

**EFFECT OF FEEDING PROGRAMME ON PRESCHOOL
CHILDREN'S PARTICIPATION IN SCIENCE ACTIVITIES IN
TIGONI ZONE, KIAMBU COUNTY**

NGURE NANCY WANJIRU

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**A research project submitted as a partial fulfilment for the award of
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DECLARATION


I declare that this is my original work and has not been submitted for a degree as any other award in any other University.

Ngure Nancy Wanjiru

Signature..........Date.....15/8/16.....

APPROVAL

This research project has been submitted for examination with my approval as the University supervisor

Signature..........

Dr. B. Ngaruiya

Senior Lecturer

University of Nairobi

DEDICATION

This research work is dedicated to my mum: Monica Wanja, Children: Joan Wanjiku, Caroline Wanja, Mariam Nyokabi, Leonard Rebo, Simon Ngugi for their patience and endless support during the time I have been away from home.

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LIST OF ABBREVIATIONS AND ACRONYMS

ECE	:	Early Childhood Education
WFP	:	World Food Programme.
WHO	:	World Health Organisation
NFPS	:	Nutritional Food Programmes
SBP	:	School Breakfast Programme
CNP	:	Child Nutritional Programmes

ABSTRACT

Food contains chemical substances called nutrients that together with water keep us alive. The body needs food to be able to function. A healthy diet helps children grow and learn. The researcher will investigate the effect of school based, feeding program on pre-schoolers participation in science activities. The researcher will use survey design. The target population consist of parents, teachers, and pre-schoolers. The researcher will target the E.C.E Centres offering feeding programme and those that do not have feeding programme in Tigoni zone, Kiambu County. Both the private and public ECE centres will be sampled. The researcher will use simple random sampling to get respondents from sampled preschools. The researcher will use questionnaires, interview schedules and observation schedules to collect data. Data will be analysed and presented using graphs, pie charts and tables. Conclusions and recommendations will be made. The researcher will establish whether schools with feeding programme performed better that pre-schools without feeding programme.

CHAPTER ONE

INTRODUCTION

The Chapter will cover the following sections: background to the study, statement of the problem purpose of the study, research objectives, significance of the study, and delimitations of the study, basic assumptions, and definition of terms.

Effects of nutrition and health during early years of life are potentially capable of having long term consequences that can affect a child's history of formal education. Children's readiness for school is determined in part by a child's physical development aptitudes and motivation to learn. A number of prevalent nutrition and health conditions are shown to affect school participation and educational outcomes. Infant mortality rate in Kenya in 1996 was 76% where children died directly because of malnutrition. The survey found out that up to six months of age, Kenyan children grow well. Thereafter, apparently growth starts to slow down. This points a glooming picture especially towards the future of ECD, as it is true that this is a slow growth and is prevalent within the preschool system hence has serious developmental implications.

Children are the future of any society. For this reason, children should be a starting point in any society that emphasizes human development. It is the children whose individual growth, development and society contribution will shape the future of the world. The education of children in Kenya has become the primary importance to educators, parents and society in general resulting in the involvement of numerous related philosophies. Many institutions and government bodies have often ignored the importance of child health and

nutrition and can be rampaged for improved children's performance. This study therefore expects to fill the gap.

1.1 Background of The Study

Children require to be well nourished in order to develop physically, mentally intellectually, socially. This is development in information processing that is formulating ideas, understanding, forming, planning and associating. Nutrition involves feeding a mother and child receives. Poor nutrition can lead to malnourished pregnant mother giving birth to undeveloped child with learning difficulties or mental retardation. Children who are well fed tend to perform better in academics than the children who are poorly fed. This is according to National guidelines on nutrition (2007).

According to Kenya constitution (2005) part II section 41(6f) has committed itself into providing adequate nutrition to children despite their race, age, colour, religion, creed, family background. The government recognizes that children are the future controllers of Kenyan economic activities as well as future providers of human resource. If well nourished at early years they will grow healthy, participating in learning process, well socialized and will excel in academic performance laying a well founded base for future development.

According to Abraham Maslows (1970) theory of Hierarchy of needs, he asserts that for children to be able to move to the next level of development, they have to first fulfil their basic needs. Food forms part of the basic needs. This theory therefore assumes that those children in Preschools with feeding programmes will be motivated to move to the next level of development with ease hence participate better in science activities.

According to Vgotsky children's brain development starts in their mother's womb. He realized that Iron fastens brain development very early and the baby intelligence already is in place as early as two and half months old in the womb. Such Children will perform better in academics than those children whose mothers were malnourished. Parents who feed their children with fish which is rich in iron tend to perform better than those children who feed their children on imbalanced diet. There is need for Preschool children to be fed well with balanced diet.

A small pilot feeding programme in Malawi was evaluated for its effect on enrolment and attendance. ([Portal.unesco.org/education files/wfpg](http://Portal.unesco.org/education/files/wfpg)). This boosted performance Evaluation of school feeding programme in Jamaican schools suggests that school feeding programmes have a greater effect on children's school performance.

Since the World, Food Programme started it has been providing food to children in schools as a way of developing individual and national interest. (www.unge.org/resources/files/wfpg).

In Burkina Faso, a recent evaluation of an on going school feeding shows that school canteens were associated with increase in school enrolment, regular attendance, constituency better performance Moore (1994).

Majority of preschools in Tigoni zone lack feeding programmes thus leading to poor participation in science activities. Most Preschoolers carry packed lunches which are not well balanced. According to the Ministry of Education Strategic Plan 2006 - 2011, the government seems to realize the importance of Early Childhood Education as the foundation for a quality education, hence need to improve enrolment especially to children from poor background

because education will not only provide them with basic knowledge and skills needed for primary school, but provides them with essential nutritional requirements. This enhances their chances of transition and success in Primary School Education.

Low performance of the Preschools has been attributed to lack in the provision of meals which has remained the responsibility of parents and communities. The government has come up with a new ECE policy as an intervention but so far there has been no implementation. Food provided in Pre-schools should be well balanced.

The Pre-School teachers play a critical role in ensuring that Pre-School children have food by sensitizing parents on the importance of providing balanced diet to their children and the effect food has on preschool children's academic performance to no avail due to the parent's poor economic status. This has led to poor participation in science activities in majority of Preschools in Tigoni zone, Kiambu County.

1.2 Statement of the Problem

Food is a basic need which facilitates children's movement to the next level of hierarchy of needs. In order to participate better in science activities, children should have good food supply. Balanced diet is important in that it promotes good health to children hence readiness and eager to learn which can lead to better participation in science activities; parents play a critical role in providing food to their children. In preschools under feeding programme children tend to participate better in science activities than those Preschools without feeding programme. Majority of Pre-schools in Tigoni zone lack school feeding programmes. This has led to poor participation of pre- school

children in science activities. Despite the Government commitment to providing basic needs to children through the Children Act (2001) which forms part of Kenyan law, nothing much seems to have been done leading to poor participation in science activities in Tigoni zone Pre- school sector.

1.3 Purpose of the Study

This study is meant to establish the relationship between Feeding Programme and Preschool children's participation in science activities in Tigoni zone, Kiambu County.

1.4. Research Objectives

The research has the following objectives:

- i. To determine the importance of feeding programmes in Preschools in Tigoni zone Kiambu County as perceived by stake holders.
- ii. To find out whether there is relationship between feeding programme and better Participation of children in science activities in Tigoni zone. Kiambu county
- iii. To establish the frequency of participation in science activities by children in schools with Feeding programmes in Tigoni zone Kiambu County.

1.5. Research Questions

- i. What is the perception of stakeholders on the importance of feeding programmes in Preschools in Tigoni zone Kiambu County as perceived by stake holders?

- ii. What is the relationship between feeding programme and better Participation of children in science activities in Tigoni zone, Kiambu Sub-County?
- iii. What is the frequency of participation in science activities by children in schools with Feeding programmes in Tigoni zone Kiambu Sub-County?

1.6. Significance of the Study

The significance of the study is to establish whether the feeding programme affect Preschool children's participation in science activities. This research is meant to be helpful to teachers, children, parents, government, NGOs, FBOs, partners and all stakeholders in Preschool education. Children will benefit from the study as their parents and teachers are sensitized in the need to have feeding programme in Preschools hence better participation in science activities.

1.7 Limitations of the Study

The researcher will not get the right answers since she will be working with young children who may not be willing to answer questions. The research will be forced to hire motor bikes in order to reach far off Preschools for data collection. Teachers may not be willing to give correct situation on the ground in private schools due to fear of victimization by the Preschool's proprietors. The questionnaires may be challenging to the respondents and the researches as respondents would demand explanations to some questions. More finances may be required by the researcher in the cause of dispatching the research questionnaires.

1.8 Delimitations of the Study

The researcher will carry out the research in Tigoni zone Kiambu County. The data will be collected from Preschools in Tigoni zone. The researcher will collect data from both the private and public Preschools. The Preschool children, teachers and parents will be part of the respondents. The research will strictly focus on the effects of feeding programme on Preschool children's. Participation in science activities in Tigoni zone, Kiambu County.

1.9 Basic Assumptions

The study assumes that some of Preschools in Tigoni zone, Kiambu County have feeding programmes, also assumes that there exists a relationship between the feeding programme and the Preschool children's participation in science activities in Tigoni zone. The study assumes that teachers, children and parents have positive attitude towards feeding programme in preschools in Tigoni zone, Kiambu County.

1.10 Definition of key terms

Attitude : This term refers to ones feeling about something.

ECE : Early Childhood Education

Feeding programme : It is a plan where children in preschool eat.

Preschool : This is a centre where young children learn before joining primary school.

Programme : Refers to a plan of activities to be carried out.

Researcher : This term refers to someone who will carry out research.

1.11 Organisation of the study

The study will be organised into five chapters. Chapter one will consist of background to the problem statement of the problem, purpose of the study, research objectives and questions significance of the study, limitations of the study, delimitations of the study basic assumptions, definition of key terms and organisation of the study.

Chapter two will include the literature review. It will be divided into – parts: introduction, theoretical framework, conceptual framework, effect of feeding programme on pre- scholars, participation of children in science activities, importance of feeding programmes in pre-schools and summary of literature review

Chapter three will cover the research methodology, which will include research design, target population, sample size and sampling procedure, research instruments, validity and reliability of the instruments, data collection procedures and data analysis. Finally there will be ethical concerns.

Chapter four will comprise of data analysis and discussion of the findings. Chapter five will include a summary of the findings, the conclusions, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The research study evaluates issues on nutrition, malnutrition, children participation in science activities types of food for Early Childhood Education (ECE) preschoolers.

According to Mitchell, C (1983) eating is a crucial part/of every person's life and we are what we eat. Food is the fuel required by the body to burn and to provide the energy for all the activities and all our body's complex bio chemical processes. This body fuel manifests itself in different forms such as proteins, vitamins, carbohydrates, water and vitamins. According to GOK/UN.CEF (2001), better nutrition enhances school environment attendance and participation in school activities which leads to economic productivity and to improved health and nutrition for future generations. A.A Janson (1987) in a historical review says that knowledge of proper nutrition practices is a core subject in the development and maintenance of good health among the population of a developing country such as Kenya. It is important in itself for making a healthy nation remain healthy and equally important, nutrition knowledge has its influence in every episode of departure from good health.

According to Roger and Malaxebarria (2004) children in their early years rely on food to gain in height and weight. School Feeding Programme has been used for years, to provide meals and snacks in order to reduce children's hunger. However, good nutrition is important to ensure survival, movements

participation in science activities, work and development for children. The repair and replacement of cell tissues, digestion, metabolism and maintenance are as well boosted by food intake. Mitchel C (1983) says that the simple natural unrefined plant foods are the best for children as well as adults in order to maintain good health, a diet on a variety of whole plant foods including grains, nuts, fruits seeds and vegetables is necessary.

Mitchel C (1983) asserts that poor nutrition is the world's source of misery. In the West countries the problem is over nutrition which is caused by over eating while in most of African countries there is under nutrition due to lack of food. FM asserts that malnutrition is the leading health problem in Kenya and contributes to death among under 5 years old. He says that in 1974 malnutrition was the 5th leading cause of death. However Mburu (1982) suggested that the following as the forms of malnutrition low birth weight, adult starvation, iron deficiency, Kwashiorkor which leads to swelling of forearms, hands, feet, legs and face which leads to poor participation in science activities.

Benet (1955) asserts that malnutrition is caused by dietary inadequacy as a result of a large family size, poor spacing, bottle feeding, family instability and child to mother relationship through early weaning.

According to world food programme 2008, survey the school enrolment, retention and increased learners participation leading to improved performance was noted, for both boys and girls. This improvement rose from 77% in 2002 to 92% in 2007. This rise was partly attributed to provision of FPE and to the provision of school meals. In schools with feeding programmes gender parity was minimal in schools that offered feeding programs. Schools assisted by WFP saw an increase in enrolment thus indicating that schools with feeding

program attracted more children who were suffering from hunger. However, according to Obonyo Josephine (2007) feeding programme does not only increase retention, attendance, performance and participation but it boosts concentration of children thus leading to good performance.

2.2 Effect of Feeding Programme on Preschoolers

Eating is a social activity which helps in the development of positive social skills and emotional well being of an individual Kate Beith etal (2005). The opportunity for children to interact with careers during feeding is very important as they get older and more independent, during meal time. Children learn to share, to help others, to use eating, implements, develop eating habits and to talk to each other.

Children through feeding programme also learn concepts such as “more or less” bit of “a slice” quarter or half spoonful. Children to learn mathematics concepts for example counting plates, cups, spoons, forks, Children also learn different colours such as rice is white, carrot is orange, milk is white, beans are red and vegetables are green. Ngaroga (2006) supports School Feeding Programmes that have to do with children’s welfare in schools. Feeding programmes greatly help children who cannot afford lunch and help to save time and energy spent by children when going home for lunch. It ensures parents involvement in their children’s welfare in schools, promote unity and understanding among children, promote a sense of belonging and enhance socialization. It also ensures a balanced diet for the children. However, there are other factors that can contribute in improving participation in science activities in Tigoni zone preschools, such as reducing population in growth so as to reduce enrolment in preschools, manageable and easier to provide for, improving feeding programmes in every preschool in order to improve

preschoolers health and by introducing medical care in order to diagnose and treat diseases earlier. Proper food and good nutrition are essential for survival, physical growth, performance and productivity, mental development, health and well being. It is essential foundation of human and National development (WHO, 2000).

Nutrition is important for cognitive and brain development, therefore healthy food choices become vital to a child's participation in science activities. Adverse effects of malnutrition on the cognitive functioning of children are well documented around the world, in particular the negative effect of under nutrition (Averrat and Stifel, 2007, Alaimo et al, 2001, Kaestner and Grossman, 2009 and Taras, 2005. By providing food at school brings two advantages. First, well timed school meals alleviate short-term hunger, and possibly improving child's ability to concentrate and learn hence participate well in science activities.

Secondly, provides an incentive for school attendance directly to the child (Caldes and Ahmed (2004). Thus, well-run programmes that provide reasonably nutritious meals should have positive impact on school participation, learning, and child dietary intake which in the end should improve participation in science activities by pre-schoolers.

According to Del Rosso (1999) Children affected by hunger and malnutrition as well as ill health do not have the same potential to do well at school in comparison with well and healthy children. Poor health and malnutrition lower children's development and performance through physiological changes or reduced capacity to participate in learning activities or both due to poor cognitive development. School children are mostly likely to perform adversely and repeat classes and may end up dropping out of school. Malnourished

children enroll in school late and leave school prematurely. The irregular school attendance of malnourished and unhealthy children is one of the key factors in poor participation science activities more difficulties in concentrating and performing complex tasks, even if otherwise well nourished. Temporary hunger, common in children who are also not fed before going to school, can have an adverse effect on learning. Research and program experience shows that improving nutrition and health can lead to better participation in science activities. According to Jukes, (2008) there is compelling, evidence that poor nutrition in early childhood affect cognitive development. For schools to learn well, they have to have feeding programmes in order to boost preschoolers participation in science activities.

According to Jamisoh and Usilie (1990) improvement in cognitive performance and development particularly in girls are linked to the micro nutrient supplementation of iodine and iron. Children should be provided with meals rich in iron in order to enhance cognitive development.

Allan (1985) argues that lack of protein in a diet causes the child to lose attention very fast; this causes the child to perform poorly and be mentally inactive. It is therefore important to provide children, with food rich in protein in order to boost a child's participation in science activities in class.

According to O'Dell (1997) lack of iron in a child's diet causes poor cognitive and poor performance of children. Children have poor concentration in class and their memory is lowered. Children should be provided with vegetables and dairy products. The meal should not be enriched with a lot of iron because iron in large quantities can lead to brain damage which can affect mental activities in children. O' Dell further states that lack of phosphorus may lead to lack of

resistance to diseases and children become ill thus, leading to absenteeism while children are under medication. Children under medication feel sleepy and are not able to concentrate in class; children do not get interested in learning activities thus participating poorly in science activities.

According to a research done in Uganda to examine the effectiveness of a pre-treatment snack or uptake of mass treatment in 2013 Muhunza et al (2014), it was funded by Danish Ministry of Foreign Affairs (DANIDA). The research targeted 12 schools in Jinja Province, Uganda were randomized into two groups; one received education messages for schistosomiasis prevention for two months prior to mass treatment.

Four weeks after mass treatment uptake of praziquantel was assessed among random samples in both groups. Children in the snack schools praziquantel intake were higher than children in the non-snack schools. The mansoni infection was lower in the snack schools.

The results suggest that the provision of a pre-treatment snack of mango juice and a dough- naught before treatment reduced the intensity of mansoni infection thus children were active in learning. This leads to good performance as children are healthier in snack schools. The chistosomiosis treatment also is carried out in Ghana, Mali, Bukina Faso, Niger, Ivory Coast and Tanzania through school based health programmes.

During the symposium on development and behavioral disorders held in Mumbai, India on poor school performance in 2005, it was found by members present that education is one of the most important aspects of human resources development and that poor school performance result in causing low self esteem to children and also brings stress to parents. Many reasons were

identified as causes of poor performance such as medical problems, below average intelligence, attention deficit, hyperactivity disorder, home environment, environmental causes.

Malnutrition and nutrition deficiencies, this is in the Indian journal of padiatrics, volume 72- November, 2005. In a study done in urban primary school children in Kualalumpa, Malaysia, it was found that poor nutrition intake is associated with poor academic performance though to a weak but significant, level. However, the higher proportion of poor achievers among non-participants deserves further attention.

However, the study by Zalilag et al (12) did not find an association between poor nutrition and school achievement. The difference as a result of larger study population, criteria used to define poor academic performance such as participation in science activities, a smaller population of children who were malnourished and the inclusion of other more important factors in this study. Some studies have suggested that other factors, such as parental involvement and the child's self esteem. Could affect children's participate in science activities.

According to Margaret McMillan, children cannot learn effectively if they are hungry, cold or ill. These physical needs have to be satisfied if learning is to take place. She promoted the importance of school meals and medical services for all children.

An article by E. Kennedy and C. Davis reviews the history of the US department of Agriculture School Breakfast Programme (SBP) and provides a synthesis of factors influencing participation rates. Certain children are likely

to participate than others, such as those are lower grades and those from low income households and African, American, Hispanic and male students.

A few studies in the past 25 years have examined the effectiveness of SBP in improving the diet and nutritional status of children. The overall pattern that SBP contributes to improved intake in programme participants. Less attention has been devoted to assessing the effects on cognitive development. Some of the evidences reviewed here suggest that SBP significantly improves and tardiness. Future directions for research and of SBP are discussed in the light of the changing dietary profile of American Children

(<http://www.ajan.org/cgi/contents/abstract07/4/7985>).

2.3 Participation of Children in Science Activities

School feeding programme have proven particularly successful at increasing the number of girls attending classes. Girls who go to school marry later and have on average of 50% fewer Jamela who is supporting the Really Good School Dinner campaign went to Kenya to see for herself how much donated WFP school feeding is spent (<http://www.goggle.coke>). Visited STARA School in Kibera African's biggest slum and asked children how they were benefiting from free meals provided by WFP. The children in return expressed their positive attitude towards the feeding programme. The Really Good Dinner Campaign is aimed at raising funds for WFP School feeding programme around the World. During the week of 26th to 30th January 2009 English School children taking part in the really Dinner campaign were' pledging to empty their plates to fill that of a child in the developing world. By giving just lop each dinner time they will help WFP to provide nutritious school meals for children in countries like Kenya, Afghanistan and Cambodia.

There is an example of how this would be calculated in the technical notes section of the guide to introducing the government's food based and nutrient-based standard for school lunches. (<http://www.schoolfoodtrust.org.uk/content/asp/content/d621>). This study has been shaped by some very important assumptions about SFPS. Foremost among this is that the program has great appeal to broad range of interest groups in to the united States and abroad. In the U.S lay enthusiasm for food for the peace program in general rather than for any of its specific comments, whereas in research designs yield incontrovertibly negative findings.

A second assumption developing countries SFPs is particularly enjoys popularity among the parents, teachers, planners and politicians. Such appeal may make it difficult to continue SFPS all altogether or even significantly reduce support for them unless strong about SFPs concern a range of impacts they might exert. All children of development progress know that any planned intervention brings about a series of secondary changes only some of which are Robert Hanvey has realized that when a change is made within a system, there is no such a thing. Teachers are role models to pre-scholars thus if teachers are positive about SFP preschoolers will appreciate food taken at school but if otherwise, children will be negative about SFP. Teachers play the parents role at pre-school and as they eat together with children there is a lot of confidence with children and in return children will accept new nutritious supplement introduced at school and finally their participation in science activities will improve.

2.4 The Importance of Feeding Programmes in Pre-schools

Teachers draw on children's curiosity and desire to make sense of their world motivate them to become involved in interesting learning activities.

Teachers use verbal encouragement in ways that are genuine to an actual task or behaviour acknowledging children's work with specific comments like see you. Good boy/girl, well done. The same way the teacher motivate children through food they eats in pre-school such as "school snacks and lunch are very sweet", This encourages children to attend school always despite other negative approaches they face like punishment. In this programme the plan includes motivating and intervention strategies that assist and support the pre-scholars develop self control and appropriate social behaviour during feeding time and in future life.

A variety of food provided to pre-scholars give them a wide range of knowledge about food cultural way of getting these foods (Berkey and Jamison 1990). Children long for school as they enjoy the social activities in school and food served at school which in turn motivate children to attend school as they develop a sense of ownership to their school since all their needs are met. When children's needs are not adequately met they respond by either crying, biting their fingers throwing tortrums and this may affect their performance. A child from poor background or starving family tends to perform poorly at school due to poor feeding.

According to Crary, learning takes place when problems are not in existence. Long term learning rarely takes place when the teacher or the child is upset. This causes lack of interest in learning. A learning approach may upset the child but a good diet can boost the learner's presence in school hence good participation in learning activities. According to Mineth, education in Britain is compulsory from age of 5 years. Children are legally required to attend school full time from the beginning of the term after their fifth birthday or to

receive a suitable education at home. Some schools take them either full time or part time.

For a child starting school is the next stage in becoming independent and building up a separate personality where children enter a new world. They find themselves in a large building with unknown people but sharing the same attention from one adult, the teacher. They are expected to follow a timetable, shared playground with bigger children, some stay up to dinner and must get used to new school meals. All these experiences become very difficult to children. The meals given enable children to adapt to school environment as well as removing hunger and stress and hence participate in learning activities adequately.

Many pre-schools try to help new children settle into school life easily and happily through the provision of food and snacks, similar to the meals served at home and giving them a relaxing mood during meals thus encouraging children to socialize and live the school environment thus motivated to attend school. In Arid and Semi-arid lands most feeding programmes encourage children to attend schools as they are sure to be well fed with snacks and lunches. These programmes motivate parents to encourage their children to go to school. Many of these programme are funded by the government in these regions and is a relief to parents (Berkey and Jamisan 1990). According to world food programme 2008, survey the school enrolment, retention and increased learners participation leading to improved performance was noted, for both boys and girls. This improvement rose from 77% in 2002 to 92% in 2007. This rise was partly attributed to provision of FPE and to the provision of school meals. In schools with feeding programmes gender parity was minimal in schools that offered feeding programs. Schools assisted by WFP

saw an increase in enrolment thus indicating that schools with feeding program attracted more children who were suffering from hunger. However, according to Obonyo Josephine (2007) feeding programme does not only increase retention, attendance performance and participation but it boosts concentration of children thus leading to good performance.

2.5 Theoretical Framework

Theory chosen for this study is humanistic theory. This theory was chosen because it attempts to explain how human beings are motivated by various factors, such as biological and achievement of power Abraham Maslow (1954). Maslow explains how to achieve a given goal (in this case participation in science activities /achievement is directed and sustained by different factors ranging from psychological, safety and love needs among others.

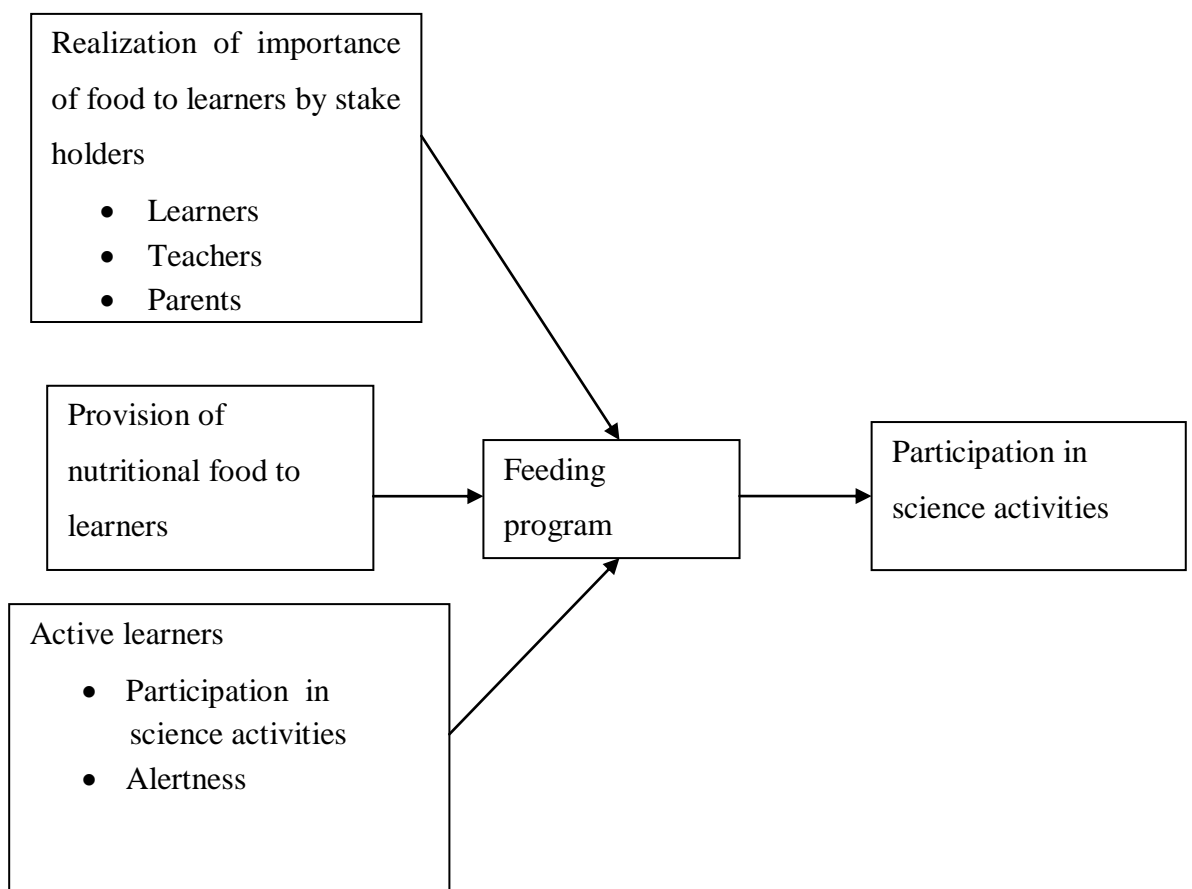
Abraham Maslow (1991) posted hierarchy of human needs. According to him an individual is ready to react upon growth needs among which lies education if only the deficiency needs such as psychological needs, safety needs, belonging needs love needs and esteem needs are met.

Maslows hierarchy of needs. The theoretical framework according to Abraham (2001-2004) was represented diagrammatically as shown. Maslows Hierarchy of needs state that we must satisfy each need in turn with the first which deals with the most obvious needs for survival itself. Only when the lower order needs of physical and emotional well being are satisfied we are concerned with the higher order of influence and development. Conversely if the lower order needs are swept away we are no longer concerned about the maintenance of our higher order needs.

2.6 The Conceptual Framework

In this study the conceptual framework will be based on the effect of school feeding program on pre-school children's participation in science activities. Feeding programme will be the independent variable while children's participation will be the dependent variable as indicated on the conceptual framework.

Figure 2.1: A Conceptual Framework on the Effect of Feeding Programme



Source: Maslows Humanistic theory (1970)

2.6.1 School feeding program

This refers to the meals pre-schoolers get in pre-school institutions. The food provided should be adequate, nutritious and readily available. Food for pre-school children will be meant to boost their participation in all learning

activities, children's growth and development. Donors, sponsors and WFP have played a critical role in the provision of food to children in famine stricken parts of Kenya. Such as ASAI as well as slums such of Kibera.

2.6.2 Nutrition

Nutrition refers to well balanced diet containing all food components. Children fed on nutritious food will develop physically, socially, cognitively and will participate more in school activities than children who are malnourished.

Very many children in the third world are malnourished in the early years of their childhood. The adverse effects of malnutrition on the development of the brain have been known to the medical profession for a number of decades now. The capacity of child to adapt him/herself to changing environment and circumstances from home to school and the cognitive function of the brain. For instance, two areas where malnutrition in a young child leaves its effects and makes him/her specifically ill equipped for progress in schooling. At Nutritional Planning Workshop on child Health, nutrition and school participation held in November 1990, through deliberation and exchanges between those in education and health, it was suggested that possible problems hindering children educational participation and suggested possible intervention measures such as in attendance, performance, repetition and drop outs may be influenced by common health and nutrition problems especially in the disadvantaged areas of the country.

Another effort representing a joint government and world food program undertaking provides a mid-day meal to preprimary and primary schoolchildren in semi-arid and arid areas of the country. The government of

Kenya provides yearly grant to the National school feeding council to supplement contributions from other non-governmental organizations and individuals (MoE 1987).

Another school feeding programme ran by the National School Feeding Council of Kenya has revised its policy in recent years rather than provide meals to school children in needy areas, it encourages school feeding programs in areas in which parents can afford to maintain them. The main objective of these feeding activities was to provide food supplements to pre-primary and primary school children in order to help improve their health and nutritional states and provide them the energy to participate in school.

Feeding begins during programme when the expectant mother eats sufficient proteins, fresh fruits, carbohydrates and vegetables to supply enough nourishment for her and the developing fetus. There is evidence that early quality care improved brain size, complexity and show increase in dendrite, breathing, growth in support gland cells and capillaries (Michael and Moore 1995). Good nutrition which contains all the necessary food substances does not need to be expensive neither does it mean all the times and all meals are balanced but simply means over the course of several days the body needs to take enough substance to grow and stay healthy. Nourishing foods are often less expensive than high calories food.

Research on school age children investigating the relationship between health, nutrition and school performance indicated that children who are healthy and well-nourished had better peers academic performance than their peers who are sick and poorly nourished (Nkinyangi, 1991). There is an effect of feeding on development of the body and brain (KIE, 1990). No child can develop his or her brain to the maximum without feeding properly. Proper nutrition in the

first years increases potentials for doing well in school and having a successful life. Notably, a child has contentious individualized process of change in complex levels of cognitive, emotional, social and body movement and speech if the diet of a child is of nutritious value (Magers, 1985).

Vanvynckt (2006) provided an overview of the current state of knowledge about nutrition and health conditions on learning and school participation. She indicated over the past few years there has been an accumulation of research findings from different countries documenting association between nutrition, health and children school participation. A number of prevalent nutrition and health conditions are shown to affect school participation and educational outcomes e.g. recent studies from Kenya and a number of other countries report significant findings on the relationship between poor health, nutrition and school outcomes. Consequently, better nutritional history and present nutritional status are associated with higher cognitive test scores or better school performance .Nutritionally stunted children are found to enroll later and drop out earlier than their normal size peer. Professor Michael Crawford (1990) has undertaken a good deal of research in the pre conception nutrition and its effects on the future of the child in the institute of brain chemistry and human nutrition which says that poor nutrition during early phase of brain development affects the brain permanently.

2.7 Summary of Literature Review

Food is a basic need sustaining functions in the body. Healthy diet helps a child to grow and learn. Education and learning depend on nutrition and health of a child hence food and children's learning are related. Children should be given balanced diet in pre-schools to enhance their cognitive development. There are nutrients which help in development. Proteins help children to be

attentive in class hence participation in science activities. Zinc helps in cognitive development too. There is a relationship between food and children's learning because healthy children learn better than weak and malnourished children. Parents teachers and children have positive attitude towards feeding programme thus boosting children's participation in science activities in pre-schools in Tigoni zone, Kiambu County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The main objective of this chapter will be to describe the research design, the sample size and sampling procedure, the target population, validity and reliability of the instruments, data collection procedures and data analysis techniques, research instrument for data collection.

3.2 Research Design

The researcher will use descriptive survey in the study. This is a method of collecting data by interview, administering questionnaire to the respondents. Oso and Onen (2008) who insisted that survey method is used in collecting data through samples in order to analyse and discover occurrences thus it will be suited for this study. The researcher will collect data using interview schedules, observation schedules and questionnaires. The available information will be used for data collection, data analysis and data interpretation, in order to justify the effect of F/P on pre-schoolers participation in science activities.

3.3 Target population

The target population will consist of parents, teachers and children from early childhood centres in Tigoni zone from both public and private centres. The target population will involve cases, groups of individuals with common characteristics (Mugenda & Mugenda, 2003).

The study will concentrate mainly on preschool within Tigoni Zone. The study assessed how ECE centres responded issues of child care, survival and development as far as feeding programmes are concerned. To generate data, parents, teachers, children were used to respond to issues. These institutions were being selected based on geographical positions the Zone and on the provision of feeding programmes.

3.4 Sample Size and Sampling Procedure

The sample size will refer to specific number of individuals or groups of individuals or cases which will be used to represent the target population. According to Mugenda & Mugenda (2003) sampling is the process of selecting subject or cases to be used in the study to represent the target population. The researcher will use simple random sampling technique by giving a number to every member or subject of the target population by placing the numbers in a container and then will pick any number at random to ensure that every members of the target population will have equal chance of being included in the sample. The sample size will involve ECE teachers, parents and children.

3.5 Research Instruments

The researcher will use interviews, observations and questionnaires to collect data. The observation will best suit data collection in children while interviews will be used with parents. Teachers will have questionnaires in order to express their opinions in a free way and make recommendations. The questionnaires will include the teacher's demographic data, their influence on the feeding programme and the parent's involvement in feeding programme. The observation will be carried on children twice to ensure the validity and

reliability of the research data. Interview schedule guide will be used in collecting data from parents. Telephone interview, will be used to the unavailable parents due to busy schedules.

3.6 Validity of The Instruments

Validity refers to extent to which research instruments matches what they are expected to measure. Osos and Onen (2008). There are different types of validity which include the content and face validities. Face validity refers to the overall impression about the suitability of an instrument whether the item will be understood or not. The content validity will refer to whether the instrument will cover the content in the objectives appropriately. The researcher will prepare the instruments which will cover the areas under investigation. Under this study, the pilot study will be carried out in two pre-schools which will not be in the actual study. A sample of 10% of the target population will be involved through giving a number to every child then placing these numbers in a container and picking at random, pre-school teachers and parents will be purposely sampled for pilot study.

3.7 Reliability of the Instrument

The reliability is a test or measure to which research tools will give constant end results or data after repeated trials (Mugenda & Mugenda 2003). It will help the researcher estimate errors in order to make appropriate corrections where need be. These instruments will be tested in order to check their reliability through test retest. Questionnaires will be given to respondents to fill in and then after one week, the same exercise will be repeated again to the same respondents. After the two tests are carried out, the researcher will use

the Pearson product- moment correlation to determine whether the two scores on the test will correlate.

3.8 Data Collection Procedures

The researcher will sought research permit from the National Commission for Science, Technology and Innovation in order to enable the researcher to carry out research in Tigoni zone, Kiambu County. After conducting the pilot study, the researcher will administer questionnaires to the selected teachers school for the research study. The interview will be administered to selected parents and observation will be carried out to selected children in order to gather research information.

3.9 Data Analysis

There are qualitative data analysis and quantitative data analysis. The researcher will do analysis from information derived from the questionnaires where responses will be analysed in order to establish the consistence and the usefulness as well as the adequacy of the information. The researcher will analyse quantitative data using descriptive tools which include percentages, frequencies and means, Mugenda & Mugenda (2003). The findings will be presented in pie charts, bar graphs and frequency tables. The findings will be collected from information from the children's observations, parents interviews and teachers questionnaires.

3.10 Ethical Concerns

The researcher will keep confidentiality of the respondents by not disclosing the names of respondent's preschools names or pre-schoolers names and the given information.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter gives a detailed analysis of the research findings on the impact of school feeding programme in Tigoni Zone, Kiambu County. Presented are the findings from the research instruments, that is, head teachers' questionnaires, teachers' questionnaires and question guided interviews for children. The findings are based on the adequacy of food given to pupils, sources of funds, forms of school feeding programmes, frequency and consistency of disbursement of food to preschools and how community involvement in the school feeding programme influences pupils' in pre schools Tigoni Zone Kiambu, County in Kenya. Data was analyzed both manually and by use of SPSS computer programme.

4.2 Instruments return rate

A total of 96 teachers' questionnaires and 12 head teachers' questionnaires were distributed. Ninety (90) teachers' questionnaires and 12 head teachers' questionnaires were returned dully completed. This represented 94.0% and 100% return rates respectively. The return rate was considered reliable for the purpose of study because it was above 70%. Question guided interviews were used by the researcher to capture responses from 60 pupils. The data collected was tabulated as per the questionnaires and question guided interviews for children systematically covering all the items as per the research objectives.

4.3 Demographic data of the respondents

It was essential for the study to gather data on head teachers', teachers' and pupils' background in terms of gender and age. Head teachers' and teachers' academic and professional qualifications were also captured. These directly or indirectly would have an impact on school feeding programmes and hence influence pupils' retention rates preschools in Tigoni Zone County in Kenya. The head teachers', teachers' and pupils' demographic data are summarized as follows:

4.3.1 Gender of the head teachers, teachers and pupils

Gender was considered important in this study because it could directly or indirectly influence pupils' in preschools.

Table 4.1: Distribution of head teachers, teachers and pupils by gender

Gender	HTs	%	Teachers	%	Pupils	%	Total	%
Male	8	66.7	66	73.3	39	65.0	113	69.8
Female	4	33.3	24	26.7	21	35.0	49	30.2
Total	12	100.0	90	100.0	60	100.0	162	100.0

Table 4.1 shows that the respondents for this study were predominantly male. Out of 162 respondents, 69.8% were male head teachers, teachers and pupils. One gender dominating in a given school can affect pupils in one way or another especially when it comes to matters of availability of food in a school on regular basis for the continuity of retention of children in pre-schools and better participation in science activities .

4.3.2 Head teachers' and teachers' age

Head teachers and teachers were also required to indicate their age bracket and the data collected are in Table 4.2.

Table 4.2: Distribution of head teachers and teachers by age

Age in years	HTs	%	Teachers	%	Total	%
21-30	0	0.0	15	25.0	15	14.7
31-40	3	25.0	48	50.0	51	50.0
41-50	7	58.3	20	25.0	27	26.5
51-60	2	16.7	7	13.2	9	8.8
Over 60	0	0.0	0	0.0	0	0.0
Total	12	100.0	90	100.0	102	100.0

From Table 4.2, the results indicate that a majority of head teachers and teachers (50.0%) were in the age brackets of 31-40 years. The age of head teachers and teachers indicate that they have good experience, knowledge and understanding when it comes to planning, organizing, coordinating and controlling feeding programmes to enhance good participation in science activities in preschools.

4.3.3 Academic and professional qualifications for head teachers and teachers

Academic and professional qualifications of head teachers and teachers were also a factor to consider in this study. Head teachers' and teachers' academic and professional qualifications directly or indirectly determine how both feeding programmes and other material resources can be handled in planning of public primary schools. This in turn has an impact on pupils' in preschools in Kenya.' Head teachers' and teachers' academic and professional qualifications are shown in Table 4.3.

Table 4.3: Head teachers' and teachers' academic and professional qualifications

Qualification	H/Ts	%	Teachers	%	Total	%
M.Ed	0	0.0	0	0.0	0	0.0
BA/BSC with PGDE	0	0.0	0	0.0	0	0.0
B.Ed	2	16.7	6	12.5	8	7.8
Diploma	10	83.3	75	62.5	85	83.3
P1	0	0.0	7	12.5	7	6.8
Form 4	0	0.0	2	12.5	2	2.1
Total	12	100.0	90	100.0	102	100.0

Results from Table 4.3 show that majority of the head teachers and teachers (83.3%) and were Diploma holders. Another percentage of head teachers and teachers (7.8%) had B.Ed degree. The overall planning of preschools feeding programmes is vested in the hands of teachers and head teachers. It is, therefore, imperative that head teachers and teachers be persons with good education and sufficient practical knowledge in educational planning. They should have a required minimum academic qualification which will allow them to interpret parliamentary Acts and other policies which relate to education and planning in school. These include the Basic Education Act, the TSC Act, The Children's Act, and Procurement Act among others. However, mechanisms have to be put in place to upgrade planning skills of the head teachers and teachers. This would be done through inservice training, seminars and workshops organized either by the school or by the ministry of education so as to empower them with school feeding programmes in order to boost children's better participation in science activities in Tigoni zone, Kiambu county.

4.3.4 Type of school

Type of school was another factor to be considered in this study. Type of school in one way or another, coupled with feeding programme might have impact on children's participation rate in science activities in preschools in Tigoni zone, Kiambu County, Kenya Zone Kiambu, County in Kenya. Data were collected from head teachers and teachers and results tabulated in Table 4.4.

Table 4.4: Head teachers' and teachers' response on type of school

Type of school	H/Ts	%	Teachers	%	Total	%
Boys boarding	0	0.0	0	0.0	0	0.0
Girls boarding	0	0.0	0	0.0	0	0.0
Mixed boarding	2	16.7	16	17.8	18	17.6
Mixed Day	10	83.3	60	66.7	70	68.6
Mixed day and boarding	0	0.0	14	15.5	14	13.7
Total	12	100.0	90	100.0	102	100.0

From Table 4.4, majority of head teachers and teachers (68.6%) indicated that most schools in Tigoni Zone Kiambu County are mixed day. These pupils are faced with many challenges compared to those in boarding schools. A few schools are given boarding facilities to enhance pupils' retention and access to education. Boarding facilities could also enable head teachers and teachers to

implement the feeding programme effectively for better participation in science activities.

4.3.5 Pupils' response to class level

Pupils were required to indicate the grade level and results were tabulated in Table 4.5 below.

Table 4.5: Pupils' response to class level

Class	Pupils	%
Class 2-3years	10	16.7
Class 3-4years	25	41.7
Class 5-6years	15	24.9
Class 7-8years	10	16.7
Total	60	100.0

Results from Table 4.5 show that the distribution of the pupils in classes is high in class of year 3-4 (41.7%) followed by class 5-6 years (24.9%). In lower years pupils' enrolment is usually high but when they go up some start dropping out as a result of challenges like lack of basic needs, food in particular. Class 7-8years is a transition to primary education that requires pupils to be supported well both at school and home for them to participate well in education. This makes them stay at home to assist parents in one way or another to acquire basic needs. If supported well at school, through feeding programmes, there is an indicator that most children would participate in primary education fully. This would enhance good participation in science activities in Tigoni zone.

4.3.6 Pupils' response on duration in their school

Pupils were to respond on the duration in their school. Data collected was tabulated in Table 4.5

Table 4.5: Pupils' duration in school

Duration in school	Pupils	%
Below 1 year	6	10.0
2 – 3 years	22	36.7
3 – 4 years	19	31.7
4 – 5 years	11	18.3
Over 7 years	2	3.3
Total	60	100.0

Table 4.5 indicates that a slightly fair percentage of pupils had been in that school for at least 2-3 years (36.7%). This indicates that at classes 2-3years the enrolment rate is fairly good. At class 4-5years the enrolment rate drops slightly. At class 6-7years it is a bit low. This call for a way retain the pupils in school, hence the need for feeding programme. On the contrary, duration in school indicates that pupils had good information on the impact of school feeding programme on children's retention rates in preschools in Tigoni Zone of Kiambu County in Kenya hence good participation in science activities.

4.3.6 Head teachers' and teachers' duration of service.

Head teachers and teachers were asked to indicate the duration of service. The data is presented in Table 4.6.

Table 4.6: Head teachers' and teachers' response on duration of service

Duration of service	of H/Ts	%	Teachers	%	Total	%
0-3 years	0	0.0	7	7.8	7	6.9
3-6 years	1	8.3	10	11.1	11	10.8
6-9 years	3	25.0	17	18.9	20	19.6
9-12 years	5	41.7	30	33.3	35	34.3
Above 12 years	3	25.0	26	28.9	29	28.4
Total	12	100.0	90	100.0	102	100.0

Table 4.6 indicates that 34.3% of head teachers and teachers had served for 9-12 years. These head teachers and teachers had good information on the impact of school feeding programme on children's participation in preschools in Tigoni Zone Kiambu County, Kenya.

4.3.7 Number of pupils in the school

It was also necessary for the researcher to collect data on the number of pupils in schools in Tigoni Zone Kiambu, County, Kenya. Data collected was then presented as follows in Table 4.7.

Table 4.7: Head teachers' and teachers' response on the number of pupils

Number of HTs	%	Teachers	%
Less than 100	2	1	1.1
100-200	4	28	31.1
300-400	6	60	66.7
500- 600	0	1	1.1
Total	12	90	100.0

Results from Table 4.7 show that the majority of the schools had students ranging between 300 and 400. There were very few schools with less than 200 students. This is a good number to determine the impact of school feeding programme on children's participation in science activities in preschools in Tigoni Zone Kiambu County, Kenya.

4.4 Adequacy of food on retention rates

The adequacy of food can be viewed in terms of quantity and quality (nutrition). It was therefore imperative for this study to solicit for the information concerning quantity and quality of food disbursed on retention rates. To operationalize quantity and quality effectively and efficiently, Lawson (2012) highlighted the need for a school child to be given a nutritional quality and quantity of ration which should always be assessed as well as timing and delivery. Hence data was collected from head teachers', teachers' and children response and tabulated.

4.4.1 Head teachers', teachers' and pupils' response on availability of SFP

Head teachers, teachers and pupils were to indicate whether SFP was available. Data collected was tabulated in Table 4.8 below

Table 4.8: Head teachers', teachers' and pupils' response on availability of SFP

Response	HTs	%	Teachers	%	Pupils	%	Total	%
Yes	12	100.0	90	100.0	60	100.0	162	100.0
No	0	0.0	0	0.0	0	0.0	0	0.0
Total	12	100.0	90	100.0	60	100.0	162	100.0

The results from Table 4.8 indicate that SFP was available in preschools in Tigoni Zone Kiambu, County, Kenya.

4.4.2: Head teachers', teachers' and pupils' response on time food is received for SFP

Head teachers, teachers and pupils were to indicate when the school started receiving food and data tabulated.

Table 4.9: Head teachers’, teachers’ and pupils’ response on time food is received

Time of the term	HTs	%	Teachers	%	Pupils	%	Total	%
Beginning	10	83.3	88	97.8	50	83.3	148	91.4
Middle	2	16.7	2	2.2	10	16.7	14	8.6
Total	12	100.0	90	100.0	60	100.0	162	100.0

Table 4.9 indicates that some schools received food for the School Feeding Programme (SFP) in the middle of the term (91.4%). Food provided in the middle of the term while classes are in session would interfere with attention, concentration and achievement among children in school and others would opt to drop out hence low retention rates. This was a delay by the government to disburse food to the affected schools. Retention requires availability of food in a school on regular basis. Therefore regular food intake is vital for the continuity of children’s participation in science activities in preschool Tigoni zone.

4.4.3 Head teachers’ response on quantity of food in school

Head teachers were to indicate how much food their schools receive during the distribution. Data was collected from head teachers and tabulated.

4.10: Head teachers' response on quantity of food distributed

Amount distributed	HTs	%
Below 10 bags	1	8.3
10-20 bags	4	33.3
21-30 bags	5	41.7
31– 40 bags	1	8.3
Over 40 bags	1	8.3
Total	12	100.0

The table shows that schools receive food. This positively indicates that School Feeding Programme (SFP) plays an important role on retention rates of pupils in preschools in Tigoni zone hence good participation in science activities . According to Jacoby (2002), school meals should be available to school throughout the term in order to keep children active in science activities in preschool. Any delay in delivery of school meals or break-ups in delivery could lead to poor participation in science activities in preschools due to absenteeism until the food is delivered (WFP, 2006).

4.4.4: Whether food is received in terms of money or dry food

The researcher was to solicit for more information from the head teachers to establish whether food was received in terms of money or dry food. Data collected was then tabulated in Table 4.11

Table 4.11: Whether food is received in terms of money or dry food

Form in which food is received	HTs	%
Money	5	41.7
Dry food	7	58.3
Total	12	100.0

Results from the Table show that preschools in Tigoni Zone, Kiambu, County can either receive food in terms of money or dry food from parents and donors.

4.5 Availability of funds

Sources of finances for school feeding programme to preschools may have influence on enrolment. This can be viewed in terms of Funds and forms and source of food distributed during school feeding programmes.

4.5.1 Head teachers' response on the source of food

There was need for head teachers to clarify the source of food to facilitate the SFP in preschools in Tigoni Zone, Kiambu County. Data was then tabulated.

Table 4.12: Head teachers' response on the source of food

Source of food	HTs	%
Parents and community	7	58.3
Government	4	33.3
WFT	1	8.4
Total	12	100.0

This table indicates that most schools receive food from parents and community. This is a positive indicator that donors and recipient governments focus wholeheartedly on the core necessities SFP. Recipient governments need to clearly state their needs and demonstrate their own commitment that they can organize their resources and priorities to support the feeding programmes (WFP, 2008) so as to enhance good participation in science activities . For example, the Government of Kenya can come up with various ways through which food may be procured for the school feeding programmes (SFP). For each fiscal year, treasury can release money to the agricultural secretary, who in turn can make the money available to the Ministry of Education. The money donated can then be channelled to dedicated school bank accounts and school committees purchase food. Besides, the Government can purchase food then it is distributed by the government to school at the beginning of the term (central processing) (MoE, 2009).

4.5.2 Pupils’ response on quality of food disbursed

The quality of food disbursed during school feeding programme to children in preschools encompasses the nutrition values of food provided. The researcher solicited information from children to determine whether food given is of quality. Data captured was tabulated as follows.

Table 4.13: Children’s response on whether food is of quality

Good quality food	Children’s	%
Yes	48	80.0
No	12	20.0
Total	60	100.0

Table 4.13 indicates that at least food provided is of quality (80.0%). Alderman (2009) argues that although school aged children are past the critical window of opportunity during early childhood for the greatest gains from good nutrition, increasing food and nutrition consumption among school-aged children with low baseline food energy or micronutrient intake can improve weight, height, reduce susceptibility to infection and increase in cognitive function in the short run. According to the World Hunger Education Service (2012), under nutrition is the biggest cause of the global diseases that contributes to 35 % of child death particularly in developing countries.

4.5.3 Pupils’ response on sickness

Pupils were to indicate whether they have been sick due to food since SFP was introduced. Data was collected and tabulated in Table 4.14

Table 4.14: Pupils response on sickness

Whether sick	Pupils	%
Yes	5	8.3
No	55	91.7
Total	60	100.0

Table 4.14 indicates that since SFP was introduced in the schools, a good percent of children have not faced challenges of sickness. Families facing poverty food choices are usually limited resulting in nutritionally inadequate, diet that are often deficient in vital micronutrients (Ash, 2009). Thus a universal approach is required to improve the health of these poorest children and the disadvantaged by maximizing developmental potential and lifelong health through funding (Van de Poel, 2008). Study carried out by International

Food Policy Research Institute (2008), found out that there was improved cognitive function in Kenyan children who were provided with school meals rich in animal source food. This calls for government's and donors' support through financing.

4.6 Forms of school feeding programmes on retention rates

The purpose of school feeding is to provide sustainable, secure and nutritious source of food. There are two forms of school feeding programmes; in school feeding and take home rations. In school feeding programs provides meals or snacks to school children on site while Take Home Rations (THR) food mostly dry cereals and oil are provided to children for consumption at home (Lawson, 2012). The researcher, therefore, was to determine which form of SFP schools had adopted to enhance preschools children's participation in science participation in Tigoni zone Kiambu county.

4.6.1 Head teachers' response on forms of School Feeding Programmes

The head teachers were asked to state the kind of School Feeding Programme adopted in preschool in Tigoni zone . Data collected was presented in Table 4.14 below.

Table 4.14: Head teachers' response on forms of SFP

Form of SFP	HTs	%
In-school-feeding	10	83.3
Take Home Rations	2	16.7
Total	12	100.0

Results from Table 4.14 show that majority of the head teachers (83.3%) prefer In-school-feeding to Take Home Rations. The benefit of food provided under the in school feeding programme is conditional on the attendance of the

child on that specific day. Thus an advantage of the programme is that it serves as an incentive for children to attend school on a daily basis to receive a meal. This is the best way of retaining children in school to attain high children's participation in science activities in Tigoni Zone, Kiambu County.

4.6.2 Head teachers' and Children's response on number of times food is served

Head teachers and Children's were to indicate how many times food was served in a day. Their responses were tabulated in Table 4.15

Table 4.15: Head teachers' and Children's response on number of times food is served

Number of times	HTs	%	Children's	%	Total	%
Once	0	0.0	0	0.0	0	0.0
Twice	1	8.3	2	3.3	3	4.2
Thrice	11	91.7	58	96.7	69	95.8
Total	12	100.0	60	100.0	72	100.0

From Table 4.15, it is evident that in most schools food is served thrice a day (95.8%).

On the other hand, THR children need only to attend a specified minimum number of days. Children are served with cooked meals onsite or pre-packaged snack or beverage. This programme may need to rely on a functional food processing sector at the county or national level to meet the needs of children.

4.6.3 Head teachers' response on whether the food served was fortified

School Feeding Programme meals or snacks can easily be fortified to help to provide micronutrients that are commonly missing from children's diets. The head teachers were to indicate whether food served to children was fortified. Data was then presented in Table 4.16

Table 4.16: Head teachers' response on whether the food served is fortified

Response	HTs	%
Yes	10	83.3
No	2	16.7
Total	12	100.0

The results indicated that food was fortified (83.3%). This is especially important for school-age children as brain is sensitive to lack of nutrients in the short term, which maybe especially a problem for malnourished children (Pollit, 1995). Abdullahi (2012) in his study on SFP in Wajir North suggested that quality of food will tremendously improve the health of children hence participate well in science activities .

4.6.4 Head teachers' response on types of nutrients used to fortify food

The quality of food disbursed during school feeding programme to children in Tigoni preschools encompasses the nutrition values of food provided. The important period of growth and body composition occurs in the early stage of life, well before enrolment in school, but school feeding programme meals or snacks can easily be fortified to help to provide micronutrients that are commonly missing from children's diets. This is especially important for

school-age children as brain is sensitive to lack of nutrients in the short term, which maybe especially a problem for malnourished children (Pollit, 1995). Head teachers were, therefore, to give responses on types of nutrients used to fortify food during SFP in Tigoni Zone, Kiambu County.

Table 4.17: Head teachers’ response on types of nutrients used to fortify food

Number of times	HTs	%
Iron	0	0.0
Vitamins	3	25.0
Proteins	9	75.0
Total	12	100.0

Results show that food was fortified with proteins mostly (75.0%) and some slight vitamins (25.0%). This makes children who are under school feeding programme in Tigoni Zone, Kiambu County attended school regularly and be punctual with tremendous improve in performance and behaviour with minimal illnesses. Quality of food tremendously improves the health of children as well as their participation in science activities.

4.7 The influence of community involvement in school feeding programmes

Communities around the school play an important role in the implementation and process of school feeding programmes. The school feeding programmes that respond to community needs are locally owned. Lack of community participation may lead to a failed programme. Head teachers were to provide information concerning community participation in SFP in preschools in Tigoni Zone, Kiambu, County and data collected and tabulated in tables below

basing on parental contribution like providing plates and spoons and community contribution in some form of: donated labour like cooking, bringing firewood, store-keeping, serving meals, constructing cooking shelters, constructing store rooms, protecting the school premises, organizing at least three meetings per annum to discuss the activities in connection to preschool feeding programmes as well as organizing fundraising activities.

4.7.1 Management and distribution of food in school

Head teachers were to provide information on who assists the school in management and distribution of food to enhance children's participation science activities in preschool in Tigoni zone. Data collected was then tabulated in Table 4.17

Table 4.17: Head teachers' response on management and distribution of food

Who manages and distributes food	HTs	%
Parents	2	16.7
School feeding committee	7	58.3
Teachers	3	25.0
Total	12	100.0

Results from Table 4.17 indicate that the school feeding programmes in most preschools in Tigoni Zone incorporated some form of parental or community contribution. Programmes that build this component from the beginning and consistently maintain it have the most success (WFP, 2010).

4.7.2 Number of cooks in the school

The head teachers were to give the cooks assisting in preparation of meals for preschoolers. Their responses were then tabulated in Table 4.18

Table 4.18: Head teachers' responses on number of cooks in school

Number of cooks	HTs	%
Male	4	33.3
Female	8	66.7
Total	12	100.0

The table shows that the community was responsible for cooking and serving of meals. Both male and female genders was involved in making the school feeding programmes successful.

4.7.3 Source of cooking fuel in school

Head teachers were also to give light on source of cooking fuel in preschool.

Data obtained was tabulated in Table 4.19 below.

Table 4.19: Head teachers' response on source of cooking fuel

Source of fuel	HTs	%
Firewood	12	100
Charcoal	0	0.0
Solar energy	0	0.0
Paraffin	0	0.0
Electricity	0	0.0
Total	12	100.0

From this table, the main source of fuel was firewood (100%). This is because it is the cheapest and easily available from the community members.

4.7.4 Fuel provision

Head teachers were to clarify on who provides fire wood in the school. Their responses were tabulated in Table 4.20

Table 4.20: Head teachers' responses on who provided fuel

Fuel provision	HTs	%
Parents	10	83.3
School feeding committee	2	16.7
Government	0	0.0
Total	12	100.0

The table indicates that parents played a vital role in the provision of firewood to sustain School Feeding Programmes (SFP). This is a clear indicator that parents are involved in attaining high participation rates in science activities in

preschool in Tigoni zone Kiambu County in preschools in Tigoni Zone Kiambu County. There is need for government to step in and provide for other sources of power like electricity, paraffin and solar energy that seemed to be expensive for the parents.

4.7.5 Water availability in school

Head teachers were also supposed to indicate if water was available in tigoni preschool. Their responses were as tabulated below.

Table 4.21: Head teachers' responses on water availability in preschools

Water availability	HTs	%
Yes	4	33.3
No	8	66.7
Total	12	100.0

The table shows that some preschools did not have water (66.7%). This shows that head teachers had to seek for assistance to acquire water so as to facilitate the school feeding programmes.

4.7.6 Head teachers' responses on who provided water

Head teachers were to provide more information on who provided water in preschool in Tigoni zone. Responses were tabulated in Table 4.22

Table 4.22: Head teachers’ responses on who provided water

Water provision	HTs	%
Parents	9	75.0
School feeding committee	2	16.7
Government	1	8.3
Total	12	100.0

Table 4.22 indicates that water was mainly provided by parents. Through donated water or labour, the school feeding programmes tend to be stronger and most likely to make a successful transition from donor assistance.

4.7.7 Teachers responses on pupils’ attendance before community involvement

The school feeding programme brings about harmony among the community, teachers and pupils, hence smooth learning (Abdullahi, M.G., 2012). Teachers were to give more information concerning the trend of children in preschools in Tigoni Zone in Kiambu, County based on school feeding programmes. They were to indicate how the involvement of the community had influenced children’s participation rates in science activities in preschools in Tigoni zone

Table 4.23: Teachers’ responses on pupils’ attendance before and after community involvement

Attendance before	Teachers	%	Attendance after	Teachers	%
Poor	78	86.7	Poor	0	0.0
Average	12	13.3	Average	4	4.4
High	0	0.0	High	86	95.6
Total	90	100.0		90	100.0

The results from the table indicate that before community was involved in matters of school feeding programmes, pupils’ attendance was poor (86.7%) and thereafter it shifted to a high attendance of 95.6%. Community involvement had a positive impact on children’s participation rates science activities in preschools in Tigoni zone Kiambu county.

4.7.8 Teachers’ responses on children’s classroom behaviour

Teachers were to respond on whether they observed any changes in pupils’ classroom behaviour since the school feeding programme started and community members involved in realizing the programme. Their responses were then tabulated in Table 4.24

Table 4.24: Teachers' responses on pupils' classroom behavior

Response	Teachers	%
Yes	90	100.0
No	0	0.0
Total	90	100.0

Teachers' responses as the table indicated was that there is a strong positive impact on children's classroom behaviour since SFP started and community members were ready to assist in making it a success.

4.7.9 Teachers' responses on observable changes in pupils and community members

Teachers were, therefore, to rate the observable changes made in both pupils and community members whether they were positive or negative changes.

Teachers' responses were then tabulated as follows:

Table 4.25: Teachers' responses on observable changes in pupils and community members

Observable behaviour	Positive change		Negative change	
	Teachers	%	Teachers	%
Pupils' attentiveness in classroom	80	88.9	10	11.1
Pupils' cognitive and learning abilities	75	83.3	15	16.7
Pupils social behaviour with one another	69	76.7	21	23.3
Increased attendance in the morning	90	100.0	0	0.0
Increased attendance in the evening	90	100.0	0	0.0
Community participation in the school	86	95.6	4	4.4

From the table, community participation in the school has been rated 95.6%. This shows that community members play vital role in providing people who are ready to assist the success of SFP by: preparing meals at school, constructing cooking shelters, constructing store rooms, protecting the school premises, organizing at least three meetings per annum to discuss the activities in connection to national school feeding programmes, organizing fundraising activities, assisting with the school vegetable gardens and parents providing plates and spoons. Thus the school feeding programme brings about harmony among the community, teachers and pupils hence smooth learning. (Abdullahi, M.G., 2012).

Summary

The chapter attempted to statistically establish whether the variables under study would have an impact on preschool in Tigoni Zone Kiambu, County in Kenya. Data analysis established that provision of food as a basic need to children and involvement of the community members in preschools Feeding Programme (SFP) in Tigoni zone Kiambu County, would positively impact on children's participation in preschool activities. The study established that teachers must know about the children's they are teaching, some of them came from poor backgrounds whereas others from able families but due to unfavourable economic conditions, they lacked food and other necessary basic needs to enable them participate fully in science activities. The provision of funds from the government and donors like WFP to support SFP by ensuring that food and other basic needs like water, health services, and uniform were given to children as a sense of belongingness and self-esteem that makes them comfortable and motivated them to participate in science activities. The school feeding programme, therefore, brings about harmony among the

community, teachers and children, hence smooth learning of preschools in Tigoni zone.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a brief summary of the study, conclusions and recommendations of the study. The study also offers suggestions for further research.

5.2 Summary of the study

The main purpose of the study was to assess the impact of school feeding programme on preschool children participation in science activities in Tigoni zone, Kiambu County Kenya. The study focused on the stated objectives by targeting head teachers', teachers' and children demographic data. In addition, the study focused on the effect of adequacy of food given to pupils, sources of funds, forms of school feeding programmes, availability of funds and disbursement of food to preschools and how community involvement in the school feeding programme influences preschool children's participation science activities in Tigoni zone Kiambu County in Kenya. Thereafter, research questions were formulated.

To generate and refine the study ideas, the literature review was essential to provide more ideas and clarity to research questions formulated. The variables of the study were summarized in the conceptual framework that showed their interrelatedness.

The study used descriptive survey design and simple random sampling technique to select head teachers, teachers and children who participated in

answering questionnaire and interview items. Data was collected using head teachers' and teachers' questionnaire, and children's' interviews which were analyzed using mainly descriptive statistics, particularly frequencies and percentages. Statistical package for social sciences (SPSS) was used for effective analysis of data. To realize the objectives of the study, findings were presented and conclusions drawn.

5.3 Summary of the findings

The following is a summary of the findings that was arrived at after the analysis of data basing on research objectives.

Adequacy of food

Findings in this study indicated that schools received food in terms of money or dry food for the School Feeding Programme (SFP), but sometimes there was a delay by the government to disburse food to the affected schools. Children's participation in science activities requires availability of food in preschool on regular basis. Therefore regular food intake is vital for the continuity of preschool children in schools.

Effect of the availability of funds on preschool children

Sources of finances for school feeding programme to schools in Tigoni Zone, Kiambu, County has an impact on enrolment. Head teachers indicated that most schools received food from parents. This was a positive indicator that donors and recipient governments focus wholeheartedly on the core necessities SFP. Other findings from children indicated that at least 80.0% of food provided was of good quality and a good percent of children had not faced challenges of sickness.

Forms of school feeding programmes on preschool

Results from head teachers on the kind of School Feeding Programme adopted in schools showed that majority of the head teachers (83.3%) preferred In-school-feeding to Take Home Rations. The head teachers viewed In-school-feeding as an incentive for children to attend school on a daily basis to receive a meal. Hence, the best way of retaining children in school and participation in science activities in Tigoni Zone Kiambu County. Besides, School Feeding Programme meals or snacks were fortified with proteins mostly (75.0%) and some slight vitamins (25.0%) to help to provide micronutrients that are commonly missing from children's diets.

The influence of community involvement in school feeding programmes

School Feeding Programmes in most preschools in Tigoni zone incorporate some form of parental or community contribution. Head teachers and teachers indicated that community involvement has a positive impact on children's participation in science activities in most preschools in Tigoni zone, Kiambu County. It brings about harmony among the community, teachers and pupils, hence smooth learning. Besides, teachers observed that there was a strong positive impact on pupils' classroom behaviour since SFP started and community members were ready to assist in making it a success.

5.4 Conclusion of the study

From the findings of the study, several conclusions were arrived at:

- i) Children's participation in science activities requires availability of food in school on regular basis. Therefore regular food intake is vital for the continuity of children's participation in science activities in preschools in Tigoni zone.

- ii) Donors and recipient governments should focus wholeheartedly on the core necessities SFP. Besides, food provided has to be of good quality to avoid cases of sickness.
- iii) In-school-feeding should be used as an incentive for children to participate in science activities on a daily basis.
- iv) Community involvement had a positive impact on children's participation in science activities in most preschool in Tigoni Zone, Kiambu County. It brings about harmony among the community, teachers and children, hence smooth learning and active participation in science activities.
- v) Every preschool in Tigoni zone Kiambu County to implement school feeding programme to raise children's participation in science activities.

5.5 Recommendations of the study

Basing on the already stated findings and conclusions, the study recommends the following.

- i) Preschools should be equipped with basic needs necessary for pupils' participation and achievement at school. The GOK should collaborate with World Bank, WHO and WFP to ensure that basic needs are provided to learners.
- ii) Head teachers and teachers should be on the forefront to ensure that school feeding programme policy is implemented in preschool in Tigoni zone , Kiambu county.

5.6 Suggestions for further research

The following are the suggested areas for further research:

- i) The influence of school feeding programmes on the children's achievement in KCPE examinations.
- ii) The influence of provision of basic needs on pupils' participation in primary schools education in other zones in Kenya.

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APPENDICES

APPENDIX I

INTRODUCTION LETTER

Ngure Nancy Wanjiru

University of Nairobi

P.O. BOX 30197

Nairobi

Dear Sir/Madam

RE: REQUEST TO FILL IN THE QUESTIONNAIRE

I am a Master of Education student from the University of Nairobi, Department of Education Communication and Technology. I am conducting a research on the **'EFFECT OF FEEDING PROGRAMME ON PRESCHOOL CHILDREN'S PARTICIPATION IN SCIENCE ACTIVITIES IN TIGONI ZONE, KIAMBU COUNTY'**

This research is part of the requirements for my academic work. You are kindly requested to take part in the study, be one of the respondents.

Your assistance will be highly appreciated.

Yours faithfully,

Ngure Nancy Wanjiru

APPENDIX 2

QUESTIONNAIRE FOR HEADTEACHERS

PART A: DEMOGRAPHIC INFORMATION

Please indicate the response by ticking (√) in the appropriate box.

1. What is your gender? Male () Female ()
2. What is your age bracket?
21-30 years () 31-40 yrs () 41-50 yrs ()
51-60 yrs () Over 60 yrs ()
3. (a) How long have you served in your present school?
0-3 yrs () 3-6 yrs () 6-9 years ()
9-12 years () above 12 years ()
(b) How long have you served in other schools? _____
4. Please indicate your school type
Boys' Boarding () Boys' Day () Girls' Day ()
Girls' Boarding () Mixed Boarding () Mixed Day ()
5. How many pupils does your school have?
Less than 100 pupils () 100-200 pupils ()
200-300 pupils () 300-400 pupils ()
400-500 pupils () 500-600pupils ()
Over 600 pupils ()

PART B: IMPACT OF SCHOOL FEEDING PROGRAMME ON PRESCHOOL CHILDREN'S PARTICIPATION IN SCIENCE ACTIVITIES IN TIGONI ZONE KIAMBU COUNTY, KENYA

Please give your response by filling in the answers.

6. Do you receive any food for the school feeding programmes?
Yes () No ()
7. Do you receive food in terms of money or dry food? Dry food () Money ()
8. What was the source of food/money?
 - Provided by WFP ()
 - Provided by the government ()
 - Parents and community ()
9. If you receive food in form of money (a)who purchases the food?
b) where do you purchase the food from?
Community () parents () market ()
10. When did the school start receiving food? _____
11. How much food did your school receive during the last distribution?

12. a) Was the food received on time? Yes () No ()
b) If No, why?

13. Were there any loses during transportation? Yes () No ()

14. a) Are all the pupils participating in the school feeding programme? Yes ()
) No ()
 b) If _____ No, _____ why?
-
15. Was the ration available at the school for the rest of the year? Yes ()
 No ()
16. What happens in case there is delay in release of funds or food distribution?

-
17. Which type of food do you receive?
 Flour () Cereals () Cooking oil () Vegetables () Barley () Rice ()
 Sugar () Soya () Snacks ()
18. a) Are the food fortified? Yes () No ()
 b) If yes, with Iron () Vitamins () Proteins ()
19. What is the source of cooking fuel?
 Firewood () Charcoal () Solar energy ()
 Paraffin () Electricity ()
20. How is the fuel provided?
21. Is water available in school? Yes () No ()
 a) If no who provides water in school?
22. Who manages distribution of food in school?
 School feeding committee () Parents () Teachers ()
 Others.....
23. How many cooks are there in school?
 Male
 Female
 TOTAL
24. a) Is the food provided onsite or given to pupils as take-home rations?
 Onsite () Take-home rations ()
 (b) (i) If onsite, how many times is the food served?
 Once a day () Twice a day () Thrice a day ()
 (ii) At what time do you serve the food? Morning () Mid morning ()
 Afternoon ()
 (c) If take-home rations, what type of food each pupil given?
 Snack () Cereals () Flour () Preserved vegetables ()
25. Suggest any measures that can be put in place to improve the school feeding programmes.

.....

APPENDIX 3

QUESTIONNAIRE FOR TEACHERS

PART A: DEMOGRAPHIC INFORMATION

Please indicate the response by ticking (✓) in the appropriate box.

1. What is your gender? Male () Female ()
2. What is your age bracket? 21-30 years () 31-40 yrs ()
41-50 yrs () 51-60 yrs () Over 60 yrs ()
3. Please indicate your school type
Boys' Boarding () Boys' Day () Girls' Day ()
Girls' Boarding () Mixed Boarding () Mixed Day ()
4. (a) How long have you served in your present school?
0-3 yrs () 3-6 yrs () 6-9 years ()
9-12 years () above 12 years ()
(b) How long have you served in other schools? _____

PART B: EFFECT OF FEEDING PROGRAMME ON PRESCHOOL CHILDREN'S PARTICIPATION IN SCIENCE ACTIVITIES IN TIGONI ZONE, KIAMBU COUNTY

Please give your response by filling in the answers.

5. Do you have any school feeding programme in your school? Yes() No ()
6. If yes, at what time of the term does the programme start?
At the beginning of the term() middle of the term ()
7. Before the start of the programme, how was the school attendance?
Poor () Average () High ()
8. What is the pupils' attendance in case there is a delay in food distribution? Poor () Average () High ()
9. A) Did you observe changes in pupils' classroom behaviour since the school feeding programme started? Yes () No ()
b) If yes, please list the changes that you observed;

<u>change</u>	<u>Positive change</u>	<u>No</u>
• Pupils' attentiveness in classroom)	()	()
• Pupils' cognitive and learning abilities)	()	()
• Pupils social behaviour with one another)	()	()
• Increased attendance Morning)	()	()
Afternoon)	()	()
• Community participation in the school)	()	()

10. How has been the pupils performance at the end of the term during school feeding?

Increasing () Same () Declining ()

APPENDIX 4

GUIDED INTERVIEW QUESTIONS TO PUPILS

1. Gender of pupil
Male () Female ()
2. Grade of pupil
Lower primary () Upper primary ()
3. How long have you been in this school?years andmonths
4. a) Are you provided with food at school? Yes () No ()
b) If Yes, are you satisfied with the quantity of food at school? Yes () No ()
b) if not satisfied please explain why
.....
.....
.....
5. What time of the term do you start receiving food?
.....
6. How often do you feel sick after the start of school feeding programmes?
7. Do you like the food? Yes () No ()
8. Would you like the change of the type of food you are given? Yes () No ()
9. How many times are you served food during the day Once () Twice () Thrice ()
10. When are you served food? Morning () Mid morning () Afternoon ()
11. Do you lack food in the school at any time of the term? Yes () No ()
12. Any comments by the pupil.
.....
.....
.....

THANK YOU

APPENDIX 5

INTRODUCTION LETTER

Letter to the respondents,

Dear teachers

Enclosed please find a designed questionnaire meant to have views on your attitude towards the effect of feeding programme or pre-school children's participation in science activities. Any information given will be treated with total confidentiality. Please do not indicate your name or the name of your pre-school.

APPENDIX B

QUESTIONNAIRE FOR TEACHERS

The questionnaire is divided into two sections. Section A contains items related to demographic information of the respondents. Section B contains items related to the variables to be measured.

Section A

- 1) What is your sex?
(Male) (Female)
- 2) How long have you taught in ECD?
- 3) What is your highest educational level?
- 4) Are you trained in ECD?

Section B

Importance of feeding programme

- 1) Does your school have a feeding programme for the children (Yes)
(No)
- 2) What is your view in relation to school feeding programme for preschool children?

Is feeding programme necessary in pre-schools? (Yes)
(No) _____ please explain your answer.

- 3) Who provides the food for the children?

Part 2

- 4) According to you how does the food programme enhance the learner ability to participate in class? Explain your answer.
- 5) According to your experience are well fed children more active in class than those who have not been fed?
- 6) Briefly explain how children in your pre-school behave when they are given food
 - i) _____
 - ii) _____
- 7) How do children who have not been given food behave in class?

-
- 8) What is the concentration level of children who have been given food?
High
Low
Moderate

Section C

- 9) According to you what is the relationship between feeding the children and participation in science activities?
- 10) What do you think are the indicators of high alertness in class?
- 11) Do you see any relationship between lack of food and low participation in class for children in pre school

APPENDIX C

OBSERVATION CHECKLIST FOR LEARNERS

Items to be checked	Schools with feeding program	Schools without feeding program
<ol style="list-style-type: none"> 1. Attention of learners 2. Activity of learners 3. Concentration of learners 4. Enthusiasm 5. Boredom 6. Withdrawal 7. Tension 8. Cooperation 9. Frequency of permission 10. Fighting pinching each other 11. Quarrelling 12. General behaviours negative 		

APPENDIX: D
INTERVIEW SCHEDULE FOR PARENTS

A) Importance of providing food

1. Source of food
2. Participation in provision of food
3. Type of food
4. Frequency breakfast, 10 o'clock, snack, lunch, supper.
5. Their attitude towards feeding of children in school.

B. Provision of Nutritious food to learners

1. Who prepares food for the children
2. What do the children take for:
 - a) Breakfast 1)
 2)
 - b) Ten o'clock snacks 1)
 2)
 - c) Lunch 1)
 2)
3. Are the children provided with fruits
4. If yes to (3) which kind of fruits and how often?
5. Is the food enough for the children ?