



MAKERERE

UNIVERSITY

**INFLUENCE OF SCHOOL MEALS ON STUDENTS' ENROLMENT IN SELECTED
DAY SECONDARY SCHOOLS IN KYEGEGWA DISTRICT**

BY

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**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF SCIENCE,
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DECLARATION.

I Ochieng Moses hereby declare that this dissertation whose title is, "Influence of school meals on the enrolment of students in day secondary schools in Kyegegwa district in Western Uganda" is my original work, and has never been presented for an award in any institution of learning. Appropriate acknowledgements have been given to all sources of information used in this dissertation.

Signed Ochieng..... Date 09TH DECEMBER, 2022.....

This work has been submitted with the approval of my supervisor.

Signed.....[Signature]..... Date 09/12/2022.....

Mr. Kansiime Edward.

Supervisor.

DEDICATION.

I dedicate this work to my parents, Mr. Owere Vincent and Mrs. Irene Owere for tirelessly supporting me in school regardless of the ups and downs encountered in my academic journey. I also dedicate this work to my beloved siblings; Mary, Kevin, Veronica, Jude, Deogratious and Lucy, for you always gave me a purpose to push on even when I felt like giving up.

To Mrs. Christine Were I dedicate this to you, for you sponsored my education throughout Advanced level. And finally, to all my friends and particularly Mr. Olatum Emmanuel and the rest of freedom square crew, I dedicate to you this work in appreciation of the great support you rendered to me and for allowing to be my study partners and also motivating me in turbulent times.

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May God reward you all.

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ACRONYMS.

WFP – World Food Program

ADA –American Dietetic Association

NDPII – Second National Development Plan.

NEP –National Education Policy.

USE/UPPET –Universal Secondary Education / Universal Post Primary Education and Training.

UPE –Universal Primary Education.

UN –United Nations.

UNWFP –United Nations World Food Programs.

SFPs -School Feeding Program.

OPERATIONAL DEFINITIONS.

Food.	Food is a substance that provided energy and nutrients required to support life.
Nutrients	Chemical substances required for normal functioning and maintenance of life.
School meal:	Comprises the food provided to students and sometimes to teachers at school.
School enrolment:	School age ratio –the rate of enrolment of learners into an institution with age.
School age	the years of existence from time of establishment up to 2022 when the data was collected.
Malnutrition	Deficiencies, excesses or imbalances in a person’s intake of energy and / nutrients.
Dietary intake	Daily eating pattern of an individual, including specific foods and calories consumed and relative quantities.
Nutrition status	Availability of nutrients and calories in individual’s diet compared to nutrition recommendations for individual’s age group and overall health.
Diet	Sums of foods consumed by a person.

ABSTRACT.

Background summary.

School meal comprises the food provided to students and sometimes to teachers at school. In many countries of the globe and depending on the school, it is served at the beginning of school day, lunch time and supper for boarding schools. Together with other factors such as family financial background, school's academic performance, religious affiliation of the school, school meals have been described to be amongst the lead determinants students' enrolment in schools but it is not well documented in Kyegegwa District. This study assessed the influence school meals have on students' enrolment in selected day secondary schools in Kyegegwa district.

Methods.

Observation, research, interview and questionnaires were used to collect the required data from study participants. Components of the school farm were seen and taken note of. While using questionnaires school administrators and students were respectively given separate questionnaire forms to fill in. Research was conducted through reading several Biology textbooks on the topic of nutrition, as well as reading several literatures related to feeding in schools across the globe, and learners' enrolment in schools online from the internet. Questions that were orally answered by the interviewees who were both the school administrators and students were also asked by the interviewer.

Results.

Findings showed that all the schools carried out crop production in the school garden, and that none of the schools carried out animal rearing in their farms. The highest number of food groups offered to learners as school meals was 5, and the minimum was 2. The food groups included cereals, Dark green leafy vegetables, vitamin A rich fruits, legumes, and oils and fats. The enrolment: school age ratios were significantly higher for schools which gave diverse food groups (more than 3 food groups) to learners in form of meals, compared to that of the school which offered very few food groups (less than 3 food groups) to their learners in school meals.

Conclusion.

Provision of school meals diversified with various food groups boost student's enrolment into day secondary schools in Kyegegwa district.

CHAPTER ONE

INTRODUCTION.

1.1. Background of the study.

School meal comprises the food provided to students and sometimes to teachers at school. In many countries of the globe and depending on the school, it is served at the beginning of school day, lunch time and evening supper for boarding schools. (Aliyar et al, 2015). In France and Finland, learners pay for school meals (Gunderson, 2016). In the United Kingdom, school governors are responsible for the provision of food in schools. The recommended foods include high quality meat, poultry or oil food, bread, cereals or potatoes, vegetables, water and fruit juice served in different proportions. This correlates with the type of crops and animals in school farm as evidenced by the Research from the center of study of education and training, in the education research department at Lancaster University (Murray et al, 2015).

In Africa, millions of children go to school on an empty stomach (World Food Program, 2020). Hunger affects children concentration and ability to learn. Girls particularly are extremely affected and some simply do not go to school because their families cannot provide them school meals among other basics for example Karamoja region (World Food Program, 2020).

In most Ugandan schools, posho and beans dominate in school meals and for many years, talking about posho is synonymous with school memories (Daily Monitor, 2019). For the active student teenager, it is a heavy source of energy giving carbohydrates and its digestion takes long, if less processed, giving consumers longer satiety. The predominance of posho and beans in school is attributed to its relative affordability, and easy storage. (Daily monitor, 2019). There have been several advocacies for the improvement of school meals by different stake holders in Uganda. Ideal meals for schools should be powder made from sweet potatoes, amaranth, and vegetables because posho and beans alone are deficient in vitamins, iron and zinc and yet they are essential in Brain development in the aspect of critical thinking and this (Acham as quoted from the Observer, 29th February, 2016). Offering more fresh fruit, whole grains and greater variety of vegetables could lead to additional healthy benefits (American Dietetic Association, 2019). Meals in school are important because they enable students to focus on content being taught at school and perform better in exams. Meals also provide an incentive for parents to keep sending their children to school. (Natalie et al, 2019). Moreover, school feeding programs have shown a consistently positive effect on students' energy, and attendance and enrolment into school (World Health Organization, 2019).

1.2. Problem statement.

In the current era, many factors are considered to affect the enrolment of learners in secondary schools. These include; level of education and income of parent, nature of the school, academic performance of the school and availability of public transport means (Kakuhire, 2018). Several studies have been carried out to further investigate other influencers of student's enrolment in schools. Religious affiliation of the school has been found to influence parental choice of secondary schools for their children (Mikael, et al, 2018). Girl child enrolment, maintenance in school, and engagement in academic activities have increased due to school feeding programs by other studies (Aulo, 2015). However, in all the studies conducted, the relationship between dietary intake and students' enrolment particularly in day secondary have not been investigated. If this is not given attention, there is a possibility that education systems in many developing countries will remain retarded, since most of the countries have day schools. This study therefore is to investigate the influence of school meals on students' enrolment in selected day secondary schools in Kyegegwa district in Western Uganda.

1.3. General Objective of the study.

The general objective of the study was to determine the influence of school meals on students' enrolment in selected day secondary schools in Kyegegwa district

1.4. Specific Objectives of the study.

- To determine the types of crops and animals in school farm.
- To identify diversity of foods in meals offer to learners at school.
- To determine the relationship between dietary intake and student's enrolment in various secondary schools in Kyegegwa district.

1.5. Research Questions.

- What types of crops and animals in school farm?
- What is the diversity of foods in meals offer to learners at school?
- What is the relationship between dietary intake and student's enrolment in various secondary schools in Kyegegwa district?

1.6. Justification of the study.

Nutrition of learners in school influence their health and attitudes towards learning and cognitive abilities. This study focused on school meals influence on the enrolment of children in Kyegegwa district schools so as inform school administrators about the role played by meal provision in the

number of students who enroll into a given school. The results obtained in this study will also enable school authorities to boost the stay of particularly female students in schools. Kyegegwa district secondary schools were used since the data obtained would represent the situations in other districts in the country.

1.7. Significance of the study.

The study will guide policymakers on how to promote children education. It will also guide school administrators on how to improve the academic performance of their learners. It will also give a basis for increasing literacy level amongst Ugandans. The study will further guide schools on the significance of carrying out agriculture in school gardens and farms. It will reduce the rate of school dropout amongst secondary school going learners in Kyegegwa and Uganda at large.

1.8. Scope of the study.

The study was done between 5th September and 02nd December, 2022. It focused on the influence of school meals on students' enrolment in selected day secondary schools in Kyegegwa district.

CHAPTER TWO

LITERATURE REVIEW.

2.1. Types of crops and animals in school farm.

Proper nutrition is an essential need for children's balanced biological, psycho-logical, mental, and social development. The shortage of proper nutrition, either in quantity or quality, will impact the child's health, causing many diseases and even death (World Health Organization, 2021). Malnutrition has different forms, including under-nutrition and hunger, and overweight and obesity due to a deficiency of micro-nutrients, which play an essential role in growth, bone health, fluid balance, and several other processes (Academy of nutrition and Dietetics, 2022).

Children's hunger is a pressing challenge facing the global community as around 10,000 children worldwide die from hunger each day (Chinyoka, 2014). Accordingly, there is severe pressure on governments and international organizations to fight malnutrition and hunger and provide multiple alternatives to healthy food sources (Chinyoka, 2014). Providing appropriate nutrition for children requires providing them with healthy food, educating them about healthy nutrition and food sources, and involving them in developing appropriate local solutions (Food and Agriculture Organization for United Nations, 2018). The school farm is an effective solution that imposes its presence on the scene since it has been an important intervention program for several decades (Hardman & Larkham, 2014).

School farms have deep historical roots as school gardens have been widely used in Europe in education since 1811, while the United States developed one of the earliest educational school garden programs in 1891 (Roche et al., 2012; Foeken et al., 2010). FAO promotes the idea of school farms and encourages schools to create moderate-sized learning gardens/farms, producing various fruit and vegetables, using simple techniques, so that teachers and parents can easily manage the garden/farm and students can apply learned gardening/farming techniques easily (Georges, 2019). School farms refer to an educational model, which includes mainly: School gardens, and farm-to-school programs (Roche et al., 2012; Foeken et al., 2010).

School gardens refer to a wide range of farm activities that depend on the scale and category of the schools. School gardens as a concept are built upon enhancing hands-on or 'learning by doing' by providing educational lessons to investigate where food comes from, how it is grown, and the

value and joy of eating fresh foods (Savoie-Roskos et al., 2017; Berezowitz et al., 2015). Therefore, students acquire authentic and positive experiences within the agricultural field (Vallianatos et al., 2004). Moreover, school gardens provide an active learning context and serve as living classrooms or outdoor laboratories where students can apply academic subjects such as science, mathematics, languages, and even fine arts (Hayden-Smith, 2015). However, the perception of school gardens now focus more on food production, better nutrition, and environmental protection (Food and Agriculture Organization, 2010); one needs to keep in mind that school gardens are first and foremost an educational tool and are not often regarded as an exit strategy to school feeding (Food and Agriculture Organization, 2006). Similarly, there are many successful initiatives of school gardens worldwide, such as in the United States, Canada, Indonesia, Japan, Finland, Ireland, Kenya, and Zambia (Alexander, 2021). One of the most prominent examples of school gardens is the Australian school garden, where the community engagement involving families, teachers, and students is at the core of establishing the school garden; for example, the Stephanie Alexander Kitchen Garden, where Australian students of all ages learn to grow, harvest, and prepare healthy food with their peers. This helps them build robust social relationships with peers, encourages critical thinking and teamwork skills, and increases observation levels among students. The Stephanie Alexander Kitchen Garden is established with a productive garden space, a kitchen and dining space, regular garden classes, and regular kitchen classes (Alexander, 2021).

Farm-to-school program is the second sector of school farms and the viral initiative that led to the concept of school farms and it was founded in 1990 in the United States and spread (Vallianatos et al., 2004). The farm-to-school program aims to increase the integration of fresh food from local and regional farms into school meals (New York Department of Agriculture and Markets, 2015), enriching the communities' connection with fresh, healthy, and local food (National Farm to School Network, 2021). Although the primary purpose of farm-to-school programs is food production, their priorities vary depending on the local circumstances and the target group. In the global south, food production, fighting hunger, and malnutrition are the main aim of farm-to-school programs, while the educational use of school farms is mainly for vocational agricultural training (Schreinemachers et al., 2020). In comparison to other institutions, farm-to-school programs function in the educational field, providing students with food education and developing hands-on farming skills (Gonsalves, Hunter, and Lauridsen, 2020). Besides, 'garden-based learning' has predominated, using gardens as laboratories for learning science, environmental studies, and other subjects such as art and language, in addition to providing children with fresh organic vegetables and fruit (Food and Agriculture Organization, 2010). Across the globe, farm-

to-school has 19 inspiring and innovative programs, making a demonstrated difference in child health, school attendance rates, food security, and farmer livelihoods in many communities (Social Farms & Gardens, 2018). Many countries worldwide have adopted farm-to-school programs, such as the ‘School Feeding Program’ in Ghana and ‘Purchase from Africans for Africa Program’ in Ethiopia, Malawi, Mozambique, Niger, and Senegal (Food tank, 2021). According to the WFP, nearly every country globally has a national school feeding program, serving an estimated 368 million children worldwide (Tembon et al., 2015). Studies reveal the lasting impact of school feeding programs on shaping children’s future, as creating school farms and boosting agriculture education can raise students’ awareness on how to grow nutritious food crops, to cook, share, and enjoy at mealtimes (Bundy et al., 2009).

According to Field actions science report over half of the Nakuru schools cultivated crops, predominantly in their school’s own compounds and were more common among secondary schools than primary schools (Dick et al, 2019). The acres ranged from 0.1 to about 5 acres, average being 0.8 acres. The most popular food stuffs grown were beans, maize, cabbage “sukuma wiki” (collard greens) and potatoes. Inputs were used by all Schools which include the following; organic fertilizer, chemical fertilizer, chemical insecticides, local seeds, improved seeds and farm irrigation (Dick et al, 2019). Sky Light Primary school has a school garden located on 5400 square meters of land. 72 children are actively involved in school gardening activities, 32 of whom are boys while 40 are girls (Ssemakula, 2021). The major crops grown are cabbages, beans, tomatoes, and “sukuma wiki” (Collard greens) for which they constructed a seedbed to raise the seedlings, and the garden is managed using cow dung manure. (Ssemakula, 2021). Bugiri Town School is another school located on a slope in Bugiri district whose garden was launched on 1st of August 2016 and was managed by a team of 140 students. The common crops grown were maize, beans, cabbage, tomatoes and onions the soil was enriched by mulching, crop rotation and application of organic manure (Watiti, 2021).

Research from the center of study of education and training, in the education research department at Lancaster University indicates that schools in United Kingdom engage in rearing both small-mainly poultry and big animals (Murray et al., 2018). All schools that responded kept chicken and an average of 25 per school, while one school had 400 chicken both broilers and layers of which only 3 schools specialized in rare breeds. All schools had some large animal livestock, 13 had cattle with an average herd of 13, which comprised both dairy and beef. 16 schools had sheep with an average flock of 29 beasts, 22 schools kept pig herds with the largest population at 105 (sow, piglets and boars) with 5 schools having 3 or under (Murray et al, 2018)

2.2. Diversity of foods in meals offered to learners at school.

School feeding is simply the provision of food to children through schools, and different countries have one or a combination of the two feeding modalities in place for various objectives (Oyefade, 2014). The feeding modalities can be grouped into two broad categories: in-school meals and take-home rations where families are given food if their Children attend school. Historically, in-school meals have been the most popular modality of school feeding Interventions (Uduku, 2011). The school feeding can be in turn grouped into two common categories: programs that provides meals and programs that provides high-energy biscuits or snacks to generate greater impacts on school enrolment, retention rates, and reduce gender or social gaps (Akanbi, 2013). There are indications of a significant swing in thinking about school feeding and many elements of this new thinking are being promoted Keenly under the rubric of “home grown school feeding (Uduku, 2011). The emergence of school feeding program to the 1930s in the United Kingdom and the United States of America with a focus on improving the growth of children (Tomlinson, 2007). In 1900, Netherlands became the first Country to move the program to a new level of incorporating school meals into a national legislation. By the 1930s, the United Kingdom and the United States had also instituted the school feeding program as part of their National program. A further account indicates that school feeding initiatives have been in existence since the late 1700’s and originated as projects of donors in Europe (Aksmbi, 2013). The United States of America began the practice of initiating School feeding programs in Austria as an act of international aid focused on combating the severe malnutrition of Children in the 1940s after the Second World War. Since then, school feeding programs have become a key part of Food assistance, relief emergency and development programs. School Feeding Program is a social safety network for children and as part of the national development goals. It provides an important new opportunity to assist poor families and feed hungry children (Oyefade, 2014).

School meal comprises the food provided to students and sometimes to teachers at school. In many countries of the globe and depending on the school, it is served at the beginning of school day, lunch time and supper for boarding schools (Aliyar et al, 2015). In France and Finland, learners pay for school meals, in the United Kingdom school governors are responsible for the provision of food in schools. And recommended foods include high quality meat, poultry or oil food, bread, cereals or potatoes, vegetables, water and fruit juice served in different proportions (Gunderson, 2016).

In most schools, posho and beans dominate the school meals and for many years, talking about posho is synonymous with school memories (Daily Monitor, 2019). For an active student

teenager, it is a heavy source of energy and its digestion takes long while giving consumers longer satiety. The predominance of Posho and beans in school is attributed to its relative affordability, and easy storage (Kinobe as quoted in the Daily monitor, 19th April, 2019). School feeding programs have shown a consistently positive effect on students' energy, enrollment and attendance. Studies show that meals served in schools should be of good nutritional quality (Jukes et al, 2008). Also, studies on nutrition have shown that under nutrition in children stunts their growth and mental development, hence, the relationship between nutrition and academic performance (Alabi, 2003). Although food has classically been perceived as a means of providing energy and building materials to the body, research over the years has provided exciting evidence for the influence of dietary factors on mental function. Not only are children motivated to get into school but also there is a significant impact on their nutritional status and development, cognitive capabilities and academic performance. Literature has shown that the development and learning potential of the beneficiaries Depend on the quality and nutrient components of food (Jukes et al, 2008). Nutritional and health status are powerful influences on a child's learning and how a child performs in school. Children who lack certain nutrients in their diet do not have the same potential for learning as healthy and well-nourished children. Children with cognitive and sensory impairments naturally perform less and are more likely to repeat grades. The irregular school attendance of malnourished and unhealthy children is one of the key factors for Poor performance (Uduku, 2011). Students in School Feeding Programs have the potential for improving their Performance because it enables them attend school regularly and studied more effectively. Also, in a study Carried out in Jamaica, children in grade 2 scored higher in Arithmetic when they started being fed at school (Yunusa, 2012).

However, the impact of School Feeding Programs on the academic performance of pupils has been embraced with mixed feelings. It was observed that although SFPs motivate parents to enroll their children in school, its impact on Academic performance is mixed and depends on various factors within the context in which the programs are set (Uduku, 2011). Drawing from this, SFPs would best improve the performance of pupils when coupled with adequate learning materials, physical facilities and teacher motivation. Nutrient needs increase in adolescence to meet the demands of pubertal (World Health Organization, 2018). Numerous factors influence the dietary habits and behaviors of adolescents, including brain development and understanding of matters that might affect health as well as the broader familial, socio-cultural and economic environment in which an adolescent interacts with, eats, studies, works and plays (World Health Organization 2019). Improving the nutritional quality of meals served to school-age children has the potential to reduce anemia and under nutrition, and to support cognitive function (Bellisle, 2004). School

children and adolescents' dietary intake in Eastern Africa and developing countries is generally limited in diversity and mainly comprises plant-based food sources. A review showed that providing food supplements and additional iron improved students' academic performance notably (Popkin and Lim-Ybanez 1982). Schools use different approaches to improve nutrition of school children such as offering more diversified diet, providing micronutrient supplements and adding specific high nutrient foods like eggs, milk, groundnuts and ground silver fish (Chen and Chang 2010). NDPII mentions that poor feeding of school children is a major constraint on the quality of education at all levels (Education Act, 2008). Feeding of children in school is a role of parents and communities, who with the school determine the format of the feeding (Education act, 2008). Uganda Education Act 2008 law gives the responsibility of feeding children while at school to parents and guardians. The Parent/Guardian led School Feeding Program encourages parents to voluntarily send children to school with food. Maize flour is the main ingredient of most meals made in schools (World Food Program, 2018). Meals in schools often include posho, rice, matooke, Irish, millet bread, cassava, sweet potatoes. Beans, cowpeas, meat, chicken, fish/mukene, vegetables (sukuma wiki, cabbage), fruits (mangoes, pineapples, citrus fruits, avocado, jackfruit, sugarcane, watermelon, papaya). Ideal meals for schools should be powder made from sweet potatoes, amaranth, and vegetables because posho and beans alone are deficient in vitamins, iron and zinc and yet they are essential in Brain development in the aspect of critical thinking and this (Acham as quoted From the Observer, 29th February, 2016). Offering more fresh fruit, whole grains and greater variety of vegetables could lead to additional healthy benefits (American Dietetic Association, 2019).

2.3. Relationship between dietary intake and student's enrolment in various secondary schools.

Cambridge University dictionary defines enrolment as the act of putting yourself or someone else onto the official list of members of a course, college or university, or group. In Uganda, an academic year begins in February and ends in December. The structure of education in Uganda includes pre-primary level, for three years; primary level for seven years; secondary level for six years, and tertiary level which can range from two to five years depending on the course offered (National Education Program, 2020).

According to results from the education planning and policy analysis department, the number of students enrolled by 2016 in lower secondary level, that is from Senior one to senior four was 1,004,019 in which the female enrolment was 473,711 and the male enrolment was 530,308. The total enrollment of students in upper secondary, that is senior five and senior six was 74,531

(Universal Secondary Education, 2016). Nearly 30% of the female youth of secondary school age are out of school compared to 21% of the male of the same age. For youth of secondary school age, the biggest disparity can be seen between the male and female youth (National Education Program, 2020). The enrollment of students in a particular school is affected by factors which include financial status of parents and guardians, education level of the parent or guardian, religious background of the school and affiliation of the students and guardians, and beauty of the school. Public and private transportation is more likely to affect student enrolment. Unplanned pregnancies and orphan hood altogether affect the rate of student's enrolment in schools (Wilson et al, 2018). In follow-up to UPE, the Government of Uganda introduced in 2007 its USE policy in order to increase access to quality secondary education for economically vulnerable families (Huylebroeck et al, 2016).

USE is one of the millennium Development Goals aimed at fostering quality education. UN notes that the abolition of school fees boosts enrolment rates in several countries including East Africa's Burundi, Kenyan and Tanzania (National Education Program, 2018). According to Josephine, one of the beneficiaries of UNWFP in Karamoja region in Uganda where school meals were being supplied, her mother kept telling her to quit school and help her with domestic work instead. She insisted on continuous school attendance until her mother one time asked her to go to school with little sisters so that they could have meals too (World Food Program, 2019). The Executive Direct of WFP asserted that studies have revealed the vital role of school meals in preventing school dropout amongst children (World Food Program, 2018).

The decision to enroll a child in school and, thereafter, for the child to attend regularly is influenced by many factors. These include the perceived value of education, the availability of employment opportunities, the direct and indirect cost of schooling and the availability and quality of school facilities (Oyefade, 2014). Food incentives offered to students such as school meals compensate parents for direct educational costs; the implementation of SFP is associated with increase in enrolment, particularly for girls (Oyefade, 2014).

Also, several studies have found a strong relationship between education and poverty, particularly inequality (Oyefade, 2014). The poor are heavily deprived and so are their children; poverty affects school attendance and education quality, particularly early childhood malnutrition, deprivation based on gender and income inequality tend to be responsible. In many countries, such as Brazil, Philippines, Cambodia, Mali, El Salvador, Indonesia, Ghana, Bangladesh, Ecuador where school feeding programs are implemented, data reveals that the program has increased enrolment and attendance rates over the years (Akanbi, 2013).

In Bangladesh, the research carried out by The International Food Policy Research Institute on the effects of school feeding program found that the program raised school enrolment rates by 14.2%, reduced the probability of dropping out of school by 7.5% and increased school attendance by 1.3 days a month. Similarly, in Pakistan a program provides an income in the form of one or two tins of oil to families whose girls attend school for twenty days per month. In its pilot phase, the oil incentive program demonstrated that it could make a significant contribution to full attendance. In participating schools, enrolment improved overall while attendance increased from 73% to 95% among participants (Ninno, 2002). The program also claims to put additional food in the hands of mothers to serve.

2.4. Summary of literature and identification of gaps.

Good nutrition is an essential need for children's balanced biological, psycho-logical, mental, and social development. The shortage of proper nutrition, either in quantity or quality, will impact the child's health, causing many diseases and even death (World Health Organization, 2021). Together with school meals, the enrollment of students in a particular school is affected by factors which include financial status of parents and guardians, education level of the parent or guardian, religious background of the school and affiliation of the students and guardians, and beauty of the school. Little has been written about the nature of crops and animals farmed at school and how they are involved in school meal systems in Uganda secondary schools. The link between the foods given to learners in Ugandan day schools and learners' enrolment into the schools is also less studied and established.

CHAPTER THREE

METHODOLOGY.

3.1. Area of study and study population.

The study was conducted from day secondary schools in Kyegegwa district in western Uganda. Kyegegwa district is bordered by Mubende district to the east, Kyenjonjo district to the west, Kibale to the north, and Kiruhura to the south. The district sits on approximately 1,747 km² of land. There are 23 secondary schools in the district with over 09 schools being day secondary school. Head teachers of the day secondary schools participate in the research.

3.2. Research design.

Exploratory and descriptive study design was adopted in which both quantitative and qualitative methods were being applied. This design was used because descriptive studies yield rich data that lead to detailed analysis (Kumar, 2011).

3.3. Sampling procedure and determination of sample size.

Three-day secondary schools in Kyegegwa district were selected for study. The selected schools were representatives of the day secondary schools in the district. In each of the schools selected, only senior one class was sampled. This was to ensure that data obtained was from students who still had more time to spend at school. A total of 97 participants were included in the survey as derived from Krejcie and Morgan's table, 1970. Out of 97 sample participants, 3 were school administrators, and remaining 94 of them were students. From each of the selected schools, 32 senior one students participated, that is to say 16 girls and 16 boys got involved in the data collection process.

3.4 Selection of respondents.

3.4.1. Non-probability sampling.

To obtain the preliminary information of the research, school administrators were involved particularly the head teachers, but not any member of the teaching staff. This was to increase accuracy and reliability of the data gathered.

3.4.2. Simple random sampling.

The learners involved in the study were randomly picked, and both girls and boys in each of the schools visited had equal chances of participating in the exercise

3.5. Procedure of data collection.

3.5.1. Interview.

Questions that were orally answered by the interviewees who were both the school administrators and students were asked. The language of communication used during the interview process was English due to the fact that the study participants were all academicians. Using this approach, learners were interviewed of their names, time they arrive at school, as well as their general welfare at school

3.5.2. Observation.

Using this approach, the animals and plants in respective school farms were taken note of.

3.5.3. Questionnaire.

Two sets of questionnaires, one for school administrators, and another for only students were given to respective respondents to fill in.

3.5.4. Research.

This was conducted through reading several Biology textbooks on the topic of nutrition, as well as reading several literatures related to feeding in schools across the globe, and learners' enrolment in schools online from the internet.

3.6 Data Analysis.

The questionnaires were verified for completeness. The data obtained from observation, research, interview and questionnaires were analyzed by systematically applying statistical and logical techniques and software such as SPSS to describe, illustrate and evaluate the data. Descriptive statistics such as frequencies, ratios and percentages were obtained and together these statistical parameters formed a basis for evaluation for the data obtained. The results obtained also yield a graph illustrating the relationships of some study parameters.

3.7 Ethical considerations.

School administrators and students involved were asked for permission, using a written consent form before the process of data collection could begin. Identity of study participants remained concealed; participant's names and the schools involved did not appear anywhere in the dissertation, but instead letters A, B and C were used to represent the schools.

1.8. Limitations of the study.

One student in one of the visited schools had a very poor handwriting on the questionnaire form and what she answered could not be read.

CHAPTER FOUR

RESULTS.

4.1. Socio-demographic characteristics of the study participants.

Table 4.1: Socio-demographic characteristics of participants.

Characteristics	Numbers	Percent
Sex		
Male	49	50.5
Female	48	49.5
Ages (years)		
<13	1	1.0
13-14	47	48.5
15-16	31	32.0
17-18	15	15.4
>18	3	3.1
Level		
Administrator	3	3.1
Student	94	96.9

Out of the 97 participants sampled, 50.5% were males and 49.5% were female. Participants of different categories were involved in which school administrators constituted only 3.1% and the students took the vast majority of 96.9%. By age group, the percentage of participants in age group <13, 13-14, 15-16, 17-18 and >18 was 1.0%, 48.5%, 32.0%, 15.4% and 3.1% respectively. Majority participants by age group were of age group 13-14.

4.2. Details of the selected schools.

Table 4.2: School details and the nature of school farms.

	School		
	A	B	C
Year of establishment.	2019	2006	2003
Student's Enrolment: Boys	69	210	340
Girls	53	151	356
Number of classes operation	2	6	6
Number of groups of food crops cultivated.	4	2	3
Number of crops cultivated in school gardens	6	2	4
Number of animals reared in school farm	0	0	0

A total of 3-day secondary schools was sampled and all had students' enrolment of above 100. Two-third of the schools sampled had complete secondary school system with all the classes. In each of the schools, at least 2 food crops are grown in school garden so as to minimize the cost of buying food to feed staff and students, as well as selling to raise school finances. None of the schools reared animals of any sort because of the management expenses involved in keeping animals in school farms.

4.3. Food groups given to learners in schools meals.

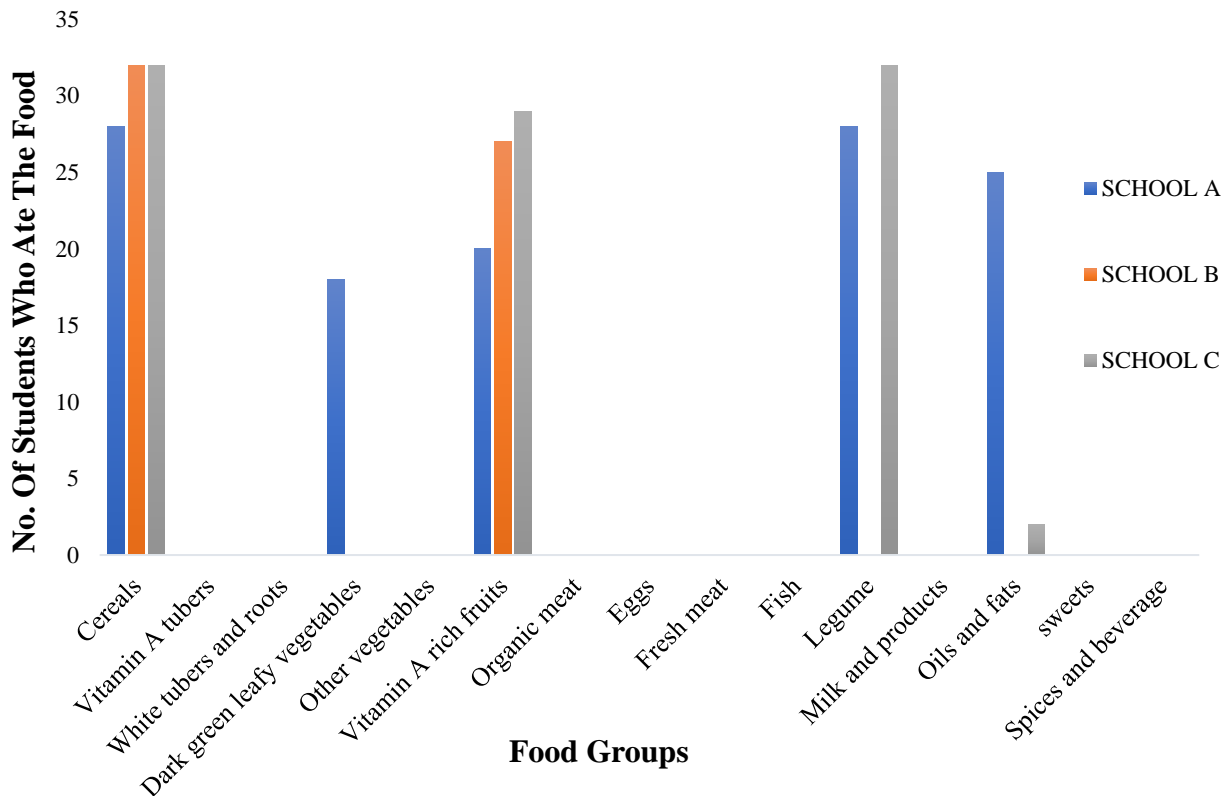


Figure 4.1: A graph of showing number of students who eat given food groups in three schools per week

Out of 3 schools sampled, each school provided at least 2 different food groups to her students. A total of 5 different food groups were offered to students in all the schools, with cereals being consumed most, and dark green leafy vegetables least. School A gave the highest number of food groups to her learners, followed by school C, and lastly school B that provided only 2 food groups. For cereals, the highest consumers were from school B and school C, then least consumed by school A learners.

Dark green leafy vegetables were only consumed by school A learners. Vitamin A rich fruits were variedly eaten by learners of all school, with school C contributing the highest number and school A the least numbers. Legumes were only consumed by learners from schools A and C, but not those from school B. Oils and fats were consumed by learners of schools A and C only, in which school A had higher consumption.

4.4. Relationship between school meals and student's enrolment in schools.

Table 4.3: Relationship between school meals provided at school and students enrolment

School	School age by 2022	Number of food groups given to students as school meal, per week.	Students' enrolment	$\frac{\text{enrolment}}{\text{school age}}$ ratio
A	3	5	122	40.7
B	16	2	361	22.6
C	19	4	696	36.6

Schools which served 5, 2 and 4 food groups in school meals had enrolment ratios of 40.7, 22.6 and 36.6 respectively, showing a direct relationship between food groups served and enrolment: school age ratio.

CHAPTER FIVE

DISCUSSION OF RESULTS, CONCLUSION AND RECOMMENDATIONS.

5.1. Discursion of results.

Both students and school administrators were involved in the study in order to collaborate the research findings. To ensure gender balance, males and females of approximately equal proportion were involved. The largest number of participants during the study were from the age group of 13-14 years. Since the participants were all in senior one, this observation is in agreement with the publication of the World Bank collection of development indicators compiled in 2021, in which the composition of senior one class is shown to be hugely composed of learners aged 13. However, it can also be noted that the proportion of participants in the age group 17-18 was relatively high at 15. 4%. This is attributed to the corona virus disease pandemic which saw Ugandan learning institutions shut down for almost 2 years during which students were helplessly Staying at home. (Voice of America, 2022)

Two-third of the schools visited and sampled had complete secondary school system running from senior one to senior six, and only one school had two classes in operation. The latter school started recently and its progression to acquire more classes was hindered by the corona virus disease pandemic which dictated a lockdown on the country's economy (Voice of America, 2022). All schools cultivated some food crops in the school farms in order to minimize on the cost of running the institutions, and to raise school finances for daily running. According to Food and Agriculture Organization' the following are the benefits Ugandan schools get from farming; students learn agricultural skills for the future and will be able to earn a living; Pupils' and teachers' nutrition and health are improved; children learn to appreciate the value of vegetables in a balanced diet; the school's reputation is enhanced; pupils get certificates in agriculture; the community gets seeds and seedlings and learns how to diversify traditional crops (Food and Agriculture Organization, 2010). None of the schools reared animals of any sort in the school farm due to several reasons such as; high cost of management of animals in the farm in terms of employing special trained handlers, maintenance of the animals which involve regular treatment, and buying of feeds. Other stumbling block to animal rearing as highlighted by the school administrators were; lack of infrastructures to shelter the animals, religious difference amongst the school employees in which the Muslims would not be comfortable with pigs in the school farm; inconveniences that come along with rearing some animals such as goats which have a tendency of moving off shelter to encroach on community's crops in the garden. This means that is difficult

to feed learners in these schools on animal products, since an attempt to do so requires purely buying without the school garden's backup (Food and Agriculture Organization, 2010).

In overall, school A provided the highest number of food groups to her learners that is to say cereals, vitamin A rich fruits, Dark green leafy vegetables, Legumes and oils and fats; school C provided four food groups to her learners that is to say cereals, vitamin A rich fruits, legumes and fats and oils, while school B offered the least number of food groups to her learners, that is to say only two food groups in which cereals and Vitamin A rich fruits were offered. The number of food groups offered to learners in each of the schools can partly be explained by the fate of the agricultural products from each of the schools sampled, as given by the school administrators. In school A where the food produced was meant for students' and staff consumption only, the weekly dietary intake of students was high. In school B where most of the food produced was sold to raise finances to run the school, and very little food was meant for consumption at school, there was low dietary intake by learners weekly.

The low feeding practices by schools can result into so many undesirable results. These include poor academic performance in class, absenteeism from school, escaping from school, theft, loss of interests in studying, decline in the immunity of learners and loss of body weight. This can also endanger learners to falling victims of bad-willed individuals like defilers among others who may use their food needs to divert and abuse them. In a publication by new vision in 2020, Kyegegwa district alone registered 3,038 teenage pregnancies. This report could have partly resulted from student disparity caused by hunger from school.

Cereals were majorly served in form of porridge and posho to students in schools, dark green leafy vegetables were served in lunch as sauce, vitamin A rich fruits were mainly mangoes, and legumes were hugely constituted of beans which were fried using cooking oils. Students from school A and B are likely not to get protein related deficiency diseases because the cereals and legumes provided in their meals complement each other in amino acids. That is to say beans have the rest of the amino acids in relatively high amounts, unlike methionine which is in limiting quantity (American Society for Nutrition, 2020). While posho contains other amino acids in relatively high amount aside from lysine which quantity is limiting. Therefore, feeding students in the meal comprising both posho and beans will always keep them healthy.

All the selected and sampled schools provided vitamin A to their learners. This is coupled with associated benefits of Vitamin A such as provision of good eye sight and maintenance of healthy teeth, skeletal and soft tissue, mucus membrane, and skin among learners. In schools where

students were fed on fats and oils, their bodies have high calorie content for daily school activities, and also efficient fat-soluble vitamins absorption (Nestle, 2020). Students from only school A received meals having dark green leafy vegetables. This confers them a unique advantage since the foods contain both organic and inorganic food substances such as iron, magnesium, calcium and potassium, vitamins A, B, C, E and K. Schools which provided more diverse ranges of food to learners registered higher enrolment compared to that which provided limited food groups to learners. Despite being in existence for relatively longer period of time, the enrolment rate of learners in school B by 2022 remained lower than for the other 2 schools which are younger (in age) and yet feed their students on more diverse meals. This agrees with Chinyoka (2014) in which institutional feeding programs had carefully selecting of balanced meals to improve children's nutrition. Careful selection promotes children's health and growth since malnutrition among children is a contributing cause of premature deaths. It improves concentration and educational performance in school. The food provided in schools improves students' energy levels, which helps them focus on class and perform much better in their assignments.

Across all schools, it should be noted that besides school feeding programs, other factors which were not studied in this survey also play a part in learner's enrolment. According to Aulo, 2015 there was also some evidence for an optimum size for a school and that has an impact on attendance and achievement. Some schools are much larger but with a lower student-teacher ratio. Teachers' workloads also increase if they have to teach more than one subject especially to large classes. This can have a negative effect on pupil participation and enrolment. Schools with good management had better state of physical infrastructure than those with poor management, which directly correlated with student's enrolment. Low performing schools were characterized by their particularly poor physical infrastructure as well as varying degree of poor management. Care for school grounds, buildings and furniture are all important signals of a disciplined and sustainable learning environment. Head teachers need to appreciate the importance of well-maintained physical facilities, such as buildings, classrooms and toilets. Separate, adequate and clean toilet facilities are particularly important for keeping girls in schools (Aulo, 2015).

5.2. Conclusion.

From the study results, most schools cultivated food crops in their school farms, but none of them reared animals of any sort in the farms. The kinds and number of food crops grown vary from school to school. At least all the schools provided school meals to the learners, though the diversity of the foods in the meals varied from school to school. The highest food diversity was offered in school A, followed by school C and lastly school B. The study demonstrates that the

meals and its diversity in terms of food groups as offered to learners in schools has a positive influence on their enrolment. Schools that gave their learners meals registered relatively higher enrolment rate compared to that which did not give its students school meals.

5.3. Recommendations.

There is need for all schools to provide diversified food to their students.

Schools are advised to desist from selling off the agricultural outputs harvested since this leaves little or no food at all for school consumption.

Schools can also adopt feeding policies which mandate parents to bring raw foods in schools, from which the children can be fed or pay money to cater for their children's welfare while at school.

The government of the republic of Uganda should consider offering food grants to its schools early enough to ensure timely provision of meals, proper budgeting and accountability in schools.

Secondary schools in Uganda should adopt rearing of genetically modified breeds of animals such as chicken, do as to cater for the huge student's population in a short time.

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Appendix A: Time frame followed during the study.

Task no.	Description.	Started on	Completed on
1	Proposal writing.	5 th September	28 th September
2.	Data collection.	3 rd October	6 th October
3.	Analysis of results.	10 th October	21 st October
4.	Writing of dissertation.	23 October	02 nd December

Appendix B: Budget used to facilitate implementation of this research project.

No.	Item	No. of units	No. of days	Cost per unit/days in Uganda shillings	Total amount in Uganda shillings
1	Printing of questionnaires	97		500	48,500
2	Transport cost		4	6,000	24,000
3.	Mobile internet		10 days	1,500	15,000
Total					87,500

Appendix C: Consent form.
Influence of school meals on the enrolment of students in day secondary schools in
Kyegegwa district in Western Uganda.

I Ochieng Moses declare that I have explained the topic, and details of this study to the participant, and I have encouraged the participant to ask questions where they need clarity. All the questions were kindly responded to, and after discussion I am satisfied that the participant has adequately understood the purpose of the study.

Name of investigator..... Signature.....

Date

.....

Ideclare that I have been sufficiently told about the details of this study and thus I have voluntarily accepted to participate in the study with my consent.

Name of participant..... Signature

Date.....

Appendix D: Questionnaire for school administrators.

Influence of school meals on the enrolment of students in day secondary schools in Kyegegwa district in Western Uganda.

I Ochieng Moses, a final year student of Makerere University pursuing a Bachelor's degree in Science with Education would like to get your permission to gather information from your school for a study reason.

The purpose of the study is to investigate the influence of school meals on the enrolment of students in day schools in Kyegegwa district in western Uganda. The findings of this research will lay a basis for various stakeholders such as school owners, education administrators and government of Uganda, for making informed decisions regarding learners' welfare while at school and to formulate a favorable meal policy which will enhance learners' enrolment into day secondary schools not only in Kyegegwa district but in Uganda at large.

Your cooperation is highly appreciated.



PART 1: To be filled by an administrator (Preferably head teacher)

Section A; School detail

Year of establishment.....

School enrolment: Girls.....

Boys.....

Class (es) in operation (For example, S.1-S.3)

Section B; Crops grown and animals reared in school farm.

1. Does the school have a school cultivation garden/ school farm? YES NO.

If yes, choose the crop(s) cultivated in the school farm appropriate crop(s) grown

- | | | | |
|------------------------------------|------------------------------------|-----------------------------------|---|
| <input type="checkbox"/> Maize. | <input type="checkbox"/> Cassava. | <input type="checkbox"/> Bananas. | <input type="checkbox"/> Millet/sorghum |
| <input type="checkbox"/> Potatoes. | <input type="checkbox"/> Pumpkins. | <input type="checkbox"/> Rice. | <input type="checkbox"/> Ground nuts |

Beans.

Vegetables.

Yams

Soybeans

If others, specify

.....

2. Does your school rear animals in its farm? YES. NO

If YES, tick the animal(s) reared;

Cattle.

Goats.

Sheep.

Mushroom

Fish.

Chicken.

Turkeys.

If others, specify.

.....

3. Choose the appropriate response by ticking the box beside it. The agricultural products obtained are;

Eaten by only staff members.

Sold off to raise school finance

Eaten by students as meals.

I don't know how they are used.

Thank you for the time, attention, cooperation and useful information provided in this study.

Appendix E: Questionnaire for learners.

Influence of school meals on the enrolment of students in day secondary schools in kyegegwa district in Western Uganda.

PART 2: To be filled by learner.

Age in years.

Sex: Male Female (tick the appropriate one)

In this part you will fill in the figure code defined below to provide the appropriate responses

Food	Eaten . 1=yes 2= no	Frequency of eating per week; 0=0 day 1=1 day 2=2-4 days 3=5-6 days 4=7 daily	Food source; 1=free at school 2=bought at school 3=free on the way 4=bought on the way 5=free at home 6=bought at home
Fermented porridge			
Pineapple peelings juice			
Banana juice			
Black tea/Coffee			
Fresh fruit juice			
Alcoholic beverages			
Other beverages/liquids not mentioned above, Specify			
Tea with milk			
Plain milk			
Bananas (Matooke)			
Cassava, yams, sweet potatoes, Irish potatoes or other root tubers			
Rice, Posho, macaroni, maize, millet, sorghum or other grains, or their product			
Bread			

Chapatti, Samosa, Mandazi			
Beans, peas,			
Ground nuts, Sim paste			
soybean			
Red Meats (beef, pork, lamb, goat, rabbit, wild game			
Poultry meats (chicken, duck, or other birds)			
Intestines, Kidney, heart.			
Liver			
Blood based foods			
Eggs (Chicken eggs, turkey eggs, duck eggs etc.)			
Fish and fish products			
Mushrooms			
Insects (white ants, grasshoppers etc.)			
Other dark green leafy vegetables like dodo, Nakati, cabbage spinach, esunsa, Timpa, jobyo, Egobe, young shoots of pumpkins, Ebugga, Cassava leaves.			
Orange fleshed vegetables, such as pumpkins, carrots, orange-fleshed sweet potatoes,			
Any bio-fortified foods			
Orange fleshed fruits like ripe mangoes, paw paws, Citrus fruits such as oranges, lemons and limes			
Other fruits or vegetables such as passion fruit, pineapples, guava etc.			
Jack fruit			

Milk and milk products (milk, cheese, Bongo, yogurt or other milk products)			
Oils and fats (oil, fats or butter added to food or used for cooking)			
Sweets (sugar, honey, sweetened soda or sugary foods such as chocolates, biscuits, sweets)			
Any other specify			

Thank you for your attention, cooperation, and useful information provided to this study