FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS ON THE WEIGHT AND THE AGILITY OF PUPILS IN SAMAR COLLEGE CATBALOGAN, SAMAR

A Thesis

Presented to

The Faculty of the Graduate School

Samar State Polytechnic College

Catbalogan, Samar

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts in Teaching Vocational Education

LETECIA A. RODRIGUEZ

March 1985

A P P R O V A L S H E E T

In partial fulfillment of the requirements for the degree of MASTER OF ARTS IN TEACHING VOCATIONAL EDUCATION (MATVE), this thesis entitled "FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS ON THE WEIGHT AND THE AGILITY OF PUPILS IN SAMAR COLLEGE, CATBALOGAN, SAMAR", was prepared and submitted by LETECIA A. RODRIGUEZ, who having passed the comprehensive examination with a rating of PASSED, is hereby recommended for oral examination.

February 9, 1985
Date

ALEJANDRO H. CANANUA, M.A. Ed.
Adviser

Approved by the committee on Oral Examination on February 9,1985 with a rating of PASSED.

DOMINADOR Q. CABANGANAN, Ed. D.
Chairman

BERNARDO S. OLIVA, M. Ed.
Member

AURORA C. BOLASTIG, M.A.
Member

GLORIA T. MENDIOLA, M.A.I.E.
Member

Accepted and approved in partial fulfillment of the requirements for the degree of MASTER OF ARTS IN TEACHING VOCATIONAL EDUCATION (MATVE) major in Home Economics.

February 9, 1985
Date

DOMINADOR Q. CABANGANAN, Ed. D.
Dean, Graduate Studies

ACKNOWLEDGEMENT

The researcher wishes to acknowledge with sincere and profound gratitude her indebtedness to Asst. Professor Alejandro E. Cananua, her adviser and professor in educational research, who is concurrently the head of the SSPC Research and Development Division, for his invaluable and untiring assistance, guidance and encouragement without which this study could not have been completed so soon;

Dr. Dominador Q. Cabanganan, Dean of the SSPC Graduate School and Panel Chairman, for his brotherly suggestions and professional guidance in the completion of the course;

Dr. Jesusita L. Arteche and Asst. Professor Cossette Oliva, for their helpful suggestions relative to the statistical treatment of data.

Special gratitude is also given to the members of the panel of examiners, Dean Bernardo S. Oliva of the SSPC Teacher Education Department, Mrs. Aurora C. Bolastig, GES I of the Division of Samar, and Associate Professor Gloria T. Mendiola, Head of the SSPC Academic Instruction, for their constructive suggestions in the refinement of the manuscript of this thesis.

Grateful acknowledgement is, likewise, due Mrs. Felicidad G. Fernandez, Chairman of the Samar College

Board of Trustees and Mrs. Rosa L. Salazar, Director of Samar College, for their considerate gesture in the use of the school facilities;

The researcher equally recognizes the generous assistance, moral support and inspiration of all others who, in one way or another, have contributed to the success of this study, especially Mr. Juan O. Cabangangan, former SSPC Registrar and concurrently SSPC Board Secretary; Mrs. Josefina A. Amistoso, SSPC College Librarian; the elementary teachers and the home economics students of Samar College; and all the donors and benefactors of this study.

Deep and sincere appreciation is also extended to Mr. Tex E. Cananua, for typing the thesis manuscript and drawing the figures, as well as to Miss Amalia N. Mahinay and Cynthia C. Cananua for typing the preliminaries and the appendices, respectively.

Above all, the researcher is deeply grateful to her ever-dearest and loving parents, brothers, sisters and relatives, for their inspiring financial and moral support, spiced with love and understanding, which generated in her extra energy and vigor during the busiest and most critical moments of her study, and ultimately, to Lord God Almighty for His blessings of health, enthusiasm and endurance in the study.

D E D I C A T I O N

To my ever-loving **parents,** brothers and sisters, and for the success of the Philippine Nutrition Program, I dedicate this humble but sacrificial endeavor.

LETTY

ABSTRACT

This study attempted to determine the effects of food production-based supplementary feeding on the weight and the agility of the pupils of Samar College, Catbalogan, Samar. The experimental design was employed in this study, using as samples 100 primary pupils of the subject school with ages ranging from seven to ten years. The samples were divided into experimental and control groups with 50 pupils to a group. The highest worth of food materials used in the supplementary feeding came from the school food production project. Of the total worth of food materials which is Php 908.45, Php 346.20 or 38.11 percent, from the school garden; Php 326.50 or 35.94 percent, from local purchase; Php 109.75 or 12.08 percent, from donation; and Php 66.00 or 7.27 percent, from parental donations. The school food production project is an important foundation of the supplementary feeding program because it contributes considerably to the possibility and success of the program. Supplementary feeding has a significant effect on the weight and the agility of pupils, particularly in the primary grades. Every institution planning to undertake supplementary feeding project should intensify food production in order to provide sufficient food supply that can sustain the implementation of the school nutrition program with the minimum external food assistance.

TABLE OF CONTENTS

Chapter 1

THE PROBLEM

Introduction

Filipinos, like most people of developing countries, are generally undernourished. The seriousness of the malnutrition problem is indicated by the following observations: (1) only 22 percent of our pre-school children have achieved normal weight; (2) 47 percent of this age group are slightly undernourished; and (3) 31 percent are severely undernourished. If this trend continues, a big percentage of Filipino children will grow up physically stunted and mentally retarded.[1]

The Philippine Nutrition Program (PNP) is then a welcome response of the government to this serious malnutrition problem. It involves widespread education of the people so that they will acquire the proper food habits necessary for a healthy and productive life. This cannot be done by one person alone, rather, it deserves the support of all.[2]

Food is one of the basic needs in the existence and enjoyment of life. This in effect, is also considered

---

[1] Paulina F. Bautista, et. al., Philippine Premarriage Information, (Institute of Mass Communication, University of the Philippines, 1981) p. 57.

[2] Ibid.

as the basis for any school nutrition program. Towards this end, the school cannot just limit its role to the dissemination of information and transfer of training but also to promote the nutritional well-being of its population. An adequate food supply will ensure the continuity of the school feeding activity. Food production projects shall therefore be necessary to support the nutrition program.

In the case of Samar College, which is a laboratory or training institution and where land for food production is available, the food supply for the school feeding program can easily be generated.

The food production project is run as an agri-business venture. Even if the products are channeled to the school feeding, there is a corresponding monetary value attached to them to facilitate the computation of the cost-benefit aspect of the program. The activities related to the school food production are tied-up with those in "Alay Tanim", Orchard Development and other related programs geared towards national food sufficiency.

While supplementary feeding includes all existing feeding programs in the schools, some are externally assisted, while others are operated as self-help projects. There are three feeding schemes being followed, namely: (1) nutribun feeding using flour from CARE, CRS, and WFP,

(2) hot lunch and supplements/snacks using CSM commodities from WFP and (3) hot lunch supplements in school and home gardens.[3]

Food production-based supplementary feeding aims to provide children with nutritious food to help them attain their needed nutritional level. These are also practical means of teaching children better dietary habits. Thus, they may not only make pupils active, but may also increase their weight and overcome psychomotor difficulties.

Theoretical Framework

The framework of this study is the theory of good nutrition as defined by Gonzales and Mary H. Hill. Good nutrition is eating the right kind and amount of food.[4]

Mary H. Hill stated that: Nutrition is the food eaten and how the body uses it. We eat food to live, to grow, to keep healthy and well, and to get energy for work and play. Food is made up of different nutrients needed for growth and health. All nutrients needed by the body are available through food. Many kinds and combinations of food can lead to a well-balanced diet. No food,

---

[3]Food and Nutrition Research Center: Your Guide to Good Nutrition, Manila: National Science Development Board, (Ind).

[4]Otilia F. Gonzales, Food and Nutrition Education In School and Home, (Manila, Philippines: Published National Book Store Inc., 1973) p. 11.

by itself, has all the nutrients needed for growth and health. All persons, throughout life, feel the need for the same nutrients, but in varying amounts. The amount of nutrients needed are influenced by age, sex, size, activity and state of health.

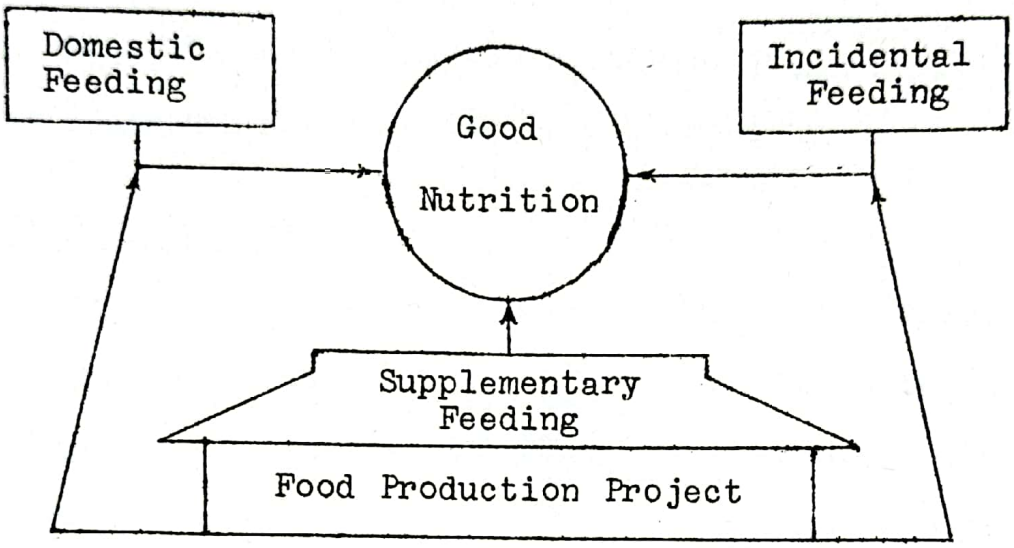


Figure 1. The theory of good nutrition revolves around the principle of "balanced diet" where supplementary feeding supplies whatever is deficient in domestic feeding and incidental feeding in order to complete the nutritional needs of the child. This can best be supported by self-help projects, i. e. food production where the end-user is the child himself.

Based on the observation made by the researcher, a greater percentage of the primary pupils of Samar College seem to be undernourished and physically inactive. Some of the probable causes of this condition is the deficiency in their domestic feeding and incidental feeding due to improper dietary habits and practices of children brought about by the ignorance of the nutritional requirements for growing children. In most cases, children eat the food they

want, not the food they need, especially when they are not strictly supervised. Children love to eat sweet and starchy foods because they are playful. While it is true that they need carbohydrates for work and play, the fact remains that they overlook the food nutrients necessary for health and growth. Supplementary feeding is, therefore, the answer to these nutritional deficiencies of children.

Conceptual Framework

The concept that can be derived from the theoretical framework of the study is "the role of nutrition in the development of health through proper dietary habits and practices."[5] This concept of nutrition can be carried out effectively through the Philippine Nutrition Program (PNP) of which the school food production and the supplementary feeding projects are notable extensions.

Based on the above-cited concept of good nutrition, as enunciated by Gonzales and Mary Hill, the researcher describes food production-based supplementary feeding as an undertaking which aims to help overcome the nutritional deficiencies of children, thus improving their nutritional well-being. It gives emphasis on the proper utilization of food produced in school and home gardens in the serving of inexpensive nutritious supplementary foods.

---

[5] Ibid.

Conceptual Framework

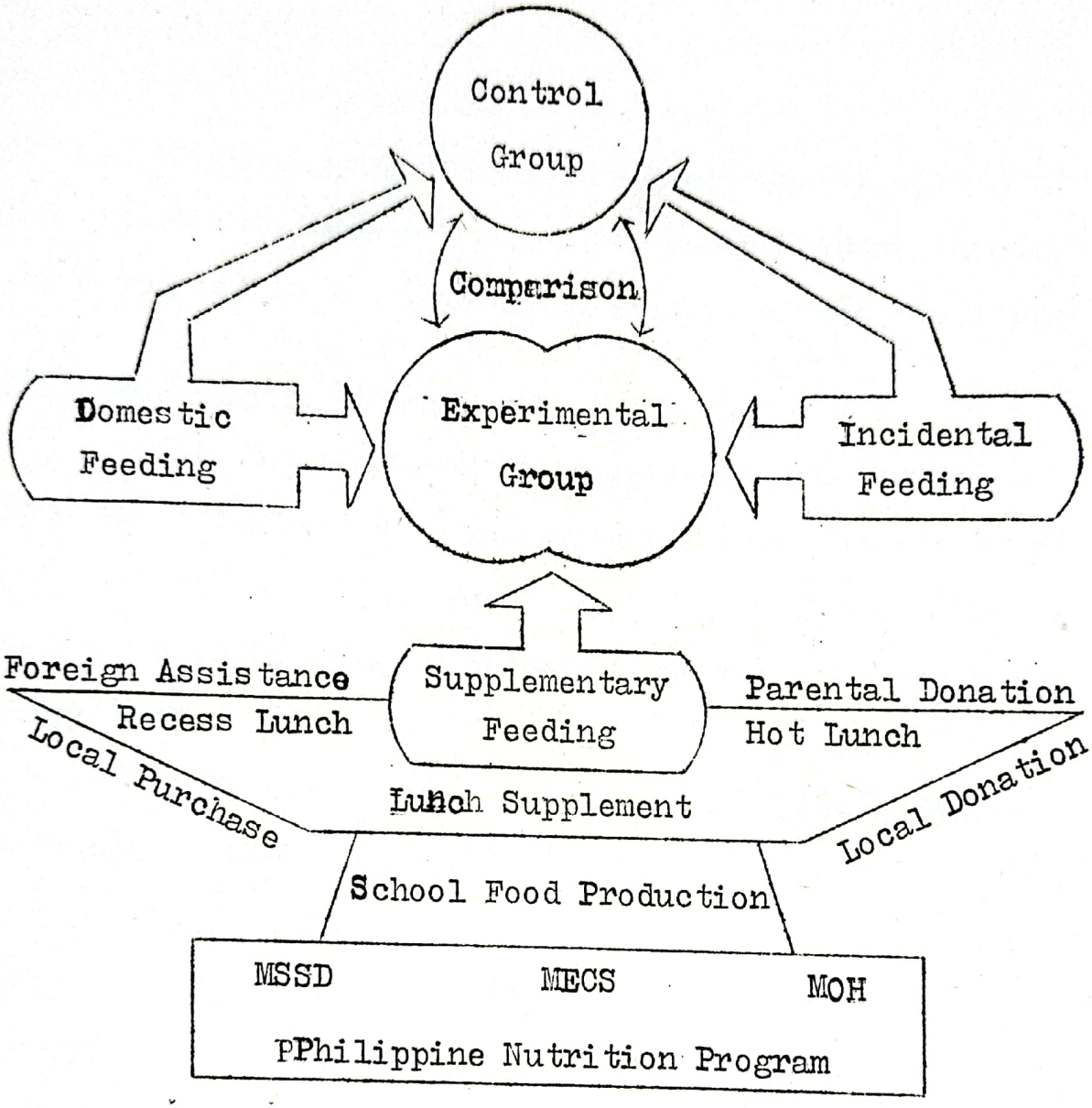


Figure 2. This conceptual model illustrates the totality of the Nutrition Program, with its implementing and support agencies, from which embarks the study on "Food Production-based supplementary Feeding: Its Effects on the Weight and Agility of Pupils of Samar College, Catbalogan, Samar."

The foregoing conceptual model includes the sources of food supply from which come the supplementary feeding in the form of recess lunch, hot lunch and lunch supplement to reinforce the domestic and the incidental feedings of the experimental group but not the control group, hence, the disparity in the weight and agility of the two groups.

Statement of the Problem

This study attempted to determine the effects of food production-based supplementary feeding on the weight and the agility of the pupils in Samar College, Catbalogan, Samar. Specifically, it sought answers to the following questions:

1. To what extent are the school food products utilized in the supplementary feeding program?

2. What is the physical profile (average, age, height, weight and agility performance) of the experimental and the control groups within three months before and during the supplementary feeding?

3. What is the average gain in the physical aspects of the two groups of pupils every 15 days within three months before and during the supplementary feeding?

4. How do the two groups compare with each other in terms of:

   a. mean weight gain.

   b. mean agility gain.

Hypotheses

In order to determine the effects of food production-based supplementary feeding on the weight gain and the agility gain of the pupils in Samar College, the following null hypotheses were tested:

1. The mean weight gain of the experimental group and that of the control group after supplementary feeding are the same.

2. The mean agility gain of the experimental group and that of the control group after supplementary feeding are the same.

Importance of the Study

This study was conducted because up to the present there has been no statistical record of researches that are exactly the same with this study. While there were related surveys made by the Philippine Nutrition Center and the Food and Nutrition Research Institute on a nation-wide scale, the focus were only on supplementary feeding and operation timbang using the resources of the government and foreign assistance. The present study on supplementary feeding considered not only the weight but also the agility performance and the main source of food supply was the school food production project. A smaller percentage of the resources used came from foreign assistance and local donations. Significantly, the results of this study will help the teachers in teaching nutrition or in

integrating it with other subjects. It will give insights to parents regarding the dietary habits and practices of their children and invite their attention to the importance of food production in the improvement of the nutritional well-being of their families. To the administrators and decision makers, this study will provide inputs for policy making in so far as food production and nutrition program is concerned.

It is, indeed, important to undertake a supplementary feeding project. A school is considered an Applied Nutrition School when it serves snacks of purely indigenous foods to all pupils for at least two times a week. When the resources warrant, a hot lunch supplement maybe served, in addition to the snacks which would improve the weight and agility of children.

This study will also teach the value and utilization of indigenous foods and intensify food production through home, community and school gardens, utilizing the products for the school meal to the maximum extent, so as to reduce reliance on external food assistance and to eventually make possible a school feeding program entirely from national and community resources.

Another purpose of this supplementary feeding is to improve the physical, mental and emotional well-being of school children and contribute to the socio-economic

development of the community.

Finally, the study will help intensify the program geared towards national food sufficiency and overcome nutritional deficiencies among school children, which may have a carry-over to their respective families.

Scope and Delimitation

The study seeks to determine the effects of food production-based supplementary feeding on the weight and the agility of the primary pupils (Grades I to IV) of Samar College, Catbalogan, Samar with ages ranging from seven to ten years. It is at these ages where most cases of malnourishment have been observed. One hundred primary pupils of Samar College were included. The period covered by this study is the school year 1983-1984, specifically from September 1983 to March 1984.

This study also involved the local offices of the Ministry of Education, Culture and Sports as the implementing agency, as well as the Ministry of Social Services and Development and the Ministry of Health as the support agencies, which subsidized the school nutrition program, with national and foreign food assistance.

Definition of Terms

To facilitate understanding of this study, the following terms are defined:

Agility. This term refers to quickness and readi-

ness in movements; nimbleness.[6]

CARE. This is the acronym for Cooperative for American Remittance to Europe. This is one of the foreign agencies involved in the distribution of donated foreign food commodities to the target population.[7]

Domestic feeding. This applies to the regular meals served in the home of the pupils.

Equated. This term refers to the balancing of the experimental and the control groups in terms of physical profile shortly before the start of the supplementary feeding in order to establish a jump-off point for the progress in age, height, weight, and agility of the sample pupils.

Feeding schemes. This refers to the proper utilization of food supply produced in the school and home gardens through serving inexpensive, nutritious snacks, lunch supplements and complete hot lunches.[8]

---

[6]Nutrition Information Series for Teacher., (Nutrition Center of the Philippines, Makati, Metro Manila, Philippines, 1978) p. 24.

[7]Nutrition Fact Sheet., (Communication Department Nutrition Center of the Philippines, Makati, Rizal, 1976 Series) p. 2.

[8]Compiled Instructional Materials on Nutrition Education, Supplementary Feeding and Selective Food Production, In Dept Training on Supplementary Feeding, Selective Food Production, and Nutrition Education for Regional and Division Supervisors or Nutrition Home Economics - Applied Nutrition and Elementary Agriculture, (Banilad Cebu City., July 12 - August 6, 1982) p. 7.

Food bank. This is the portion in the home economics room where food materials are stocked.

Food production. This applies to any undertaking conducted in any available piece of land in the home, school or town which may produce highly nutritious foods like dark green leafy and yellow vegetables, livestock and fish.[9]

Hot lunch. It is a complete meal served to the children who remain at school during noon time. Such meal is inexpensive but nutritious.[10]

Incidental feeding. This refers to eating food aside from the regular meals, and those given in the supplementary feeding.

Lunch supplement. In this study, it refers to an additional food given to the pupils besides their food brought from home (baon). Preferably, it is a hot vegetable with inexpensive sea foods or small shrimps or dried fish if available.[11]

Nutrition. It is the food eaten and how the body uses it.[12]

---

[9] Ibid., p. 8.

[10] Ibid.

[11] Ibid. p. 1.

[12] Ibid.

Nutrition education. This applies to instructions on the practical applications of knowledge of nutrition to improve the eating habits of individual and the families through class discussions, demonstrations and practices.[13]

PNP. Abbreviation for Philippine Nutrition Program which refers to the national action plan integrating individual and collective efforts in the public and private sectors to solve malnutrition in the Philippines.[14]

Primary pupils. These are the pupils in grades I to IV from which the 100 samples were taken.

Recess lunch. This applies to the snacks eaten by children during recess time, whether they are hot or cold.

Supplementary feeding. Is an existing feeding program in the schools. Some of these are assisted projects while others are on self-help basis.[15]

Weight. It is a system of units for expressing the heaviness or lightness of bodies.[16]

Weight gain. An increase in weight.[17]

---

[13] Nutrition Information, op. cit., p. 21.

[14] Ibid. p. 24.

[15] Compiled Instructional Materials on Nutrition, op. cit., p. 6.

[16] Ibid. p. 110.

[17] Ibid.

Chapter 2

REVIEW OF RELATED LITERATURE AND STUDIES

To enrich the content of this study, and to establish a foundation of ideas or concepts relative to the problem, the researcher reviewed some relevant literatures and studies. In her readings, however, the researcher did not find studies that include agility performance, so the information included in this chapter are only those related to nutritional problems, especially on weight.

LITERATURE

Malnutrition Problem

Everyone is aware of the malnutrition problem[18] that our country is facing today. The extent of this problem probably overwhelms the people because it strikes the most helpless of human beings, the children, whose minds and body may be scarred by hunger. These are the children dear to the hearts of the parents and the teachers whose tutelage is indispensable in order to develop the youth of today into active and productive citizen of tomorrow.

Malnutrition figures show that more than one-third of the pre-schoolers are suffering from various

---

[18] Nutrition Information., op. cit, p. 31.

degrees of undernutrition. These children need the help of the school and the community by leading them to the road of healthy growth where food production-based supplementary feeding has a good role to play.

If the authorities concerned will not take steps in solving this problem, then this problem will only remain unsolved. The school and the community should be involved in order to contribute to the proper education of the people so that they will acquire the proper food habits and attitudes necessary for a healthy and productive life. Nutrition, indeed deserves the support of all.

As what Gonzales said, good nutrition and good eating habits are the precious things a mother can send to school with her children. For many years, men have struggled for food, for it is the first necessity of life.[19] It is a public knowledge that foods occupy almost 100 percent of the human body.

Furthermore, Gonzales stated that the emotional disturbances as anger, fear, and frustrations, frequently affect a person's digestion. To have a comfortable life, a person needs to keep the network of his organs for the perfect operation of the body at all times. This is the

---

[19]Gonzales, op. cit., p. 24.

the way to live longer and enjoy real health and vitality.[20]

This task can only be achieved if there is enough food, as well as adequate knowledge of the selection and preparation of nutritious foods.

The thrusts of the Philippine Nutrition Program have drawn one of the most important intervention schemes and this is food production which aims to help meet the dietary and economic needs of the family through production and marketing of nutritious crops, livestock, poultry and fish in the home, school and neighborhood. Out of these products can be derived a considerable food supply for feeding the school children in the right consistency.

According to the fact sheet prepared by the Nutrition Center of the Philippines, among infants and preschool children, malnutrition manifest itself in growth retardation both in weight and height. This malnutrition may be caused by insufficient food intake, which also results in being depressed and weak.[21]

If we want to produce intelligent, active and healthy children, Dr. Mary Swartz, an authority on diet says, "One year of good feeding at the beginning of life is

---

[20] Ibid., p. 18.

[21] Food and Nutrition Research Center, Your Guide to Good Nutrition, (Manila: National Science Development Board) p. 28.

more important than ten years after forty."

From the time of conception until the child reaches the age of six he or she must be given the right kind and amount of food especially protein, because it is necessary for the development of the brain cells, which greatly affect the mental capacity of the individual. This is strongly supported by Guthrie who stated:

> With 25 million of the nation's school children participating in the supplementary feeding, protein can be considered an important element in the food intake of school children. Supplementary feeding was originally conceived to "safeguard the health and well-being of the nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other foods.[22]

Specifically, food production and supplementary feeding should really go hand in hand and every school then should participate in this program to have food production which will become the source of supplementary foods to be served free to the school children. It eventually reduces the expenses for other foods served in the nutrition center, especially for those unable to buy the meals that meet specified nutritional standards.

Food is the basis of any school nutrition program. An adequate food supply ensures the continuity of school feeding. Food production then is an important tool

---

[22]Helen Andrews Guthrie, Introductory Nutrition, University Paryk, Pennsylvannia, The C. C. Mosby Co., 1978, p. 75.

towards supplementary feeding. The products are being utilized for school feeding and for home consumption.[23]

For an effective operation of food production projects, adequate funds should be provided. Some possible sources of funds may come from private funds of pupils and parents, private funds of teachers, funds of organizations interested in food production, rural banks and other banking institutions and garden trust funds.[24]

However, the sharing of the products would be 75 percent for school feeding program and 25 percent for the pupils and the teachers as producers.

Basically, a laboratory is a place for the testing of ideas. Samar College can be one of the most effective means for teaching nutrition. It is in serving supplementary foods wherein children may learn various foods good for their health.

In the study made by Robert Morton School, it was found out that the children were frequently absent from school because of colds and other illnesses. The children were relatively small for their age, tired easily and generally not alert. The teacher then carried out a dietary survey. They found out that 38 percent of the

---

[23] Instruction Material on Nutrition Education, op. cit., p. 53.

[24] Ibid.

children usually come to school in the morning without having eaten their breakfast; another 38 percent usually eat breakfast that are considered inadequate, and only 24 percent had adequate breakfast. With this situation, teachers and administrators worked hand in hand to solve this problem, for they knew that it would have a bad effect on the achievement of the school children. They made a school lunchroom, wherein teachers and children eat together the supplementary foods served to them. The parents felt very happy for the said program of the school and they found out that in the school year 1955-1956 the average percentage of attendance was 91 percent. Another important fact aside from the improved attendance, was that it reduced the number of children affected with common colds. The health records also showed that there were fewer children who were underweight.[25]

This is an example of what one group of dedicated teachers and administrators has done. The program based upon the needs of the children that were discovered and studied by the teachers and administrators. It appears that their enthusiam and imagination in working with children have improved the ways of living in their community.

---

[25] Ibid., p. 53.

Furthermore, supplementary feeding shall give emphasis on the proper utilization of food produced in the school and home gardens, through the serving of inexpensive, nutritious snacks, lunch supplements and complete lunches. The food served should provide the nutrients commonly lacking in the pupil's diet, specifically, calories, protein, vitamin A and iron. Priority should be stressed in the serving of legumes, leafy green and yellow vegetables and rootcrops.[26]

As much as possible, the severely and moderately underweight school children should be served with the supplementary foods daily. Each serving, as recommended by nutritionists, should yield at least 300 calories, 18 grams protein, 1,800 iron and vitamin.[27]

Supplementary foods may either come from foreign food donations like the nutribun and supplemented with indigenous vegetables from school gardens which play a great role in the supplementary feeding.

Hot lunch or lunch supplement should also be served to severely and moderately underweight children and all children who walk to school three kilometers or more.

---

[26] Ibid., p. 108.

[27] Ibid., p. 109.

STUDIES

Weight Ranges of Pre-schoolers

In a study conducted by the Philippine Nutrition Center through operation Timbang in the entire country, the weight ranges of the pre-schoolers shortly before reaching the age of seven are as follows: (1) 15.3 to 18.2 kilograms for the mildly undernourished, (2) 18.3 to 24.3 kilograms for the normal weight; and (3) 24.4 and above kilograms for the overweight. These data give the average weights of 16.75 and 21.3 for the mildly underweight and the normal weight, respectively. The average of the overweight cannot be determined because the maximum weight is indefinite.[28]

According to national surveys conducted by the Food and Nutrition Research Institute (FNRI),[29] above 69 percent of pre-school children weigh lower than the standards for their ages in the 1960's, three percent of which had severe or third degree malnutrition. Today, the figure runs as high as 78 percent.

The worsening situation is indeed quite serious,

---

[28] Philippine Nutrition Program Implementing Guidelines, pp. 14-15.

[29] Options for Policy and Practice; Nutrition, Health and Education: Prospects for the Year 2000, pp. 4-5.

considering the irreversible effects of protein energy malnutrition (PEM) on children. Among the very young, severe malnutrition can alter the normal functioning of the brain and forever damage their learning abilities, either totally or for specific learning areas. If it is not severe, malnutrition causes apathy and listlessness, thereby reducing the capacity of children to interact with their environment.

A substantial number of deaths and illnesses among children have been closely associated with malnutrition. Besides PEM, other types of malnutrition are prevalent in the country. Based on FNRI data, Nutritional anemia for one, afflicts 48.5 percent of a sample population of Luzon and 42.2 percent of Visayas in 1975-76. Although its prevalence has dropped in these two regions, it has dramatically increased in certain areas in Bicol and in Metro Manila, particularly.[30]

General undernutrition in the Philippines has apparently worsened. The extent is difficult to measure due to the limitations of available data and methods used. Nevertheless, current estimates underline the gravity of the malnutrition problem.[31]

---

[30] Report on Operation Timbang, 1978, p. 4.

[31] Ibid.

It is also clear based on data presented that its deterioration cannot be due to lack of economic growth since per capita Gross National Product (GNP), available supply of protein and energy, and education have been steadily rising at a respectable rate. It seems that the pursuits of a national food self-sufficiency program does not necessarily lead to the solution of malnutrition problem.[32]

In the study conducted and the report of the Population Center Foundation of the Philippines shows that the image which emerges from the PREPF scenarios is best viewed with cautious optimism.[33]

Firstly, both scenarios assume the attainment of the government target of an 8-percent GNP growth rate, which is rather high. If, instead, the economy develops at the historical GNP rate of six and one fourth percent, the prevalence of second and third degree protein energy malnutrition will remain as high as 10 percent among preschoolers. These projections assume that income distribution will not worsen and that the relative prices of commodities, especially food items will remain constant.[34]

---

[32] Ibid., p. 5.

[33] Bimonthly Special Report of the Population Center Foundation of the Philippines, Volume 6, Number 3 and 4, 1980, p. 10.

[34] Ibid. p. 11.

Secondly, the effect of urbanization on morbidity is quite disturbing. At first, the hypothesis was advanced that urban residents would have slower morbidity rate than their rural counterparts, because modern medical care is more available and easily accessible in urban areas. Results from regression analysis, however, show that urban residence is associated with higher morbidity.[35]

PREPF's scenarios project a dramatic reduction in the prevalence of PEM among children. But caution must be exercised in predicting the future nutritional status of the population. In the past, per capita GNP available supply of protein and energy foods per person, and educational attainment have all been rising, and yet fragmentary data suggest that there have been some worsening of certain aspects of the nutrition problem.[36]

Relationship with the Present Study

The studies just reviewed are related to the present study in the sense that they were focused on the nutritional status of children, particularly on the weight aspect. They differ, however, on the age level of children because those reviewed concerned the pre-schoolers,

---

[35] Ibid., p. 11.

[36] Ibid.

while the present study is on primary pupils and it includes the agility aspect. As to sources of food, the major source of the present study was the food production project, while the related studies were supported mostly by the government resources and the foreign assistance.

Chapter 3

MATERIALS AND METHODS

Materials

School garden. Realizing the need for improving the health among school children, the 1.5 hectare lot of Samar College located in Canlapwas was cultivated and variety of rootcrops, leafy and leguminous vegetables were planted to be used in the supplementary feeding.

The researcher used organic fertilizer and insecticides in order to have abundant yield for the supplementary feeding. Additional food supplies were obtained through local purchase, local donations, foreign assistance, and parents' donations. However, the greater percentage of food supply came from the school food production project. The specific crops produced were mongoes, sitao, string beans, bush beans, okra, peanuts, gabi, camote, cassava, corn, peachay, mustard, eggplant, ampalaya, kangkong, alugbati, green onions, tomatoes, and pepper, aside from the already existing plants.

Food bank and nutrition center. The storage room of the Home Economics building was used as food bank for the harvested crops and other food supplies. The school canteen was converted into nutrition center where the preparation and the service of supplementary foods were

done by the researcher and her students.

Other school facilities were utilized in the supplementary feeding, like the utensils as; peolin cups and saucers, stainless teaspoons, aluminum stockpots, laddles, kitchen knives, aluminum kettles, serving trays, fruit preserving kettles and many other utensils. Weighing scale was also used in determining the weight and height of the experimental and the control groups. To test the agility performance, wooden blocks measuring 5 x 5 x 5 centimeters were used in the shuttle run relay. A stop watch was also used to record the time.

Method

This study used the experimental method. The primary pupils with ages ranging from seven to ten years were used as samples in the experiment. They were divided into two groups with fifty pupils to each group to serve as the experimental and the control groups. These two groups were equated based on the individual age, height, weight, and initial agility. They were further equated on the basis of their average age, height, weight, and agility performance.

Procedures

Measuring height and weight. The initial heights and weights of the sample pupils were taken by the

researcher three months before feeding started. Heights were taken using uniform non-stretchable tape measure and recorded to the nearest 0.5 centimeter. Weights were measured using uniform bar scales, the flat form type, and were recorded to the nearest 0.1 kilogram. Ages were computed in years and months as of last birthday up to two decimal places. The weighing and the agility test of the samples were done ten times a week.

Agility testing. To determine the average agility performance of the two groups, the agility test was conducted through shuttle run relay. The researcher used a stopwatch, and wooden blocks of 5 x 5 x 5 centimeters. The area was measured accurately with two parallel lines 10 meters apart. Behind each line were two semi-circles drawn, each with a fifty-centimeter radius. The blocks were set inside the semi-circle before starting the game. Each group was made to stand on one column facing the opposite line where the wooden blocks were placed inside the semi-circle. At the given signal, the children were made to sprint towards the other line, each picking one block which they carried back to where they started and laying it down inside the semi-circle on their side. The procedure was repeated for the remaining blocks. The time was recorded to the nearest tenth of the second when the last member had the block placed inside the semi-circle.

There were five trials for each group and the average time was the one considered. Proper instruction was given so that the blocks were carefully set inside the semi-circle to avoid dropping or throwing the block carelessly. The time was stopped when the last runner placed the block inside the semi-circle, not when he crossed the finish line.

Food production. While the weighing and the testing were going on before feeding, the researcher was simultaneously undertaking her food production activity. The lot that she used was exclusively for selective food production in which rootcrops, leafy vegetables and legumes that were nutritious and easy to produce were planted, The field was plowed and the total garden area was divided into four major communal areas representing the four grade levels in the primary grades as follows: (1) lot number one, for grade one; (2) lot number two, for grade two; (3) lot number three, for grade three; and (4) lot number four, for grade four. Multiple cropping was designed to determine the duration of food supply for the supplementary feeding. The crops that were planted were mongo, corn, bush sitao, okra, tomato, sweet potato, pechay, and others mentioned earlier in chapter 1.

Pre-feeding. The researcher waited until the maturity of the crops within a period of thirty to seventy-

two days before she started the supplementary feeding. In the mean time, the weighing and the agility test went on every 15 days.

Shortly before she started the feeding, she weighed both the control and the experimental groups and conducted the agility test to establish the jump-off point for the pupils progress in weight and agility.

The feeding. To undertake the supplementary feeding, the researcher prepared ten recipes a month making use of the vegetables and other crops produced in the school food production project. She scheduled food preparation and service for the experimental group with reference to the products obtained from the communal lots and with the class program of the school.

She determined the volume of food in relation to the number of beneficiaries to be fed in a week or month. The home economics students took care of the preparation and distribution of food under the close supervision of the researcher who was their instructor at the same time. The preparation area was in the home economics building in the sense that products were stocked in one of its rooms. The distribution and feeding of food was done in the nutrition center.

She started feeding the experimental group just after the first harvest on the first week of January 1984.

The feeding was done daily morning and afternoon or ten times a week. Everyday before the feeding she weighed both groups and conducted agility testing. The feeding lasted for three months in the sense that the garden products were still abundant. It was only during this period that the effects of supplementary feeding on the weight gain and agility gain of school children could be reliably determined.

Sampling procedure. The researcher utilized purposive sampling technique in order to provide an unbiased cross section of the population. One hundred seven-to-ten-year-old primary pupils out of the two hundred fifty elementary pupils in Samar College were grouped into two, the experimental and the control group, having fifty pupils from each group, were properly equated as described in the foregoing paragraphs, so that a balanced profile of the two groups could be attained.

Statistical measures. The statistical measures used in this study were the percentage, the mean, the standard deviation, and the t-test of significance. Since the subjects were equated before the supplementary feeding, the researcher used the t-test for independent samples to test the hypotheses one and two: (1) that the mean weight gain of the experimental group and that of the control group after the supplementary feeding are the same.

(2) that the mean agility gain of the experimental group and that of the control group after supplementary feeding are the same. The Alpha level of Significance used to determine whether the hypotheses are accepted or rejected was .05 level at 10 degrees of freedom. (See Appendices H and I).

Chapter 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the data obtained as a result of the study on food production-based supplementary feeding and its effects upon the weight and the agility of pupils in Samar College, Catbalogan, Samar, during the school year 1983-1984. The data were tabulated and expressed quantitatively and qualitatively, and later, analyzed and interpreted in accordance with the most appropriate statistical measures. The data referred to in this chapter are those on: (1) the sources and cost distribution of food materials used in the supplementary feeding including the monthly per capita expenses within the period of three months; (2) the physical profile of the sample pupils within three months before and during the supplementary feeding for both the experimental and the control groups; and (3) the average gain in the physical aspects within three months before and during supplementary feeding for both groups of samples. The physical profile includes, among other things, the average age in years, the average height in centimeters, the average weight in kilograms, and the average agility performance in seconds. Tables 2 and 3 are broken down into two sub-tables; (A) Before feeding, and (B) During feeding.

Cost Distribution of Food Materials Used in the Supplementary Feeding

Table 1 shows the cost distribution of food materials used in the supplementary feeding within the period of three months. The total worth of food materials used is ₱907.95. Of this amount, ₱346.20 or 38.13 percent came from the food production project. This is followed by ₱326.00 or 35.91 percent which came from local purchase. A larger portion of this amount came from the researcher's own pocket because there were no funds for the incidental expenses on food materials necessary to balance the diet. A total of ₱109.75 or 12.09 percent was taken from local donations, most of which were in kind. These foods came from friends of the researcher who were active members of civic and charitable organizations in the locality. Some parents of the pupils belonging to the experimental group also voluntered to give donations and a total of ₱66.00 or 7.27 percent was realized from them.

After the three-month feeding, there was a little excess in the food materials but since it was inadequate for another week of feeding, it was just prorated among the pupils who were mildly underweight.

A cursory glance at the table reveals that the highest worth of food materials came from the school food production project, being the foundation of the supplementary feeding, hence the phrase "Food Production-

Table 1

Cost Distribution of Food Materials Used in the Supplementary Feeding

Source of Food Materials	Monthly Cost of Food Materials			Total Cost	%
	January	February	March		
School Food Production	₱220.30	₱74.95	₱ 50.95	₱346.20	38.13%
Foreign Assistance	₱ 20.00	₱20.00	₱ 20.00	₱ 60.00	6.60%
Local Purchase	₱120.00	₱92.00	₱114.00	₱326.00	35.91%
Local Donation	₱ 31.50	₱28.25	₱ 50.00	₱109.75	12.09%
Parental Donation	₱ 18.00	₱ 24.00	₱ 24.00	₱ 66.00	7.27%
Total	₱409.80	₱239.20	₱258.95	₱907.95	100.00%

Based" in the problem studied. As gleaned from the data, the highest monthly expense of P409.80 was incurred during the initial month of January, especially for the materials taken from the school food production project. This happened because when some of the crops were already matured, the researcher had to utilize first the perishable foods, reserving only the non-perishables in the Home Economics Food Bank. Besides, the other non-perishables, like the groceries were bought in larger scale on a semi-whole sale basis. Those expenses taken from foreign assistance were uniform for the period of three months because most of them were in the form of oat meal, powdered milk, flour, wheat and yellow corn. In the case of local and parental donations, the trend of expenses was irregular because most of the donations would come unexpected. Some of these items were in the form of bread, canned goods, fresh fish and meat. During the last month, however, it increased because the researcher had to campaign for more donations from local sources due to inadequate food supply.

From the data just presented, it may be inferred that supplementary feeding without a food production project would be difficult to undertake as a research or study without a stable supporting agency because the food supply from other sources is quiet intermitent.

Monthly Per Capita Expenses for the Supplementary Feeding

As shown in Table 1-A, the average monthly per capita expense in the supplementary feeding is only ₱6.05, thus making a total of ₱18.17 for the period of three months. These amounts seem incredible considering the present economic condition, but because the food materials used in the feeding were the least expensive yet nutritious, the project did not entail much expenses. Besides, the prices assigned to every commodity were based on the producers price and most of those actually purchased were on a semi-whole sale basis. The feeding could have been more expensive if it was done daily. Since the feeding was conducted morning and afternoon, it was administered only five days a week, specifically from Monday to Friday.

Physical Profile of Pupils Within Three Months Before and During Supplementary Feeding

Table 2 presents the physical profile of pupils broken down into two sub-tables as follows: (A) Before feeding, and (B) During feeding.

Before feeding. As shown in Table 2A, the period before feeding covers from September 16 to December 15, 1983. During this period both the experimental and the control groups followed the same trend of growth in the physical profile aspects, as evidenced by the common means

Table 1-A

Monthly Per Capita Expenses for the Supplementary Feeding

Source of Food Materials	Monthly Per Capita Expense			Total Cost	%
	January	February	March		
School Food Production	₱4.41	₱1.50	₱1.02	₱6.93	38.13
Foreign Assistance	₱0.40	₱0.40	₱0.40	₱1.20	6.60
Local Purchase	₱2.40	₱1.84	₱2.28	₱6.52	35.91
Local Donations	₱0.63	₱0.57	₱1.00	₱2.20	12.09
Parental Donations	₱0.36	₱0.48	₱0.48	₱1.32	7.27
Total	₱8.20	₱4.79	₱5.18	₱18.17	100.00
Ave. Per Capita Expense	₱2.73	₱1.59	₱1.73	₱ 6.05	

Table 2

Physical Profile of Pupils Within Three Months Before and During Supplementary Feeding

A. Before Feeding

Date	Experimental Group				Control Group			
	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)
September 16-30	9.36	116.27	22.54	28.84	9.30	116.27	22.54	28.84
October 1-15	9.33	116.29	22.67	28.08	9.33	116.30	22.66	28.08
October 16-30	9.36	116.52	22.79	27.31	9.36	116.52	22.78	27.30
November 1-15	9.39	116.78	22.90	26.53	9.39	116.76	22.91	26.54
November 16-30	9.42	117.07	23.02	25.74	9.42	117.07	23.02	25.74
December 1-15	9.45	117.39	23.13	24.94	9.45	117.40	23.13	24.95
Total	56.25	700.32	137.04	161.44	56.25	700.32	137.04	161.45
Mean	9.37	116.72	22.84	26.90	9.37	116.72	22.84	26.90

B. During Feeding

Date	Experimental Group				Control Group			
	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)
January 1-15	9.54	118.00	23.29	26.03	9.54	117.00	23.25	27.30
January 16-30	9.57	119.01	23.44	24.35	9.57	117.08	23.35	26.20
February 1-15	9.60	120.05	23.60	22.63	9.60	117.22	23.43	25.98
February 16-29	9.63	121.13	23.77	20.85	9.63	117.42	23.50	25.58
March 1-15	9.66	122.25	23.95	18.97	9.66	117.66	23.56	24.98
March 16-30	9.69	123.40	24.14	16.87	9.69	117.94	23.62	24.26
Total	57.69	723.40	142.19	129.70	57.69	704.32	140.71	153.30
Mean	9.61	120.64	23.69	21.61	9.61	117.38	23.45	25.55

of the age, height, weight, and agility performance. These are 9.37 years, 116.72 centimeters, 22.84 kilograms, and 26.90 seconds, respectively. While slight differences in the individual profile aspects are noted every 15 days the fact remains that the means of all aspects resulted uniformly after the end of the three-month period. The uniform increase in average age and the almost uniform gradual increase in the other aspects is obviously a part of the pupils natural growth and development even without supplementary feeding.

During feeding. This period covers from January 1 to March 30, 1984, as shown in Table 2B. It can be noted that during this period there is a marked difference in the averages of the physical profile aspects between the experimental and the control groups every 15 days, except the average ages which obviously grow uniformly with the lapse of time, regardless of any feeding program.

As to the average height the experimental group yielded a mean of 120.64 centimeters, as against the control group with only 117.38 centimeters. This makes a mean difference of 3.26 centimeters between the two groups. This difference leads the researcher to believe that when pupils at this age are given proper supplementary feeding, their height grows faster than those who are not given supplemental feeding at all. This growth in height may

even be faster if the pupils are not subjected to a rigorous agility testing, as what was done in this study.

In the matter of weight, the experimental group registered a mean of 23.69 kilograms, as against 23.45 kilograms in the control group thus making a difference of .24 kilograms. This difference in favor of the experimental group is certainly influenced by the proper supply of protein brought about by the supplementary feeding.

Inasmuch as the agility performance is recorded in seconds, it is obvious that the bigger the time, the poorer the agility performance, or vice versa. As gleaned from the data the mean agility performance of the two groups are 21.61 and 25.55 seconds, respectively. This makes a difference of 3.71 seconds, which means that the experimental group became more agile than the control group after three months of feeding. This particular condition suggests that the increase in agility performance on the part of the control group is only due to the skill and experience developed in the game as the agility testing progressed. On the part of the experimental group, however, the improvement in agility performance is undoubtedly due to proper nutrition coupled with experience and skill in the game.

Average Gain in the Physical Aspects Every 15 Days

Shown in Table 3 are the average gains in the

Table 3

Average Gain in the Physical Profile Aspects Every 15 Days Within Three Months Before and During Supplementary Feeding

A. Before Feeding

Date	Experimental Group				Control Group			
	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)
September 16-30	.04	.18	.10	.75	.04	.18	.10	.76
October 1-15	.04	.20	.13	.76	.04	.21	.12	.76
October 16-30	.04	.23	.12	.77	.04	.23	.12	.78
November 1-15	.04	.26	.11	.78	.04	.25	.13	.77
November 16-30	.04	.29	.12	.79	.04	.30	.11	.78
December 1-15	.04	.32	.11	.80	.04	.32	.11	.80
Total	.24	1.48	.69	4.65	.24	1.49	.69	4.65
Mean	.04	.25	.115	.775	.04	.25	.115	.775

B. During Feeding

	Experimental Group				Control Group			
	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (Kg.)	Ave. Agility Perf. (Sec.)	Ave. Age (Yrs.)	Ave. Height (Cm.)	Ave. Weight (kg.)	Ave. Agility Perf. (Sec.)
January 1-15	.04	.98	.14	-1.09	.04	.04	.12	-1.08
January 16-30	.04	1.01	.15	1.69	.04	.08	.10	.10
February 1-15	.04	1.04	.16	1.72	.04	.14	.08	.22
February 16-29	.04	1.08	.17	1.78	.04	.20	.07	.40
March 1-15	.04	1.12	.18	1.88	.04	.24	.06	.60
March 16-30	.04	1.15	.19	2.10	.04	.28	.06	.72
Total	.24	6.38	.99	8.08	.24	.98	.49	.96
Mean	.04	1.06	.165	1.35	.04	.16	.0817	.16

physical aspects every 15 days within three months before and during supplementary feeding, broken down, as sub-tables A and B, respectively.

Before feeding. Sub-table 3A presents the average gains before feeding. Since the age changes uniformly, there is an average change of .04 years in both groups every 15 days, hence a combined mean age of .04 years, This figure was obtained by dividing 15 days by 365 days a year. The changes in average height for both groups represent a gradually increasing trend ranging from .18 centimeters during the first 15 days to .32 centimeters during the last 15 days. These average changes in height yielded a mean of .25 in both groups. The changes in average weight range from .10 to .13 kilograms for both groups and the trend was fluctuating because the changes occasionally increased or decreased as the weighing progressed. Both groups, however, yielded a common mean of .115 kilograms. As to agility gain, the experimental group registered an increasing trend of change ranging from .75 to .80 seconds, while that of the control group decreased during the first 15 days of November 1983. Regardless of the increase or decrease, however, the combined mean of the gains in agility performance remained equated at .775 seconds within the three-month period. The means of the other aspects also remained equated for both

groups. This is obvious because there was no feeding yet in either group. Since the next two weeks that followed was a Christmas vacation, no measuring was done on the sample pupils.

During feeding. As shown in sub-table 3B the average gains in the physical aspects vary in relation to the group of samples, except the changes in average age which are obviously uniform at .04 years for both groups.

During the initial stage of feeding, there is a big disparity in the average gains in height. While the experimental group registered an average increase in height of .98 centimeters, the control group had only .04 centimeters, thus yielding a pronounced margin of .94 centimeters. This motivated the researcher to repeat the measurement of the height to discover a possible vicious, circle, only to find out that the measurement was accurate for both groups. During the next 15 days the average change in the experimental group rose 1.01 centimeters, while the control group had only .08 centimeters. This made a difference of .93 centimeters. Although the trend of change was increasing in both groups, the increase in the experimental group was much more rapid than that of the control group. The changes in the experimental group range from .98 centimeters to 1.15 centimeters, thereby yielding a mean of 1.06 centimeters. In the control

group the changes range from .04 to .28 centimeters, which gave a combined mean change of .16. The difference between the two groups is then .90 centimeters after the feeding period. Based on this data, the researcher believes that supplementary feeding contributes considerably to the growth in height.

As to the average gain in weight every 15 days during the feeding period, the two groups of samples exhibited an opposite trend. While the experimental group was gradually increasing in weight gain, from .14 to .19 kilograms, the control group was decreasing from .12 to .06 kilograms. This two groups yielded a mean weight gain of .165 and .0817 respectively, thus making a margin of .0833.

In the average change in agility performance it will be noted that the initial change in both groups during the first 15 days shows a decrease as indicated by the negative figures of -1.09 and -1.08, respectively. This data surprised the researcher at the outset. However, after observing and interviewing the pupils, she was made to understand that the main cause was the two-week Christmas vacation. During this period the pupils did not have supplementary feeding and agility testing, so they lost the skill and the experience in the game. Added to this is the fact that during Christmas vacation the pupils often stay late at night, enjoying the fun and frolic of

the Yuletide season and some of them would even help their parents in livelihood activities until the wee hours in the evening. Starting the second 15 days, however, there is a marked difference in the agility gain between the two groups and the trend suddenly became increasing. The experimental group exhibited agility changes ranging from 1.69 to 2.10 seconds, while the control group had changes ranging from .10 to .72 seconds. This agility gains yielded the means of 1.35 and .16 seconds, respectively, thus making a notable margin of 1.19 seconds in favor of the experimental group. The slight gains in the control group may lead to a conclusion that exposure to a rigorous agility testing without provisions for replacement and growth of tissues, may cause the deterioration of one's agility performance as indicated by the slight increase in agility gain. This increase in agility may just be attributed to the skill and experience in the game which go hand in hand with the natural growth and development in age and height. On the other hand, the notable agility gains on the part of the experimental group may be due to proper nutrition which enables the children to withstand the rigorous exercise. This can be justified by the agility testing before the feeding started wherein the weight gain and the agility gain for both groups remained equated up to the end of the three-month period.

Comparison Between the Weight Gain of the Experimental Group and that of the Control Group

To compare the weight gain of the experimental group and that of the control group, the t-test of significance of the difference between two means was employed using the average weight gains every 15 days within the three-month feeding period as the raw data (See computation in Appendix H).

The level of significance for a two-tailed test under .05 level at 10 degrees of freedom on the tabular values of t is 2.23. Since the absolute computed value of t is 7.24, being more than the foregoing tabular values, the null hypothesis that "the mean weight gain of experimental group and that of the control group after supplementary feeding are the same" is rejected. This means that the supplementary feeding conducted within the period of three-months has a significant effect on the weight gain of children, even if it is coupled with a rigorous exercise like agility testing, as in the case of the sample pupils.

Comparison Between the Agility Gain of the Experimental Groups and that of the Control Group

The comparison of the agility gain of the two groups employed the same procedure used in comparing the weight gain (See Appendix I).

Inasmuch as the absolute computed t value of 2.34 is higher than the absolute tabular t value of 2.23 at .05 level and 10 degrees of freedom, the null hypothesis that "the mean agility gain of the experimental group and that of the control group after supplementary feeding are the same" is rejected. This means that supplementary feeding conducted in three months time has a significant effect upon the agility performance of children because the control group progressed slower than the experimental group in so far as agility is concerned. Therefore, it cannot be denied, that the difference of 1.19 seconds is attributed to the additional calories brought about by the supplementary feeding among the experimental samples, which was not true among the control pupils.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to determine the effects of food production-based supplementary feeding upon the weight and the agility of pupils in Samar College, Catbalogan, Samar. Specifically, it sought answers to the following questions:

1. To what extent are the school food products utilized in the supplementary feeding?

2. What is the physical profile (average age, height, weight, and agility performance) of the experimental and the control groups within three months before and during the supplementary feeding period.

3. What is the average gain in the physical aspects of the two groups of pupils every 15 days within three months before and during the supplementary feeding period?

4. How do the two groups compare with each other in terms of:

   a. mean weight gain

   b. mean agility gain

The study employed the experimental design using as samples 100 primary grades pupils of Samar College with

ages ranging from seven to ten years. These pupils were divided into two groups with 50 pupils to a group. These two groups were equated based on their initial average age, height, weight and agility performance. The data were gathered from the results of the experiment.

To enrich the content of the study, the researcher patiently reviewed several books, unpublished works and other reading materials to gather substantial bits of information that shed relevance to the study.

Findings. The findings which answered the specific questions raised in Chapter 1 are as follows:

1. The highest worth of food materials used in the supplementary feeding came from the school food production project. Of the total worth of food materials which is ₱908.45, ₱346.20 or 38.11 percent came from the school garden; ₱326.50 or 35.94 percent, from local purchase; ₱109.75 or 12.08 percent, from donation; and ₱66.00 or 7.27 percent, from parental donations.

2. The physical aspects of the experimental and the control groups followed the same trend of growth before feeding started as evidenced by their common means of the age, height, weight, and agility performance, which are 9.37 years, 116.72 centimeters, 22.94 kilograms, and 26.90 seconds, respectively. During the feeding period, however, the experimental group progressed better except

in average age which is obviously uniform at 9.61 years for both groups. As to average height, the experimental group yielded a mean of 120.64 centimeters as against the control group with only 117.38 centimeters, thus making a difference of 3.26 centimeters. The average weight of the two groups registered the means of 23.69 and 23.45 kilograms, respectively. This makes a difference of .24 kilograms. The agility performance of the two groups yielded the means of 21.61 and 25.55 seconds, respectively, thus making a difference of 3.71 seconds in favor of the experimental group. The smaller the time the better the agility performance. This means that the experimental group is 3.71 seconds faster than the control group.

3. The average gains in the physical aspects for both groups before the feeding started followed a fluctuating trend but they remained equated at the end of the three-month period. After the feeding started, the progress in the physical aspects revealed a disparity in favor of the experimental group. While the age gain remained uniform at .04 years, the height registered a difference of .90 centimeters, while the weight and the agility performance had a difference of .08 kilograms and 1.19 seconds, respectively. Therefore, supplementary feeding does affect the physical development of children.

4. In the matter of weight gain of the experi-

mental group and that of the control group, the absolute computed t value which is 7.24 is more than the tabular t value of 2.23 at .05 level at 10 degrees of freedom. Hence, the null hypothesis that "the mean weight gain of the experimental group and that of the control group after supplementary feeding are the same" is rejected. As to agility gain, the computed t value of 2.34 is higher than the foregoing tabular value at the same level and degree of freedom. Therefore, the null hypothesis that "the mean agility gain of the experimental group and that of the control group after supplementary feeding are the same" is also rejected.

Conclusions

In the light of the findings just presented the following conclusions are drawn:

1. The school food production project is an important foundation of the supplementary feeding program because it contributes considerably to the possibility and success of the program.

2. Supplementary feeding has a significant effect on the weight and the agility of pupils, particularly in the primary grades.

Recommendations

Based on the foregoing conclusions, the following

recommendations are made:

1. Every institution planning to undertake supplementary feeding project should intensify food production in order to provide sufficient food supply that can sustain the implementation of the school nutrition program with minimum external food assistance.

2. For further research the following problems are hereby recommended:

a. Influences of Mother's Occupation upon the Infant Feeding Preferences of the Three Social Classes of Families in Catbalogan, Samar.

b. Modification of Vegetable Recipes Usually Rejected by Primary Grades Children to Suit their Own Taste.

BIBLIOGRAPHY

BOOKS

Adeva, Jose A. *Elements of Research and Thesis Writing*. Manila, Philippines: University Publishing Company, 1957.

Aquino, Gaudencio V. *Essentials of Research and Thesis Writing*. Quezon City, Philippines: Alexander Phoenix Publishing House, Inc., 1972.

Arkin, Herbert and Calton Raymond R. *Statistical Methods applied to Economics, Business, Psychology, Education and Biology*. New York: Barnes and Noble, Inc., 1965.

Ballow, Stephen V. and Camsbell, William Giles, *Form and Styles Thesis, Reports, Term Papers*. 4th ed. Houghten Mifflin C., Boston, 1974.

Bautista, Paulina F. et al. *Philippine Marriage Information*. IMC, U. P., 1981.

Best, John W. *Research in Education*. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1970.

Borg, Walter R. and Gall, Meredith D. *Educational Research and Introduction*. New York: David McKay Co., Inc., 1971.

Ferguson, George A. *Statistical Analysis in Psychology and Education*. New York: McGraw Hill Book Co., 1977.

Flores, Tomas W. *Fundamental in Test and Measurements*. Manila: Abiva Publishing House, Inc., 1960.

Garrett, Henry E. *Statistical in Psychology and Education*. Bombay: Vokila, Fedder and Simons Private Ltd., 1966.

Gonzales, Otilia f. *Food and Nutrition Education in School and Home*. Manila, Philippines: National Book Store Inc., 1973.

Good, Carter V. *Dictionary of Education*. McGraw-Hill Publishing Co., New York: 1959.

Guthree, Helen Andrews. *Introductory Nutrition*. University Paryk, Pennsylvinnia: The C. C. Mosby Co., 1978.

Manuel, Bienvenido B and Medel, Paz G. *A Practical Guide to Methodology of Research and Thesis Writing. Manila, Philippines*: GIC Enterprises and Co., Inc., 1976.

Tuckman, Bruce W. *Conducting Educational Research*. 4th Ed. New York: Harcourt Brace Jovanovich, Inc., 1978.

UNPUBLISHED WORKS

"Bimonthly Special Report of the Population Center Foundation of the Philippines", Vol. 6 No. 3 and 4, 1980.

"Option for Policy and Practice: Nutrition, Health and Education: Prospects for the year 2000".

"Report on Operation Timbang, 1978".

DOCUMENTS

Food and Nutrition Research Center. Your Guide to Good Nutrition, Manila: National Science Development Board, (Ind.).

Nutrition Fact Sheet. Communication Department, Nutrition Center of the Philippines, Makati, Rizal, 1976.

Nutrition Information Series for Teachers. Nutrition Center of the Philippines, Manila, 1978.

Instructional Materials on Nutrition Education, Supplementary Feeding and Selective Food Production. July – August 1982.

Philippine Nutrition Program Implementing Guidelines.

APPENDICES

APPENDIX - A

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

July 1, 1983

The Acting Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r :

I have the honor to submit for approval one of the following research problems for my thesis as a requirement for the degree of Master of Arts in Teaching Vocational Education (MATVE) major in Home Economics.

1. FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS UPON THE WEIGHT AND THE AGILITY OF PUPILS IN SAMAR COLLEGE, CATBALOGAN, SAMAR.

2. COMPARISON BETWEEN THE EFFECTS OF STABLE MANURE AND CHICKEN DUNG UPON THE YIELD OF AMPALAYA UNDER THE SOIL AND CLIMATIC CONDITIONS OF CATBALOGAN, SAMAR.

3. EVALUATION OF THE APPLIED NUTRITION PROGRAM IN PUBLIC AND PRIVATE SCHOOLS IN CATBALOGAN, SAMAR.

I hope for your early favorable action.

Very truly yours,

(SGD.) LETECIA A. RODRIGUEZ
Graduate Student

Recommending Approval:

(SGD.) ALEJANDRO E. CANANUA, M.A.Ed.
Adviser

Approved:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Actg. Dean of Graduate Studies

APPENDIX - B

MAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

APPLICATION FOR ASSIGNMENT OF ADVISER

Name RODRIGUEZ, LETECIA ACAMPADO
(Family Name) (First Name) (Middle Name)

Candidate for Degree in MASTER OF ARTS IN TEACHING
VOCATIONAL EDUCATION

Area of Specialization HOME ECONOMICS

Title of Proposed Thesis

FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS UPON THE WEIGHT AND THE AGILITY OF PUPILS IN SAMAR COLLEGE, CATBALOGAN, SAMAR.

Name of Requested Adviser ALEJANDRO E. CANANUA

Approval of Adviser Strongly recommended

(SGD.) ALEJANDRO E. CANANUA
Requested Adviser's
Signature

(SGD.) LETECIA A. RODRIGUEZ
Researcher's
Signature

Approved:

(SGD.) DOMINADOR Q. CABANGANAN, Ed. D.
Dean, Graduate School

Date July 29, 1983

APPENDIX - C

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

December 12, 1983

The Acting Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r :

I have the honor to request that I be scheduled on December 29, 1983 to defend my thesis proposal entitled "FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS UPON THE WEIGHT AND THE AGILITY OF PUPILS OF SAMAR COLLEGE, CATBALOGAN, SAMAR", to give me ample time to refine my manuscript during the remaining few days of the Christmas Vacation.

In this connection, I am submitting herewith five copies of my thesis proposal for distribution to the Dean and the panel members.

I hope for your early favorable action on this matter.

Very truly yours,

(SGD.) LETECIA A. RODRIGUEZ
Researcher

Recommending Approval:

(SGD.) ALEJANDRO E. CANANUA
Adviser

Approved:

(SGD.) DOMINADOR Q. CABANGANAN
Acting Dean of Graduate Studies

APPENDIX - D

August 20, 1983

The Director
Samar College
Catbalogan, Samar

Madame:

In connection with my research on "FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS UPON THE WEIGHT AND THE AGILITY OF THE PUPILS OF SAMAR COLLEGE, CATBALOGAN, SAMAR", I would like to request permission to use the school garden as food production lot and the Home Economics facilities as the feeding center.

I am anticipating with gratitude your favorable action on this matter.

Very truly yours,

(SGD.) LETECIA A. RODRIGUEZ
Researcher

Approved:

(SGD.) ROSA L. SALAZAR
Director, Samar College

APPENDIX - E

SAMAR STATE POLYTECHNIC COLLEGE
Catbalogan, Samar

January 14, 1985

The Acting Dean of Graduate Studies
Samar State Polytechnic College
Catbalogan, Samar

S i r :

I have the honor to request that I be scheduled on February 9, 1985 to defend my thesis entitled "FOOD PRODUCTION-BASED SUPPLEMENTARY FEEDING: ITS EFFECTS UPON THE WEIGHT AND THE AGILITY OF PUPILS OF SAMAR COLLEGE, CATBALOGAN, SAMAR".

In this connection, I am submitting herewith six copies of my thesis for distribution to my adviser, the chairman and the members of the panel of examiners.

I hope for your early favorable action on this request.

Very truly yours,

(SGD.) LETECIA A. RODRIGUEZ
Researcher

Recommending Approval:

(SGD.) ALEJANDRO E. CANANUA
Adviser

APPROVED:

(SGD.) DOMINADOR Q. CABANGANAN
Acting Dean of Graduate Studies

APPENDIX - F

CHART OF AVERAGE WEIGHT GAIN

Experimental Group		Control Group	
Weight Gain		Weight Gain	
Before Feeding	During Feeding	Before Feeding	During Feeding
2.77	2.78	2.77	1.50
1.49	2.70	1.49	1.00
1.40	1.90	1.40	1.00
1.31	1.85	1.31	.90
1.30	1.65	1.30	.84
1.20	1.65	1.28	.82
1.14	1.65	1.20	.80
1.00	1.60	1.14	.80
1.00	1.55	1.00	.79
1.00	1.50	1.00	.75
1.00	1.50	1.00	.75
1.00	1.50	1.00	.70
1.00	1.50	1.00	.70
.95	1.30	1.00	.70
.90	1.30	.95	.69
.90	1.28	.90	.65
.90	1.25	.90	.65
.88	1.20	.90	.62
.84	1.14	.88	.60
.82	1.12	.84	.56
.80	1.10	.82	.50
.70	1.05	.80	.50
.70	1.05	.70	.50
.69	.95	.70	.50
.62	.95	.60	.50
.61	.90	.62	.50
.60	.90	.61	.45
.56	.85	.60	.44
.50	.84	.56	.40
.45	.80	.50	.40
.44	.80	.45	.38
.40	.68	.40	.34
.40	.65	.40	.30
.40	.65	.38	.25
.38	.60	.37	.24
.37	.48	.34	.21
.34	.47	.30	.20
.30	.45	.28	.20
.28	.38	.28	.20
.28	.35	.25	.15

APPENDIX - F
(Cont'd)

CHART OF AVERAGE WEIGHT GAIN

Experimental Group		Control Group	
Weight Gain		Weight Gain	
Before Feeding	During Feeding	Before Feeding	During Feeding
.25	.30	.24	.15
.24	.30	.21	.15
.21	.28	.15	.15
.15	.20	.12	.12
.12	.20.	.20	.11
.11	.15	.10	.10
.10	.10	.08	.08
.08	.10	.05	.05
.05	.05	.05	.05
.02	.05	.02	.02

APPENDIX - F-1

CHART OF AVERAGE AGILITY GAIN

Experimental Group		Control Group	
Agility		Agility	
Before Feeding	During Feeding	Before Feeding	During Feeding
7.5	10.9	7.5	6.9
7.3	10.9	7.3	5.9
7.2	10.9	7.2	5.6
7.2	10.9	7.2	5.1
6.7	10.9	6.7	4.9
6.4	10.9	6.4	4.9
6.3	10.9	6.3	4.8
6.3	10.8	6.3	4.7
6.3	10.8	6.3	4.5
6.2	10.8	6.2	4.5
6.2	10.8	6.2	4.3
5.8	10.8	5.8	4.2
5.8	10.8	5.8	3.9
5.6	10.8	5.6	3.9
5.5	10.8	5.5	3.8
5.5	10.8	5.5	3.8
5.5	10.8	5.5	3.6
5.5	10.7	5.5	3.5
5.4	10.7	5.4	3.4
5.4	10.7	5.4	3.3
5.3	10.7	5.3	3.3
5.3	10.6	5.3	3.3
5.2	10.5	5.2	3.3
5.1	10.5	5.1	3.3
5.1	10.5	5.1	3.1
4.8	10.5	4.8	3.1
4.7	10.4	4.7	3.1
4.6	10.4	4.6	3.1
4.5	10.3	4.5	2.5
4.5	10.3	4.5	2.5
4.3	9.8	4.3	2.4
4.3	9.8	4.3	2.3
4.3	9.8	4.3	2.3
4.3	9.7	4.1	2.3
4.1	9.7	3.4	2.2
3.8	9.7	3.4	2.2
3.4	9.6	3.3	2.2

APPENDIX - F-1
(Cont'd)

CHART OF AVERAGE AGILITY GAIN

Experimental Group		Control Group	
Agility		Agility	
Before Feeding	During Fedding	Before Feeding	During Feeding
3.4	9.6	3.2	2.2
3.3	9.6	2.8	2.2
3.2	9.6	2.4	2.2
2.8	9.6	2.2	2.2
2.4	9.5	2.0	2.0
2.2	9.5	2.0	1.8
2.0	9.5	1.5	1.5
2.0	9.5	1.4	1.3
1.5	9.5	1.3	1.3
1.4	9.5	1.1	1.3
1.3	9.4	1.1	1.2
1.1	8.8	1.1	1.0

APPENDIX - G

Recipes Used in Supplementary Feeding with their Corresponding Composition and Computed Value

Recipe: Mongo-Camote Mash

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A I.U.		Food Energy Calories	Protein Gms.	Vit. A I.U.
1 gt.	2520	Mongo	356	24.4	130		8971.2	614.88	3276
40 c.	4000	Yellow Camote	136	1.1	900		5440.0	44.00	36000
18 c.	3600	Refined Sugar	387	0.0	---		13932.0	---	---
10 c.	1000	S. Milk Powder	360	36.0	40		3600.0	360.00	400
4 gal.		Water							
Total Cost			Total				31943.2	1018.88	39676
Total Yield	100 Servings		Value per serving				319	10.1	397
Size per serving			Rec. Snack Allowance				420	10.0	875
Cost per serving			% Rec. Snack Allowance				76	101.	45

APPENDIX - G
(Cont'd.)

Recipe: Mongo Squash Cream

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A. I.U.		Food Energy Calories	Protein Gms.	Vit. A. I.U.
1 gta.	2520	Mongo	356	24.4	130		8971.2	614.88	3276
20 c.	2000	Yellow Squash	34	1.9	1065		640.0	30.00	21300
20 c.	2400	Brown Sugar	346	2.2			8304.0	52.80	—
20 c.	3000	Coconut Milk	318	5.5			9440.0	165.00	—
4 gal.		Water							
Total Cost			Total				27455.2	862.68	24576
Total Yield	100 servings		Value per serving				275	8.6	246
Size per serving			Rec. Snack Allowance				240	10.0	875
Cost per Serving			% Rec. Snack Allowance				65	86	28

APPENDIX – G
(Cont'd.)

Recipe: Corn Pospas with Dilis

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A I.U.		Food Energy Calories	Protein Gms.	Vit. A I.U.
1-½ gta.	3000	Corn Grits	363	8.7	—		11979.10	287.10	—
1 kg.	1000	Dilis, Dried	321	60.2	—		3210.0	602.00	—
24 C.	6000	Malunggay	75	5.9	2450		450.00	35.40	74700.0
20 C.	2000	Yellow Squash	34	1.9	1065		680.0	38.00	21300.0
2 C.	400	Oil	882	Tr.	—		3532.0	Tr.	—
1 t.	10	Garlic	122	7.0	0		12.2	.70	—
½ C.	50	Onions	67	1.9	5		33.5	.95	2.5
1 C.	160	Tomatoes	19	1.0	735		30.4	1.60	1179.0
6-½ gal.		Water							
Total Cost			Total				19924.1	365.75	97178.5
Total Yield	100 Servings		Value per serving				199.0	9.6	972.0
Size per serving			Rec. Snack Allowance				420.0	10.0	373
Cost per serving			% Rec. Snack Allowance				47.0	96	111

Recipe: Mongo-Corn Porridge with Dilis

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A I.U.		Food Energy Calories	Protein Gms.	Vit. A I.U.
1-½ gta.	3300	Corn Grit	363	8.7	—	—	11979.0	287.10	—
½ gta.	1260	Mongo	356	24.4	—	130	4485.6	307.44	1638.0
½ kg.	500	Dilis Dried	321	60.2	—	—	1160.5	30.10	—
20 C.	500	Malunggay	75	5.9	—	2450	375.0	29.50	62250.0
10 C.	250	Kangkong	30	3.9		4825	105.0	9.75	12062.
10 C.	1000	Yellow Squash	34	1.9	15.0	1065	240.0	19.00	10650.0
2 C.	400	Oil	883	Tr.			3532.0	Tr.	—
10 C.	1000	S. Milk Powder	360	36.0		40	3600.0	360.00	400.0
½ C.	50	Onions	67	1.9	353.0	5	33.5	195.	2.5
1 C.	160	Tomatoes	19	1.0		735	30.4	1.60	1176.0
7 gal.		Water							
Total Cost			Total				24641.0	1045.44	88179.0
Total Yield	100 Servings		Value per Serving				246	10.4	882
Size per Serving			Rec. Snack Allowance				420	10.0	875

Recipe: Benignit

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A I.U.		Food Energy Calories	Protein Gms.	Vit. A I.U.
1 gta.	2520	Mongo	356	24.4	230		8971.2	614.88	3276
10 C.	2500	Carrots	55	1.3	18520		275.0	6.50	92600
20 C.	2000	Yellow Camote	136	1.1	900		2720.0	22.00	18000
20 C.	2000	Banana Sab-a	143	1.2	285		2660.0	24.00	5700
20 C.	2400	Brown Sugar	346	2.2	—		8304	52.80	—
20 C.	3000	Coconut	318	5.5	—		9540.0	165.00	—
10 C.	1000	Landang (sago)	316	0.5	—		3160.0	5.00	—
6-½ gal.		Water							
				Total			35830.2	890.18	119576
Total Cost				Value per serving			358	8.9	1196
Total Yield	100 servings			Rec. Snack Allowance			420	10.0	875
Size per serving				% Rec. Snack Allowance			85	89	137
Cost per serving									

Recipe: Squash Cream Soup

Household Measure	Wt. in Gms.	Ingredient	Composition			FCT NO.	Computed Value		
			Food Energy Calories	Protein Gms.	Vit. A I.U.		Food Energy Calories	Protein Gms.	Vit. A I.U.
50 C.	5000	Yellow Squash	34	1.9	1065		1700.0	9.50	5325
1 kg.	1000	Dilis	321	60.2	—		3210.0	602.00	—
20 C.	3000	Coconut Milk	318	5.5	—		9540.0	165.00	—
1 C.	200	Oil	883	Tr.	—		1766.0	Tr.	—
½ C.	50	Onions	67	1.9	5		33.5	.95	—
1 C.	160	Tomatoes	19	1.0	735		30.4	1.60	1176.0
10	250	Malunggay	75	5.9	2450		187.0	14.75	31125.0
5 gal.		Water							
						Total	16474.3	794.00	85533
Total Cost						Value per servings	165	7.9	
Total Yield	100 servings					Rec. Snack Allowance	420	10.0	
Size per serving						% Rec. Snack Allowance	39	79	
Cost per serving									

APPENDIX - G
(Cont'd)

The following Amount of Foods (E.P.) will Provide About 5 Grams Protein

Vegetable Sources (FCT NO.)	Weight Grams	Calories
378 Soybeans, Utaw(Dried)	13	53
251 Peanut, Roasted(Binusa)	16	90
254 Mongo, (Dried)	20	71
115 Black Baens	23	49
227 Pepper, Cowpies Dried	25	90
250 Peanuts Uncooked	35	95
152 Kayos	56	80
1 Rice white uncooked	67	246
165 Gata (Thick Coconut Milk)	95	318
17 Corn Yellow	100	188
20 Corn White	136	174
Animal Sources		
888 Dried Dilis (Powdered)	6	23
902 Dried Dilis	8	26
904 Dried Pusit	8	24
899 Dried Alamang	10	30
909 Dried Fish Tunsoy	12	25
845 Powdered Whole Milk	19	92

APPENDIX - G
(Cont'd)

The Following Amount of Foods (E.P.) will Provide About 5 Grams Protein

Vegetable Sources (FCT NO.)	Weight Grams	Calories
837 Cheese (Cheddar)	21	69
519 Chicken Lean Meat	21	21
426 Beef, Liver	22	94
440 Beef Lean Meat	23	34
525 Frog Meat, Palaka	24	23
406 Prok Lean Meat	25	56
628 Shrimps, White	26	26
668 Fish, Fresh Galonggong	27	27
832 Canned Meat (Luncheon Meat)	33	63
829 Frankfurters	34	81
859 Bagoong Alamang	34	25
839 Native Cheese	38	113
954 Patis	47	23
863 Bagoong Isda Anchivis	49	34
343 Condensed Milk	56	193
846 Recombined Milk	68	73
841 Evaporated Milk	70	98
629 Taguatan Hipon	25	26

APPENDIX - G
(Cont'd)

Amount of Foods that will Provide 100 Calories

FCT No.		Weight Grams	Protein
946	Lard	11	
947	Margarine	12	
945	Butter	12.5	
23	Milk	22	3
29	Spaghetti	27	3
13	Bihon	28	1
25	Misua	29	4
1	Rice, White	27	2
7	Glutinous Rice (Malagkit)	27	2
763	Bread, Sliced	30	3
772	Pandesal	31	3
17	Corn, Yellow	53	3
169	Kamo te (Sweet Potato)	74	0.8
176	Cassava Kamoteng Kahoy	71	0.6
368	Togi (Spring Yam)	89	1
317	Ubi	97	0.5
211	Gabi	118	3
289	Potatoes (Irish)	138	3
265	Coconut (Milk Thick)	31	2
266	Coconut Meat (Nature)	33	1
910	Sugar	25	
721	Palitao with Grabted Coconut	50	

APPENDIX - H

Computation of the t-test of Significance of the Difference Between the Mean Weight Gain of the Experimental and the Control Groups

Experimental Group		Control Group	
X_1	X_1^2	X_2	X_2^2
.14	.0196	.12	.0144
.15	.0225	.10	.0100
.16	.0256	.08	.0064
.17	.0289	.07	.0049
.18	.0324	.06	.0036
.19	.0361	.06	.0036
$EX_1 = .99$	$EX_1^2 = .1651$	$EX_2 = .49$	$EX_2^2 = .0429$
$\bar{X}_1 = .165$	$n_1 = 6$	$\bar{X}_2 = .0817$	$n_2 = 6$

$$S_1 = \sqrt{\frac{EX_1^2}{n_1} - \left(\frac{EX_1}{n_1}\right)^2}$$

$$= \sqrt{\frac{.1651}{6} - \left(\frac{.99}{6}\right)^2}$$

$$= \sqrt{.0275 - .1652^2}$$

$$= \sqrt{.0275 - .0272}$$

$$= \sqrt{.0003}$$

$$S_1 = .0173$$

$$S_2 = \sqrt{\frac{EX_2^2}{n_2} - \left(\frac{EX_2}{n_2}\right)^2}$$

$$= \sqrt{\frac{.0429}{6} - \left(\frac{.49}{6}\right)^2}$$

$$= \sqrt{.0072 - .0817^2}$$

$$= \sqrt{.0072 - .0067}$$

$$= \sqrt{.0005}$$

$$S_2 = .0224$$

Where: $\bar{X}_1$ = Mean of the experimental group

$\bar{X}_2$ = Mean of the control group

S_1 = Standard deviation of the experimental group

S_2 = Standard deviation of the control group

n_1 = Number of items in the experimental group

n_2 = Number of items in the control group

E = Summation

*Cristobal M. Pagoso, et, al., Fundamental Statistics, (Manila: Sinag-Tala Publishers Inc., 1982) p. 157-158 & 201-203.

APPENDIX - H
Cont'd)

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)(S_1)^2 + (n_2-1)(S_2)^2}{n_1 + n_2 - 2}} \sqrt{\frac{1}{n_1} \ddagger \frac{1}{n_2}}}$$

$$= \frac{.165 - .0817}{\sqrt{\frac{(6-1)(.0173)^2 + (6-1)(.0224)^2}{6 + 6 - 2}} \sqrt{\frac{1}{6} + \frac{1}{6}}}$$

$$= \frac{.0833}{\sqrt{\frac{(5)(.0003) + (5)(.0005)}{12 - 2}} \sqrt{.1667 + .1667}}$$

$$= \frac{.0833}{\sqrt{\frac{.0015 + .0025}{10}} \sqrt{.3334}}$$

$$= \frac{.0833}{\sqrt{\frac{.004}{10}} \times .5774}$$

$$= \frac{.0833}{\sqrt{.0004} \times .5774}$$

$$= \frac{.0833}{.02 \times .5774}$$

$$= \frac{.0833}{.0115}$$

$$= 7.24$$

$df = n_1 + n_2 - 2$
$= 6 + 6 - 2$
$= 12 - 2$
$= 10$

Tabular value of t at 10 degrees of freedom is 2.23 at .05 level

Since the computed t value of 7.24 is more than the tabular t value, the difference is significant at .05 level. Therefore, the hypothesis is rejected.

APPENDIX - I

Computation of the t-Test of Significance of the Difference Between the Mean Agility Performance of the Experimental and the Control Group

Experimental Group		Control Group	
X	X^2	X	X^2
-1.09	1.1881	-1.08	1.1664
1.69	2.8561	.10	.0100
1.72	2.9584	.22	.0484
1.78	3.1684	.40	.1600
1.88	3.5344	.60	.3600
2.10	4.4100	.72	.5184
EX_1=8.08	EX_1^2=18.1154	EX_2=.96	EX_2^2=2.2632
$\bar{X}_1$ =1.35	n_1 = 6	$\bar{X}_2$= .16	n_2 = 6

$$S_1 = \sqrt{\frac{EX_1^2}{n_1} - \left(\frac{EX_1}{n_1}\right)^2}$$

$$= \sqrt{\frac{18.1154}{6} - \left(\frac{8.08}{6}\right)^2}$$

$$= \sqrt{3.0192 - (1.3467)^2}$$

$$= \sqrt{3.0192 - 1.8136}$$

$$= \sqrt{1.2056}$$

$$S_1 = 1.0980$$

$$S_2 = \sqrt{\frac{EX_2^2}{n_2} - \left(\frac{EX_2}{n_2}\right)^2}$$

$$= \sqrt{\frac{2.2632}{6} - \left(\frac{.92}{6}\right)^2}$$

$$= \sqrt{.3772 - (.16)^2}$$

$$= \sqrt{.3772 - .0256}$$

$$= \sqrt{.3516}$$

$$S_2 = .5930$$

*Cristobal M. Pagoso, et, al., Fundamental Statistics, (Manila: Sinag-Tala Publisher Inc., 1982) p. 157-158 and 201-203.

APPENDIX - I
(Cont'd)

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)(S_1)^2 \;)n_2-1)(S_2)^2}{n_1 + n_2 - 2}} \quad \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$= \frac{1.35 - .16}{\sqrt{\frac{(6-1)(1.0980)^2 + (6-1)(.5930)^2}{6 + 6 - 2}} \sqrt{\frac{1}{6} + \frac{1}{6}}}$$

$$= \frac{1.19}{\sqrt{\frac{(5)(1.2056) + (5)(.3516)}{12 - 2}} \sqrt{.1667 + .1667}}$$

$$= \frac{1.19}{\sqrt{\frac{6.0280 + 1.7580}{10}} \sqrt{.3334}}$$

$$= \frac{1.19}{\sqrt{\frac{7.786}{10}} \times .5774}$$

$$= \frac{1.19}{\sqrt{.7786} \times .5774}$$

$$= \frac{1.19}{.8824 \times .5774}$$

$$= \frac{1.19}{.5095}$$

$$t = 2.34$$

df = n + n - 2
= 6 + 6 - 2
= 12 - 2
= 10

Tabular value of t at 10 degrees of freedom is 2.23 at .05 level

Since the computed t value of 2.34 exceeds the tabular t value of 2.23 at .05 level, the hypothesis is rejected.

APPENDIX - J

Table of Critical Value of t

df	Level of Significance for One Tailed Test				
	.005	.01	.02	.05	.10
	Level of Significance for Two-Tailed Test				
	.01	.02	.05	.10	.20
1	63.66	31.82	12.71	6.31	3.08
2	9.92	6.69	4.30	2.92	1.89
3	5.84	4.54	6.18	2.35	1.64
4	4.60	3.75	2.78	2.13	1.53
5	4.03	3.30	2.57	2.02	1.48
6	3.71	3.14	2.45	1.94	1.44
7	3.50	3.00	2.36	1.90	1.42
8	3.36	2.90	2.31	1.86	1.40
9	3.25	2.82	2.26	1.83	1.38
10	3.17	2.76	2.23	1.81	1.37
11	3.11	2.72	2.20	1.80	1.36
12	3.06	2.68	2.18	1.78	1.26
13	3.01	2.65	2.16	1.77	1.35
14	2.98	2.62	2.14	1.76	1.34
15	2.95	2.60	2.13	1.75	1.34
16	2.92	2.58	2.12	1.75	1.34
17	2.90	2.57	2.11	1.74	1.33
18	2.88	2.55	2.10	1.73	1.33
19	2.86	2.54	2.09	1.73	1.33
20	2.84	2.53	2.09	1.72	1.32
21	2.83	2.52	2.08	1.72	1.32
22	2.82	2.51	2.07	1.72	1.32
23	2.81	2.50	2.07	1.71	1.32
24	2.80	2.49	2.06	1.71	1.32
25	2.79	2.48	2.06	1.71	1.32
26	2.78	2.48	2.06	1.71	1.32
27	2.77	2.47	2.05	1.70	1.31
28	2.76	2.47	2.05	1.70	1.31
29	2.76	2.46	2.04	1.70	1.31
30	2.75	2.46	2.04	1.70	1.31
40	2.70	2.42	2.02	1.68	1.30
60	2.66	2.39	2.00	1.67	1.30
120	2.62	2.30	1.98	1.66	1.29
	2.58	2.33	1.96	1.645	1.28

Source: Henry E. Garrett, 1966.

APPENDIX – K-1

P i c t o r f a l s

Researcher cultivates the Plots
of young mongo plants

Researcher sprays insecticede
on the plants

APPENDIX - K-2

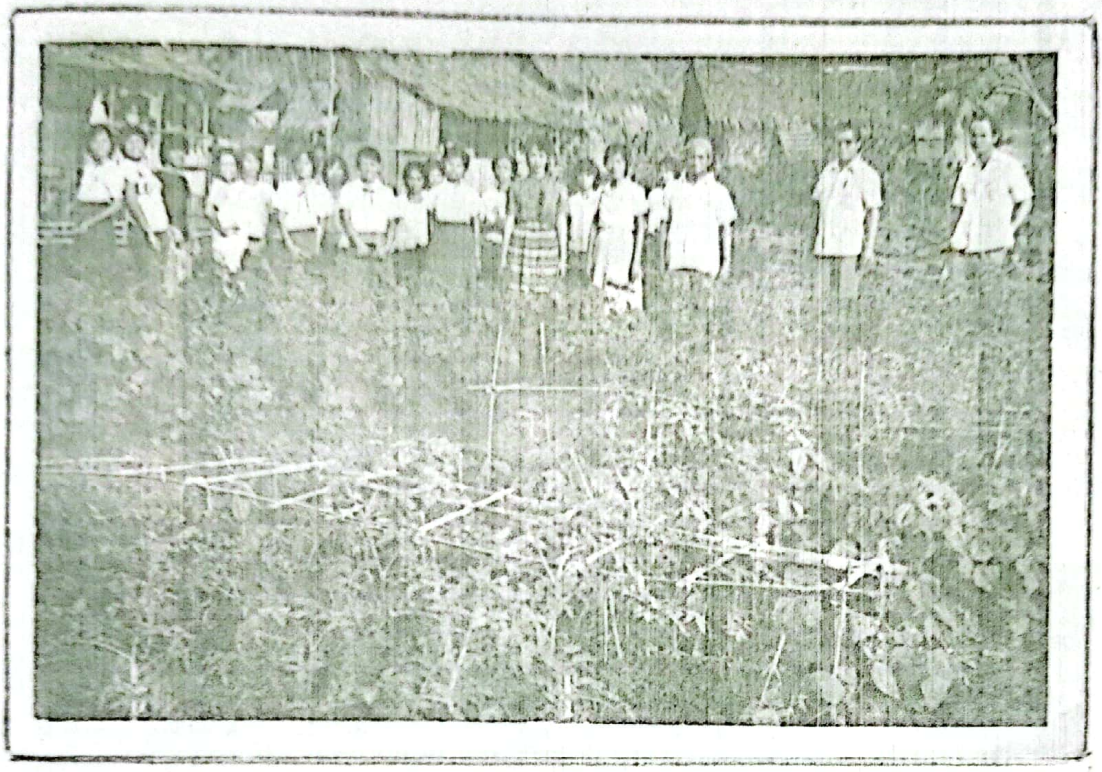
Pictorials

Researcher (2nd from right) inspects okra at initial fruiting

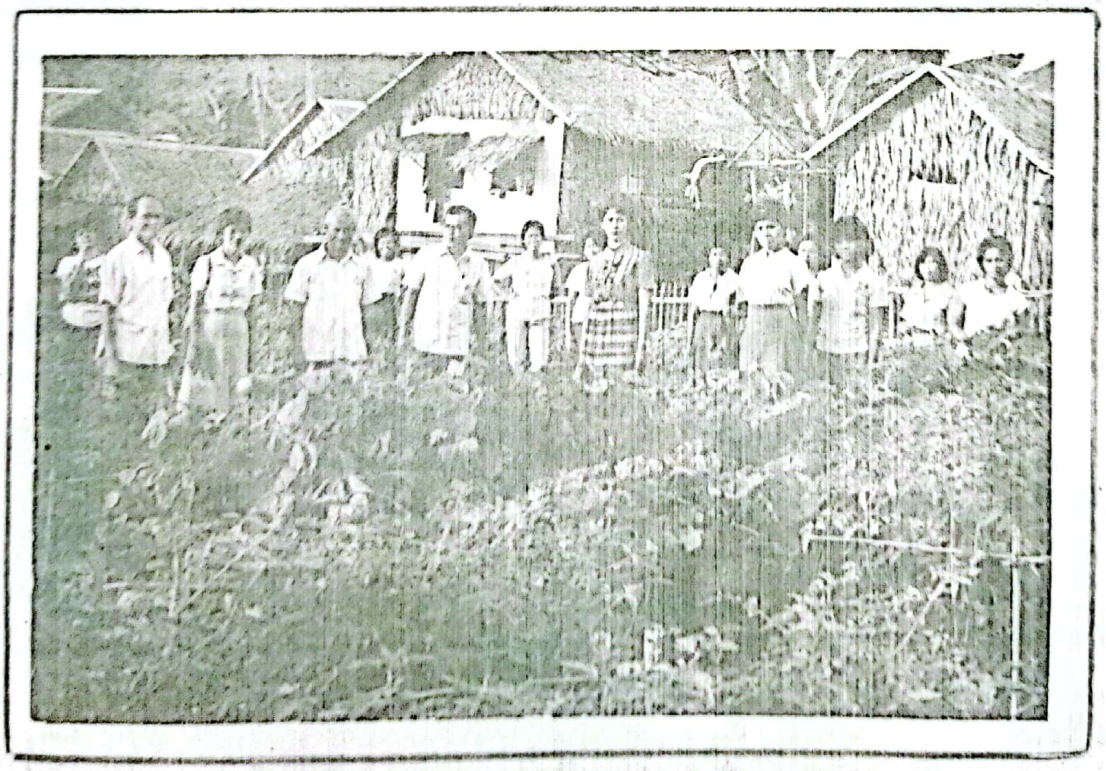
Researcher poses with her H. E. Students behind young camote plants

APPENDIX - K-3

P i c t o r i a l s



Thesis Committee members, with researcher, before harvest of crops



Thesis Comittee members, with researcher, before harvest

APPENDIX - K-4

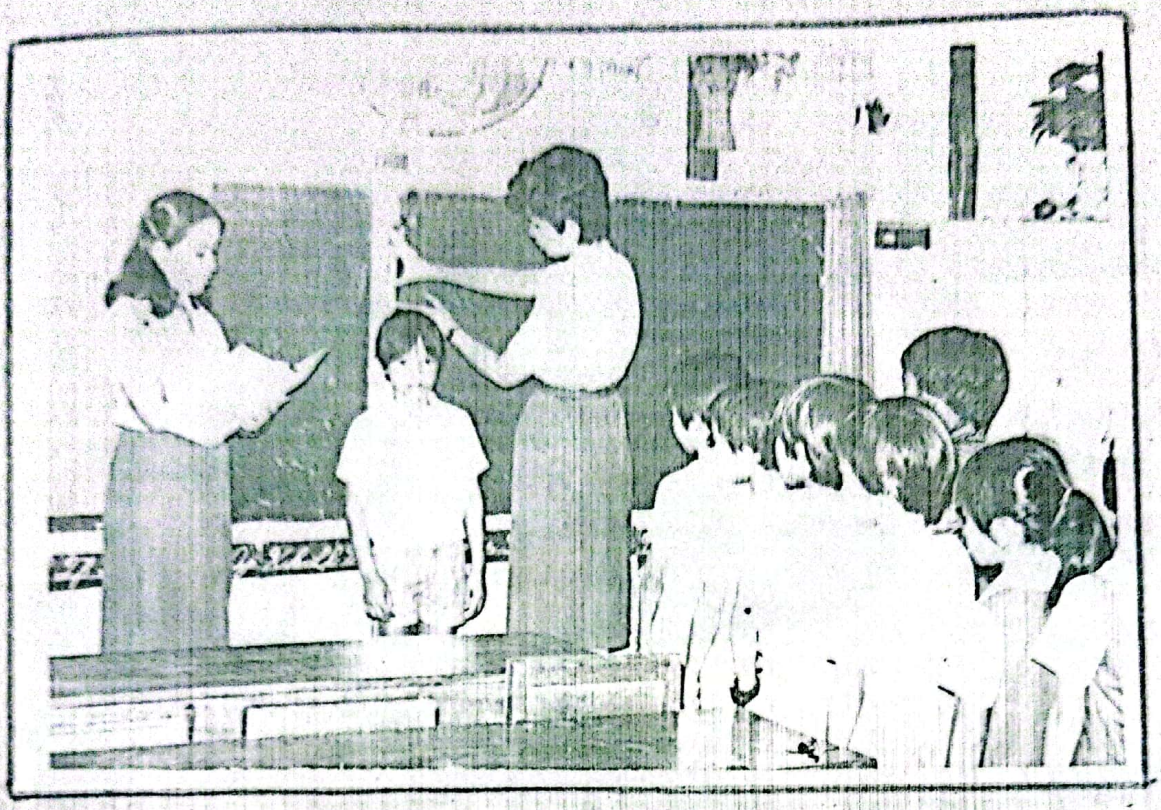
Pictorials

Researcher, with Adminstrative Staff, watches feeding of pupils

Researcher, with Adm. Staff and H. E. students, watches weighting of pupils

APPENDIX - K-5

Pictorials



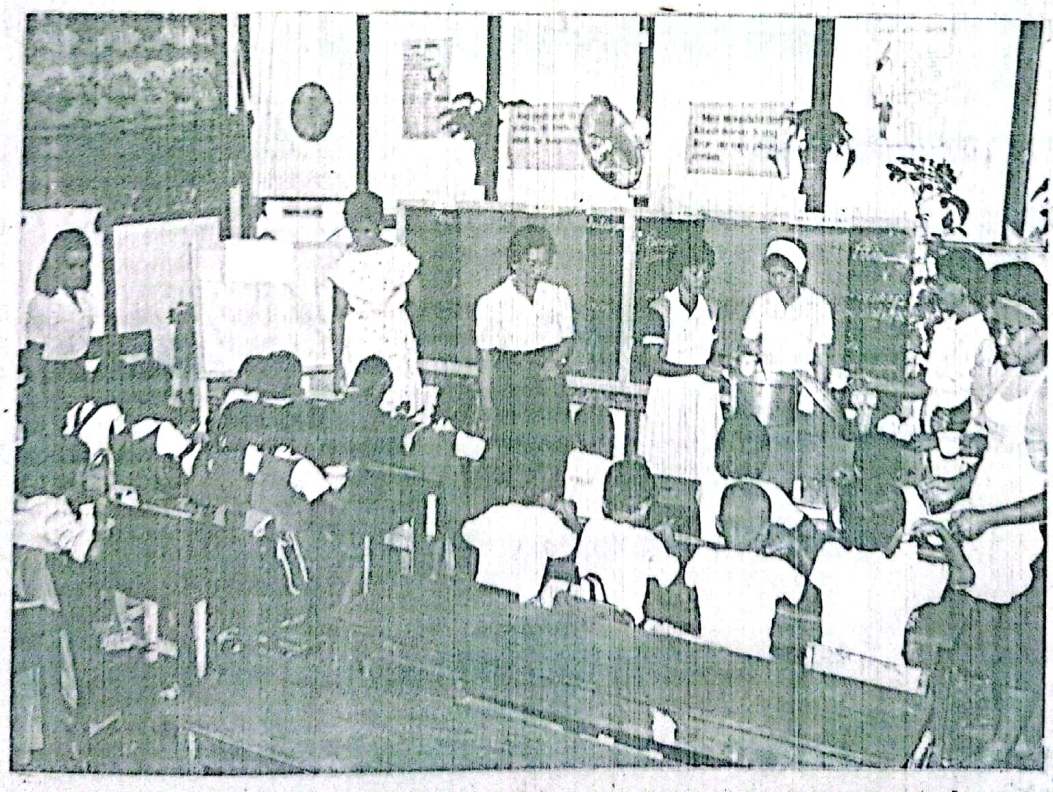
The researcher weighs the sample pupils before the agility testing

The researcher conducts agility testing to the sample pupils

APPENDIX – K-6

P i c t o r i a l s

The researcher, supervises her H. E. Students preparing Supplementary Snacks.



The researcher and a faculty member watch pupils fed by her H. E. students

CURRICULUM VITAE

CURRICULUM VITAE

NAME	:	LETECIA ACAMPADO RODRIGUEZ
ADDRESS	:	Patag I, Catbalogan, Samar
DATE OF BIRTH	:	December 29, 1954
PLACE OF BIRTH	:	Sulat, Eastern Samar
PRESENT POSITION	:	Home Economics College Instructor
STATION	:	Samar College, Catbalogan, Samar
CIVIL STATUS	:	Single

EDUCATIONAL BACKGROUND

Elementary - Sulat Elementary School, Sulat, Eastern Samar.

Secondary - Loyola Academy, Sulat, Eastern Samar

College - Samar College, Catbalogan, Samar

CIVIL SERVICE ELIGIBILITIES

Teacher Civil Service Exam . . . . . December 15, 1976

Civil Service Eligible Under P.D. 907. . April 7, 1976

HONOR RECEIVED

College . . . . . Cum Laude 1974

SEMINARS AND WORKSHOPS ATTENDED

Population Education Seminar (Division Level) . . Catbalogan, Samar

Girl Scout Leaders Seminars (Division Level) . . Catbalogan, Samar

SEMINARS AND WORKSHOPS . . (Cont'd)

Survey Outcome of Elementary Education for Head of Schools (SOUTELE) - Regional Level . . Tacloban City

Survey Outcome of Elementary Education for Head of Schools (SOUTELE) - Division Level . . Catbalogan, Samar

Girl Scout Journalist Workshop
Regional Level . . . . . Cebu City

Art Education Seminar Workshop
Division Level . . . . . Catbalogan, Samar

Consumer Education Seminar
Regional Level . . . . . Catbalogan, Samar

Labor Management Seminar
Regional Level . . . . . Tacloban City

Seminar Workshop on the Revision of Syllabi-Integrated of Nutrition to Health, Psychology, Sociology and Livelihood Education 1 & 2
National Level . . . . . Cebu City

CO-CURRICULAR ACTIVITIES

Vice President . . . . . Samar College Faculty and Employees Union

Secretary . . . . . Consumers Association of Catbalogan, Samar

Business Manager . . . . . Provincial Labor Management Council

LIST OF FIGURES AND TABLES

LIST OF FIGURES AND TABLES