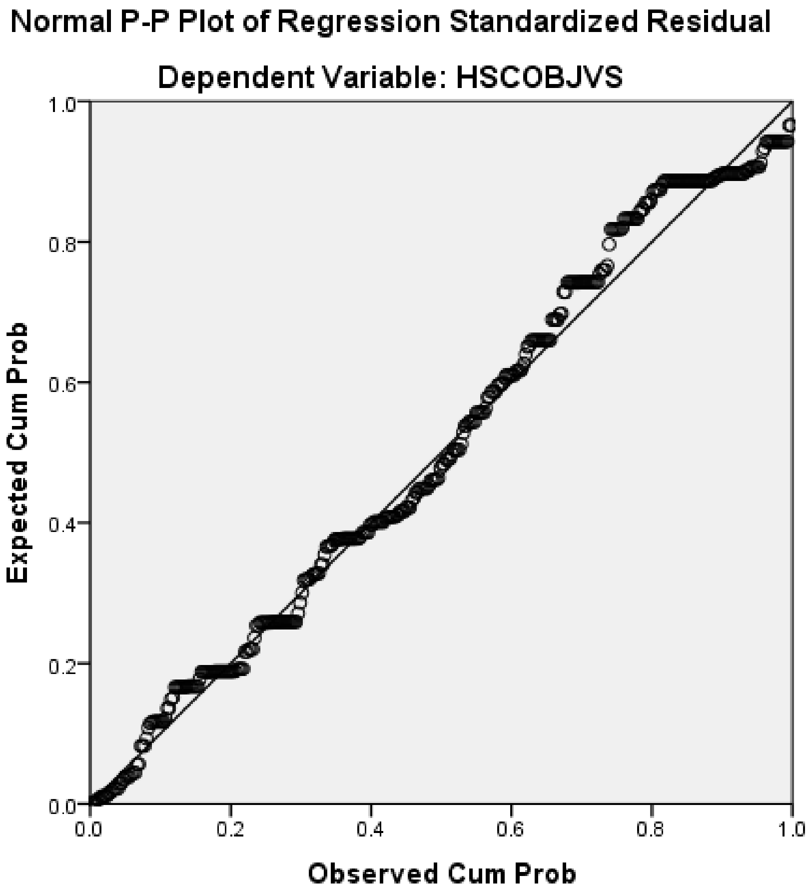
Case Number	Std. Residual	Home Science Objectives	Predicted Value	Residual
326	-3.126	1.50	3.1570	-1.65705

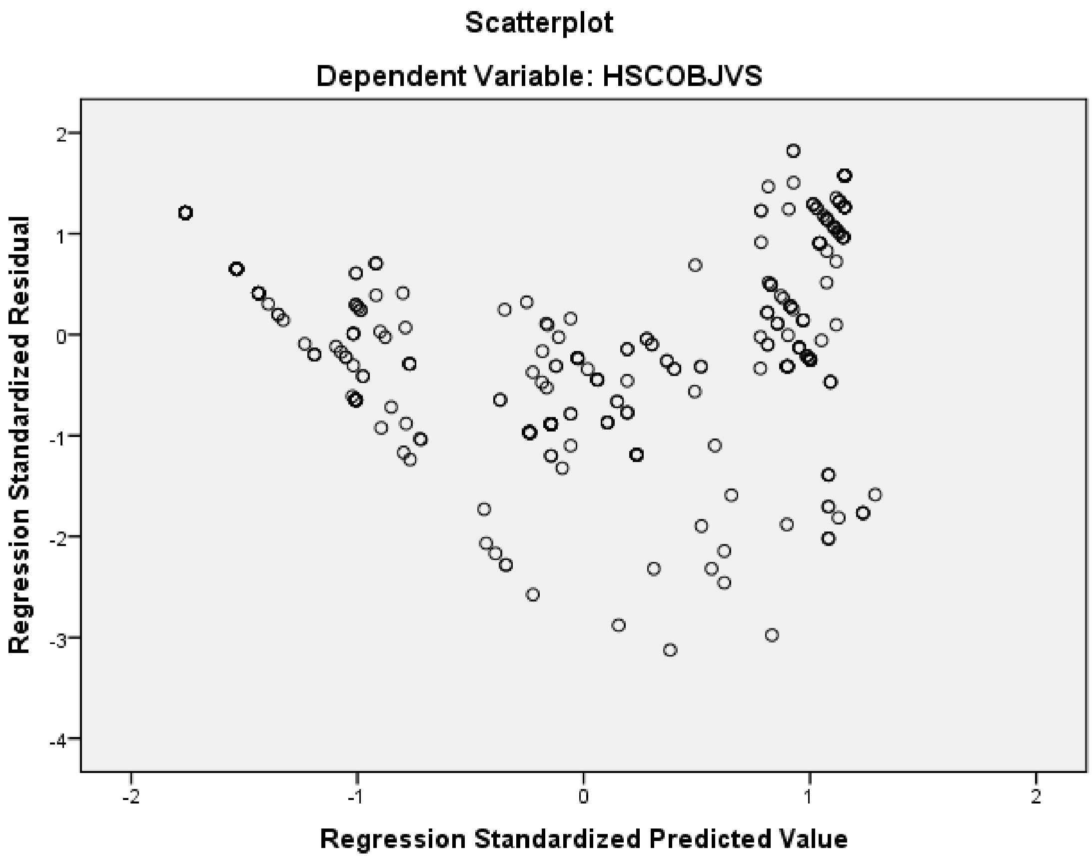
a. Dependent Variable: HOME SCIENCE OBJECTIVES

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.3594	4.3401	2.6581	1.30552	370
Std. Predicted Value	-1.761	1.288	.000	1.000	370
Standard Error of Predicted Value	.040	.156	.064	.021	370
Adjusted Predicted Value	.3509	4.3706	2.6609	1.30677	370
Residual	-1.65705	.96631	.00000	.52641	370
Std. Residual	-3.126	1.823	.000	.993	370
Stud. Residual	-3.193	1.830	-.003	1.003	370
Deleted Residual	-1.72835	.97324	-.00280	.53742	370
Stud. Deleted Residual	-3.234	1.836	-.003	1.006	370
Mahal. Distance	1.119	30.860	4.986	4.708	370
Cook's Distance	.000	.077	.004	.010	370
Centered Leverage Value	.003	.084	.014	.013	370

a. Dependent Variable: HOME SCIENCE OBJECTIVES


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: HSCOBJVS
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

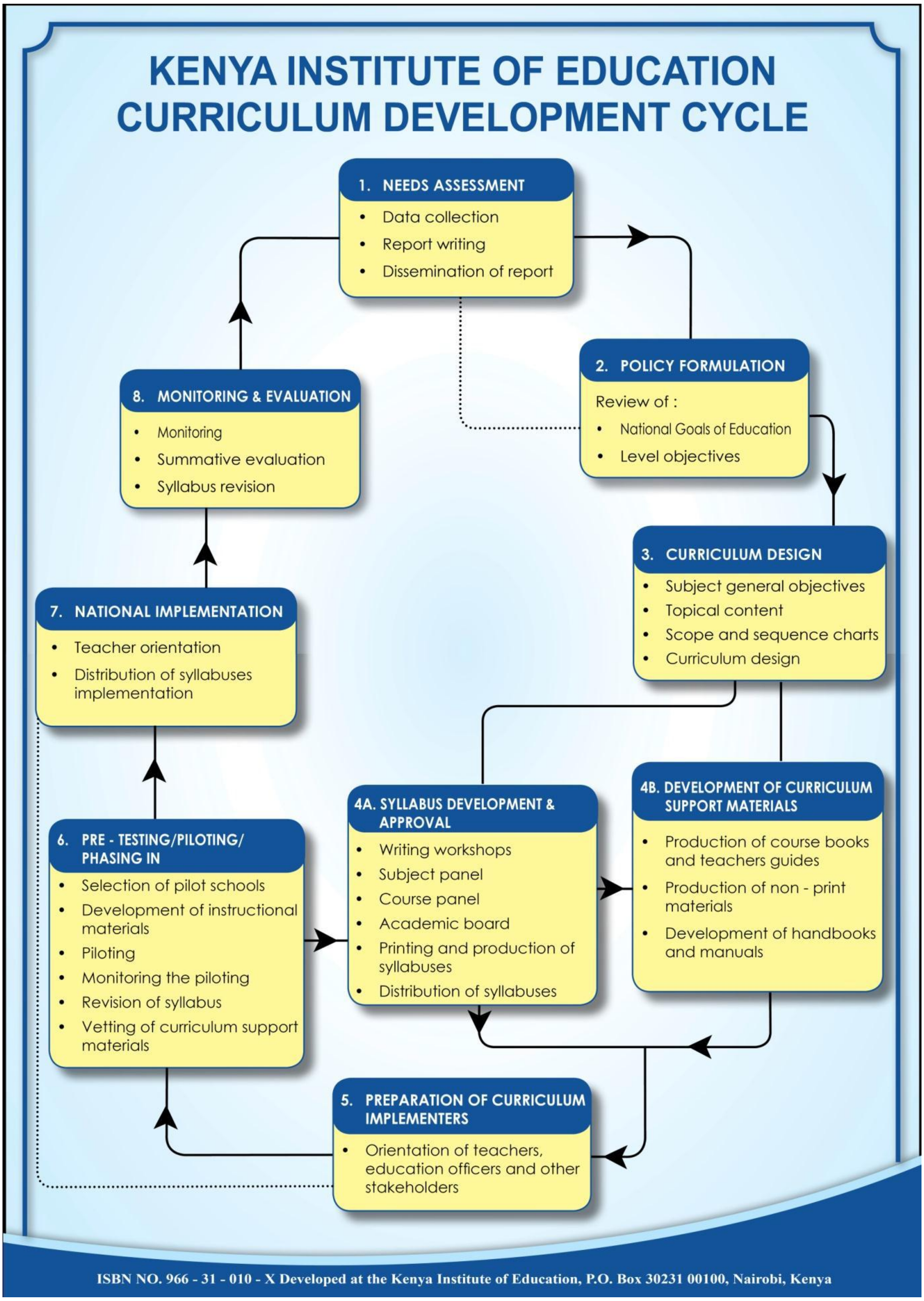

Scatterplot
Dependent Variable: HSCOBJVS
Regression Standardized Residual
2
1
0
-1
-2
-3
-4
-2
-1
0
1
2
Regression Standardized Predicted Value

APPENDIX VI: DATA OF PRIMARY TEACHER TRAINING COLLEGES IN KENYA

S/NO	Public PTTC	Region	Male	Female	Total	Expected Home Science Trainees	Home Science tutors
1.	Kamwenja	Central	237	200	437	219	3
2.	Kilimambogo	Central	221	329	550	275	3
3.	Murang'a	Central	174	186	360	180	3
4.	Thogoto	Central	249	243	492	246	3
5.	Shanzu	Coast	186	212	398	199	2
6.	Egoji	Eastern	385	318	703	352	3
7.	Kigari	Eastern	230	407	637	319	3
8.	Machakos	Eastern	270	252	522	261	3
9.	Meru	Eastern	173	311	484	242	4
10.	Garissa	North	222	192	414	207	2
11.	Asumbi	Nyanza	228	256	484	242	3
12.	Bondo	Nyanza	170	193	363	182	2
13.	Migori	Nyanza	300	271	571	286	3
14.	Moi Baringo	Rift	175	171	346	173	1
15.	Kericho	Rift	205	201	406	203	4
16.	Mosoriot	Rift	286	235	521	261	3
17.	Tambach	Rift	281	282	563	282	3
18.	Eregi	Western	286	271	557	279	3
19.	Kaimosi	Western	343	322	665	333	4
	TOTAL		**4621**	**4852**	**9473**	**4741**	**55**
Private PTTC							
20.	Bura	Coast	101	100	201	101	1
21.	Islamic	Coast	79	103	182	91	2
22.	Ishiara	Eastern	157	160	317	159	2
23.	Rupate	Eastern	132	117	249	125	2
24.	Kibera	Nairobi	102	112	214	107	2
25.	Kamagambo	Nyanza	148	104	252	126	2
26.	Matongo	Nyanza	98	102	200	100	2
27.	Nyabururu	Nyanza	103	105	208	104	3
28.	Nyanchwa	Nyanza	107	109	216	108	2
29.	Nakuru	Rift	156	148	304	152	3
30.	Bungoma	Western	140	110	250	125	2
TOTAL			**1323**	**1270**	**2593**	**1298**	**23**
GRAND TOTAL			**5944**	**6122**	**12066**	**6034**	**78**

Source: Ministry of Education (2014)

APPENDIX VII: KICD CURRICULUM DEVELOPMENT MODEL



APPENDIX VIII: RESEARCH AUTHORIZATION

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref No **NACOSTI/P/16/73843/12487**

Date: **1st August, 2016**

Catherine Nairesiae Sempele
University of Eldoret
P.O. Box 1125-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"An evaluation of the primary teacher education home science curriculum in selected Training Colleges in Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **selected Counties** for the period ending **29th July, 2017.**

You are advised to report to **the County Commissioners and the County Directors of Education of the selected Counties** 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. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioners
Selected Counties.

The County Directors of Education
Selected Counties.

APPENDIX IX: RESEARCH PERMIT

CONDITIONS

1. You must report to the County Commissioner and the County 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) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 10378

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MS. CATHERINE NAIRESIAE SEMPELE
of UNIVERSITY OF ELDORET, 1125-30100
Eldoret,has been permitted to conduct research in *Baringo , Bungoma , Kakamega , Migori , Mombasa , Nairobi, Nakuru , Nyeri Counties*

on the topic: *AN EVALUATION OF THE PRIMARY TEACHER EDUCATION HOME SCIENCE CURRICULUM IN SELECTED TRAINING COLLEGES IN KENYA*

for the period ending:
29th July,2017

Permit No : NACOSTI/P/16/73843/12487
Date Of Issue : 1st August,2016
Fee Recieved :ksh 2000

....
Applicant's Signature

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