IMPACT EVALUATION OF SCHOOL FEEDING PROGRAMME IN OSUN STATE PRIMARY SCHOOLS

By

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ABSTRACT

Poor nutrition contribute to low academic performance, high dropout rates, decrease in enrolment and irregular attendance in schools. A school feeding programme was started in Osun state in 2005. To date, there is little or no empirical evidence on the impact of the programme. This study, therefore, investigated the impact of the feeding programme oneducational indicators and social skills of the beneficiaries.

The study adopted a non-equivalent, control group post-test only design. Multi-stage sampling was used to select 450 pupils each from primary two (who have participated in the feeding programme for four years) in Osun State, and 450 pupils from primary two in Oyo State which served as the control. Four hundred and fifty parents of the pupils from Osun state, 45 intact classes of primary four, 45 head teachers, 109 stakeholders (teachers, teachers' supervisor, Local Government Education Authority Secretaries, School feeding Agency staff) and 60 cooks involved in the programme were also selected. Seven instruments were administered, namely: School Resources Inventory (r=0.82) (to the head-teachers), Parents Perception of School Feeding Programme (r=0.77) (to the parent of the pupils), School Feeding Programme Operators Questionnaire (r=0.74) (to the stakeholders), Cook Empowerment Questionnaire (r=0.82) (to the cooks), Achievement Test in Numeracy (r=0.84) (to pupils), Achievement Test in Literacy (r=0.78) (to pupils) and Standard Balance Beam Scale physically used to measure pupils' weight and height. Data collection took place from October to December 2012. Data were analysed using descriptive and inferential statistics at $p<0.05$.

Average enrolment in primary two increased by 19.2%, attendance rate was raised by 9.2% and retention rates increased by 3% after feeding started. Intervention schools showed significant increases in enrolment ($t_{(43)}$ =2.41) and attendance ($t_{(43)}$ =2.909). Boys' and girls' enrolment, were not different in the intervention schools, but boys' enrolment was significantly higher ($t_{(28)}$ =2.08) in non-intervention schools. Girls' attendance were significantly higher ($t_{(58)}$ = -2.23) in intervention schools, while that of boys' were higher ($t_{(28)}$ =2.15) in non-intervention schools. There was higher nutrition status ($t_{(898)}$=4.62) for pupils' in intervention schools. In respect to achievement, intervention schools were significantly higher in numeracy ($t_{(898)}$ =5.43) and literacy ($t_{(898)}$ = 9.69) girls' in intervention schools were significantly higher in numeracy ($t_{(448)}$ = -5.36) and literacy ($t_{(448)}$=-3.86) also, girls' in non-intervention schools were significantly higher in numeracy ($t_{(448)}$ = -2.01) but no difference in boys' and girls' literacy achievement. Girls' nutrition status was higher ($t_{(448)}$ = -2.62) than boys' in the intervention schools. Parents (363/80.6%) and stakeholders (99/90.9%) indicated satisfaction with implementation of the programme. Cooks' income showed significant increase ($t_{(59)}$ =15.7) and (50/83.3%) of them perceived that the training received improved their purchasing skills.

School feeding programme in Osun state made a positive impact on pupils' enrolment, attendance, retention, nutrition status and academic achievement and benefited a wide range of stakeholders. Non-implementing states should be encouraged to replicate the School Feeding Programme and sustain it beyond primary two.

Keywords: School Feeding Programme, Impact Evaluation, Academic Achievement.

Word count: 493

CERTIFICATION

I certify that this work was carried out by Rebecca Adeola AYOOLA in the International Centre for Education Evaluation (ICEE), Institute of Education, University of Ibadan, Nigeria.

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DEDICATION

This Thesis is dedicated to the Almighty God who has sustained me throughout the duration of the degree programme.

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I give all glory, honour and adoration to the Almighty God for the gift of life, good health and grace to start and finish this study.

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LIST OF ABBREVIATIONS/ACRONYNMS

3ie	International Initiative for Impact Evaluation
FFE	Food for Education
FGN	Federal Government of Nigeria
FME	Federal Ministry of Education.
FNDE	National Fund for Educational Development
GOB	Government of Bangladesh
HGSFHP	Home Grown School Feeding and Health Programme
IDA	International Development Association
IDP	International Development Partners
IFPRI	International Food Policy and Research Institute
IIIE	International Initiative for Impact Evaluation
MDGs	Millennium Development Goals
MDM	Midday meals
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental organization
NDHS	Nigeria Demographic and Health Survey
NPE	National Policy on Education
Lao PDR	Lao People's Democratic Republic
PCD	Partnership for Child's Development
PESP	Primary Education Stipend Programme
RIE	Rigorous Impact Evaluation
SFP	School Feeding Programme
SUBEB	State Universal Basic Education Board
THR	Take-home ration
UBEC	Universal Basic Education Commission
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Fund
WFP	World Food Programme.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the study

Education is the key to development and a powerful tool for lifting millions of the world's poor out of poverty. It is a proven contributor to reducing poverty and an instrument of change (Preece, 2006). Education is a major force in economic, intellectual, social and cultural development (Burtch, 2006), with the added value of bringing about character and attitudinal changes, and its ability to reshape human potential for desired development. Formal education acts as a powerful determinant of economic productivity. Schooling improves productivity, health and reduces negative features of life, such as child labour, and brings about empowerment (UNESCO, 2002). The foregoing suggest that education affects not only wages, but also broadens workforce outcome, participation in labour market, work in modern sectors and ability to earn regular income from work.

Nigerian education is categorised into three main vertical segments: basic education, post-basic education (or upper secondary education) and tertiary education (FGN, 2004). Some of the objectives for primary education put emphasis on a balance between physical and intellectual development. The specific objectives include:

- Widening access to basic education,
- Eliminating present inequalities in enrolment between urban and rural,
- Ensuring greater retention –this is aimed at ensuring that learners remain in school long enough to acquire basic and life skills.
- Ensuring long-term permanent literacy for those children who had completed the programme (UBEC, 2004; FRN, 2004; Nigeria Vision 2020 Report).

The Nigerian government initiatives to reform the education system started in the 1990s with the revision of the National Policy on Education document and two studies of the education sector (World Bank, 2000). The first study "A Situation Analysis Policy Study" (SAPA) was conducted in cooperation with the United Nations International Children's Fund (UNICEF). The study was undertaken to analyze the factors that inhibit access to education and factors that affect the quality of education. This study was conducted between 1991 and 1992 (UNICEF 1992). The second study was conducted in 1997 for the purpose of assessing learning achievements of Nigerian primary school children at primary four. The results of the 1997 study indicated that the pupils lacked basic numeracy and literacy competencies

(Falayajo, Makoju, Okebukola, Olubodun and Onuoha, 1997; UNICEF 2002; Ayeni and Dada 2011). The monitoring and evaluation report of primary four Nigerian pupils shows that the national mean score in literacy, numeracy and life skills did not exceed 40% in the competencies assessed by UNICEF and UNESCO in 1997 (*Tell*, 2007).

Another initiative during this period was the Obasanjo's government re-launched of the Universal Basic Education in 1999. The UBE is aimed at providing basic education for all, to enable all citizens to acquire appropriate levels of literacy, numeracy, communicative, manipulative and life skills. The intention is to provide nine years of compulsory education that would span primary and secondary levels. It covered primary and junior secondary education. The main objective of the programme was to ensure that there is a smooth transition from primary to junior secondary school education. This was one of the initiatives that have also been taken as basic steps to promote increased access to education.

All these initiatives are geared towards development and recognising education as an instrument par excellence for national development (FRN, 2004; UBEC, 2004). Moreover, improving education system can bring benefits in terms of future productivity, and increase efficiency in using the capacity of the system itself. Jamision Leslie (1990) aver that better educated adults are clearly more productive, which improves their income and contributions to national economy.

It is, however, sad that despite all initiatives undertaken, many children are not in school. United Nations Children's Education Fund reveals in one of its reports that about 130 million primary school-age children are not attending school globally, and 10 million Nigerian children are out of school. Out of this figure, 4.7m are of primary school age while 5.3m are of secondary school age (UNICEF, 2002; Afoakwa, 2011). Moreover, a report of Federal Ministry of Education (FME, 2003), cited by Agomoh (2006), placed Nigeria in a group of 15 IDA countries whose completion rates for primary education declined in the 1990s from 71% to 67%: Afghanistan, Albania, Cameroon, Central African Republic, Comoros, Republic of Congo, Congo Democratic Republic, Cote d'Ivoire, Kenya, Madagascar, Rwanda, Senegal, Vanuatu and Zambia. This report revealed the enormity of the devastating condition of Nigerian education. The EFA Global Monitoring Report notes that many children drop out before primary five without obtaining basic education (UNESCO, 2005).

Studies have been conducted to find out why children do not go to school. A study conducted by Action Aid published in 2003 showed that the reason why pupils do not go to primary schools include costs of schooling, opportunity costs, cost of feeding, illness and hunger, limited economic costs of education and low quality of schooling (Action Aid, 2003).

Research has shown that early under-nourishment in children, in addition to affecting physical growth and maturation, has potential influence on school aptitude, time of school enrolment, school attendance and concentration (UNICEF, 2002). This has also been supported by NEPAD (2003) that, the period from birth to 12 years is one of rapid growth, particularly in the early years. Malnourishment at this stage may result into stunted growth, increase susceptibility to disease such as tuberculosis and intellectual impairment.

Hunger is another important cause of pupils' absence from school. Food and Agricultural Organisation (FAO, 2009) reported that school-age children (3-14years) are estimated globally at 1.2billion. A substantial fraction of these children falls to the age range of basic education. However, 300 million of these children are chronically hungry and do not have enough to eat (Warren and Anderson, 2002). A United Nations' report, cited by Osun Defender (2014), indicated that only one out of five school children get a healthy school meal in developing countries, and that in Nigeria less than 500,000 school children get a decent meal in school. In that report, Nigeria and Cameroon shared the ignoble position of coming last. Similarly, UNICEF (2008) notes that in Nigeria, while 25.8 million are estimated to be enrolled in school, 7 million are out of school. Although death rate may be low, increasing evidence shows that there is a high nutritional deprivation combined with a heavy burden of disease among the age group 3-14 (Drake, Maier, Jukes, Patrikios, Bundy and Gadner, 2002). For example, the hospital attendance records of this age group in Osun State between 2001 and 2010, as presented in Table 1a and 1b, show cases of diarrhoea and anaemia, which are results of nutritional deficiency.

Table 1.1a: Hospital Records of Children Aged 3-14 in Osun State Hospital 2001-2005

S/N	Local Govt. Area	2001			2002			2003			2004			2005		
		Prevalence Rate %			Prevalence Rate %			Prevalence Rate %			Prevalence Rate %			Prevalence Rate %		
			D	A		D	A		D	A		D	A		D	A
1	ATAKUNMOSA EAST	2720	8.3	3.5	4109	2.2	3.2	4387	2.4	3.3	4804	4.8	0.6	3978	1.4	2.0
2	ATAKUNMOSA WEST	2657	3.1	2.3	4301	2.6	.2.5	4318	3.5	2.5	3257	1.6	5.4	3416	5.6	3.8
3	AYEDAADE	4054	2.3	1.1	3078	2.6	3.8	4300	1.8	1.1	8429	4.3	0.6	5016	0.5	6.6
4	AYEDIIRE	3475	1.7	1.6	5256	1.7	1.2	5567	2.0	1.6	4734	1.9	1.9	5073	2.0	0.5
5	BORIPE	2484	2.9	2.8	4481	2.8	10	5012	2.1	3.0	4773	1.8	2.0	3998	1.9	2.0
6	BOLUWADURO	6703	2.2	3.8	2254	2.7	1.9	2266	1.7	4.9	2415	1.8	3.8	2314	3.6	1.7
7	EDE NORTH	**7705**	3.8	3.0	12068	6.0	3.1	10153	3.2	0.6	11031	5.0	6.6	11397	1.2	1.0
8	EDE SOUTH	8510	2.1	2.2	8622	2.2	2.9	8046	2.6	2.2	8722	1.3	0.5	7763	3.8	0.2
9	EGBEDORE	2061	1.7	4.4	3079	1.6	0.3	1977	3.1	0.2	4473	1.1	2.0	2629	4.4	2.0
10	EJIGBO	1754	3.2	4.6	2312	1.5	1.9	1722	1.9	4.6	2663	1.3	1.8	3395	1.4	1.9
11	IFEDAYO	1262	2.6	2.6	3808	2.2	1.3	2989	2.0	0.5	2462	1.6	1.0	3911	0.5	3.8
12	IFELODUN	5457	3.1	3.8	5517	1.3	1.5	5545	1.7	1.2	5838	2.0	1.2	5942	7.1	1.2
13	IFE NORTH	4675	1.9	2.0	5438	1.4	1.1	4984	1.6	1.4	4742	1.4	1.8	4895	1.2	4.6
14	IFE SOUTH	1683	2.8	1.8	1560	6.0	2.1	1674	2.9	2.6	1098	2.9	2.0	1010	2.3	4.4
15	IFE CENTRAL	10785	3.7	1.3	10551	2.0	2.6	11474	2.3	1.2	9833	7.3	0.9	9144	4.8	1.4
16	IFE EAST	13165	2.1	3.1	14236	2.4	9.3	13987	3.4	2.4	13842	2.6	0.6	13572	2.4	1.5
17	ILA	6545	3.9	4.3	6703	1.6	2.1	7915	3.3	3.8	13268	4.5	2.5	16947	4.2	3.5
18	ILESA EAST	10571	2.3	1.7	10033	4.2	2.7	11545	2.6	1.2	11377	3.4	2.1	11910	2.8	0.2
19	ILESA WEST	13128	3.4	2.4	16729	2.1	1.7	11104	4.0	5.3	11442	3.1	2.0	8973	1.0	2.3
20	IREPODUN	2883	3.3	2.7	2801	1.4	1.2	3192	1.2	1.5	4317	3.2	1.4	2643	0.6	1.9
21	IREWOLE	9906	3.6	5.2	8673	2.4	2.1	8194	3.0	1.9	4763	1.4	1.5	4070	0.9	1.8
22	ISOKAN	2896	4.0	2.5	3022	0.9	2.0	3462	2.2	0.4	3274	3.2	1.4	2696	0.7	1.8
23	IWO	21336	2.2	1.8	18978	0.5	3.2	11437	1.3	1.5	15556	4.2	1.6	18960	0.4	5.2
24	OBOKUN	4420	3.0	2.5	4962	2.3	1.8	4330	2.5	1.9	3935	1.3	1.1	4515	0.9	1.3
25	ODO-OTIN	1079	2.2	1.4	2316	1.7	1.7	2357	1.9	1.3	3241	3.2	1.0	3826	2.1	1.1
26	OLA-OLUWA	2391	2.5	1.9	2013	2.3	1.4	2761	2.1	1.9	4773	7.2	1.1	17109	1.6	1.3
27	OLORUNDA	21336	2.8	2.1	18976	1.2	2.2	11472	3.4	2.8	15555	3.0	2.8	18556	2.3	1.6
28	ORIADE	4668	1.9	1.4	6449	1.6	3.0	4938	0.8	2.0	4763	3.2	3.2	3942	2.7	2.0
29	OROLU	2801	3.6	2.3	5517	2.6	2.2	3937	14	1.7	3966	1.7	3.3	3761	2.9	1.4
30	OSOGBO	33708	6.4	8.9	39191	8.4	5.2	31685	6.2	4.4	30555	6.3	2.1	30755	7.3	4.9

Source: Osun State Hospital Management Board; Hospital Records Dept 2011

Key: Prevalence rate in % A= Anaemia D= Diarrhoea

Table 1.1b: Hospital Records of Children Aged 3-14 in Osun State Hospital 2006-2010

S/N	Local Govt. Area	2006			2007			2008			2009			2010		
		Prevalence Rate%			Prevalence Rate %			Prevalence Rate%			Prevalence Rate%			Prevalence Rate%		
			D	A		D	A		D	A		D	A		D	A
1	ATAKUNMOSA EAST	4768	1.5	1.4	2334	0.6	1.2	4368	1.4	1.0	3300	1.4	1.0	3425	1.3	1.4
2	ATAKUNMOSA WEST	2437	4.1	1.6	2108	1.4	1.5	2356	1.6	1.2	3602	1.4	0.4	2875	1.4	1.1
3	AYEDAADE	4062	2.5	4.2	2692	0.6	1.0	2839	0.5	1.8	2510	1.1	0.5	2418	0.5	1.6
4	AYEDIIRE	4050	3.0	1.9	3022	1.9	0	3082	2.0	1.2	3785	1.8	0.4	3503	0.3	5.8
5	BORIPE	3591	4.9	1.8	3021	2.0	2.1	2890	1.9	1.1	2019	1.6	0.6	2017	0.2	0.4
6	BOLUWADURO	2488	2.1	1.8	1147	1.8	1.7	1218	1.8	1.4	1240	3.0	1.1	1206	1.3	3.2
7	EDE NORTH	10268	2.2	3.4	8031	1.6	1.2	6011	1.1	1.4	6853	1.8	1.0	6902	1.9	1.8
8	EDE SOUTH	8021	3.6	1.3	7252	1.2	16	7810	1.2	0.5	7412	1.2	1.1	7308	1.8	0.2
9	EGBEDORE	1789	2.6	1.1	2070	2.0	1.1	1974	1.4	2.1	1820	2.1	1.8	2007	1.8	1.1
10	EJIGBO	2284	2.4	1.3	1592	1.8	1.9	2363	1.4	0.2	2879	1.3	1.2	2800	1.1	0.3
11	IFEDAYO	3372	5.2	1.6	3044	3.0	1.2	3439	1.5	1.2	3295	2.1	1.3	3625	1.3	1.1
12	IFELODUN	4731	3.2	2.0	4003	1.2	1.5	3418	1.4	1.3	3112	0.3	2.1	3006	1.1	0.3
13	IFE NORTH	4719	1.6	1.4	4077	1.3	2.2	3823	0.2	1.4	3852	0.1	0.6	3205	1.3	0.1
14	IFE SOUTH	1986	1.1	0.9	1964	2.0	0.9	1912	2.3	0.5	1902	0.6	0.6	1876	1.6	1.6
15	IFE CENTRAL	8854	2.1	1.3	8875	0.9	2.3	7682	2.7	2.0	7874	0.5	1.6	7601	2.0	0.5
16	IFE EAST	12800	3.8	2.6	10391	1.6	0.4	11001	2.4	0.2	10251	2.0	1.4	9411	1.4	2.0
17	ILA	14673	2.7	1.5	13009	2.3	1.3	11987	1.2	2.1	11004	1.8	1.1	10212	1.9	1.0
18	ILESA EAST	8620	2.3	2.2	8299	1.6	1.1	6132	1.4	1.2	7102	1.0	1.2	6280	1.0	0.8
19	ILESA WEST	8893	1.5	2.0	8872	2.0	1.0	8971	1.0	1.8	8570	0.2	2.5	7808	0.4	0.2
20	IREPODUN	3782	1.9	3.0	2298	0.4	1.2	4865	0.6	1.3	3599	0.4	1.8	3354	0.5	1.0
21	IREWOLE	4109	1.4	1.4	4693	0.5	1.0	4854	0.9	1.2	4269	1.5	2.5	4523	0.4	0.6
22	ISOKAN	2422	1.5	1.2	2312	0.4	1.2	1997	0.7	1.3	1923	0.6	0.4	1953	0.6	0.9
23	IWO	18649	3.1	2.5	8141	0.6	1.1	11358	0.4	1.1	13265	1.3	1.9	11960	1.1	0.7
24	OBOKUN	4030	1.3	0.3	3273	1.1	0.6	3022	0.9	1.3	2717	0.4	0.3	2420	1.0	0.4
25	ODO-OTIN	2022	2.1	2.3	2341	1.0	0.9	2011	2.1	1.6	2062	1.8	0.5	2008	1.1	0.9
26	OLA-OLUWA	6319	1.8	1.2	7871	1.1	0.5	6514	1.6	2.0	7148	2.0	2.3	7314	1.8	2.1
27	OLORUNDA	18559	1.5	1.0	8641	1.8	0.6	12358	1.2	1.4	13265	0.7	1.7	12960	1.2	0.4
28	ORIADE	4070	1.7	1.6	1437	3.2	0.8	2356	2.7	2.9	3385	1.7	0.3	3643	1.3	1.9
29	OROLU	3368	4.2	1.7	2426	3.3	1.4	3180	2.8	1.2	3733	1.6	0.6	3714	1.1	0.2
30	OSOGBO	30074	8.0	3.3	19985	2.1	1.3	14116	1.6	1.2	17987	1.3	1.2	15681	1.4	1.1

Source: Osun State Hospital Management Board; Hospital Records Department, 2011

Tables 1.1a and 1.1b show the health features of school-age children. The Tables show the diseases treated in the school-age children that attend hospitals. This picture can be taken as the situation of health status of school-age children in Osun State. The situational analysis of the prevalence of nutrition-related diseases as presented in the tables (Tables1.1a and 1.1b) shows that morbidity is high. Although the data here do not present full information of prevalence of malaria in Osun State, the hospital attendance records (2001-2010), show that malaria has the highest morbidity, followed by diarrhoea, anaemia, protein energy malnutrition, vitamins and mineral deficiencies, and marasmic and respiratory infections. The average prevalence rate of diarrhoea and anaemia in Osun State rose from 3.6% and 2.9% in 2001 to 3.9% and 3.3% in 2005, and in 2006 it dropped to 2.89% and 2.0%, respectively. Diarrhoea, anaemia and other parasitic diseases have high prevalence rate in Osun State. This is also confirmed by FGN's (2008) report, that malaria, diarrhoea and other anaemic diseases are the main causes of mortality in Nigeria, relying on Nigeria 2006 MDG report. So also NDHS (2003) claims that over 90% of morbidity and 80% of mortality in children of age 5 and below arise from four causes: malaria, diarrhoea, anaemia and other parasitic diseases.

The prevalence rate of diarrhoea and anaemia is high when compared with others like respiratory diseases. This may be linked with nutrition. For example, the prevalence rate of anaemia and diarrhoea for Osogbo Local Government Medical Centres was put at 8.9% and 6.4%, respectively for 2001 record. In 2002, the prevalence rates of anaemia and diarrhoea were 8.42% and 5.2% respectively. This shows that the two diseases were rampant among the school-age children in the state. In 2007, the prevalence rate for anaemia and diarrhoea were put at 2.1% and 1.3% respectively (Osun State Hospital Management Board, 2011). This indicates that, although the incidence of poor nutrition is apparent in Osun State, it seems to be decreasing. This was confirmed by the report of Nigerian Demographic and Health survey conducted in 2008 that, 31% of the children in Osun State are stunted and 12% are wasted (Osun State Ministry of Information and Strategy, 2011). Table 1b shows a decrease in prevalence rate of these diseases which was noticeable between 2007 and 2010. However, these diseases have clear implications for health and educational attainment (Beard and Connor, 2003; WHO/CDC, 2004). The prevalence of these diseases could be linked with the problems of low school enrolment and school attendance.

The 2003 report of Centre for African Settlement Studies and Development (CASSAD) confirmed that childhood preventable illness accounts for 49% of school absentees in Nigeria and that this situation impacts negatively not just on school enrolment

(particularly girl's child enrolment), attendance and retention, but also on learning achievements of school children.

It has also been reported that more than 60 million school children go to school hungry everyday and about 40% of these children are in Africa (World Bank, 2007). Also, World Food Programme (WFP 2004) that, when poor children go to school, they often leave home on an empty stomach. Moreover, a huge number of these children who attend school must learn while fighting hunger (Afridi, 2010; Afoakwa, 2011). Children who are hungry are more likely to have difficulty in concentrating and performing complex tasks. Omitting breakfast interferes with cognition and learning, which affects nutritionally at-risk children more than well-nourished children (World Bank, 2007). This temporary hunger is common in children who are not fed before going to school, and can have an adverse effect on learning.

The World Declaration on Education for All (EFA) in April, 2000 noted that poor health and poor nutrition are crucial underlying factors for low school enrolment, absenteeism, poor classroom performance and early school dropouts. In many African countries, learning and school performance are compromised owing to ill health, hunger and under-nutrition, which affect a significant proportion of school-age children.

The health and nutritional status of school-age children can no longer be ignored. Therefore, taking appropriate measures to address the issue of nutrition and health problems afflicting the preschool and school-age children is of serious concern. Measures to combat these menace will confer significant benefits not only on the school-age children at present as they grow older but will also produce positive effects in future generation.

Many steps have been taken by the globally to address poverty and hunger- related issues. Among these are EFA and MDGs. Jomtien Declaration and Framework for Action on Education for All (EFA) in 1990 emphasized a refocusing on access, equity and quality in education. This has since guided thinking and action on basic education. It was re-affirmed in April 2000 at the Darkar World Conference – the global commitment to the six goals that should guide the attainment of EFA by the year 2015. These goals have also become the UNESCO's overriding priority in education. The goals outlined were established to eradicate poverty, alleviate hunger, reduce gender inequalities, improve health and longevity, overcome environment degradation, and, most importantly, develop global partnerships to achieve the goals. The Millennium Development Goals (MDGs), which were later set, also have a great deal to do with education, and corroborate the efforts of the EFA in seeing that education brings the much expected development (Obanya, 2009).

The literature shows that education for girls remains a goal rather than a reality. Out of the approximately 130 million primary school children not attending school globally, two out of three are girls (UNICEF, 2002). Girls are also the majority of the roughly 150 million children of primary school age who begin school but stop before completing their four years of education. This means that they have not acquired even basic literacy and numeracy skills. Evidence shows that out of the 875 million adults in the world that are not literate, two-thirds are female (UNESCO, 2000). Although the proportion of illiterates in the world is decreasing, the proportion of women among the illiterates is not decreasing at the same pace with men (Stromguist, 1999).

Table 1.2 shows the trend in primary school enrolment in 1999 between the boys and girls in the developing regions of the world.

Table 1.2: 1999 Gender Enrolment Rate for Developing Regions of the World.

Developing Regions	Girls	Boys	G.P.I/F.M
Central Asia	88.0	89.0	0.99
Latin America/ Carribean	124.5	127.5	0.98
Sub Saharan Africa	76.3	86.0	0.89
South/West Asia	90.3	107.8	0.84

Source: UNESCO 2002:69

The Gender Parity Enrolment Index (GPI) for Male and Female (M.F) indicates an index already close to 1. Thus, the gender enrolment rate is on the high side in favour of the boys. Moreover, the Gender Enrolment Rate for Nigeria (1991- 2002) shown in table 1.3 reveals that the case was consistent with the world estimates.

Table 1.3: Primary School Gender Enrolment Rate for Nigeria 1991-2002

Year	Male	Female	GPI/FM
1991	7,741,89	6,034,957	0.82
1992	8,273,824	6,532,211	0.82
1993	8,930,600	6,939,680	0.81
1994	9,056367	7,135,480	0.82
1995	8,729,421	7,011,657	0.84
1996	7,702281	6,376,192	0.87
1997	8,100,485	6,594,848	0.84
1998	9,232,885	6,812,682	0.78
1999	10,058,434	7,848,576	0.81
2000	10,745,128	8,413,311	0.81
2001	10,932,315	8,452,862	0.84
2002	10,772,914	8,569,745	0.83

Source: Fagbulu, 2003

Table 1.3 shows that there was improvement in girls' enrolment in 1994 and 1997, only to drop again in1996; and by 1998 the indicator dropped considerably in favour of the boys. Olubodun (2008) aver that there was a decline in gross enrolment rate between 1991 and 1998, and that girls' enrolment was 45% wide. This shows that the educational participation of girls notably trails that of boys. The trend in the statistics presented suggests that concrete actions needs to be taken so as to promote gender equity in education. This requires far more than single project - based interventions. This is because there is a structural link between gender inequality and poverty.

Higher levels of women's education are strongly associated with both lower infant mortality and lower fertility, as well as with higher levels of education and economic opportunity for their children. The society should ensure that all girls and boys are empowered through quality education to realise their full potential and contribute to transforming the society, so that gender equality becomes a reality (WFP, 2010).There is need to create an environment that is conducive to keeping girls in school through the basic education level, or at least ensure they are literate.

However, since Nigeria assented to the 2000 Millennium Declaration of the United Nations, the Nigerian government has taken a number of steps to achieve the MDGs. The

evidence of these could be seen in the launching of the Universal Basic Education (UBE) Programme in September 1999. This is a policy reform measure by the Federal Government aimed at reforming the basic education sub-sector in Nigeria. The UBE programme embraces formal education up to the age of 15 as well as adult and non-formal education. As a process, the UBE specifically entails: advocacy and social mobilization for educational participation; empowerment of communities to take greater interest in education and consequent ownership of schools; re-orientation of basic education to be in tune with the national aspirations and personnel development; re-training of teachers with a view to making them independent, pro-active and creative individuals; monitoring of learning achievement; as well as development and distribution of basic education materials. The UBE intervention fund is divided into five main categories, which include: matching grants to states, imbalance funds, good performance grant, physically and mentally handicapped grant, and school feeding programme. Another effort is Federal Government's launching of a poverty-reduction strategy called the National Economic Empowerment Development Strategy (NEEDS).

The NEEDS is aimed at creating wealth; generating employment (job creation); reducing poverty (empowerment of people), and inculcating value re-orientation. The NEEDS emphasizes that education is the vital transformational tool and a formidable instrument for socio-economic empowerment (National Planning Commission, 2004: 2). The education sector has responsibility for producing and supplying the personnel required to propel and sustain the NEEDS initiative. The overall policy thrust of NEEDS in education is to: provide unhindered access to compulsory universal basic education to all citizens as a bridge to the future socioeconomic transformation of Nigerian society. The key strategies of NEEDS on education includes; ensuring and sustaining unfettered access to education for the total development of the individual and the main targets for achieving the goal include the: increase the percentage of graduates of primary schools who acquire functional literacy and numeracy to 100 percent (National Planning Commission, 2004:35).

Gentilini and Webbb, 2008, in a robust poverty study, on how far the globe was doing on poverty and hunger reduction that included 81 countries of the world. They found that Nigeria was seriously behind when measured against a new poverty indicators they called poverty-hunger index. Nigeria was ranked 73rd. in terms of poverty and hunger index. Specifically, they found that Nigeria had 0.156 values on matching towards achieving the Millennium Development Goals (MDGs) which interprets to mean low. More important revelation about the poverty situation in Nigeria in their research was the negative values of -0.392 and -0.355 on poverty and poverty gap composites respectively. The negative values on

the two composites of the poverty and hunger index (PHI) were indicators of reversing trends in the Nigeria's performance towards reducing poverty and poverty gap that formed part of poverty and hunger index.

Despite the major efforts exerted at various levels (locally, nationally and globally), the progress towards universal primary education has been slow and uneven, and enrolment rates continue to be low in many developing countries (UNESCO, 2007). Table 1.4 shows the situation analysis of the MDGs that are related to this study.

Table 1.4 MDG Situation Analyses in Nigeria, 1990-2006

S/N	Goal & Indicator	1990	1996	2004	2005	Target 2015	Progress towards Target
1	Eradication of extreme poverty and hunger						
	• % of pop. living in relative poverty	43(1992)	6	4	4(2004)	21	Slow
	• % of pop. living in extreme poverty	-	-	35	35(2004)	-	Insufficient Data
	• % of underweight children of school age.	36	31	30	30(2004)	18	Slow
2	Achieve Universal Education						
	• Net Enrolment Ratio in Basic Education %	68	81	81.1	84.3	100	Good
	• Proportion of pupils starting Grade 1 who reached Grade 5 %	67	74	74	74	100	Good
	• Grade 6 completion %	58	64	69.2	67.5	100	Worsen in 2005
3	Promote Gender Equality and Empowerment						
	• Ratio of girls to boys in Basic Education (Girls per 100 boys)	82	-	79	81	100	-
	• Ratio of girls to boys Secondary Education (Girls per 100)	106(1991)	-	79	81	100	-
	• Share of women in wage employment in the non-agricultural sector %	66(1991)	-	79(2003)	79(2003)	100	-

Source: FGN 2008, Office of the Senior Special Assistant to the President on MDGs

Table 1.4 shows the target set for the MDGs in 2015. The percentage of the population living in poverty, which is an indicator of eradication of relative poverty and extreme poverty, rose from 43% in 1992 to 66% in 1996; and it declined to 55% in 2004. The target is 21% by 2015. Although initially the poverty head count is on the decline, the pace is slow and there seems to be a kind of fluctuation. With the trend in progress, one can conclude that the2015 target is indeterminate. Also, considering the fact that in 2004 Nigeria still had 35% of the population living in extreme poverty and about 30% of school-age children were underweight as captured in Table 1.4, one could say that Nigeria is far from meeting the target of 18% reduction of malnutrition and underweight children which is also an indicator of poverty and hunger. The goal of the UBE, which is a core focus of MDGs, EFA, and the Nigeria Government's target of 100% of net enrolment, 100% of proportion of pupils reaching Basic 5 and 100% of completion rate till Basic 6, appears unachievable within the target period.

Moreover, the ratio of girls to boys in Basic Education (girls per 100 boys) declined marginally from 82 in 1990 to 81 in 2005. It is glaring from the table that there is little prospect of attaining gender parity by 2015. The progress is slow considering the time span of about 11years. A World Bank report presented by Burns, Mingat and Rakotomalala (2003), aver this in their analysis that placed Nigeria in a group classified as off-track in achieving Universal Basic Education by 2015. More women than men live in poverty (UNFPA, 2011). Economic disparities persist partly because much of the unpaid work within families and communities falls on the shoulders of women and because they face discrimination in the economic sphere. Equality between men and women exists when both sexes are able to share equally in the distribution of power and influence; have equal opportunities for financial independence through work or through setting up businesses; enjoy equal access to education and the opportunity to develop personal ambitions (UNFPA, 2011).

Going by the current trends, Nigeria may not achieve most of the MDGs by 2015. This is because progress is slow in most of the indicators, for example, poverty and hunger reduction. The percentage of the underweight children diminished from 36% to 30% during the 14-year period of 1990-2004 and this is short of the 2015 target, which is by 12%. Efforts must be geared towards seeing that most of the MDGs are achieved by 2015 (Obayan, 2009). Similarly, effort must be concentrated on promoting gender equality, which is the empowerment of women, with a focus on identifying and redressing power imbalance and giving women more autonomy to manage their own lives.

Many policy solutions have been proposed to achieve this goal. Few among these include; improvement of teachers' quality by some governments; elimination of school fees to foster enrolment; and the establishment of programmes such as school feeding to increase the demand for schooling.

School Feeding Programmes (SFPs) of different forms are becoming another prominent policy in education in recent decades and have been implemented widely in developing countries and low income areas of developed countries. School feeding is a new concept, and has experienced a good deal of success and progress as far as programme development and growth are concerned. It has been found to have both educational and nutritional outcomes (Grantham-McGregor and Ani, 2001). The driving rationale is that, by subsidizing schooling costs, school feeding programmes can induce parents to invest more in their children education than they would have done in the absence of the programme (Alderman, Behrman, Lavy, and Menon, 2007). Additionally, SFPs can make investments in education more efficient. School meals, in particular, have been used for a long time in developed countries and their introduction in low income countries dates back to at least three decades (Levinger, 1986; Dwyer, 1995). The benefits of SPFs are very large (Ahmed, 2004; Alderman, 2007; Adelman, Gillian and Lehrer, 2008). Nutrition and health status have powerful influences on a child's learning and on how well a child performs in school. In particular, poor nutrition among school-age children impact their cognitive functions and reduce their ability to participate in learning experiences in the classroom.

In 2004, the Federal Government of Nigeria initiated the School Feeding Programme through the Universal Basic Education (UBE) Act. The legislation stipulated that all state primary schools must provide at least one meal a day for each pupil. The scheme was meant to reverse the nation's dismal school enrolment. The programme's purpose is to improve the dietary pattern of school children, increase enrolment, discourage absenteeism and generally help to build children's capacity to learn. According to the Federal Government of Nigeria, "the programme serves as incentive to encourage parents to allow their children to attend schools as it reduces the amount of money they spent on feeding their wards" (FGN 2006).

To begin the national programme, the Federal Ministry of Education decided on a phased-pilot roll-out for the programme, beginning with 12 states, including the FCT. The pilot states were selected from the six geo-political zones, namely; Enugu, Imo, Rivers, Osun, Ogun, Kogi, Nasarawa, Bauchi, Yobe, Cross River, Kano and Kebbi. The pilot lasted for six months. Among the 13 original pilots, the Osun State School Feeding Programme is the only one that continues the initiative in Nigeria.

The Osun State Government started providing free feeding for pupils in kindergarten classes and primary one and two (Basic 1and 2) in public primary schools in 30 local government areas and one area council. The Free Feeding Programme is a significant intervention designed to improve school enrolment, attendance, retention and completion rates, nutritional health and status, and learning in Osun State. The programme is in pursuance of the target of Education for All (EFA) and the Millennium Development Goals. Under this programme, food is served to pupils during lunch without paying. The School Feeding Programme's vision in Osun State is to have a nation of well-nourished and healthy children, in a stimulating learning environment (Homegrown School Feeding and Health Programme (HGSFHP) Report, 2006).

This study evaluated objectives of the Osun School Feeding Programme, which include;

- Improvement of nutritional health status of school children;
- Increasing enrolment, attendance and retention,
- Improving academic achievement;
- Stimulating job creation (HGSFHP Report, 2006).

The School Feeding Programme is targeted at public primary schools, especially Early Child Care or kindergarten pupils and pupils in primary one and primary two of public schools. The main stakeholders are the State Government, the Local Governments, various communities, Non-governmental Organizations (NGOs), Philanthropists, and Development /Donour Agencies. All these stakeholders have defined roles to play in the programme. Some of the foci of the programme include getting every UBE pupil up to primary 2 fed with a balanced diet each school day; ensuring provision of healthy and inviting school environment and health facilities to take care of pupil's health needs and problems.

The School Feeding Programme started as a pilot testing in 2005 and has since continued as an intervention programme in Osun State, South-west, Nigeria. It involved 1,352 public primary schools, and features de-worming and feeding of pupils in kindergarten (KG) and primary one and two classes (Homegrown School Feeding and Health Programme Report, 2006). The Osun State Government has designed and implemented the programme in line with her vision, set-up and facilities. It is however, pertinent to find out how effective the programme has been in accomplishing the objectives of improving school children nutritional health status, increasing school enrolment, attendance, retention and achievement on the beneficiaries.

1.2 Statement of the problem

Poor nutrition and poor health condition among children contribute to the inefficiency of the educational system. Nutrition is an important factor related to child's learning, well-being, performance and productivity. A child who is not properly fed or lacks certain nutrients in his/her diet may not have the same potential for learning, have difficulty in performing complex tasks, and may have critical health conditions that can delay his/her enrolment in school or cause irregular attendance in school. A nation with malnourished citizens suffers setbacks in the areas of human productivity and economic development. In Nigeria, it is very glaring that one of the myriads of development challenges is poverty with the attendant problems of hunger and malnutrition, low school enrolment, attendance, retention, completion rates and low academic achievements in schools.

The Osun State Government resolved to put in place School feeding programme in public primary schools to meet some of these identified challenges. The Osun school feeding programme has been in place since 2005 (pilot stage inclusive). To date, it seems no impact evaluation has been undertaken. As a result there is little or no empirical evidence on the impact of the Osun School Feeding Programme. Therefore, this study investigated the effect of the feeding programme on enrolment, attendance and retention rates in Osun State primary schools. It assessed the effect of the school feeding programme on pupils' academic achievement, their nutrition status, the differences in enrolment, attendance, retention, nutritional status and achievements of boys and girls. It also examined the perception of stakeholders *(*parent, teachers, School feeding Agency's staff, LGEA Secretaries and teachers' supervisors) about the programme. The financial empowerment of the cooks in the feeding programme was also assessed.

1.3 Research questions

Based on the foregoing, this study was guided by the following research questions:

1. What is the trend of Osun school feeding programme in terms of pupils'
   - (i) enrolment;
   - (ii) attendance and
   - (iii) retention rate before and after the school feeding began?
2. What is the difference with or without intervention programme in relation to pupils'
   - (i) enrolment;
   - (ii) attendance;

(iii) retention in the post-feeding classes (Pry. 4) and

(iv) nutrition status?

3 Is there any difference in the:

(i) Academic achievement of pupils in intervention and non-intervention schools;

(ii) Child environment friendliness of the intervention and non- intervention schools?

4. Is there any difference in the girls' and boys'

(i) enrolment;

(ii) attendance;

(iii) retention;

(iv) nutrition status and

(v) achievement in schools with intervention and schools without-intervention schools?

5. What is the perception of the stakeholders (parents of the pupils, teachers, teacher supervisors, LGEA secretaries and school feeding agency staff and cooks) in terms of school feeding programme in Osun State primary schools?

6. Does the school feeding programme affect the financial empowerment of the cooks?

7. What are the challenges in the implementation of the programme?

1.4 Scope of the study

The study focused on four objectives of the school feeding programme as stated in the Homegrown School Feeding and Health Programme Report (2006). The sample was taken from public primary schools in Osun and Oyo States. The study investigated the pupils' nutritional status, enrolment, attendance, and retention rates, as well as the academic achievement in primary schools. It also assessed the level of child-friendliness and attractiveness of the school environment. Moreover, the perception of the parents and teachers of the pupils under the School Feeding Programme as well as the financial empowerment of the cooks were investigated. The study was restricted to pupils in primary 2 and primary 4, head teachers, class teachers, teacher supervisors, Local Government Education Authority (LGEA) secretaries, school feeding programme agency staff, cooks and parents of the pupils.

1.5 Significance of the Study

This study provides empirical evidence and information on the impact of the School Feeding Programme in Osun State. The study may inform programme implementers and

other stakeholders, in particular, on the programme operations especially to improve the structure of the school feeding programme.

The findings of this study provide a framework for similar studies, especially in other States of the Federation. This can possibly persuade other states to initiate free school feeding since the programme produces a positive impact on educational indicators and social skills for both children and adult members of Osun state. Moreover, the findings provide a sort of feedback to the government on her investment on the programme.

1.6 Definitions of terms

Attendance Rate: This refers to the average number of times pupils in public primary school attend schools in a term. It is calculated in percentages.

Enrolment: This is the number of pupils who are enlisted at the public primary schools, and are considered as members of that school.

Impact Evaluation: This refers to the difference the implementation of the programme has made on the beneficiaries. It is the programme outcome.

N**utritional Status:** This is a term that implies the result of many interrelated factors as it is influenced by food intake, the quality and quantity of food and the individual's physical health. This was measured with three nutritional indices: height for age, weight for age and weight for height. The pupils were measured barefooted with the scale placed on the floor. This height and weight measurements were converted to BMI for age values, Measurement obtained were analysed using WHO anthroplus software and it computed the BMI for age ranging from <-2.0 SD and >+2.0 SD for undernourished and normal children respectively.

Osun School Feeding Programme: This is the School Feeding Programme introduced in Osun State, southwest Nigeria**.**

Retention: This measures the number of pupils who go to the public primary schools and remain there till primary four without dropping out. It was calculated on a cohort basis. When a cohort of pupils is taking at primary two, the flow is followed through the system, and measurement of number remaining is taken at primary four.

Achievement Test: This measures numeracy and literacy skills of the pupils in primary two, who were screened on the basis of the food they brought to school after eating at home or the money that was higher than ₦10.00 which they brought to school. Those that brought food from home or money greater than ₦10 were excluded from the study.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

This chapter presents the review of related literature in the following order:

2.1 The concept of impact evaluation
2.2 The concept of school feeding
2.3 Nutrition and its importance
2.4 School feeding and school enrolment
2.5 School feeding and pupils school attendance
2.6 School feeding and pupils' retention rate
2.7 School feeding and pupils nutrition Status
2.8 School feeding and pupils academic achievement
2.9 School feeding programme and community participation
2.10 Child friendly school environment
2.12 An overview of School feeding programme of Osun State
2.12 Importance of primary education;
2.13 Evaluation model;
2.14 Impact evaluation designs;
2.15 Conceptual clarification;
2.16 Appraisal of literature;
2.17 Gaps in the existing literature.

2.1 The concept of impact evaluation

The ultimate goal of impact evaluation (IE) is to determine the extent to which the observed outcomes can be attributed to the programme, and to the programme alone. According to the definition of the International Initiative for Impact Evaluation (IIIE, 2010), impact evaluation measures "the net change in outcomes amongst a particular group, or groups of people that can be attributed to a specific programme using the best methodology available, feasible and appropriate to the evaluation question(s) being investigated and to the specific context". Similarly, the World Bank Impact Evaluation Group (IEG, 2010) defines Impact Evaluation as "the systematic identification of the effects, positive or negative, intended or not, on individual households, institutions, and the environment caused by a given development activity such as a programme or project". Impact Evaluation provides information on whether the programme has had an impact and on the magnitude of that

impact (IEG, 2010). Khandker, Koolwal and Hussain (2010) see impact evaluation as one that provides a framework sufficient to understand whether the beneficiaries are truly benefitting from the programme and not from other factors. Because of this, it is an important source of information for policy makers and development institutions seeking to justify the implementation and expansion of a programme.

The IEG lists four impact evaluation models: (i) rapid assessment or review, conducted ex-post, (ii) ex-post comparison of project beneficiaries with a control group using multivariate analyses, (iii) quasi-experimental design using matched control and treatment groups and (iv) randomised design. The IEG classifies the last two models as *rigorous impact evaluations*. It emphasises that "the strong advantage of these two methods is that they are the most reliable for establishing causality – the relationship between a specific intervention and actual impacts and for estimating the magnitude of impact attributable to the intervention" (IEG 2010). A broader (though similar) description of rigorous impact evaluation is provided by the International Initiative for Impact Evaluation (IIIE, 2010), that "rigorous impact evaluations are those which tackle the attribution problem. The main challenges to be addressed in attribution are (1) allowing for confounding factors, (2) selection bias arising from the endogeneity of programme placement, (3) spillover effects, (4) contamination of the control, and (5) impact heterogeneity" (IIIE, 2010).

Common to these descriptions is that Rigorous Impact Evaluation (RIE) entails the inclusion of quantitative elements in the design of the evaluation, as well as qualitative analysis to tease out and validate the effects of the intervention. Thus, addressing this attribution problem adequately usually entails the use of experimental or quasi-experimental approaches.

Although generalisation is often not possible, the advantage of using a qualitative approach is that it provides a good contextual basis, which the other approach frequently lacks. White (2006) argues that there should not be a trade-off between quantitative and qualitative approaches. Qualitative data provide context and appropriate interpretation of quantitative results. In fact, the combination of the two, known as the mixed methods approach, should produce "the strongest evaluative findings, combining well-contextualized studies with quantitative rigor" (White, 2006).

White (2009), in his work "theory based evaluation," argues that the aim of theory-based impact evaluation is to determine why an intervention has had an impact, rather than knowing only that it has had one. He recommends' six steps in the successful adoption of this approach.

(1) Map out the causal chain (programme theory). This step involves constructing a detailed flow chart of the causal chain from inputs to outcomes and impact. It seeks to test the underlying assumption embedded along the causal chain, also taking into account the changing dynamics of the intervention and of unintended impacts.

(2) Understand context. Context is defined as the socio-economic and political setting in which an intervention takes place. Apart from revealing the factors that may explain why an intervention has had an impact, it plays an important role in indicating how similar interventions may have different impacts. This step requires the reading of project documents and of more general literature on anthropology or political economy.

(3) Anticipate heterogeneity. This means that the evaluator must be aware of the possibility of an intervention having various impacts. The differences may be due to the social and political setting, the behaviour of the target groups, the existence of other interventions or the design of the intervention itself.

(4) Rigorous evaluation of impact using a credible counterfactual. The construction of a credible counterfactual, or control group, involves the use of an experimental and quasi-experimental approach to tease out the effect of the treatment. This is a key aspect in theory-based impact evaluation.

(5) Rigorous factual analysis. Apart from counterfactual analysis, factual analysis is needed to confirm whether the intervention has reached the targeted groups and whether it has actually changed their behaviour. This type of question reveals any potential breakdown in the causal chain that could lead to low impact.

(6) Use mixed methods. This refers to the combination of quantitative and qualitative approaches in the same evaluation. The qualitative aspect involves a wide range of activities, including the reading of project documents, focus group discussions, literature review and field work.

Impact evaluation analyses the impact of an intervention on welfare outcomes. Intervention may take the form of policies, programmes or projects. In reality, changes in outcome may be only partly due to the intervention, and sometimes not at all. Thus, the fundamental problem with evaluation is how to establish attribution, that is, to determine that the outcome is the result of the intervention and not of any other factors. It raises the issue of the counterfactual, "the comparison of what actually happened and what would have happened in the absence of intervention" (White 2006).

The main challenge to impact evaluation is, therefore, to find the valid counterfactual. In the search for a valid counterfactual, the two common comparison groups that are often considered, but insufficient if considered separately, are (i) data on the same individuals before and after the intervention and (ii) data on a group of individuals who participated in the programme and another group who did not or, in short, with and without intervention.

Since it is already too late for randomisation, combining before and after approaches and with and without comparisons, on its own can yield credible estimates. To ensure that the pre-treatment differences in the control and treatment groups are taken into account, statistical techniques for correcting for selection bias, such as propensity score matching and instrumental variable could be used.

This work adopted the fourth principle above, where impact is measured with the aid of a credible counterfactual. This does not imply that other principles were neglected. In fact, the validity of findings may be greatly reduced if the focus is limited to this aspect only and context specificity is omitted. However, for the sake of brevity, this study focuses solely on impact measurements.

2.2 The concept of school feeding

School feeding is defined here as the provision of food to school children. It is about providing a free meal for primary school pupils each day during school days. School feeding includes on-site school meals, snacks and take-home rations. There are as many types of school feeding programmes as there are countries, but they can be classified into two main groups based on their modalities: in-school feeding, where children are fed in school; and take-home rations (THR), where families are given food if their children attend school.

In-school feeding can be divided into two common categories: programmes that provide meals and programmes that provide high-energy biscuits or snacks. In some countries, in-school meals are combined with take-home rations for particularly vulnerable students, including girls and children affected by HIV, to generate greater impacts on school enrolment and retention rates, and reduce gender or social gaps. For programmes that provide meals, the primary objective is to provide breakfast, mid-morning meals, lunch, or a combination (depending on the duration of the school day) to alleviate short-term hunger, increase attention span, facilitate learning, and obviate the need for children to leave the school to find food. In-school meals also act as an incentive to increasing school access. School meals can be prepared in schools or in the community, or can be delivered from centralized kitchens. They can be an important source of micronutrients if prepared using

fortified commodities, or if micronutrient powder is added during or after preparation. Meals at school provide a nutritional incentive for girls to attend school. They reduce short-term hunger and provide the micronutrients needed to grow and learn. School meals also offset some of the cost of education so that a poor family has one less meal per day to provide.

Provision of fortified high-energy biscuits and snack is a modality that functions in a similar way to in-school meals, alleviating short-term hunger and micronutrient deficiencies, and improving learning (Arsenault, Mora-Plazas, Forero, 2009). They can be part of a meal programme, particularly in full-day schools, in which case they are given early in the day to alleviate short-term hunger. They are cheaper and easier to distribute than meals, and often aim to act as an incentive for increased school access, but they are less substantial and their financial value to families is lower. Biscuits are a compact source of nutrients produced off-site that is easy to pack, store, and transport. They are particularly used in emergency or crisis contexts for rapid scale-up or in situations of poor school infrastructure and storage facilities. Snacks require little preparation time and facilities, and can be served early in the school day. They typically use fortified commodities, such as blended foods. However, their use presumes the availability of safe drinking water because they are typically dry, and their nutritional content is lower than that of meals.

Take-home rations (THR) function in a similar manner to conditional cash transfers. They transfer food resources to families. Hence they enhance school enrolment and regular attendance of children. Rations are given to families typically once a month or once a term (Bergerson and Del-Rosso, 2001). They increase school participation and probably learning. While they may require less school involvement than in-school modalities, they do demand an investment of school time in regular monitoring of the attendance condition. Their effect depends on whether the value of the ration offsets some of the costs of sending the child to school.

2.2.1 Complementary health and nutrition interventions in school feeding

The addition of micronutrients to food (fortification), the delivery of micronutrients in pills or suspensions (supplementation), and the provision of anthelmintic treatment (deworming) are all cost-effective ways of enhancing the nutrition and education of school children. These actions are viewed as complementary in the sense that food could be provided without these interventions, and because micronutrient supplements and deworming can be delivered independently of school feeding. There is a strong case, however, that micronutrient fortification should be an integral part of school feeding, and that de-worming

should be conducted alongside school feeding wherever there is an epidemiologically demonstrated need. This is a new policy with World Food Programme (WFP), school feeding programmes, in which case these may be viewed as essential actions.

Micronutrient fortification is a low-cost means of including in meals or fortified biscuits or snacks the essential vitamins or minerals that may otherwise be deficient in the diet. The main micronutrients that are added are iron, iodine, vitamins A and B as well as zinc. Micronutrients can be added at the processing stage, as is the case with salt, oil, flour, and other foods. A new technology is the addition after the food has been cooked, using micronutrient powder. Fortification increases the intake of micronutrients, thereby improving micronutrient status, preventing damage caused by micronutrient deficiencies, and increasing cognition and nutritional status. School health and nutrition services may provide micronutrient supplements, most commonly iron supplements, in contexts where micronutrient deficiencies, such as anaemia are highly prevalent.

School-based de-worming is a very low-cost and cost-effective way of improving education outcomes and nutrition. It involves offering de-worming tablets once or twice a year to all children in schools in infection endemic areas. Studies (RCTs) in both Kenya and India have found a significant impact from deworming on school attendance, thus contributing to completion. Absenteeism fell by one quarter in the Kenyan study (Miguel and Kremer, 2004) and one fifth in India (Bobonis**,** Miguel, and Sharma, 2004). The greatest benefit is observed in the most vulnerable school children, those in lower grades, the most heavily infected, and the malnourished. This delivery is readily incorporated into school feeding schedules. Reducing the prevalence and intensity of worm infections in children enhances nutritional status and learning and cognition, and reduces absenteeism.

2.2.2 Other important actions

There are other important actions to enhance educational outcomes. The key purpose of schools is to provide education. There are many studies on the education interventions that are specifically intended to enhance student learning (for example, Vegas and Petrow 2007). There are health interventions that offer the additional benefit of helping children learn. Such health and nutrition interventions help reinforce the benefits of school feeding programmes and should be strongly promoted, but most times are typically part of broader sectoral and cross-sectoral policies and programmes.

The framework for Focusing Resources on Effective School Health (FRESH) was launched at the World Education Forum in Dakar, Senegal, in 2000 by the United Nations

Educational, Scientific, and Cultural Organization (UNESCO), and the World Health Organization (WHO) to implement state agencies and reimburse the costs of transportation to the district authorities. States pay for any additional food items required and for food preparation. States can choose from providing cooked meals at school or dry rations. Efforts were made in 2001 to improve school infrastructures for the programme, especially with the construction of kitchens, and to tackle challenges related to clean water, appropriate utensils, and eating facilities. Still, challenges remain in guaranteeing the quality and stability of the programme in all states in the country under a decentralized system. Currently, the programme has near universal coverage, reaching 130 million school children throughout India.

The Brazilian school feeding programme is in the country's national constitution and is part of the government's Zero Hunger Program. Covering nearly 37 million children each year, the programme is among the largest in the world. Its implementation is managed by an independent institution, the National Fund for Development of Education (FNDE), created in 1997 to be responsible for the disbursement of the financial resources for school meals in each municipality. This transfer became automatic in 2001 and obliges local governments to spend at least 70 percent of transferred money on food, preferably purchased locally. The implementation modality in Brazil is highly decentralized. Regions, districts, and communities have a prominent role, not only in the day-to-day implementation of the programme but also in decision-making processes. The role of FNDE is crucial to providing general guidance, standards, guidelines, audit and control systems, and efficient resource management. Food is bought through a tendering process, governed by law, that envisages an invitation process, pricing, public tendering, and a price registration system. The 1994 law obliges each municipal and state government to create a School Feeding Committee, representing different parts of the society, to be the local body and make fiscal arrangements for the school feeding program. This helps counter corruption. The School Feeding Committee also helps design a locally acceptable menu and promotes food procurement from local or regional sources. As at early 2009, Brazil was considering legislation to establish that at least 30 percent of the food used by the school feeding programme should be procured locally (WFP 2009b). Experience shows that properly designed and effectively implemented School Feeding Programmes can:

1. Alleviate short-term hunger in malnourished school children. This helps to increase the attention and concentration of students, producing gains in cognitive function and learning.

2. Motivate parents to enrol their children in school coupled with proper attendance. When programmes effectively reduce absenteeism and increase the duration of schooling, educational outcomes (performance, dropout, and repetition) improve.
3. Address specific micronutrient deficiencies in school-age children. Most important of these are iodine and iron, which directly affect cognition. Meeting the iron and iodine needs children have to lack family time or resources to provide adequate meals to children before and/or during the school day of school-age children can translate into better school performance.
4. Increase community involvement in schools, particularly where programmes depend on the community to prepare and serve meals to children.

2.3 Nutrition and its importance

Nutritional and health status are powerful influences on a child's learning and on how well a child performs in school. Moronkola (2003) rightly notes that nutrition is the science of food and is highly related to health of human beings. Children who lack certain nutrients in their diet (particularly iron and iodine) or who suffer from protein-energy malnutrition, hunger, parasitic infections or other diseases do not have the same potential for learning as healthy and well-nourished children. Poor health and poor nutrition among school-age children adversely affect their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences or both.

Contrary to conventional wisdom, nutritional status does not improve with age. The extra demands on school-age children (to perform chores, for example, or walk long distances to school) create a need for energy that is much greater than that of younger children. Indeed available data indicate high levels of protein-energy malnutrition and short-term hunger among school-age children. Moreover, deficiencies of critical nutrients such as iodine, vitamin A and iron among the school-age children are pervasive (Partnership for Child Development, 1998). Del Rosso and Marek, (1996) attests to this by expressing the view that children who lack certain nutrients in their diet (particularly iron and iodine), or who suffer from protein energy malnutrition, hunger, and parasitic infections or other diseases do not have the same capacity for learning as healthy and well-nourished children. It is estimated that 60 million school-age children suffer from iodine deficiency disorders and that another 85 million are at risk for acute respiratory disease and other infections because they are deficient in vitamin A. The number of school-age children suffering from iron deficiency anaemia is greater still – 210 million (Jamison, Mosley, Measham, and Bobadilla,

1993). Malnutrition, the lack of basic nutrients that are necessary for human health, is a largely silent but prevalent problem in several parts of the developing world. Around one third of the children in developing countries are either stunted or underweight and a similar proportion exhibits micronutrient (vitamin and mineral) deficiencies (World Bank, 2006).

Parasitic worms that infect the intestines or the blood are a major source of disease and malnutrition in school-age children. An estimated 320 million school-age children are infected with roundworm, 233 million with whipworm, and 239 million with hookworm (Partnership for Child Development, 1997). Schistosomiasis affects an estimated 200 million people throughout the world, approximately 88 million of whom are under 15 years old (Montresor , Crompton, Bundy, Hall and Savioli, 1998).

Poor nutrition and poor health condition among school children contribute to the inefficiency of the educational system. Children with diminished cognitive abilities and sensory impairments naturally perform less well and are more likely to repeat grades and to drop out of school than children who are not impaired; they also enrol in school at a later age, if at all, and finish fewer years of schooling. The irregular school attendance of malnourished and unhealthy children is one of the key factors in poor performances. Even temporary hunger, common in children who are not fed before going to school, can have an adverse effect on learning. Children who are hungry have more difficulty concentrating and performing complex tasks, even if otherwise well nourished. Research and programmes experience show that improving nutrition and health conditions can lead to a better performance; fewer repeated grades and reduced dropout (Seshadri and Gopaldas, 1989; Ahmed and Billah, 1994; WFP 1995; 1996; Nokes, Van de Bosch and Bundy, 1998; Gelli, 2006 and WFP, 2006). Fortification of school rations is the most efficient and effective route to alleviating micronutrient deficiencies in school children where SFPs are in operation.

In South Africa, soup fortified with iron and vitamin C was provided to 350 schools in an area of low socio-economic development on Cape Peninsula. Results showed that initially 12% of six to seven year old, and 20% of 8 to 12-year-old children had low weight-for-age, and 49% and 31% had low serum ferritin (a measure of iron deficiency) respectively. At follow-up, after 15 weeks of intervention, iron status improved significantly; falling from 49% to 28% in 6 to 7- year- old children and 31% to 21% in 8 to 12 year old children (Kruger, Badenhorst, Laubscher and Spinnler, 1996).

A relatively new breakfast programme in Peru, which included an iron-fortified ration, was evaluated for its short-term impact on diet, amongst other factors. The programme

significantly increased dietary intakes of energy by 25%, protein by 28% and iron by 46% (Jacoby and Pollitt, 1997).

2.4 School feeding and pupils' enrolment

School feeding programmes (SFPs), and other school-based nutrition and health programmes, can motivate parents to enrol their children in school. School feeding Programmes (SFPs) are one of several interventions that can address some of the nutrition and health problems of school-age children (WFP 2010).

Research revealed that, in Ghana, malnourished children entered school at a later age and completed fewer years of school than better nourished children (Glewwe and Jacoby, 1994; Afoakwa, 2011). The number of days that a child attends school is related to cognition and performance (Ceci, 1995; Jacoby, Cueto and Pollitt, 1997). Results are most compelling for school enrolment and attendance, particularly where initial rates of participation are low (Jacoby, Cueto and Pollitt, 1996; Ahmed, 2004; Alderman, Behrem, Lavy and Menon 2001). For example, Ahmed and Carlo (2002) provide evidence of an 8% increase in enrolment and a 12% increase in attendance in a programme targeted to poor households. The effect of school feeding programmes on age at first schooling is also of interest, given prior work on the importance of timely school entry for future school and labour market success.

In West Bengal, the Pratichi Research Team took up a study in Birbhum district in 2004. They did a comparative analysis that involved the selection, on a random basis, 15 primary schools where the programme had been operative and another 15 primary schools without the programme. They found a great positive increase in enrolments in the areas where the programme was in operation (Rana and Partriachi Team, 2004).

A recent evaluation of an ongoing school feeding programme in Burkina Faso found that school canteens were associated with increased school enrolment and regular attendance, especially among girls (Moore and Kunze, 1994). Recent evaluations and studies have found encouraging results. Analysis of WFP survey data from 32 countries in sub-Saharan Africa that grouped 4,000 primary schools showed that, girls' enrolments increased by 28 percent, twice the rate in schools not receiving assistance. When on-site school meals were combined with take-home rations for a student's family, girls' enrolment in the highest primary grade surged by 46 percent, twice the yearly rate for girls in schools offering only on-site meals (WFP, 2009). The study claims that older girls are less likely to drop out, and that girls are more likely to stay in class throughout primary school when they bring food home to their families.

A number of studies suggest that the Food For Education (FFE) programmes raised primary school enrolment (Ahmed and Billah, 1994; Khandker 1996; Ravallion and Wodon 1997; Ahmed and Carlo 2002; Ahmed and Arends-Kuenning 2003; Meng and Ryan. 2004). The Primary Education Stipend Programme (PESP), which replaced the FFE programme in 2002, provides cash assistance to poor families if they send their children to primary school. The Government of Bangladesh (GOB) also provides cash assistance to girls in secondary schools through four secondary school stipend programmes. These conditional cash transfer programmes are aimed at increasing the enrolment and retention rates of students in primary and secondary schools throughout rural Bangladesh. The Pakistan programme of giving conditional Take Home Ration of oil has changed the way the parents think and act. Before the programme started, 48% of households did not send any of their daughters to school (WFP, 1995; 1996; Dreze and Goel, 2003; Afridi, (2010).

A recent study indicates positive influence of these (FFE and PESP) programmes on educational attainment. As a result of these educational investments, Bangladesh has made commendable progress in the education sector over the past decade. Over 90 percent of children eventually enrol in school, and few disparities now exist between boys and girls. (Ahmed 2004). A recent World Bank report on poverty in Bangladesh notes that Bangladesh and Sri Lanka are the only countries in South Asia that have achieved gender as well as urban-rural parity in school enrolments (World Bank 2009). The Bangladesh evidences show that the SFPs are making positive impact on school enrolment and gender parity. This, however, show the significant effect of THR on school feeding. Walingo and Musamali (2008) also confirm that different studies have shown an increase in both gross primary school enrolment and increase school attendance.

Buttenheim, Alderman and Friedman, (2011) found the effect of school feeding on enrolment. They observed that children enter school at an earlier age. School feeding programmes could encourage timely school entry by changing parental perceptions about the costs and benefits of schooling for young children around the school entry age. The availability of school meals may shift parent preferences toward sending a child perceived as too young or small to school.

2.5 School feeding and pupils' school attendance

School feeding programmes (SFPs) can have positive effect on rates of attendance. SFPs, and other school-based nutrition and health programmes, can also motivate parents to enrol their children in school and to see that they attend regularly (Meyers, Sampson,

Weitzman, Rogers and Kayne, 1989; Moore and Kunze, 1994). Evidence suggests that providing school meal improves attendance. A study in Nepal showed that the probability of attending school was 5% for malnourioshed children, versus 27% for children of normal nutritional status (Moock and Leslie, 1986). A small pilot school feeding programme in Malawi was evaluated for its effect on enrolment and attendance. Over a three-month period, there was a 5% increase in enrolment and up to 36% improvement in attendance/absenteeism compared to control schools over the same period (WFP, 1996).

In Niger Republic, the WFP-assisted programme provided the equivalent of the total daily recommended food intake (2,079 kcal) in three meals per day as well as a take-home ration as an incentive for girls' participation in schools (Bergeron and Del Rosso, 2001). The school feeding programme is intended to enhance attendance of nomad and transhumant children, particularly of girls. Niger has one of the lowest school enrolment rates in the world. It was observed that, whenever canteens are closed, even provisionally, immediate high absenteeism follows and children are withdrawn from school. In areas with nomadic and transhuman populations, the school year cannot commence until food stocks arrive (WFP, 1995; 1996). One could infer here that SFP is a strong factor to enhance school attendance. Jamison and Leslie (1990) assert that school feeding programmes appear to have a significant positive effect on attendance. School feeding can do this by increasing and facilitating better attendance.

In the traditional sense, school-based food distribution has also been used successfully to improve attendance among school-age children, particularly girls, although this could not be classified as a school feeding programme. For example, in Bangladesh a programme of school-based food distribution increased enrolment by 20% with a 2% decline in non-participating schools (Ahmed and Billah, 1994). In the study of West Bengal, Rana et al. (2004) found 10.1% point of increase in the rate of attendance. The comparison of record of attendance of the schools with and without the mid-day meal programme substantiates the difference; while the non-midday meal schools had 60.6% in the month preceding the study; it was 71.9% in the case of schools with mid-day meal.

In Pakistan, a programme provides an income transfer in the form of one or two gallons of oil to the families whose girls attend school for 20 days per month. In its pilot phase, the oil incentive programme demonstrated that it could make a significant contribution to full attendance. In participating schools, enrolment improved by 76% compared to 14% in the province overall. Attendance increased from 73% to 95% among participants. The programme also claims to put additional food into the hands of mothers and to serve as a

contact between mothers and teachers on distribution days (WFP, 1995; 1996). These food transfer mechanisms do not offer the same potential benefits, for example, meeting short-term hunger and specific nutritional needs, as programmes that deliver food directly to beneficiaries.

Ahmed (2004) used a mixed cross-sectional survey and a retrospective CBA to evaluate Bangladesh's School Feeding Programme, which provides a mid-morning snack of fortified wheat biscuits to one million children. School enrolment was boosted by 14.2 per cent, attendance increased by about 1.3 days a month, and the probability of dropping out was reduced by 7.5 per cent.

In northern rural India, school feeding-assisted schools had attendance of girls 15% higher. This revealed 30% higher chances that girls complete primary education. However, it showed a positive effect on girls' grade attainment. The Pakistan programme of giving conditional Take Home Ration of oil has changed the way the parents think and act. Before the programme started, 48% of households did not send any of their daughters to school, but afterwards, all households sent them to school (Bergeron and Del Rosso, 2001). An analysis from the World Food Programme's Food for Education programmes, which provided food for 21.7 million children in 74 countries in 2005 (WFP, 2006), found a 14-percent yearly increase in school enrolment for both boys and girls in 4,175 WFP-assisted schools in 32 sub-Saharan African countries (Gelli, 2006). Jamision and Leslie (1990) notes that school attendance is affected by hunger

2.6 School feeding and pupils' nutrition status

A few studies have shown an improvement in children's nutritional status with school feeding (Agarwal, Upadhyay Tripathi & Agarwal, 1987; Kazianga, de Walque and Alderman, 2010). Recent studies indicate positive influence of school feeding and other school-based nutrition and health programmes on the nutritional health status of school children. The Burkina Faso study (Kazianga, de Walque and Alderman, 2010) found a large and significant positive effect on child weight-for-age for younger siblings of eligible children, with benefits accruing primarily for young boys. THR and OSF provided roughly similar benefits. Results indicated that the benefits accruing to young children would have cost 9 times the value of the food transfer had it been provided as a direct transfer. The study argues that failure to account for spillover effects may lead to underestimates of benefits associated with school feeding programmes.

Other analyses of school feeding programmes in Burkina Faso have found evidence of nutritional spillover effects for younger children (Kazianga, et al. 2010). Spillover effects show up in the analysis as a gain in weight-for-age or height-for-age or reductions in anaemia for younger children (age 3-5). Significant increases in height-for-age for boys' and girls' ages (3-5) were observed in Nhot Ou among those that were exposed to take-home rations in between-district analyses, but this appears to be driven more by the declines in height-for-age among children in the control villages. Pre-school children whose siblings were exposed to the on-site feeding had significant increase in height-for-age and reduction in anaemia prevalence. There was no similar development among those not exposed (Kazianga et al., 2010).

The Uganda school feeding study took place in Internally Displaced Persons' (IDP) camps in Northern Uganda (Alderman, Gilligan and Konde-Lule, 2008; Alderman, Gilligan and Lehrer, 2008). Sampled households lived in the camps at the time of the baseline survey in 2005 but had resettled out of the camps (either returning home or moving to smaller camps closer to their original homes) during the follow-up survey in 2007. The follow-up survey located and re-interviewed 81% of the baseline sample. Nutritional effects of the Uganda school feeding programme were consistent with the Burkina Faso study. Both on-site and take-home rations programmes reduced anaemia prevalence among older girls (10-13). School feeding led to outcomes that were mutually reinforcing, helping to lift households out of poverty to end the inter-generational cycle of hunger. World Bank, (2006), notes that the available evidence seems to indicate that these school feeding programmes help in improving children nutrition within a shorter time frame (between two and three years) compared to the longer horizon of other interventions such as income, food and fertility policies. A study by Hall, Hahn, Farley, Quynh and Valdivia (2006) was designed in such a way to prevent substitution of food consumption at home. They found a small but significant difference in weight and height gain. Children who had a better initial anthropometric status gained more weight ($p = 0.001$) than children who were undernourished

To determine the nutritional status, various techniques could be used to describe the outcomes that are regularly examined within the context of community-led nutrition interventions. Akre (1988) views anthropometric measurements (weight and height) as a technique that could be used in assessing individual nutritional status. Similarly, Baez (2007) recommends anthropometric measures to assess the nutritional status of children such as height and weight. More specifically, child's growth can be analyzed by identifying differential changes in standardized sex- and age-specific international population reference

measures such as height-for-age Z-scores (HAZ), weight-for-height Z-scores (WFH) and weight-for-age Z-scores (WAZ). In addition, the mid-arm circumference (MAC) can also be measured to monitor changes over time in the body composition of children The use of body measurements to assess nutritional status is a practical and immediate applicable technique for assessing children's development patterns and also provides useful insights into the nutrition and health situation of entire population groups (Gorstein and (Onis and Yip, 1996; Adenuga, 2009).

Buttenheim, Alderman and Friedman, (2011) in the impact evaluation of Lao PDR school feeding programme reported that nutritional status was measured by height-for-age and weight-for-age standardized z-scores, calculated from measured height and weight and reported age using the WHO Child Growth Standards (WHO Multicentre Growth Reference Study Group, 2006)

2.7 School feeding and pupil's retention rate

School feeding and other school-based nutrition and health programmes have been found to influence the rate of pupils' dropout in school. In Bangladesh, feeding children in school is a recent phenomenon. In July 2002, in order to diminish hunger in the classroom as well as to promote school enrolment and retention rates, the Government of Bangladesh (GOB) and the World Food Programme (WFP) launched the School Feeding Programme (SFP) in chronically food insecure areas of Bangladesh. The programme distributes nutrient-fortified biscuits to all children in the intervention schools. In addition, a small pilot project, which started in 2002, distributes 'tetrapack' milk and fortified biscuits to children in project schools in one of the 64 districts in Bangladesh. This pilot project is funded by the U.S. Department of Agriculture (USDA) and implemented by the Land O'Lakes Foundation. The Bangladesh's School Feeding Programme's evaluation show that the dropping out rate reduced by 7.5 per cent (Ahmed, 2004). This finding corroborates Moore and Kunze (1994) study, which reported that school feeding lower dropout rates in disadvantaged provinces, especially among girls. However, many factors may account for the reasons of low completion rate. Politt (1990) notes that, in sub-Saharan Africa, over 4% of school-age children and about 2% will die before school completion. Children in developing countries have the tendency (14 times more likely) to die more than those children of the same age in industrialized countries.

2.8 School feeding and achievement

The number of hungry school-age children is unknown, but it is likely to be a significant problem in various circumstances. Food insecurity in early childhood can have a long-term negative impact on the cognitive and socio-emotional development of a child, ultimately impairing his or her productivity and economic potential. Children who enter school without proper nourishment and support are at an early disadvantage and, as such, struggle to meet up with their more advantaged peers. Agarwal, Upadhyay Tripathi Agarwal's (1987) study in India notes that school feeding affects time-on-task, which includes time allocated by teachers and time engaged by the children. With the quality of instruction and ability controlled, the more the time children spend on a task, the easier their learning process.

One study showed that kindergartners from food-insecure homes not only entered school with lower Mathematics scores, but also learned less over the course of the school year (Winicki and Jemison (2003). Even children who had enough food but their families struggled to meet their needs lagged behind their peers (Winicki and Jemison (2003). Hunger and malnutrition thus depress both the starting point and the upward trajectory of a child's education from the moment he or she enters the kindergarten classroom.

Learning deficits in the earliest years of education have a cumulative effect as children continue through elementary school and beyond. Data from the Early Childhood Longitudinal Study—Kindergarten (ECLS-K) Cohort, which followed more than 21,000 children from kindergarten through third grade, showed that, by the third grade, children who had been food insecure in kindergarten had lower reading and Mathematics scores than their peers who had enough to eat in the same class. For example, children in families that had not been food insecure in kindergarten had an average gain of 84 points in reading, compared with a 73-point gain among children who had experienced food insecurity. The data also demonstrated the corrective effect of nutrition programmes, which can work to decrease or eliminate food insecurity in recipient households. Gains in reading and mathematics scores were higher for girls who entered SNAP between kindergarten and third grade than those who left SNAP during that time (Frongillo, 2006). This demonstration of the inverse relationship between food supplementation and cognitive delay shows the dynamic effect of nutrition upon cognitive development in young children.

Among the most harmful types of malnutrition with regard to cognition is iron deficiency which renders children restless, inattentive and uninterested in learning. The literature suggests a causal link between iron deficiency anaemia and less than optimal

behaviour for learning (Nokes, van den Bosch and Bundy, 1998). Poor performance on a wide range of achievement tests among iron-deficient children in school has been documented. Remediation of iron deficiency through supplementation has eliminated the differences in school performance and IQ scores between school children previously deficient in iron and those without iron deficiencies (Seshadri and Gopaldas, 1989).

In the case of iodine, most studies have focused on the differences in cognitive test performance between children who lived in communities with and without endemic goitre. The results show differences in favour of the non-goitre areas. In Sicily, for example, the proportion of children with below-normal cognitive scores was 3% in areas with sufficient iodine, 18.5% in areas where iodine was inadequate, and 19.3% where iodine was inadequate and cretinism was endemic (Vermiglio 1990; Alaimo, Olson, Frogillio, 2001). Studies in Indonesia and Spain have documented similar effects on children in areas with insufficient iodine (Bleichrodt, Garcia, Rubio, Morreale and Escobar, 1987).

A case-control study of the impact of providing heme-fortified cookies to school children in Chile found higher concentrations of haemoglobin among children receiving the fortified cookies through the school lunch programme. The impact was most significant among children with greater demands for iron, such as post-menarchial girls and pubertal boys (Walter, Hertrampf, Pizarro, Olivares, Llaguno, Letelier, Vega, and Stekel, 1993). Academic performance also improved, with test scores boosted by 15.7 per cent points. Participating students did especially well in Mathematics, scoring 28.5 per cent more than those in the control group. School feeding programme consistently lower repeater rates and produces higher success rates on national examinations, especially among girls (Moore and Kunze, 1994). School feeding can benefit education through enrolment, attendance, cognition, and educational achievement, although the scale of benefit and the evidence of effect vary with feeding modality.

Hunger and malnutrition has a continuing negative impact on the cognitive and academic development of children as they grow older. Pollitt (1990) found that hunger interferes with problem solving and concentration abilities. The children affected detrimentally in most cognitive tests by missing breakfast were those who are previously malnourished. Attention, interest and learning may be adversely affected by short-term hunger and this short-term hunger could be likened to skipping breakfast or having inadequate morning meal before living home for school. When attention or interest is affected, mastery is also affected. Educational achievement through the middle and secondary school years depends on students mastering basic skills and building on their knowledge over

time. There is considerable evidence that children who are better nourished have more efficient cognitive function than those who are undernourished (Simeon and Gratham-McGregor, 1990; Pollitt, 1990). It is, therefore, conceivable that school meals could indirectly improve cognitive function by improving the nutritional status of undernourished children. It is also possible that better-nourished children will attend school more often. Thus, children that lack adequate food in-take learn at a slower rate than their peers. This fact, coupled with their initial delay, leaves them further behind as they progress through the educational system. Studies have found that elementary school pupils from food-insecure homes have significantly lower Mathematics scores and are more likely to have repeated a grade than their peers from food-secure homes (Alaimo, Olson, Frongillo, (2001).

Nutrition and health status are powerful influence on how well a child performs in school. Del Rosso and Marek (1996) rightly opined that weak health and poor nutrition among school-age children diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences or both. Taras (2005) reviews research on micronutrient supplementation, findings reveals that, iron therapy appears to improve cognitive performance whereas zinc and iodine therapy does not, and there is no evidence population- wide vitamin and mineral supplementation leads to improved academic performance. Ahmed (2004) uses a mixed cross-sectional survey and a retrospective CBA to evaluate Bangladesh's School Feeding Programme, which provides a mid-morning snack of fortified wheat biscuits to one million children. School enrolment was boosted by 14.2 per cent, attendance increased by about 1.3 days a month, and the probability of dropping out was reduced by 7.5 per cent. Academic performance also improved, with test scores boosted by 15.7 per cent points. Participating students do especially well in mathematics, scoring 28.5 per cent more than those in the control group. However, simply alleviating this hunger in school children will help them to perform better in school. School feeding facilitates education, and education, particularly for girls, leads to improved food security, health and nutrition, the effects of which all contribute to ending hunger.

2.9 School feeding and community participation

Schools with their communities behind them while operating school feeding are more effective than schools with less community involvement. Schools that depend on the community to organize and implement SFPs offer certain advantages. These advantages include: increasing the contact, and hence communication, between parents and teachers, officials and others; giving parents the opportunity to become more aware of what goes on at

schools; and serving to raise the value of education/the school for parents and the whole community. For example, school canteens are viewed as an important feature of education policy in Morocco. Since 1978 WFP and the government have been supporting school feeding. The programmes have strong government and community support and are viewed as part of a necessary package of inputs for improving education. The feeding programme is credited with helping to maintain high enrolment and attendance and encouraging community participation in education. School cooperatives support the school canteens and parents associations assist with the transportation of food aid (WFP, 1993).

Investing in school feeding creates significant economic value: one, school meals and take-home rations translate into savings at household level, which can result in increased returns on investment; two it helps in developing local expertise. Local personnel will benefit from the experience of developing and implementing the interventions; local training is an important element of these activities. Staff participation in international workshops and other opportunities for sharing experience across countries, will also strengthen local capacity (Del-Rosso and Marek, (1996). For example, the training that is given to people in catering services may empower and develop their local expertise. Adepoju and Babalola (2011) opined that, vocationally trained women are more likely to practice basic principles of safe food storage and preparation techniques, self employment, nutrition and family care. Such women are able to earn a livelihood that provides the purchasing power to sustain their family. Thus, when women are trained in these areas they can be empowered to start their own business or use the skills to better their families' welfare.

2.10 Child friendly school environment

It has been found in developed countries that school inputs can have a major effect on both children's behaviour and their attainment levels. It has been found that school resources or facilities influence child's health condition and academic achievement, after the child's ability and behaviour on entering school were controlled (Rutter , 1980).

Mwanwenda and Mwamwenda, cited by Agomoh (2006) found that availability of classrooms; desks, seats, and books produce significantly better academic achievement. Friendly environment includes school buildings, classrooms laboratories, libraries, offices, farm land, play grounds, toilets, textbooks, electricity and water supply.(`Gardens and flower availability in schools enhance their aesthetics and facilitate teaching and learning activities. They also found that academic achievements of pupils from schools with sufficient classrooms are better than those pupils from schools with insufficient classrooms.

Hattie (2003) claims that school facilities contributed to the 5 – 10% of the variance in school achievement attributable to the school. Hedges, Laine and Greenwald (1994) also found that school facilities affect pupils' learning outcomes. Khandker (1996) observed that water and sanitation facilities, and electricity affect learning outcomes and child's health. Similarly, Pineros and Rodriques (1999) found that better school resources lead to better achievement after appropriately controlling socio-economic background variables. Bacolod and Tebias (2005) reported that schools providing such basic facilities as electricity perform much better in the production of achievement growth than schools without such facilities.

School environment may damage the health and nutritional status of school children. It increases their exposure to hazards, such as infectious diseases carried by water supply. It is, however, believed that any factor that influences pupils' health is also likely to influence pupils' attendance and alertness. Dilapidated school environment contributes to the high dropout rate of learners from school. Lack of facilities may cause absenteeism. These facilities include clean water, sanitary facilities, new school construction and rehabilitation of existing school, among others (Joy, Muller and Del Rosso (2010),

Moreover provision of water supplies and toilet or latrine would benefit hygiene and will also improve the health of the pupils and teachers. UNICEF (2006) recommended that facilities like potable water that can be accessed through boreholes, protected dug wells; rain and pipe-borne water are safe for drinking should be provided in schools.

Gratham-McGregor, Chang and Walker (1998) evaluated school feeding in Jamaica. Their study focused on schools in rural communities. However, they differed somewhat in their physical facilities. One school (school A) was much better equipped than the other three. It had recently been built to the specifications of an international agency. Each class had a separate room and every child had a desk and a chair. In the other schools, two or three children shared a desk; while two or more classes often shared a room. The children in the best school (school A) did the least amount of talking and fidgeting and paid the most attention during instruction, and they were the only children who showed improvements after eating breakfast. In contrast, the children's behaviour in two of the other schools actually deteriorated after they received breakfast: they paid less attention to the set task and talked more in class (Gratham-McGregor, Chang and Walker, 1998).

The findings from the classroom behavioural observations suggest that the quality of the school itself may modify any benefit from school feeding. For example, desk arrangement can affect child's classroom behaviour (Rosenfield, Lambert and Black, 1985) and also school facilities are important determinants of school attainment in developing than in

developed countries. It may be that, below a certain threshold level, small differences in facilities become critically important (Fuller, 1987).

2.11 An overview of School Feeding Programme of Osun State

Osun State is located in the south western part of Nigeria, covering an area of approximately 14,875 square kilometres (see appendix 7). The state was carved out of old Oyo State on 27th August, 1991. It lies between longtitude 04 00E and 05^0 5 and latitude $05^0$558N and $08^0$07W. It is bounded by Ogun, Kwara, Oyo, Ondo and Ekiti States in the South, North, West and East, respectively (Osun State Ministry of Information and Strategy, 2011). Osun State has an estimated population of 3,423,535 million people (National Population and Housing Census conducted in 2006), with just over 1 million school-age children, about half of which are currently enrolled in school, and 49% of whom are girls. According to the Nigerian Demographic and Health Survey conducted in 2008, 31% of the children in Osun State are stunted and 12% are wasted (NDHS, 2008). The state is made up of 30 local government areas and Ife East Area Office. Administratively the state is divided into three senatorial districts, namely Osun West, Osun Central and Osun East.

In 2004, the Federal Government launched a pilot programme of school feeding programme featuring 12 states of the federation and Abuja (the Federal Capital Territory). Osun State was included, and it continued full implementation early 2006 shortly after the implementation stopped. The School Feeding Programme Office is positioned separately from the ministries with the State Programme Director reporting directly to the Governor (FME, 2005). The stakeholders include:

- Programme Director, Operation Officer, Administrative Officer, Programme monitors;
- State government officials (Programme steering committee), Programme monitoring committee, Ministry of Education;
- School level staff school (head-teacher, class teacher, cooks) (FME, 2005).

Initially, when the programme started, kitchen was provided in schools to facilitate cooking in the school premises and the weekly menu consisted of the following:

Table 2.1: Standard Weekly Menu in Osun School Feeding Programme

Day	Initial	Present (from May
Monday	Rice, stew, fish	Yam, stew, fish +orange or available fruit
Tuesday	Porridge, vegetable with egusi, + an egg	Rice, beans, vegetables with chicken + fruit
Wednesday	Rice, beans, vegetables with egusi, fish+ cocoa drink	Beans & Bread with whole egg+fruit
Thursday	Beans, vegetables, fish	Rice & egusi +chicken + fruit
Friday	Rice, vegetables, fish	Porridge & vegetable (*efo riro*) + beef

Source: Ayoola, 2012 Field survey

On November, 27, 2010, there was a change in government of the state and this brought modifications to the programme. The name of the school feeding agency changed from Home Grown School Feeding and Health Programme (HGSFP) to Osun Elementary School Feeding and Health Programme (a.k.a O'MEALS). The coverage of the programme was extended to primary 3, with effect from May 3, 2012 but the programme objectives and focus remain the same. The state government was initially spending #30.00 on a child every school day, but jerked it up to ₦50.00 with the modifications (Osun Elementary School Feeding and Health Programme Report in Osun State, 2012).

Also the institutional arrangement / set up remain the same. The menu time-table now includes chicken, meat and fruits of different kinds but cocoa drink has been removed. The pupils feed on eggs; chickens, fish and red meat to enable them meet nutritional requirements for mental development. Appropriate kitchen utensils - (modern day) chef uniforms, and seed money for effective take-off was given to all the cooks. In addition, training in modern catering was sponsored by the Osun State government. According to *The Nation Newspaper* (2012)'s report cited by *Osun Defender* (2014) experts working on the O'MEALS scheme have come up with prescribed rules, certain benchmarks and minimum workable standards which must not be compromised. These include acceptable hygiene rules (since the cooks are not allowed to cook at school), general conditions of the kitchen and neatness of the cooking infrastructure (availability of water and type of water) and, the quality and quantity of nutritional contents of each meal. To ensure strict compliance to minimum standards, competent health inspectors go around without prior notice, to snap-check the compliance level of all cooks.

2.12 Importance of primary education

The goal of primary education is centered on functional literacy and numeracy, the ability to communicate effectively, and the inculcation of positive attitudes towards co-operation, work, community, national development, and continuing learning (FRN, 2004). The primary school curriculum is discipline-based, and addresses all the goals of primary education. Permanent literacy and numeracy and communication skills are the top priority. Seven main subjects are specified in the curriculum as follows: Language Arts; Elementary Science; Mathematics; Social Studies; Cultural Arts; Agriculture; and Home Economics. In 2003, the National Primary School Curriculum was further reviewed and the modular approach was replaced with a thematic one. Also, a number of emerging social issues, such as HIV and AIDS, information technology, environmental education, gender equity and child labour, have been introduced.

A thirty-five-minute period each day for the five days per week is allocated to each of English Language and Mathematics. Physical and Health Education is taught twice a week; Religious Knowledge, Elementary Science, Agriculture, Home Economics and Social Studies are also taught twice a week. Drawing, Handicraft, Music and Cultural Activities are each allocated a period per week.

In Grades I-III, the medium of instruction is the language of the immediate environment. During this period, English is taught as a subject. From Grade IV, however, English is progressively used as a medium of instruction, while the language of the immediate environment is taught as a subject.

Of the estimated primary-school-age population (18.6 million children), 15.4% is not enrolled in school. The gross enrolment rate is estimated at about 70%, and the national average for functional literacy is only 51%. Furthermore, primary school enrolment growth rates—which averaged 4% annually—have not been able to fully clear the backlog and keep pace with the population growth rate, estimated at an average of 3.2%.

Despite high gross enrolment rates, severe constraints, both within and outside the education system, have led to comparatively lower completion rates—the current average being 62% for girls and 59% for boys. The average completion rate at the end of Grade VI, as a percentage of final enrolment in Grade I, is reported to be around 55%. In 1995, the transition rate from primary to junior secondary was estimated at 43.7%.

Between 1986 and 1992, the dropout rate in primary school was estimated at 43.2%. According to a survey, the drop-out rate is higher in the upper primary classes than in the lower classes, presumably because the pupils in upper classes are mature enough to be

engaged in income-generating activities. The Situation and Policy Analysis Survey, conducted in 1992, showed that there is a 17%-wastage rate, and that an average of 46.6% of primary school pupils who dropped out from schools was girls.

2.13 Evaluation models

Evaluation is an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, value, merit, worth, significance, or quality of a programme, product, person, policy, proposal, or plan (Fournier, 2005). Conclusions made in evaluations encompass both an empirical aspect (that something is the case) and a normative aspect (judgment about the value of something). It is the value feature that distinguishes evaluation from other types of inquiry, such as basic science research, clinical epidemiology, investigative journalism, or public polling. Project evaluations assess how well a programme has worked in terms of its stated goals. Methods of evaluation range from individual reviews of performance to statewide assessments. Evaluation design hinge on the fundamental question, "What would the situation have been if the intervention had not taken place?" Although it is impossible to observe such a situation, it is possible to approximate it by constructing an appropriate counterfactual, or group of non-participants in a programme.

Evaluation may occur at regular intervals throughout a programme to measure progress (formative) or may occur at the end of a time period to summarize the results (summative) (Dutton, Homnous, Hydis and Owens, 1994). Evaluation design is a critical aspect of programme evaluation. This is because it not only provides the overall framework for evaluation but also gives shape to the research questions, organises and focuses the evaluation, and informs the process of inquiry (Comrade and Wilson, 1985).

The use of model assists in making decision on which variable we want to measure. By constructing a model of intended process of a programme, the means and the steps by which the programme is intended to work is identified. Hence, the sequence of events is hypothesized. The model indicates the kinds of effects that should be investigated. Once ways are found to measure each set of events and the measurements are made, it is possible to see what happens, what works and what doesn't, for whom it works and for whom it doesn't (Weiss, 1999).

2.13.1 CIPP Model

CIPP was developed by Daniel Stufflebam on the view that the most important purpose of evaluation is not to prove but to improve. It is against the view that evaluation should be "witch-hunts" or only instruments of accountability. Instead, it sees evaluation as a tool to help make programmes work better for the people they are intended to serve.

It can be said that CIPP is decision oriented, since it viewed evaluation as the process of obtaining and providing information for decision makers.

CIPP model adopts the criteria of internal and external validity, reliability, objectivity, relevance, importance, scope, credibility, timeliness, pervasiveness and efficiency. It asserts that experimental design is not usable in conducting evaluation. Thus, it stresses the clarification of goals and objectives and advocates structured observation as a means of discovering whether these goals and objectives have been achieved or not.

Basically, the CIPP model answers four major questions, namely:

1. What objectives should be accomplished?
2. What procedures should be followed in order to accomplish the objectives?
3. Are the procedures working properly?
4. Are the objectives of the programme being achieved?

The CIPP model identifies some kinds of decisions: first, the importance of the decisions depends on the significance of the change it intends to bring about, two, Decisions that have far-reaching consequences and demand evaluation that are thorough, rigorous and most likely expensive, third, the availability of information and the decision-makers' ability to make such information successfully. Corresponding to these decisions and the information to be provided are the types of evaluation which are contained in Context, Input, Process and Product evaluation

2.13.2 Goal Free Model

Scriven proposed this model of evaluation, claiming that it will ensure evaluators to pay more attention to the actual outcomes of a programme, intended and un-anticipated, rather than just the quality of the programme goals or the extent to which they have been achieved. This model focused on outcomes and as such viewed evaluation as an assessment of outcomes, intended or otherwise.

In goal free evaluation model, evaluator does not know the reasons, goals or intended receipient of the programme. The evaluator simply examines the effects of the programme on

the needs and wants of the impactees, and judges the process of delivery of the programme. The evaluation is best suited for summative evaluation. It should be noted that the model emerge from an attempt to deal with a number of serious draw-back about approach evaluation via determination of goals.

2.13.3 Antecedent, Transaction and Outcome (ATO)

Antecedent, Transaction and Outcome (ATO), otherwise known as the countenance model of evaluation, was introduced by Robert Stakes in 1967. Stakes defined evaluation as a judgemental process of ascertaining the discrepancy between objectives, contents and performance (outcomes). Thus, ATO model viewed evaluation as an assessment of discrepancy between objectives and performance.

The ATO model is based on the notion that judgement and description are both essential to the evaluation of any programme. This made Stakes to distinguish between three bodies of information that make up the elements of evaluation statement that should be included in the descriptive and the judgement act. The elements are the antecedent, transaction and outcomes (ATO).

Antecedent refers to conditions existing prior to implementation of the programme, which may relate to outcome. Transactions are the succession of engagements that make up the processes. To Stakes, outcomes refer to much more than traditional standard outcomes. Outcomes include the immediate and long-range effect of the programme. This may include programme impact on the beneficiaries and implementers as well as the effectiveness of the participants and the facilities.

The countenance model is judgemental and, to it, there are two bases of judging the characteristics of a programme: one, evaluating a programme on the bases of absolute standards; two, reflecting personal opinion concerning what the programme should be; or standard reflecting other similar programmes. With the use of this model, evaluator needs to be fully aware of and be sensitive to the concerns of those involved or affected by the programme.

2.13.4 Input–Process–Output (IPO) Model

This model takes cognizance of the inputs into the programme which include human and non-human (material) resources, such as facilities, staffing and budgets that will be necessary to promote attainment of a particular set of objectives. The inputs are the independent variables of the study.

The process focuses on the extent to which resources are utilized and various actions and activities involved. This also touches on the usage of the facilities provided and the procedures.

The output refers to the outcome or the results of the product of the programme. This outcome refers to what is assessed, to find out the attainment of objectives of the programme. These outcomes are the indicators to measure the extent to which the specific goals are achieved. These indicators of the programme outcomes are the dependent variables of the study

Now that the various evaluation designs have been presented, the question: "when is one technique more appropriate than another" remains. There is no quick and easy answer to this question. And typically, there is no definitive approach to choosing the best evaluation technique. Each method has its own particular requirements, advantages and disadvantages.

To a certain extent, evaluators must rely on their own judgment to strike the right balance. However, going back to programme theory helps a great deal to identify potential methods, since a policy intervention is always case-specific and, in some respect, unique. Its design varies with the beneficiaries of the programme and the socio-economic characteristics of the population. Such peculiarities must, therefore, be addressed in the research design.

2.14 Impact evaluation design

Impact evaluation is to: (i) determine if a project benefits intended beneficiaries and, if so, how much; and (ii) help policy makers decide if a project is worth supporting. Thus, it focuses on outcomes /impacts.

Impact evaluation designs are determined by the choice of methods used to identify the counterfactual and can be broadly classified into three that vary in feasibility, cost, and degree of selection bias:

1. Experimental
2. Quasi-experimental
3. Non-experimental

Methods in Quasi-experimental designs: The design of a quasi-experiment relates to a particular type of experiment or other study in which one has little or no control over the allocation of the treatments or other factors being studied. The key difference in this empirical approach is the lack of random assignment. The defining feature is that control group is similar to treatment group, but not equivalent. There are several types of quasi-experimental designs, ranging from the simple to the complex, each having different

strengths, weaknesses and applications (Shadish, Cook and Campbell 2002). These designs include (but are not limited to):

1. Non-equivalent control group pretest-posttest
2. Non-equivalent control group posttest-only
3. Generic control

Non-equivalent control group pretest-posttest design is similar to pretest-posttest control group in experimental designs but groups are chosen by matching rather than random assignment. It has the advantage of ease in the choice of groups through matching than through random assignment. It could be used when the intervention has not started yet and appropriate when the financial resources and technical ability to collect data before and after the intervention begins. The advantage is that it is easier to choose groups through matching than through random assignment. The weakness is that it must maintain experimental condition throughout the programme. Also, it cannot account for the risk that experimental groups may differ on factors that matching or statistical analysis can. It is highly useful when one has to collect baseline data.

The non-equivalent control group posttest-only design is similar to posttest-only control group in experimental designs but the major difference is that experimental groups are chosen by matching rather than random assignment. This could be used when intervention has already started, when baseline data are not available, or a collection of baseline data is not feasible for some reasons (such as lack of resources) (Shadish, Cook and Campbell 2002; Price and Oswald, 2006). It could also be used when random assignment is not feasible, and staff or professionals who can handle sophisticated statistical analysis are available. The advantage is that it does not require the collection of baseline data. The weakness of the design is that it must maintain experimental condition throughout programme. Moreover, it has a high risk that experimental groups may differ on factors that matching or statistical analysis cannot account for. It also has less statistical power.

Generic control is another specific design of quasi-experimental study design. It involves comparing the changes in programme indicators to the status of the general population. With this type of design, there is no need to create control group. The major weakness of the design is that data for relevant indicators and appropriate comparison population are rarely available.

Quasi-experiments are exceptionally useful in areas where it is not feasible or desirable to conduct an experiment or randomized control trial. Such instances include

evaluating the impact of public policy changes, educational interventions or large-scale health interventions. The primary drawback of quasi-experimental designs is that they cannot eliminate the possibility of confounding bias, which can hinder one's ability to draw causal inferences. This drawback is often used to discount quasi-experimental results. However, such bias can be controlled using various statistical techniques such as multiple regressions, if one can identify and measure the confounding variable(s). Such techniques can be used to model and partial out the effects of confounding variables techniques, thereby improving the accuracy of the results obtained from quasi-experiments. Moreover, the developing use of propensity scores to match participants on variables important to the treatment selection process can also improve the accuracy of quasi-experimental results.

This design consists of constructing a comparison group using matching or reflexive comparisons. Matching involves identifying non–programme participants comparable in essential characteristics to participants. Both groups should be matched on the basis of either a few observed characteristics or a number of them that are known or believed to influence programme outcomes. Matched comparison groups can be selected before project implementation (prospective studies) or afterwards (retrospective studies).

The main advantage of evaluations using matching methods is that they can draw on existing data sources and are, thus, often quicker and cheaper to implement. The principal disadvantages are that the reliability of the results is often reduced, as the methodology may not completely solve the problem of selection bias; and the matching methods can be statistically complex, thus requiring considerable expertise in the design of the evaluation and in analysis and interpretation of the results.

The most widely used type of matching is propensity score matching, in which the comparison group is matched to the treatment group by using the propensity score (predicted probability of participation given observed characteristics). This method allows one to find a comparison group from a sample of non-participants closest in terms of observable characteristics to a sample of programme participants.

Score matching is a very useful method when there are many potential characteristics to match between a sample of programme participants and a sample of non-participants. Instead of aiming to ensure that the matched control for each participant has exactly the same value of the control variable X, the same result can be achieved by matching on the predicted probability of programme participation, P, given X, which is called the propensity score of X. The range of propensity scores estimated for the treatment group should correspond closely to that for the retained sample of non-participants. The closer the propensity score, the better

the match. A good comparison group comes from the same economic environment and is administered the same questionnaire as the treatment group by similarly trained interviewers.

Reflexive comparison is another type of quasi-experimental design. In a reflexive comparison, the counterfactual is constructed on the basis of the situation of programme participants before the programme. Thus, programme participants are compared to themselves before and after the intervention and function as both treatment and comparison group. This type of design is particularly useful in evaluations of full-coverage interventions, such as nationwide policies and programmes in which the entire population participates and there is no scope for a control group.

In a nutshell, quasi-experiments are a valuable tool, especially for the applied researcher. On their own, quasi-experimental designs do not allow one to make definitive causal inferences. However, they provide necessary and valuable information that cannot be obtained by experimental methods alone. Researchers, especially those interested in investigating applied research questions, should move beyond the traditional experimental design and avail themselves of the possibilities inherent in quasi-experimental designs (Shadish, Cook and Campbell, 2002).

Non-experimental designs are also available for impact evaluation. The major feature is that there is no control group. The specific types are:

(i) Time Series

(ii) Pretest-Posttest

(iii) Posttest-only

The primary factor which directs the evaluation design is the purpose for the evaluation. It is critical to considering the utility of any evaluation information. If the programme's impact on participant outcomes is a key concern or if multiple programmes (instructional strategies, or something else) are being considered and educators are looking for evidence to assess the relative effectiveness of each to inform decisions about which approach to select, then experimental designs are appropriate and necessary. Nonetheless, resulting information should be augmented by rich descriptions of programmes and mechanisms need to be established which enable providing timely and responsive feedback (Lincoln and Guba, 1985; Reinhart and Rallis 1994; Patton, 1997). In addition to using multiple evaluation methods, evaluators should be careful in collecting the right kinds of information when using experimental frameworks. Measures must be aligned with the programme's goals or objectives. Additionally, it is often much more powerful to employ multiple measures. Triangulating several lines of evidence or measures in answering specific evaluation

questions about programme outcomes, increases the reliability and credibility of results. When interpreting this evidence, it is good to use absolute standards of success in addition to relative comparisons. This is the justification for the inclusion of sections B, C and D in these instruments: Parent Perception on School Feeding Programme (PPSFQ) and School Feeding Programme Operators Questionnaire (SFPOQ) under "data collection" of this study.

It is important to always consider alternative explanations for any observed differences in outcome measures. If the treatment group outperforms the control group, consider a full range of plausible explanations in addition to the claim that the innovative practice is more effective. Programme staff and participants can be very helpful in identifying these alternative explanations and evaluating the plausibility of each.

The need to enhance development effectiveness has prompted a tremendous growth of interest in impact evaluation studies in recent years. A better understanding of the technical difficulties of the appropriate attribution of outcomes has led to increasing calls for more 'rigorous' impact evaluations to address the problem of causality. The push towards evidence-based development policy has consequently led to many rigorous impact studies being conducted in various economic and social sectors. Heavily evaluated programmes have been implemented in such areas as health (Gaarder, Glassman and Todd (2010), nutrition (Habicht, Pelto and Lapp, 2009) and education (Glewwe and Kremer 2006). By comparison, relatively little attention has been paid to the rigorous evaluation of governance programmes.

Collecting baseline data or pre-intervention information is a challenging task for development practitioners, since (i) interventions may tend to change over time; (ii) all potential outcomes – expected and unexpected – must be taken into account at the outset; (iii) collecting baseline data requires additional financial resources; and (iv) the implementation of the project could be delayed. Those who are to collect baseline data must have an overall idea of how the project will be evaluated later on. Otherwise, the baseline data collected may be insufficient or no longer relevant at the time of evaluation.

However, if baseline data are not available, using a triple-difference (DDD) method is an option under certain conditions. Ravallion, Galasso, Lazo and Philip (2005) adopted a double difference (DD) approach for the Trabajar programme in Argentina, which provides work for the unemployed poor for six months. They examined the difference in the incomes of participants who had left and participants who had remained in the programme. A simple DD between "stayers" and "leavers" would lead to biased results, since work opportunities are not the same for both groups. Ravallion and Chen (2005) therefore formed an entirely separate control group who had never participated in the programme. The triple difference

(DDD) is the difference of 'stayers' with matched non-participants minus the difference of 'leavers' with matched non-participants. The result is the income gained by stayers for participating in the programme. The triple difference (DDD) technique has allowed changes in the economy or labour market to be controlled. Another possible approach if no baseline data are available is to reconstruct a baseline in retrospect, a practice common to many clinical studies. However, the accuracy of recall, that is, collecting data from individuals' recollections of what happened a year or more earlier, is a serious problem in this type of study. As discussed above, some quasi-experimental techniques, namely single difference (control versus treatment group) approaches, such as Propensity Score Matching (PSM) or Instrumental Variable techniques, can be applied even in the absence of baseline data. Rosenbaum and Rubin (1983), defines PSM as the conditional probability of assignment to a particular treatment or control given a set of covariates. It incorporates covariates into a singular scalar variable, ranging from 0 to 1.This new scalar variable can then be used to match participants in treatment groups. Once matched, treatment effects should be more reflective of the true effect and analogous to interpretation of randomized designs. Habicht, Victoria and Vaughan (1999) note that control groups without the programme are necessary for a conventional impact evaluation. This would make impact study superfluous. Thus, the difference between programme and non-programme schools would obviously have been important.

2.15 Conceptual clarification

The concept of impact evaluation of school feeding programme as the researcher viewed it needs explication. This is to facilitate a good understanding of the variables involved in the study and also to outline possible courses of action. The concepts and variables in the study are identified presented in the schema below. It was adapted from the IPO model.

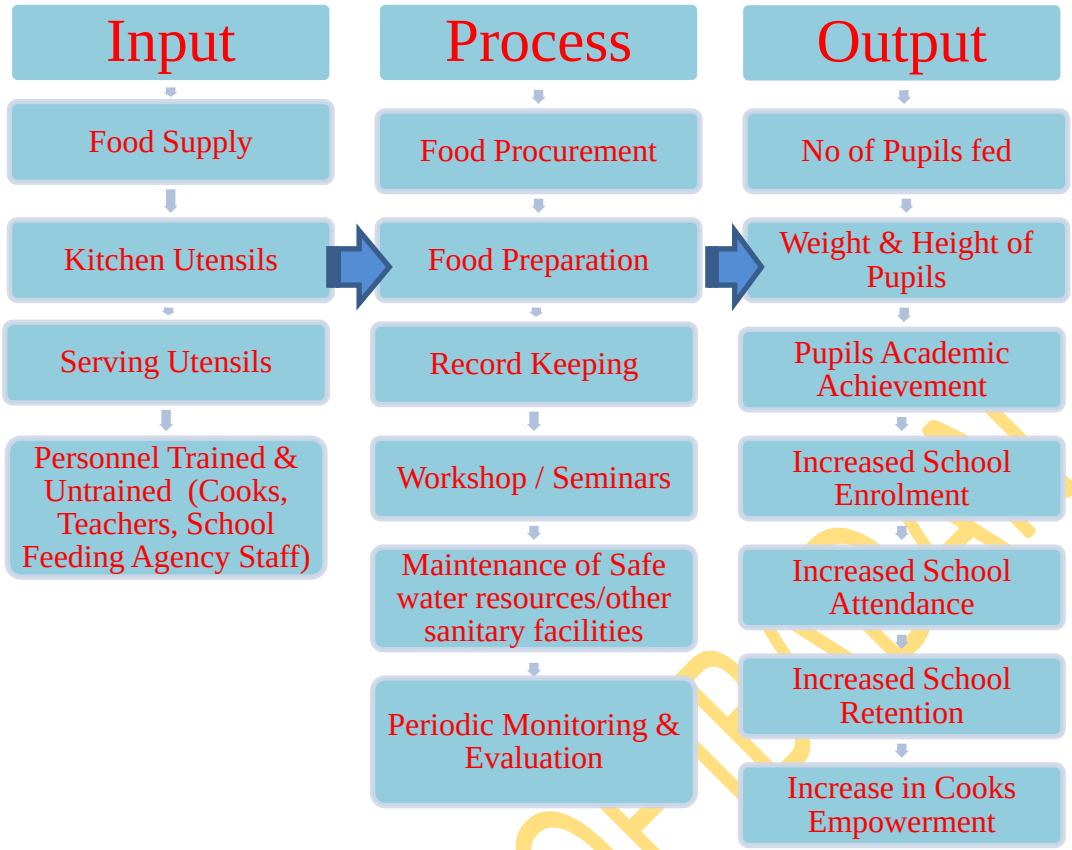

Fig. 2.1: Conceptual framework

Source: Adapted by the Author from Input-Process-Output (IPO) model of Evaluation

Fig.2.1 presents the conceptual framework and shows the possible linkages between the input, process and output involved in the school feeding programme under this evaluation.

The inputs include resources and variables available to the system and are a function of human and material resources invested in the school feeding programme.

The process is the way by which the resources are used to implement the programme. This includes methods, strategies and actions taken during programme implementation.

The output is the interaction of the input and process components. These are outcomes and expectations of the school feeding programme.

2.16 Appraisal of the literature reviewed

Evaluation has been defined by various authors (Scriven, 1991; Wholey, 2009; Worthens and Rogers 1999, Stufflebeam 2001). There are many models of evaluation Rose and Nyre (1977) note that models of evaluation exist in large number. Among the models are Antecedent Transaction and Outcome, also known as Countenance model; Goal-free; CIPP; Medical model; Input Process and Output and so on. Many authors have suggested that most

suitable model should be used to provide a feedback for programme designers, implementers and other relevant stakeholders (Scriven, 1991; Payne 1994; Patton, 1997; Brickmayer and Weiss 2003). Project evaluations assess how well a programme has worked in terms of its stated goals. Methods of evaluation range from individual reviews of performance to statewide assessments. The evaluation models reviewed exposed the one that is most relevant to this study, hence, IPO evaluation model has been chosen.

Most of the previous works reviewed used randomized assignment of subjects in their evaluations. They viewed governance programmes, which usually take the form of welfare interventions as being not feasible for evaluation. This is because most of these interventions are usually without baseline data, thus making the evaluation difficult and seems to would-be researcher as a no-go area.

Furthermore, random assignment or a control group facilitates attempt to generalize to a large population, especially in impact evaluation. But when this is not possible single differences could be used. For example, propensity score matching, as well as baseline reconstruction by creating a comparison group having similar characteristics with the intervention group, are option for compensating for lack of baseline data.

The perspectives of programme participants, programme staff, and other stakeholders are often captured through interviews, surveys, and/or observations conducted by a programme evaluator (Pattason, 2002). Mechanisms for gathering information about a programme's quality include close-ended survey questions, such as those that ask participants to rate their level of satisfaction with the services and information provided. More powerful evidence is often generated when survey participants are asked to rate the degree to which they have gained new skills or information, or changed their behaviour as a result of their involvement in the programme. Likert scales are commonly used to elicit numerical ratings from survey respondents about the quality of a programme. All these are issues which this present study considered in its data collection procedure.

2.17 Gaps in the Existing Literature

There has been extensive research on the link between feeding in schools, enrolment and attendance of pupils. However, most of the earlier studies have not concentrated on the impact of school feeding programme on the different outcomes of pupils, parents, other stakeholders and the cooks' financial empowerment. Most of these studies still leave many questions unanswered. A good number of them did not involve rigorous evaluation especially when it lacks baseline data. This study took cognisance of these gaps and focused attention

on these areas. It adopted non-equivalent posttest only control group design, a type of quasi-experimental design. The Input-Process-Output (IPO) model of evaluation was used in this study, since it is the most appropriate to the concept of evaluation. IPO, identifies critical elements of inputs (reflects the potential for productivity), process (performance, the extent to which execution takes place) and output (accomplishment of the result, meeting the demand expected and effectiveness that result from interaction of inputs and process). It focuses on the outcome of the programme, since it is a summative evaluation (Onwuakpa and Anyanwu, 2013). It also suggests a linear progression of main effect, which shows influences proceeding from one category to the next.

CHAPTER THREE
METHODOLOGY

This chapter presents the procedures employed in carrying out the study. It features the following:-

- Research design
- Population of study.
- Sampling technique and sample.
- Research Instrument.
- Data collection
- Data analysis
- Methodological challenges

3.1 Research design

The study assessed the impact of school feeding on pupils' health and educational outcomes. The study adopted non-equivalent, control group, posttest-only design, a type of quasi-experimental design. With the non-equivalent, posttest-only design researcher do not have to collect baseline data but administer an outcome measure to two groups (intervention group and a comparison group) (Shadish et al. 2002). A control or comparison group is a group of pupils similar to those who receive the school feeding intervention but have not been exposed to the intervention. The purpose of a control or comparison group is to provide an estimate of what should have happened had the school feeding programme not been implemented. The control group has similar characteristics but is not randomly assigned.

Ideally, pupils would have been randomly assigned to schools, so that any identified differences in outcomes could be attributed to the school feeding programmes (Heckman and Smith, 1995). In this study, random assignment of subject to groups was not possible, because all schools within the intervention state were already participating in the school feeding programme. Intact classes were used.

Thus, this study used non-equivalent control group posttest-only design in a quasi-experimental setting. Post-test Only Control Group Design is used when:

- Sample is sufficient (≥ 30/group)
- Pre-testing is not possible
- Pretest cannot be use to assign to groups
- Baseline data are not available

Non-equivalent Control Group Posttest-Only Design

Where

Time - time points

RS - Random Selection

X - School feeding treatment that was given

0_1 - Post-test measurement for intervention group

0_2 - Post- test measurement for control group

With the non-equivalent control group posttest-only design, the researcher

- created experimental group by matching characteristics (such as pupils by age group, pocket money received from home, retrospective information on school enrolment, attendance, and retention before the School Feeding Programme (2006/2007), thus no random assignment was done
- took measurement only at final class of the intervention (Primary 2);
- measured impact as the difference between outcome indicators for the intervention and control groups;
- measured retention rates of each cohort (2006-2012) at primary 4, (two years) after the programme implementation had stopped on the cohort.

The posttest-only design was adopted for this evaluation because baseline survey was not conducted prior to programme implementation. With the two groups (intervention group and a comparison group), the researcher investigated evidences relevant to the assessment of the relative impact of the input on the output variables. Respondents in the experimental condition received free school meals. Respondents in the control group did not receive any school feeding.

3.1.1 Criteria for matching the school feeding group with non- intervention group

The following criteria were used for matching the intervention group with the control (non-intervention) group. The two states are in the south west geo-political zone. They both have:

- similar background; they were together as one state until August 27, 1991, when Osun was carved out of old Oyo State;
- government with similar political setting, meaning that they are likely to have similar political ideologies and policies;
- similar sociological background, cultural practices and outlook;
- similar historical background in terms of educational development, educational policies and educational practices.

3.1.2 Evaluation model

This research used the Input-Process-Output (IPO) model of evaluation. The inputs into the programme included human and non-human (material) resources. The process focused on the utilization of input resources while the output was the outcome of the school feeding programme.

Table 3.1: Summary of IPO Evaluation Framework for Osun School Feeding Programme

Evaluation component	Variables of Interest	Data Sources	Observation Instrument	Judgement Decisions
Input	Food supply Kitchen equipment Serving utensils (plate, cups& cutlery) Personnel (trained & untrained) • Cooks • Teachers • Agency Staff (School feeding) Water supply Energy supply Food storage facilities Toilet facilities	**Head teacher** **Cooks**	**SRI** **CEQ**	To find out where there is support for change
Process	Food procurement Food preparation Sustenance of food supply Maintenance of equipment Record keeping • Enrolment • Class attendance • Nutritional status Regular nutrition education Workshop /seminar Maintenance of safe water sources Storage and preservation of foodstuff Use of appropriate toilet facility	**Teachers** **Teachers' supervisors** **School feeding Agency Staff** **LGEA Secretaries** **Cooks**	**SFPOQ** **CEQ**	To help in fine-tuning the programme and also provide data which can be used later to interpret the impact changes
Outcome	No of pupils fed Weight & height of school children Pupils academic achievement Increase school enrolment Increase school attendance Increase school retention Parent Perception of School Feeding Programme Increase in cooks empowerment	**Pupils** **Head teacher** **Parent** **Teachers** **Teachers' supervisors** **School feeding Agency Staff** **LGEA Secretaries** **Cooks**	**SBBS** **ATN** **ATL** **SRI** **PPSFP** **SFPOQ** **CEQ**	To find out whether there is change. Measurements are taken.

3.2 Variables of the study

The following were the variables of the study:

3.2.1 Input Variable: School Feeding

3.2.2 Output Variables

1. Educational outcomes:
    a. Pupils' Enrolment
    b. Pupils' Attendance
    c. Pupils' Retention Rate
    d Pupils' Academic Achievement
2. Pupils' Nutritional Status
3. Stakeholders' perceptions
    a. Parent
    b. Teachers
    c. Cooks
    d. Local Government Education Authority (LGEA) Secretaries
    e. Teacher supervisors
    f. School Feeding Programme Agency staff

3.3 Population of study

The target population for this study was pupils in Primary 2 and Primary 4 of Osun and Oyo States public primary schools, class teachers, head teachers, parents of the pupils, School Feeding Programme Agency staff, LGEA secretaries, teachers' supervisors and cooks,

Primary 2 pupils were included in the study because they represent a group of beneficiaries of the Osun State School Feeding programme. Moreover, the pupils must have participated in the feeding programme for four years. Primary 4 was also a target population because it presents the outcome of the programme after the feeding intervention had terminated in Primary 2. Therefore, Primary 4 pupils were included in the study in order to evaluate programme impact on enrolment, attendance and retention rates after 2 years of not participating in the programme.

3.4 Sampling procedure and sample

The study used a multi-stage sampling procedure to select the sample. Purposive sampling technique was used to select Osun State being the only state that had school feeding programme in South West, Nigeria. Oyo State served as the control group, being a group

similar to the intervention group within the same zone. In Osun State, nine local government areas were selected; from the LGAs 30 primary schools were randomly selected. The selection was done from the list consisting of schools in each local government areas, which was obtained from School Feeding Agency Office. Within schools, a simple random sample of 15 pupils was selected for the study. Thus, a total of 450 pupils were selected. In the selected schools, two cooks were randomly selected where they were more than two, where sampled schools had only two cooks, both were included. The cooks are directly involved in the preparation and distribution of food to the pupils. Two primary 2 teachers (class administrator) and one head teacher (school administrator) were selected from each school. These were included in the study since they are the custodians of the pupils in the school. Within each local government area, nine LGEA secretaries and two teacher supervisors were selected for the study, because they are responsible for the supervisory activities, disbursement of food stuffs and other materials to the cooks. Furthermore, 22 agency staff members who are literate were purposively selected for the study since they are directly involved with the programme implementation, monitoring and evaluation.

In the control group, 5 LGAs were randomly selected from the list of LGAs in Oyo state, from which 15 schools were randomly selected. In each selected school, simple random sampling was used to select 30 primary 2 pupils making up 450 pupils. One head teacher was selected in each school, giving a total of 15 head teachers in the control group.

Table 3.2: Sample of the study

State	LGA	School	Pupil	Head-teacher	Class teacher	Teacher supervisor	LGEA Secretary	Parent	Agency Staff
Osun	9	30	450	30	60	18	9	450	22
Oyo	5	15	450	15	-	-	-	-	-
Total	14	45	900	45	60	18	9	450	22

3.4.1 Sample size

The sample size was calculated at a confidence level of 95% using the formula;

$$N = \frac{Z^2(P)(1-P)}{d^2}$$

Where P: Prevalence within the population which is assumed at 50%
Z: Score associated with the confidence interval (95% confidence interval was used for this study). For 95% confidence interval, Z score is 1.96.
d: Expected precision= 0.05. Thus,

$$N = \frac{1.96^2(0.5)(1-0.5)}{0.05^2}$$

$$N \approx 384.16$$

N: 10% (38.4) non-response rate, when this was added, the sample size increased to 422.

3.5 Instrumentation

Six instruments (1-6) were designed by the researcher. They are:

1. School Resources Inventory (SRI)
2. Parents Perception on School Feeding Programme (PPSFP)
3. School Feeding Programme Operators Questionnaire (SFPOQ)
4. Cook Empowerment Questionnaire (CEQ)
5. Achievement Test in Numeracy (ATN)
6. Achievement Test in Literacy (ATL).
7. Standard Balance Beam Scale (SBBS) adopted from UNICEF.

3.5.1 School Resources Inventory (SRI)

This instrument (Appendix I) was designed by the researcher and was used to collect data on human and material resources available in the schools. **Section A** consisted of 5 items which elicited information on the school. **Section B** elicited information on the facilities available in the school; school plant; classroom ventilation and other child environment-friendly variables. The respondent indicated whether **Not Available, Available But Not in Good Condition, or Available and in Good Condition.** Section C elicited information on pupils' enrolment, while section D collected information on pupils' school attendance from 2001-2012 academic sessions. The SRI was given to lecturers in the field of Educational Evaluation for face validity, and was later administered on twenty-five head teachers in Ejigbo Local Government of Osun State. A Cronbach Alpha Coefficient of (α= 0.82) was obtained.

3.5.2 Parents Perception on School Feeding Questionnaire (PPSFQ)

This instrument (Appendix II) was designed by the researcher and used to collect relevant data from the parents of the sampled primary school pupils on their perception of the school feeding programme and services. **Section A** elicted information in relation to household background, parent socio-economic background and other demographic data. It consists of 18 items. **Section B** consisted of 16 items, which were used to collect data on general disposition of parents to school feeding programme. **Section C** had eight items that solicited information on the adequacy of the activities in the school feeding programme. **Section D** elicited information on the benefits of school feeding to the pupils and parents. It had 12 items. The PPSFQ was validated by lecturers and higher degree students in the field of educational evaluation for face validity. It was pilot tested on 40 parents selected from

Ejigbo local government area of Osun State. The reliability of the instrument was carried out using Cronbach Alpha and yielded a reliability coefficient of 0.77 (α= 0.77).

3.5.3 School Feeding Programme Operators Questionnaire (SFPOQ)

This instrument (III) was designed by the researcher to collect data from programme operators (teachers, school feeding programme staff, teacher supervisors, and LGEA secretaries) on their perception of the School Feeding Programme. The operators responded freely to the items. **Section A** on personal data consisted of 10 items that solicited background information. **Section B** had 16 items, while S**ection C** had eight items**. Section D** had 16 items which sought for information on the challenges of school feeding programme in Osun State**.** The SFPOQ was given to the Programme Director and other top management staff of the School Feeding Agency for face validity. The instrument was pilot tested on 20 primary 2 teachers selected from Ejigbo local government area of Osun State. It yielded a Cronbach Alpha Coefficient of 0.74 (α=0.74).

3.5.4 Standard Balance Bean Scale (SBBS)

The SBBS was used for evaluating the impact of feeding intervention. It was used to collect data on pupil's nutritional health status. The weight and height of each child were measured using a standard balanced beam scale (SBBS) with an attached measuring rod. It was adopted from UNICEF instrument and was handled by 1 trained health worker and eleven research assistants. The weight and height of the pupils were measured and recorded on the ATN answer sheet of each pupil in spaces already indicated on the right side at the top of the paper. The weight was recorded to the nearest 0.1kg. The height was also recorded to the nearest 0.1cm.

3.5.5 Cook Empowerment Questionnaire (CEQ)

This CEQ (Appendix IV) was designed by the researcher to collect data from the cooks. It consisted of 23 items. **Section A** consisted of nine items, which were used to collect background information of the cooks. **Section B** contained nine items that elicited information on the relevant equipment and facilities provided for the school feeding programme in schools. **Section C** requested the cooks' information about their economic life. **Section D** had 3 items that were used to elicit information on perceived effects of the school feeding on the cooks' financial status. The content validity was carried out by lecturers and higher degree students in the field of educational evaluation. It was trial tested on twenty-five

cooks selected from Ejigbo local government area of Osun State. The reliability was determined using Cronbach Alpha Coefficient. The reliability of the instrument was (α= 0.82).

3.5.6 Achievement Test in Numeracy (ATN)

This instrument (Appendix V) was designed by the researcher to gather information on the numeracy level of the pupils and provided space for the recording of pupils' weight and height measurements. The ATN consisted of 10 items of simple sums. These sums were administered to test the accuracy of pupils' simple skills of addition, subtraction, multiplication and division. The ATN, which had 12 items initially constructed, was given to three primary school teachers handling primary 2 for content validity. The items were reduced to 10, meaning that 2 were discarded on the basis of their difficulty level. The items used focused on the first three levels (knowledge, comprehension and application) of cognitive domain in the categories of Bloom's taxonomy of educational objectives. The test blueprint is presented in Table 3.3.

Table 3.3: Table of Specification

Content area	Knowledge 30%	Comprehending concepts 50%	Application 20%	Total 100%
Fractions 20%	2			2
Quantitative reasoning 20%		2		2
Addition of two -1digit numbers 10%		1		1
Addition of two -2digit numbers 10%			1	1
Subtraction of 2 digits numbers10%		1		1
Addition of three -2 digit numbers 10%		1		1
Multiplication 20%	1		1	2
Total 100%	**3**	**5**	**2**	**10**

The ATN was trial-tested on 40 primary 2 pupils in Pontela, in Ogo-Oluwa Local Government area of Oyo State. The correct answers attracted 1mark each, while the incorrect answer attracted 0. Fifteen minutes was given to the pupils to respond to ATN. The reliability of the item was estimated using K-R20 after the trial testing. The ATN yielded a reliability coefficient of (r=0.84).

3.5.7 Achievement Test in Literacy (ATL)

Achievement Test in Literacy (ATL) (Appendix VI) was constructed by the researcher to collect data on literacy skills of the pupils. The test items include simple English comprehension passage to test the reading skills, vocabulary and word composition. This was given to three teachers teaching English Language in primary 2, in Ogo-Oluwa Local Government area of Oyo State. This ensured face, construct and content validity of ATL.

Table 3.4: Table of Specification for ATL

Content area	Knowledge 30%	Comprehending concepts 30%	Application 40%	Total 100%
Vocabulary 20%	2			2
Comprehension 40%	1	1	2	4
Composition 40% (writing story)		2	2	4
Total	**3**	**3**	**4**	**10**

Only 10 items were certified appropriate by 3 English teachers in primary 2. The correct answer attracted 1mark each, while the incorrect answer attracted 0. The pupils were given fifteen minutes for the test. The reliability of the ATL was estimated using K-R 20 reliability coefficient, a reliability coefficient of (r=0.78) was obtained.

3.6 Data collection procedure

The data collection was done in the following order:

1. The first week was used to obtain permission for data collection, training of the 12 research assistants, and instrument validation.
   (a) An introduction letter was obtained from the International Centre for Educational Evaluation (ICEE), to seek permission to collect information from schools. Letters were obtained from the School Feeding Agency in Osun State and Local Universal Basic Education Board (LUBEB) in Oyo State. These served as clearance that allowed the researcher to have a smooth field experience.
   (b) The researcher, with the assistance of a nutrition professional, trained the research assistants that were involved in collection of data, because some of the information collected required special skills, for example, handling of measurement of weight and height.
   (c) The research assistants consisted of one health worker who is a Masters' Degree holder in public health, one Masters Degree student in chemistry of the University of Ibadan, while the remaining ten are undergraduate students in

Guidance and Counselling, of the University of Uyo, an affiliate of Osun State College of Education, Ila- Orangun, Osun State.

(d) A trial-test of the ATN and ATL was done on 40 primary 2 pupils in Pontela, Ogo-Oluwa Local Government of Oyo State. The SRI, SFPOQ, PPSFQ and CEQ were pilot-tested in Ejigbo Local Government of Osun State by the researcher and the research assistants.

2. In Osun State, the data collection was carried out in the following order:

(a) The ATN and ATL were administered to primary 2 pupils in the sampled schools after they have been screened on the basis of the food they brought to school after eating at home or the money that was higher than ₦10.00 which they brought to schools. Those that brought food from home or money bigger than ₦10 were excluded from the study.

(b) The SBBS was used to measure the height and weight of the primary 2 pupils.

(c) The SRI was administered to the head teacher in each sampled school by the researcher. This instrument could not be collected by the research team along with other administered instruments at thge point of leaving each school. Thus, SRI was retrieved on appointments.

(d) The CEQ was administered to 2 cooks in each sampled school by the researcher and the research assistants.

(f) Lastly, PPSFQ was administered to parents of the pupils in primary 2 by the researcher and the research assistants, at Parent-Teachers Association (PTA) meetings which took place in some schools arranged by the head teachers on the request of the researcher. It was aided by the letters obtained from ICEE, and the School Feeding Agency ('O' meals).

3. The data collection in Oyo State (the non-intervention group) was done in the following order:

(a) The ATN and ATL were administered to primary 2 pupils in the sampled schools by the researcher and the research assistants.

(b) The SBBS was used to measure the height and weight of the primary 2 pupils.

(c) The SRI was administered to the head teacher in each sampled school by the researcher. The SRI was retrieved on appointments since it required going into records that were not readily available on the head teacher's desks. It, however, recorded 100% retrieval, stamped and signed by the head teacher.

3.7 Scoring of Instrument

3.7.1 SRI: Item The researcher scored the instrument thus: 3 to 1 were awarded to available and in good condition, available but not in good condition, not available respectively. Each item was taken at a time. Section C: Each data set for the classes was sum up together as gross enrolment, attendance and retention for the sessions.

3.7.2 PPSFPQ: Items were taking one by one for analysis. Section B: each item was scored on a 4 - point Likert scale ranging from 1–4 for negative statement of Strongly Agree, Agree, Disagree, Strongly Disagree respectively. For positive statement the scores were reversed. The score for section C: 1 to 5 are (very satisfactory), (satisfactory) (undecided) (unsatisfactory) (very satisfactory).

3.7.3 SFPOQ: Scores of each items was taken one by one for analysis. Section B: each item was scored on a 4 - point Likert scale ranging from 1 – 4 for negative statement of Strongly Agree, Agree, Disagree, Strongly Disagree respectively. For positive statement the scores were reversed. The score for section C: 1 to 5 (Very satisfactory); (satisfactory); (undecided); (unsatisfactory); (very satisfactory).

3.7.4 ATN and ATL: Each correct item response on this instrument was awarded a score of 1, while 0 was awarded for each negative response. The maximum score was 10, while the minimum scores was zero.

3.8 Data Analysis

The data collected were analysed using percentages, cross tabulation analysis, line graphs, t-test of independent means, WHO Anthroplus software and chi-square. The summary of data analysis for the study is presented in Table 3.5

Table 3.5 Summary of data analysis procedure

S/N	Research Questions	Instrument	Respondent / Data Source	Method of Data Analysis
1.	What is the trend of School Feeding Programme pupils enrolment; attendance and retention rate since programme inception?	SRI	Head-teachers	Descriptive, frequencies line graphs, & percentages
2.	What is the difference between the intervention schools' pupils and non-intervention pupils on the programme outcome indicator - enrolment - attendance - retention rate in pry 4 - Nutrition status	SRI SBBS	Head teachers Pupils	Descriptive, t-test, chi-square WHO Anthroplus software
3. .	Is there any difference in the (i) academic achievement of intervention and non-intervention schools (ii) Child environment friendliness of the intervention and non-intervention	ATN ATL SRI	Pupils in primary 2 Pupils in primary 2 Head teachers	t-test chi-square
4.	Is there any difference in the girls' and boys' i. Enrolment ii. Attendance and iii. Retention rate, iv. Nutrition status of pupils in intervention and non-intervention schools.	SRI SBBS	Pupils Head teachers	t-test chi-square WHO Anthroplus software
5.	How do stakeholders (head teachers, teachers, parents and agency staff perceive SFP in Osun State primary schools	SFPOQ PPSFPQ	Teachers Teachers' Supervisors SFP Agency Staff LGEA Secretaries Parents	Percentages
6.	Does the school feeding programme impact the financial empowerment of the cooks?	CEQ	Cooks	t-test frequency counts and percentages
7.	What are the areas of challenges in the implementation of the programme	SFPOQ	Teachers Teachers' Supervisors SFP Agency Staff LGEA Secretaries	Frequency counts & Percentages

3.8 Methodological challenges

The design of the present study, offers several challenges to the identification of a suitable counterfactual. First, political and logistical circumstances dictated that school feeding formats (intervention and non-intervention) can only be done at the state level. Second, the control state (receiving no intervention) had to be selected from a neighbouring state with similar characteristics, as all other local government areas in the intervention state were already participating in school feeding.

Since the school feeding intervention in Osun State has full coverage, it poses challenges for evaluation. Evaluating a programme that covers the entire population of the state is quite difficult. But, whatever the case, research is needed to answer questions on the impact of the school feeding programme. Thus, this study attempted to provide empirical evidences on the impact of school feeding programme in Osun State. It adopted quasi-experimental design since the full coverage of the programme would not allow randomization of subjects and, at the same time, there was no baseline.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the result of statistical data analysis and discussion of the findings of this study. The results are presented according to the order of research questions already stated in chapter one, while the discussions are in the order of results.

4.1 Research Question 1: What is the trend of Osun school feeding programme in terms of pupils'

(i) enrolment;

(ii) attendance and

(iii) retention, before and after the school feeding began?

(i)Trend in Enrolment

Table 4.1.1: Gross Enrolment in intervention schools before (2001/2002-2005/2006) and after (2006/2007-2011/2012) School Feeding Programme began in Osun State

Before SFP	**Gross Enrolment**							
Session	Pry 1	%	Pry 2	%	Pry 3	%	Pry 4	%
2001/2002	1,761	(21.4)	1,673	(20.7)	1,513	(19.1)	1,502	(19.3)
2002/2003	1,606	(19.5)	1,723	(21.3)	1,634	(20.7)	1,586	(20.3)
2003/2004	1,586	(19.3)	1,598	(19.7)	1,685	(21.3)	1,509	(19.3)
2004/2005	1,503	(18.3)	1,538	(19.0)	1,572	(19.9)	1,668	(21.4)
2005/2006	1,762	(21.4)	1,562	(19.3)	1,501	(19.0)	1,542	(19.8)
After SFP								
2006/2007	1,891	(15.4)	1,922	(16.1)	1,827	(16.0)	1,645	(14.8)
2007/2008	1,933	(15.7)	1,949	(16.3)	1,903	(16.6)	1,702	(15.4)
2008/2009	1,957	(15.9)	2,009	(16.8)	1,932	(16.9)	1,883	(17.0)
2009/2010	2,051	(16.7)	2,056	(17.2)	1,963	(17.1)	1,908	(17.4)
2010/2011	1,879	(16.9)	1,609	(13.5)	1,987	(17.4)	1,957	(17.7)
2011/2012	2,387	(19.4)	2,413	(20.2)	1,836	(160)	1,972	(17.8)
Enrolment Before School Feeding	8,218	(40.5)	8,094	(40.4)	7,905	(40.8)	7,807	(41.3)
Enrolment After School Feeding began	12,098	(59.5)	11,958	(59.6)	11,448	(59.2)	11,083	(58.7)
Total Enrolment	20,316	(100.0)	20,052	(100.0)	19,353	100.0)	18,890	(100.0)

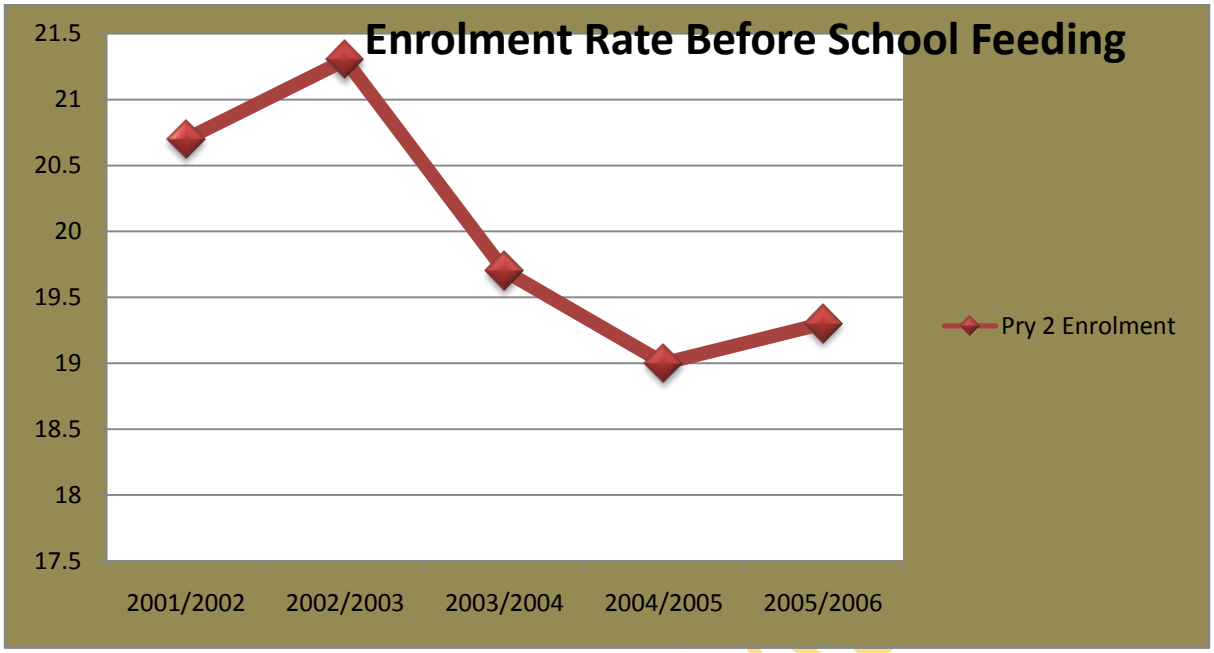

Fig. 4.1: Enrolment before the School Feeding Programme.

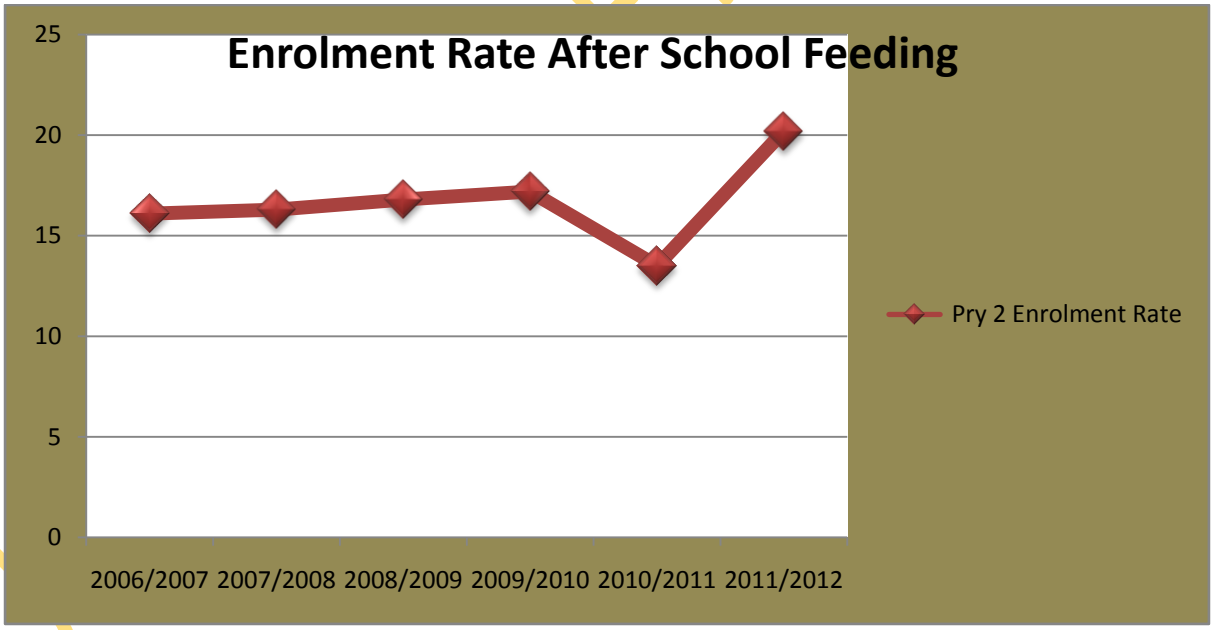

Fig. 4.2: Enrolment after the School Feeding Programme.

Table 4.1.1 presents the trend in enrolment of pupils in Osun State primary schools before (2001/2002-2005/2006) and after the School Feeding Programme started (2006/2007-2011/2012). The table shows that the trend of enrolment fluctuated before the feeding programme started (2001/2002- 2005/2006). The enrolments in primary two before the programme were 1,673 (20.7%) in 2001/2002; 1,723 (21.3%) in 2002/2003; 1,598 (19.7%) in 2003/2004; 1538 (19.0%) in 2004/2005; and 1,562 (19.3%) in 2005/2006.

Table 4.1.1 shows a steady increase in enrolment for primary 2 pupils, with 1922 (16.1%) in 2006/2007 to 1949 (16.3%) in 2007/2008; 2009 (16.8%) in 2008/2009; and 2056 (17.2%) in 2009/2010; and a decrease to 1609 (13.5%), in 2010/2011. However, enrolment jumped up to 2413 (20.2%) in 2011/2012. Table 4.1.1 also shows that the total enrolment of primary 2 pupils before the programme was 8,094 (40.4%) and after the programme started it was 11,958 (59.6%) of the total enrolment for the period of 11years (2001/2002-20011/2012). Thus, with this result, it could be inferred that there was 19.2% increase in pupils' enrolment since school feeding programme started in Osun State.

Figure 4.1 illustrates the trend of enrolment in primary 2 between 2001/2002 and 2005/2006, which represents the period before the intervention programme started in Osun State. It shows an improvement in the enrolment of primary 2 pupils since the school feeding intervention started in Osun State.

Fig 4.2 illustrates the trend of enrolment in primary 2 between 2006/2007 and 2011/2012, which represents the period after the intervention programme started in Osun State. For primary 2 pupils, a steady increase in enrolment can be observed, from with enrolments of 1922 (16.1%) in 2006/2007 to 1949 (16.3%) in 2007/2008; 2009 (16.8%) in 2008/2009; and 2056 (17.2%) in 2009/2010; and a decrease to 1609 (13.5%), in 2010/2011. However, enrolment jumped up to 2413 (20.2%) in 2011/2012. The trend in enrolment, as presented in the table and also illustrated in Figure 4.1and 4.2 shows an improvement in the enrolment of primary 2 pupils since the school feeding intervention started in Osun State. The table also shows that the total enrolment of primary 2 pupils before the programme was 8,094 (40.4%) and after the programme started it was 11,958 (59.6%) of the total enrolment for the period of 11years (2001/2002-20011/2012). Thus, with this result, it could be inferred that there was 19.2% increase in pupils enrolment since school feeding programme started in Osun State.

(ii) Trend in Attendance

Table 4.1.2a: The trend of attendance in Osun State primary schools before School Feeding began

Session	Pry1 (%)	Pry2 (%)	Pry3 (%)	Pry4 (%)
2001/2002	67.3	77.4	67.6	70.2
2002/2003	73.3	67.6	79.4	78.9
2003/2004	72.8	83.6	70.9	71.5
2004/2005	70.0	80.0	67.8	64.0
2005/2006	72.8	71.6	72.1	75.4
Average attendance before SFP		**76.0**		

Table 4.1.2b: The trend of attendance in Osun State primary schools After School Feeding

Session	Pry1 (%)	Pry2 (%)	Pry3 (%)	Pry4 (%)
2006/2007	78.3	67.6	75.3	72.8
2007/2008	79.3	84.1	76.3	75.8
2008/2009	79.4	87.3	79.2	79.8
2009/2010	88.6	88.1	88.9	85.4
2010/2011	89.1	87.2	88.2	89.1
2011/2012	89.2	96.8	90.9	89.7
Average attendance after SFP		**85.2**		

Tables 4.1.2a and 4.1.2b shows the trend of attendance of the Osun State primary school pupils before the programme (2001/2002 - 2005/2006) and after the programme (2006/2007-2011/2012). Figures 4.3 and 4.4 illustrate the attendance rates of primary 2 pupils. It could be seen from the statistics of attendance presented in percentages in Table 4.1.2 that between 2001/2002 and 2005/2006, the mean attendance rate was 76.0% for primary 2, while the mean attendance rate during the period of intervention (2006/2007 and 2011/2012) was 85.2%. Thus, the attendance rate in the intervention period was much higher than the periods before intervention. In primary two the mean attendance rate was raised by 9.2% between 2006 and 2012.

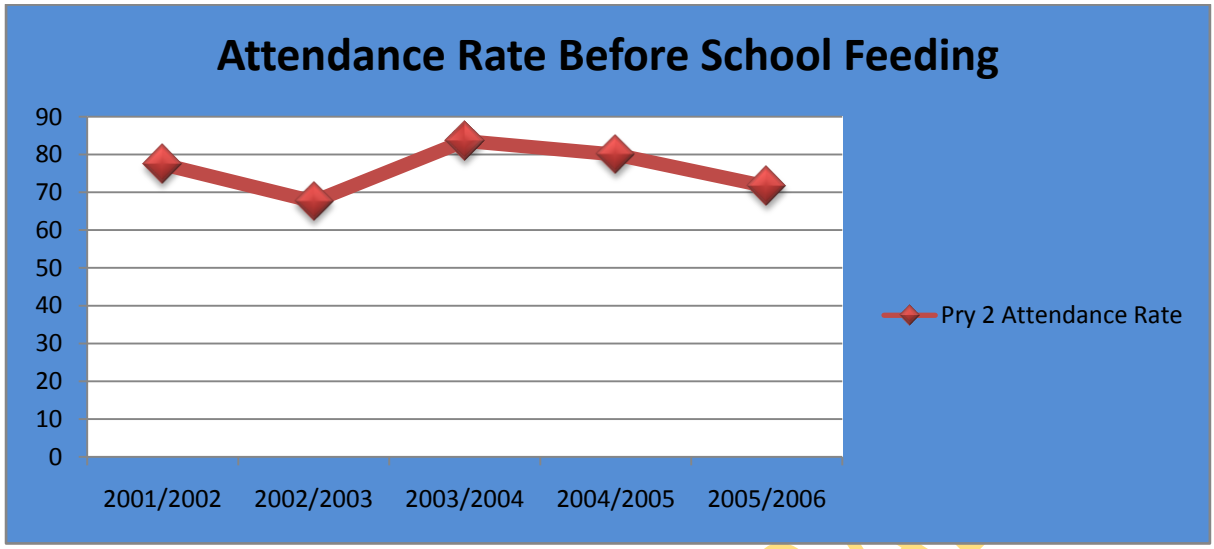

Fig. 4.3: Attendance before the school feeding started

Fig.4.3 presents the trend in attendance of primary 2 pupils. The attendance rate of primary 2 pupils, from 2001/2002 to 2005/2006 consistently increased but at a slow rate. For instance, there were 77.4%, 67.6%, 83.6%, 80.0%, and 71.6% for 2001/2002; 2002/2003; 2003/2004; 2004/2003 and 2005/2006, respectively.

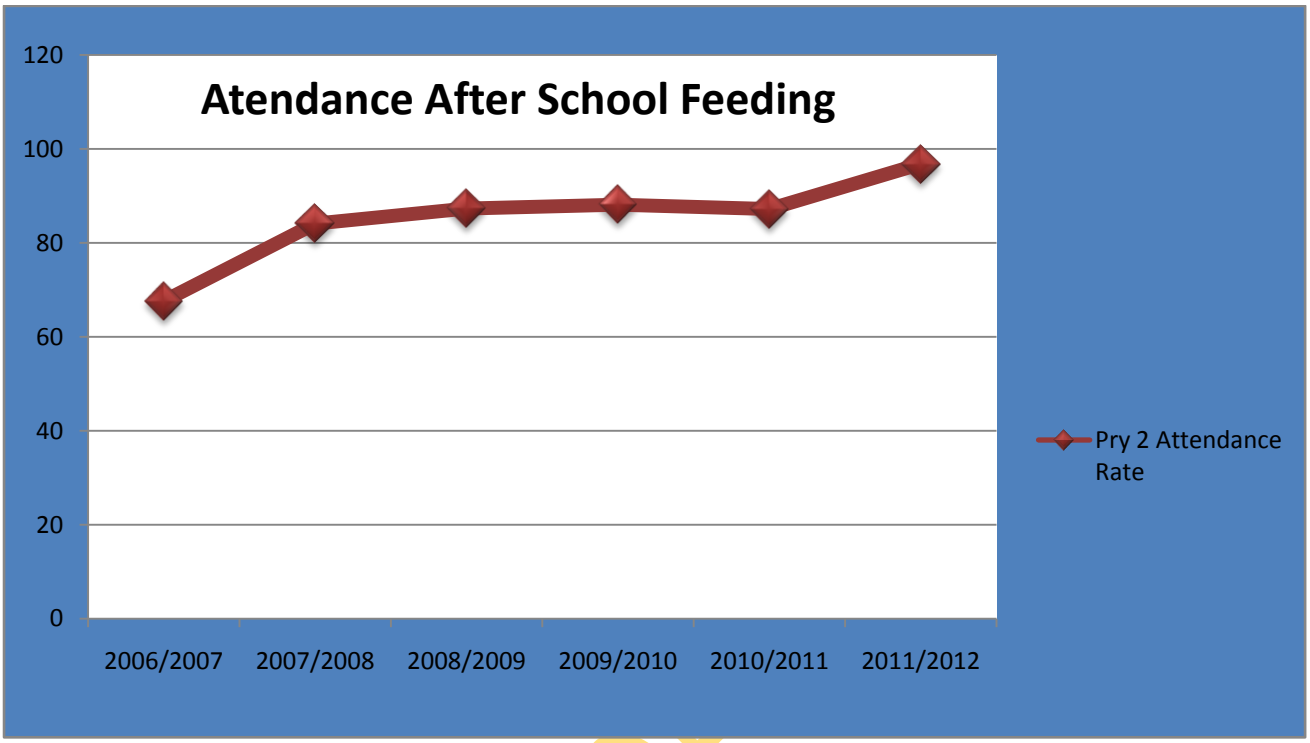

Fig. 4.4: Attendance after the school feeding started

Fig 4.4 shows that between 2006/2007 and 2011/2012, the attendance rates increased rapidly (67.6%; 84.1%; 87.3%.; 88.1%; 87.2% and 96.7%). Considering this result, there has been an average increase of 9.2% in the attendance rate since school feeding started in Osun state primary school.

(iii) Retention

Table 4.1.3: The trend of retention of pupils in primary 4 before the feeding programme began (2001/2002-2005/2006)

Cohort	Primary 2	Primary 4	Retention Rate at Primary 4
2001/2002	1,673	---	---
2002/2003	1,723	---	---
2003/2004	1,598	1,509	90%
2004/2005	---	1,668	97%
2005/2006	---	1,542	96%
Before SFP	Average Retention rate	=	94%

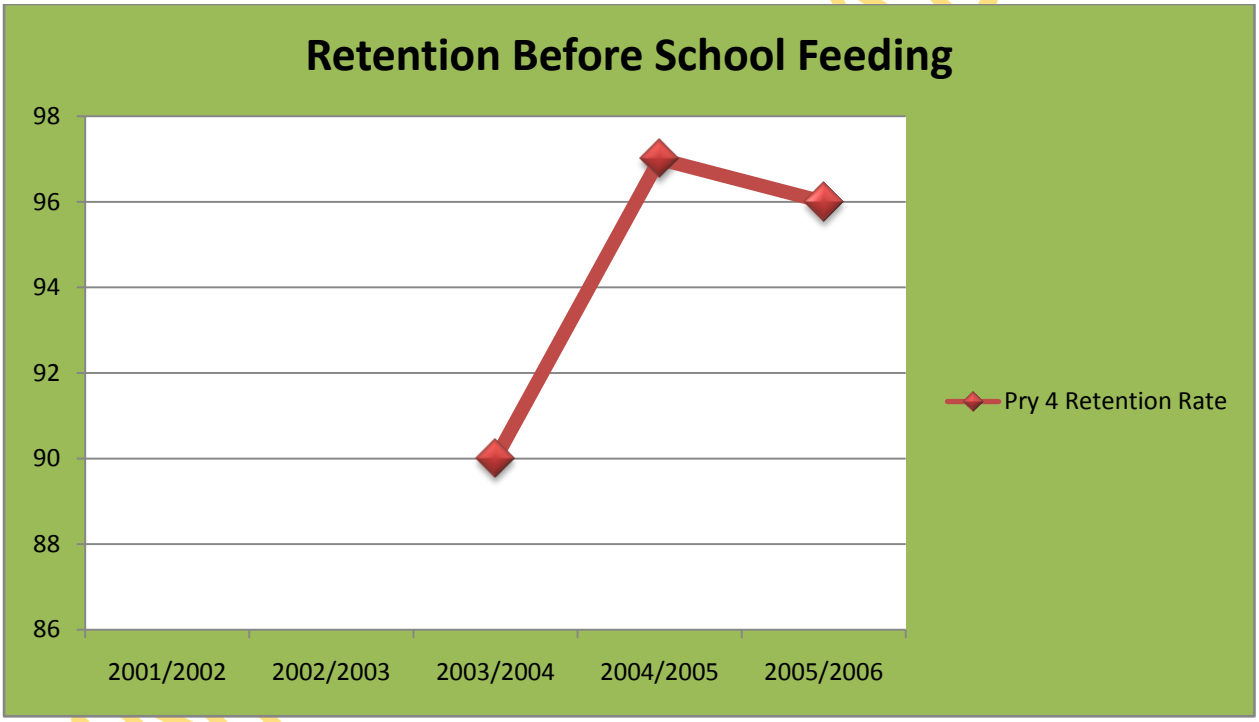

Fig. 4.5: Retention before school feeding started

Table 4.1.3 and Fig. 4.5 show the trend of retention of pupils in classes before and after the School Feeding Programme started (2001/2002-2005/2006). It shows that the average retention rate in school for 2001/2002 cohort at primary 4 in 2003/2004 was 90%; it increased to 97% for 2002/2003 cohort in 2004/2005; and there was a decrease in the average retention for 2003/2004 cohort to 96% in 2004/2005. The average retention rate in school before the school feeding started was 94%.

Table 4.1.4: The trend of retention of pupils in school after the School Feeding Programme began (2006/2007-2011/2012)

Cohort	Primary 2	Primary 4	Retention rate
2006/2007	1922		--
2007/2008	1949		--
2008/2009	2009	1883	98%
2009/2010	2056	1908	98%
2010/2011		1957	97%
2011/2012		1972	96%
After SFP		Average retention rate= 97%	

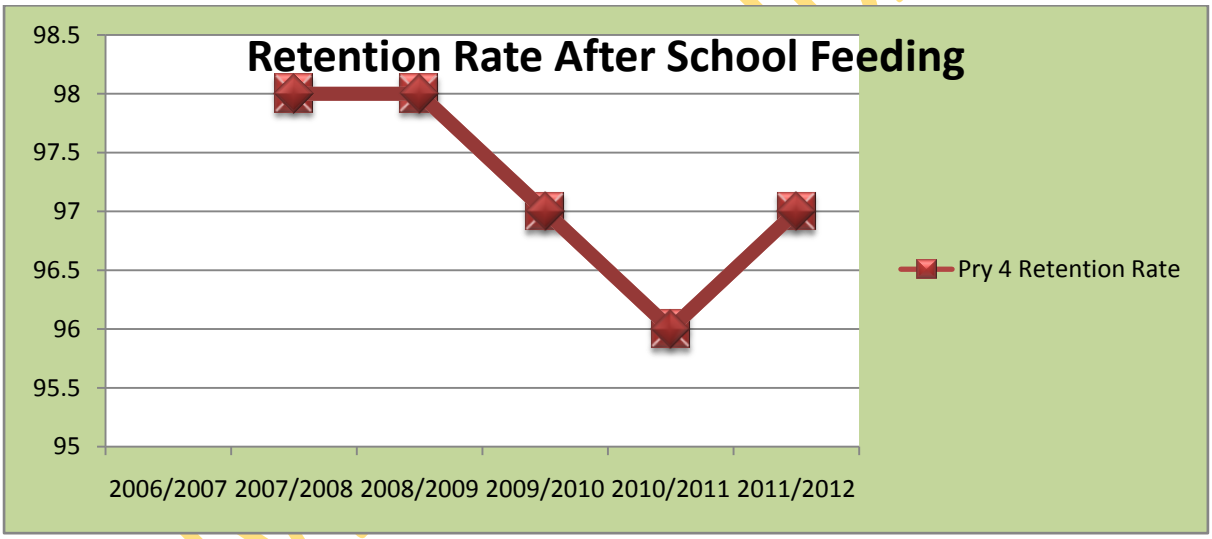

Fig. 4.6: Pupil retention after the School Feeding Programme started

Table 4.1.4 and Fig 4.6 present the trend in retention of pupils in Osun State primary schools after school feeding started. The table shows that the average retention rate in school for 2006/2007 cohort at primary 4 in 2008/2009 was 98%; for 2007/2008 cohort in 2009/2010 it was 98%; a decrease in the average retention for 2008/2009 cohort to 97% in 2010/2011; and for 2009/2010 cohort in 2011/2012 it was 96%. The average retention rate in school after the School Feeding Programme started was 97%. Thus after School Feeding Programme retention of pupils in primary 4 increased by 3%. Fig. 4.6 illustrates this trend.

Discussion

4.1.1 The trend of enrolment before and after the school feeding began in Osun State.

The assessment of the trend of Osun School Feeding Programme reveals that enrolment increased consistently since the introduction of the feeding programme in 2006/2007 in primary schools, especially in primary 2 up till 2009/2010. It was observed that in 2010/2011 there was a fall in the average enrolment by 4.4% (Table.4.1.1). This might not be unconnected with the change of government and the consequent interruption of the programme for about two months. In 2011/2012 session, the enrolment rose again by 17.7%. It seems that the enrolment status is responding to the school feeding programme.

In May 2012, the programme was extended to cover primary 1 to 3. Thus, there was a rise in the primary three enrolments by 2.7%, compared to the 2010/2011 statistics. By analysing the trends in the average enrolment, a useful insight has been provided on the difference the school feeding intervention has made to improve access to education in Osun State. This finding concurs with earlier findings of Moore (1994) on Burkina Faso's school feeding programme, that school canteens were associated with increased school enrolment. Also, this current finding corroborates earlier findings of WFP (2009) that after school feeding started there was surge in school enrolment in sub-Saharan Africa up to about 46%. Although an increase in the school enrolment may not be solely due to the school feeding programme, other factors could jointly explain an increase in the enrolment. For example, a change of mind or a rethink to send children to public primary school, like the Pakistan programme that gave conditional Take Home Ration of oil to the pupils. Ahmed and Arend (2003) found that the programmme changed the way parents think and act before the programme started and they started sending their children to school.

Earlier findings by Polittt (1996), Jacoby, et al. (1998), Ahmed (2004), Gelli (2007), Neumen (2007) and Walingo, (2008) that school feeding increased school enrolment, particularly where initial rates of participation were low, also supporting the finding of this study, Ahmed (2004) discovered that owing to the educational investment on school feeding, over 90% of the children eventually enrolled in school. Walingo (2008) also notes that different studies have shown an increase in both gross and average primary school enrolments since the School Feeding Programme started. There is difference in the trend of enrolment before and after the programme (school feeding); as the awareness of the programme grew, the enrolment became higher. Moreover, the revelation that there was a decrease in the prevalence rate of the nutrition related diseases, like anaemia and diarrhoea

which was noticeable between 2007 and 2010 in Osun State hospitals records (Osun State Hospital Management Board, 2011) may not be unrelated with the increase in the enrolment. The study found, however, that parents who are highly involved in school activities have a better relationship with their child's teacher and a more positive opinion of the child's school than parents who are less involved.

4.1.2 The trend of attendance before and after the School Feeding Programme began in Osun State.

This study shows that there was a substantial increase in the attendance of pupils in Osun State primary schools since the school feeding intervention started. A critical assessment done on the attendance statistics showed that the pupils' attendance has continued to grow since the programme started in 2006/2007 academic session. This finding agrees with the earlier findings of Meyers et al. (1989), Moore (1994), Bergeron and DelRosso (2001), Ahmed (2004), Gelli (2006) and Kristjansson et al. (2007) found that, in Niger Republic, when school canteen were closed, high absenteeism followed and children were withdrawn from school. The revelation that there was a decrease in the prevalence rate of the nutrition related diseases, like anaemia and diarrhoea which was noticeable between 2007 and 2010 in Osun State hospitals records (Osun State Hospital Management Board, 2011) may not be unrelated with the increase in the attendance in schools, since this period coincided with the time the School Feeding Programme was introduced in the state. The programme might have contributed to health improvement that resulted into increase in the school attendance, though there may be other factors, like improved health facilities, and improved socio-economic status of the parents and others.

4.1.3 The trend in pupils' retention before and after the school feeding began in Osun State

Analysis of the school records showed significant changes in pupils' retention in Osun State. The study found that, before school feeding began, the average retention rate in primary four was 94%, and after school feeding started, it was 97%. This revealed that there was improvement. Retention is one of the outcome indicators for reporting the impact of school feeding programmes. It is expected that the pupils' retention in school after the programme would increase considerably at primary 4. The retention of pupils in Osun State primary schools showed increase at primary 4, only that the increase was not consistent. It was observed that, immediately each cohort left primary 2, there were decrease in retention.

This study found that the trend of pupils' retention was not encouraging after primary two. Although the 3% gained since school feeding programme started was an improvement, considering the expectation of 100% target in the retention rate at primary four one could conclude that it is still far. This finding agrees with Ahmed (2004) who claims that Bangladesh's school feeding programme's evaluation showed that there is probability of dropping-out rate reducing by 7.5 percent. By implication, the retention of the pupils in school was speculated. In this study, although a positive effect of the School Feeding Programme has been felt minimally in post-feeding classes it has presented a good progress in the feeding classes especially at primary 2. However, a number of factors can be responsible for pupils low retention rates in schools, such as transfer or change of location of parents. It may also be due to pupils repeating a class because of inability to cope well in class.

4.2 Research Question 2: What is the difference with or without intervention in relation to pupils'

(i) enrolment;
(ii) attendance;
(iii) retention in the post-feeding classes (Pry. 4) and
(iv) nutrition Status (weight & height)?

(i) Enrolment

Table 4.2.1: **The Gross Enrolment in Osun and Oyo State primary schools 2001-2012**

Session	Pry 1		Pry 2		Pry 3		Pry 4	
	Osun (%)	Oyo (%)	Osun (%)	Oyo (%)	Osun (%)	Oyo (%)	Osun (%)	Oyo (%)
2001/2002	1,761 (21.4)	551 (17.3)	1,673 (20.7)	634 (17.6)	1,513 (19.1)	634 (18.5)	1,502 19.3)	550 (18.7)
2002/2003	1,606 (19.5)	612 (19.3)	1,723 (21.3)	765 (21.2)	1,634 (20.7)	684 (20.0)	1,586 20.3)	539 (18.4)
2003/2004	1,586 (19.3)	637 (29.1)	1,598 (19.7)	752 (20.8)	1,685 (21.3)	697 (20.4)	1,509 19.3)	587 (20.0)
2004/2005	1,503 (18.3)	696 (21)	1,538 (19.0)	782 (21.7)	1,572 (19.9)	689 (20.2)	1,668 21.4)	606 (20.7)
2005/2006	1,762 (21.4)	680 (21.4)	1,562 (19.3)	679 (18.7)	1,501 (19.0)	713 (20.9)	1,542 19.8)	652 (22.2)
Average Enrolment Before SFP	1643	635.2	1618	722.4	1581	683.4	1561.4	586.8
Total Enrolment	8218	3176	8,094	3612	7905	3417	7807	2934
2006/2007	1,891 (15.4)	704 (18.3)	1,922 (16.1)	676 (16.8)	1,827 (16.0)	719 (19.0)	1,645 (14.8)	677 (18.2)
2007/2008	1,933 (15.7)	698 (18.2)	1,949 (16.3)	744 (18.5)	1,903 (16.6)	651 (17.2)	1,702 15.4)	642 (17.3)
2008/2009	1,957 (15.9)	630 (16.4)	2,009 (16.8)	661 (16.5)	1,932 (16.9)	630 (16.7)	1,883 (17.0)	629 (16.9)
2009/2010	2,051 (16.7)	578 (15.1)	2,056 (17.2)	644 (16.0)	1,963 (17.1)	588 (15.5)	1,908 (17.4)	574 (15.4)
2010/2011	1,879 (16.9)	586 (15.3)	1,609 (13.5)	622 (15.5)	1,987 (17.4)	565 (14.9)	1,957 (17.7)	582 (15.6)
2011/2012	2,387 (19.4)	641 (16.7)	2,413 (20.2)	668 (16.6)	1,836 (16.0)	630 (16.7)	1,972 (17.8)	616 (16.5)
Average Enrolment	2049	639.5	1993	669.3	1908	630.5	1847.2	620.0
Total Enrolment after SFP	12298	3837	11958	4016	11448	3783	11083	3720

Table 4.2.1 present the trend in enrolment in Osun and Oyo States. The average enrolment in Osun State for primary two before the School Feeding Programme was 1618 and after the feeding started was increased to 1993. In Oyo State the average enrolment within those years were 722.4 and 669.3 in primary two. There was improvement in the enrolment of primary 2 pupils since the school feeding intervention started in Osun State while the average enrolment dropped in Oyo State. The table also shows that the average enrolment of primary 2 pupils before the programme in Osun State was 1618 (44.8%) and after the programme started it was 1,993 (55.2%), for Oyo State average enrolment was 722.4 (51.9%) before the SFP and 669.3 (48.1%) for the period of 11years (2001/2002-20011/2012). Thus, with this result, it could be inferred that there was increase of 10.4% in Osun and a decrease of 3.8% in Oyo State.

Table 4.2.2: Comparison of pupils' enrolment in pry 2 for schools with intervention and schools without intervention before school feeding started (2001/2002-2005/2006)

Variable	Group	N	Mean	Standard Deviation	Standard Error Mean	t-test for equality of means.			
						t	df	Sig (2tailed)	Mean Difference
Enrolment Before the programme	With Intervention	30	269.8	±106.3	19.4	.696	43	.490	29.0
	Without intervention	15	240.8	±173.1	44.7				

Tables' 4.2.1 and 4.2.2 presents the comparison of pupils' enrolment with and without intervention before and after school feeding started. The mean scores of 269.8 for the schools with intervention and 240.8 for the schools without intervention before the school feeding programme started was not statistically significant. This result shows that the schools with intervention and those without intervention were not statistically different in enrolments during the period before the School Feeding Programme started. The result shows that $t_{(43)} = .696$ $p>0.05$. Therefore, there was no significant difference in enrolments between the schools with and those without intervention in the period before intervention.

Table 4.2.3: Comparison of pupils' enrolment for schools with intervention and schools without intervention in primary 2 after the school feeding started (2006/2007-2011/2012)

Variable	Group	N	Mean	SD	Std Error Mean	t-test for equality of means.			
						t	df	Sig (2tailed)	Mean Diff
Enrolment After the Programme started	With Intervention	30	398.60	±189.48	34.59	2.41	43	.020	130.87
	Without intervention	15	267.73	±125.05	32.28				

Table 4.2.3 shows comparison of pupils' enrolment with and without intervention in primary 2 after the school feeding started. The mean score of 398.60 for the group with intervention and 267.73 for the group without intervention shows that the pupils' enrolments were higher in the group with intervention than the group without intervention between 2006 and 2012, which is statistically significant. The result shows that $t_{(43)} = 2.41$ $p<0.05$. This result implies that there was significant difference in enrolments between the two groups and that enrolment was higher in schools with intervention than schools without intervention.

(ii) Attendance

Table 4.2.4: The attendance rate in Osun and Oyo State primary schools, 2001-2012

	Pry1 (%)		Pry2 (%)		Pry3 (%)		Pry4 (%)	
Session	Osun	Oyo	Osun	Oyo	Osun	Oyo	Osun	Oyo
2001/2002	67.34	75.4	77.40	79.2	67.6	83.1	66.2	80.7
2002/2003	73.29	76.5	67.61	84.4	79.4	81.2	78.9	81.2
2003/2004	72.8	79.2	83.62	68.5	70.95	78.3	66.5	87.2
2004/2005	70.0	80.5	80.03	79.4	67.8	84.1	64.0	81.5
2005/2006	72.8	77.9	71.60	74.8	72.1	82.9	75.4	80.5
2006/2007	78.3	82.6	67.64	78.83	75.3	77.5	72.8	77.4
2007/2008	79.3	80.6	84.14	74.2	76.31	79.2	75.78	85.1
2008/2009	79.4	81.3	87.33	82.41	79.24	80.4	79.8	78.5
2009/2010	88.6	79.5	88.14	67.4	88.9	80.3	85.4	76.4
2010/2011	89.1	88.2	87.24	93.3	88.17	82.32	89.11	87.6
2011/2012	89.2	82.5	96.77	75.6	90.9	87.5	89.7	85.3

Table 4.2.5: Comparison of pupils' attendance in primary 2 for schools with intervention and schools without intervention before school feeding programme started (2001/2002-2005/2006)

Variables	Group	N	Mean	SD	Standard Error Mean	t- test for equality of means.			
						t	df	Sig (2tailed)	Mean Diff
Attendance before the Programme	With Intervention	30	76.05	±5.05	.92	-.762	43	.450	-1.206
	Without intervention	15	77.26	±4.78	1.23				

Table 4.2.5 shows analysis of pupils' attendance rate in schools with intervention and schools without intervention between 2001/2002 and 2005/2006. The mean attendance of 76.05% for the schools with intervention and 77.26% for the schools without intervention was not statistically significant. The result shows that $t_{(43)} = -.762$ $p>0.05$. There was no significant difference in the attendance rate of schools with intervention and schools without intervention before the feeding programme started (2001/2002 - 2005/2006).

Table 4.2.6: Comparison of pupils' attendance in primary 2 with and without intervention after school feeding started (2006/2007-2011/2012)

Variables	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means.			
						t	df	Sig (2tailed)	Mean Diff
Attendance	With Intervention	30	85.21	±6.32	1.15	2.909	43	.006	6.59
	Without intervention	15	78.62	±8.63	2.22				

Table 4.2.6 shows comparison of pupils' enrolment with and without intervention in primary 2. The comparison of records of attendance of the schools with and without the feeding programme substantiates the difference; while the schools with intervention had mean = 85.21%, in the period after the programme started, it was mean =78.62% in the case of schools without intervention, which is statistically significant $t_{(43)} = 2.909$ $p<0.05$. Therefore, there was substantial increase in the attendance rate of schools with intervention than the schools without intervention between 2006/2007 and 2011/2012.

(iii) Retention

Table 4.2.7: Comparison of pupils' retention rates in primary 4 for the schools with intervention and the schools without intervention 2001/2002-2005/2006

State	**Osun**			**Oyo**		
Cohort	Primary 2	Primary 4	Retention Rate %	Primary 2	Primary 4	Retention Rate %
2001/2002	1673	---	---	634	---	---
2002/2003	1723	---	---	765	---	---
2003/2004	1598	1509	90%	752	587	93%
2004/2005	---	1668	97%	---	606	79%
2005/2006	---	1542	96%	---	653	87%
Average retention rate =			94%			86%

Table 4.2.7 shows the comparison of pupils' retention rates in primary 4 for the schools with intervention and the schools without intervention between 2001/2002 and 2005/2006. The result shows that, at primary four, the average retention rate for the schools with intervention was 94%, while the schools without intervention had 86%. This result shows that the schools with intervention had a higher retention rate in primary four than the schools without intervention in the period before school feeding programme.

Table 4.2.8: Comparison of pupils' retention rates in primary 4 for the schools with intervention and schools without intervention between 2006/2007 and 2011/2012

State	Osun			Oyo		
Cohort	Primary 2	Primary 4	Retention Rate	Primary 2	Primary 4	Retention Rate
2006/2007	1922	---	---	676	---	---
2007/2008	1949	---	---	744	---	---
2008/2009	2009	1883	98%	661	629	93%
2009/2010	2056	1908	98%	644	574	77%
2010/2011	---	1957	97%	---	582	88
2011/2012	---	1972	96%	---	616	95
		Average retention rate= 97%				= 88%

Table 4.2.8 indicates the result of analysis of pupils' retention rates in primary 4 for the schools with intervention and the schools without intervention before the programme (2006/2007-2011/2012). The result shows that, in schools with intervention the average retention ratefor the period school feeding started was 97%, while it was 88% for the schools without intervention. This result implies that schools with intervention had a higher retention rates than schools without intervention in primary four since the school feeding programme started. Therefore, there was significant difference in the retention rates of pupils in group with intervention and group without intervention.

(iv) Nutrition Status

Table 4.2.9: Comparison of pupils' nutrition status in the schools with intervention and schools without intervention

Variables	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means.			
						t	df	Sig (2 tailed)	Mean Diff
Age	With Intervention	450	7.20	± .756	.036	- 7.123	898	.000	-.402
	Without intervention	450	7.60	± .929	.044				
Height	With Intervention	450	121.66	± 9.171	.432	6.785	898	.298	.562
	Without Intervention	450	121.09	±6.856	.323				
Weight	With Intervention	450	22.14	±2.371	.112	1.042	898	.000	1.058
	Without intervention	450	21.09	±2.306	.109				

Table 4.2.9 shows comparison of pupils' nutrition status in the schools with intervention and the schools without intervention. The table captured the differences in means for age, height and weight used as indicators of a child's nutrition status. The mean age of pupils in schools with intervention was 7.20 years, while that of the pupils in schools without intervention was 7.60, which shows a mean difference of -.402, which was statistically significant $t_{(898)} = -7.123$ $p<0.05$. The difference in age was in favour of the schools with intervention. The result implies that pupils in schools with intervention were younger at the point of enrolment than those without intervention.

The mean height of the intervention group was 121.66cm, while that of the non-intervention group was 121.09cm. The difference in means of these groups was not statistically significant.

The mean weight of pupils in the group with intervention was 22.14, while that of the group without intervention was 21.09. The difference in the mean weight was statistically significant $t_{(898)} = 1.042$ $p<0.05$. It, therefore, means that the pupils in schools with intervention had better weight at a lower age than the pupils in the schools without intervention that were older in age.

Table 4.2.10a: Mean and Standard Deviation of pupils' nutritional status in the schools with intervention and schools without intervention

BMI for age	Undernourished	Normal	Mean	Std Dev.
	n (%)	n (%)	n (%)	
Schools with intervention	11 (20.0%)	439 (52.0%)	1.97	.154
Schools without intervention	44 (80.0%)	406(48.0%)	1.90	.297
Total	55 (6.1%)	845 (93.9%)		

Table 4.2.10a shows the mean and standard deviation of pupils' nutritional status in the schools with intervention and schools without intervention. Pupils in schools with intervention had the highest mean BMI for age of 1.97 and standard deviation .154, while pupils in schools without intervention had a mean BMI for age of 1.90 at .297standard deviation.

Table 4.2.10b: Comparison of BMI for age in the schools with intervention and schools without intervention

Variables	Schools	N	Mean	SD	Standard Error Mean	t-test for equality of means.			
						t	df	Sig. (2tailed)	Mean diff
BMI for Age	With intervention	450	1.97	±.154	.007	4.64	898	.000	.073
	Without Intervention	450	1.90	±.297	.014				

Table 4.2.10 shows the comparison of BMI for age in the schools with intervention and the schools without intervention. The mean BMI for age of the pupils in the schools with intervention was 1.97, while that of the pupils in schools without intervention was 1.90. The difference in the mean BMI for age was statistically significant $t_{(898)} = 4.64$ $p<0.05$. It therefore, means that the pupils in schools with intervention had higher nutritional status than the pupils in the schools without-intervention.

Table 4.2.11: Comparison of pupils' nutrition status in the schools with intervention and the schools without intervention

BMI for age	Schools with intervention N =450	Schools without intervention N =450	Total N=900	χ^2	p-value
	n (%)	n (%)	n (%)		
Undernourished	11 (20.0%)	44 (80.0%)	55 (6.1%)		
Normal	439 (52.0%)	406(48.0%)	845(93.9%)	21.089	.000*

*Statistically significant

Table 4.2.11 further shows the comparison of nutrition status of pupils in schools with intervention and schools without intervention. Prevalence of undernourished pupils was significantly higher 44(80%) among pupils in the schools without intervention, compared with those from schools with intervention, 11 (20.0%). However, pupils from schools with intervention had higher proportion of those that are normal 439(52.0%) as against schools without intervention 406(48.0%) ($p=<0.05$). Thus, the pupils from intervention schools possessed higher nutritional status than pupils from schools without intervention which was statistically significant ($\chi^2 = 21.089$ $p<0.05$).

Discussion

4.2.1 Difference in the enrolment between schools with intervention and schools without intervention

The study found that there is a huge gap in enrolments between the schools with intervention and schools without intervention. It implies that enrolment increased more in the schools with intervention than the schools without intervention. The mean enrolments in the schools with intervention almost doubled that of the schools without intervention. Thus, the school feeding programme is a means of encouraging enrolment of pupils in schools. This finding further confirmed earlier research studies (Dreze and Goel 2003; GOWB and UNICEF, 2003) which undertook comparative studies and found positive effects of meals on the school enrolment. However, the increase in mean enrolment in Osun State may not be entirely due to the school feeding programme.

4.2.2 Difference in the pupil attendance between the schools with intervention and those without intervention

There was significant improvement in the attendance of pupils in the schools with intervention, unlike in the schools without intervention. The comparison of records of attendance of the schools with and without the feeding programme substantiates the difference. This means that pupils attended school more regularly in the schools with intervention than the schools without intervention. This confirmed findings of Moock and Leslie (1986), Meyers (1989), Jamision and Leslie (1990), Moore (1994), Rana et.al (2004), Ahmed (2004) WFP (2006), Gelli (2006) and Kristjansson et al. (2007). For example, Rana et al. (2004), compared attendance records of schools with and without the free feeding programme, support the difference the meal has made. While the non-midday meal schools had 60.6%, in the month preceding the study; it was 71.9% in the case of schools with mid-day meal. A comparative analysis of the pupils' attendance records showed that the schools with intervention had a mean attendance of 85.2%, whereas the schools without intervention had 78.6%. Thus, the attendance rate of schools with intervention increased by 9.2%, while that of schools without intervention increased by 1.4% when compared with the period before feeding intervention. This implies that pupils' school attendance is higher in intervention schools than in non-intervention schools. This further corroborates Kristjansson (2007), who avers that in low income countries, children who were fed at school attended school more frequently (4 to 6 days). Regular school attendance presupposes that the child enjoys school and desires to be there as required. School attendance predicts the academic achievement of

pupils. This suggests that attendance in all school activities by pupils is a necessary ingredient for success in academics.

4.2.3: Difference in the nutrition status of pupils in the schools with intervention and schools without intervention

This study found that there was a significant difference in the nutritional status of the pupils in schools with intervention and those schools without intervention. The nutritional status of the pupils was analysed using WHO anthroplus software. The software computed the BMI (w/h^2) weight (kg), height(m) of the pupils and compared with the recommended BMI for specific age bracket. The Z-score of BMI for age for each pupil was calculated and then categorized for nutritional status. The cut off for categorization was based on the WHO recommendation for nutritional status of children above 5years of chronological age. The difference in the height may not be significant, but the observed height increase favoured the schools with intervention. This finding corroborates Walingo et al. (2008) that found a significant better nutritional status for the children that participated in the SFP in a case-control study in Kenya with school children aged 10 – 12 years.

It was also found that the average height of the pupils' in the schools with intervention was more than those in the schools without intervention. The study found that pupils in the schools without intervention were older in chronological age, lower in weight and smaller in height than pupils in the schools with intervention. The pupils in the schools with intervention had lower age, more weight and higher height than the pupils in the schools without intervention. This finding showed that pupils in the schools with intervention enroled in school at early age. This agrees with earlier findings (Glewwe 2001, and Alderman, 2001). Glewwe, (2001) found that better nourished children start school earlier. This finding also corroborates earlier research findings (Glewwe and Jacoby, 1994; WFP, 2010; Afoakwa, 2011 and Buttenheim et al., 2011). The WFP (2010) avers that School Feeding Programmes (SFPs), and other school-based nutrition and health programmes, motivate parents to enrol their children in school early. Afoakwa (2011) observes that, in Ghana, malnourished children entered school at a later age and completed fewer years of school than better nourished children. Thus, pupils in the schools with intervention had better weight, better height at a lower age than their counterparts in the schools without intervention. Buttenheim, Alderman and Friedman, (2011) observed that School feeding programmes could encourage children entering school at an earlier age. The meals served in school may encourage timely school entry by changing parental perceptions about the costs and benefits of schooling for

young children around the school entry age. The availability of school meals may shift parents preferences toward sending a child perceived as too young or small to school. Thus, this may enable the child to enrol in school early in chronological age.

4.2.4 Differences in the prevalence of undernourished children in the schools with intervention and schools without intervention

Prevalence of undernourished pupils was significantly higher in the schools without intervention than in the schools with intervention. Greater proportion of the undernourished was from the group without intervention. This implied that the pupils in schools with intervention are better nourished than those without intervention. This finding corroborates World Bank, (2006), that the available evidence of SFPs seems to indicate that, it can help in improving children nutrition within a shorter time frame (between two and three years) compared to the longer horizon of other interventions such as income, food and fertility policies. The finding also agree with Hall, Hahn, Farley, Quynh, and Valdivia (2006) that found a small but significant difference in weight and height gained by children exposed to school feeding programme. Children who had a better initial anthropometric status gained more weight ($p = 0.001$) than children who were undernourished.

This finding agrees with Buttenheim, et al., (2011) that found nutritional effects of the Uganda school feeding programme of both on-site and take home rations' programmes reducing prevalence of anaemia among older girls (10-13). School feeding can improve the health condition of pupils thereby reducing malnutrition. This in turn may be effective in improving school enrolment and attendance.

4.3: Research Question 3: Is there any significant difference in the:

(i) Academic achievement of pupils' in schools with and without intervention.

(ii) Child environment friendliness of the schools with and without intervention.

(i) Academic achievement of pupils' in schools with and without intervention.

Table 4.3.1: Comparison of achievements of pupils in the schools with and the schools without intervention

Achievement	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means.			
						t	df	Sig (2-tailed)	Mean diff
ATN	With Intervention	450	5.1	±1.8	.086	5.43	898	.000	.646
	Without intervention	450	4.5	±1.7	.081				
ATL	With Intervention	450	4.3	±1.38	.065	9.69	898	.000	.846
	Without intervention	450	3.5	±1.22	.057				

Table 4.3.1 reveals the comparison of achievements of pupils in the schools with intervention and the schools without intervention. The mean score of the intervention group was 5.1, while the mean score of schools without intervention was 4.5. The difference in the scores was statistically significant $t_{(898)} = 5.43$ $p<0.05$. This shows that there was significant difference in the mean scores of intervention and non-intervention pupils in numeracy test. The mean difference was in favour of the intervention pupils.

The comparison of pupils' achievement in literacy test (ATL) shows a significant difference in the mean scores. The group with intervention had a mean score of 4.3 and the group without intervention had 3.5. The difference in scores was statistically significant $t_{(898)} = 9.69$ $p<0.05$. This result implies that the group with intervention had higher academic achievement in literacy than the group without intervention.

Table 4.3.2: Comparison of pupils' achievement in Numeracy and Literacy in schools with intervention and schools without intervention

Achievement	Schools with intervention N = 450	Schools without intervention N = 450	Total N = 900	χ^2	p-value
	n (%)	n (%)	n (%)		
ATN					
Low Achievement	170 (37.7%)	215 (47.8%)	385 (42.8%)	9.192	.002*
High Achievement	280 (62.2%)	235 (52.2%)	515 (57.2%)		
ATL					
Low Achievement	127 (33.2%)	255 (66.8%)	382 (42.4%)	74.519	.000*
High Achievement	323 (62.4%)	195 (37.6%)	518 (57.8%)		

***Statistically significant**

Table 4.3.2 also shows the comparison of achievement in ATN and ATL in the schools with intervention and the schools without intervention. As regards ATN, schools with intervention had a total of 170 (37.7%) pupils with low achievement, and 280 (62.2%) with high achievement; in schools without intervention, 215 (47.8%) had low achievement and 235 (52.2%) had high achievement in ATN. It could be observed that there is much difference in the proportion of those that had low and high achievements in the schools with intervention and the schools without intervention. The difference was about 10% on both sides in favour of schools with intervention. This proved further that schools with intervention had better academic achievement in numeracy and literacy tests than schools without intervention. The result was statistically significant ($\chi^2 = 9.192$, $p<0.05$).

(ii) Environment friendliness

Table 4.3.3: Comparison of environment friendliness of the schools with and the schools without intervention

Variables	Group	N	Mean	Standard Deviation	Standard Error Mean	t-test for equality of means			
						T	Df	sig 2 tailed	Mean Diff
Boundary Fence	With Intervention	30	1.37	.669	.122	.829	43	.412	.157
	Without Intervention	15	1.20	.561	.145				
Painted Wall	With Intervention	30	1.50	.682	.125	1.89	43	.065	-.433
	Without Intervention	15	1.93	.799	.205				
Electricity	With Intervention	30	1.07	.365	.067	2.04	43	.047	-.333
	Without Intervention	15	1.40	.737	.190				
Play ground	With Intervention	30	2.40	.563	.103	.271	43	.211	.267
	Without Intervention	15	2.13	.834	.215				
Football field	With Intervention	30	2.13	.730	.133	.309	43	.197	-.333
	Without Intervention	15	1.80	.941	.243				
Swing	With Intervention	30	1.03	.183	.033	1.26	43	.214	-.100
	Without Intervention	15	1.13	.352	.091				
Merry go round	With Intervention	30	1.10	.403	.074	2.36	43	.023	.433
	Without intervention	15	1.53	.834	.215				
Climbers	With Intervention	30	1.03	.183	.033	.501	43	.619	-.033
	Without Intervention	15	1.07	.258	.067				
Toys	With Intervention	30	1.07	.365	.067	.962	43	.342	-.133
	Without Intervention	15	1.20	.561	.146				
Charts on walls	With Intervention	30	2.27	.785	.143				
	Without Intervention	15	2.33	.816	.211	.265	43	.792	-.067
Picture/diagram on walls	With Intervention	30		.809	.148				
	Without Intervention	15	2.13	.834	.215	.387	43	.701	-.100
Covered water Container	With Intervention	30	1.87	.937	.171				
	Without Intervention	15	1.60	.910	.248	.908	43	.369	.267
Cups for Drinking water	With Intervention	30	2.17	1.020	.186				
	Without Intervention	15	1.73	.961	.248	.695	43	.491	-.200
Washing hand basin	With intervention	30	1.53	.730	.133				.200
	Without Intervention	15	1.73	.961	.248	.778	43	.441	
Toilet facilities	With Intervention	30	1.87	.817	.149	.846	43	.402	-.233
	Without Intervention	15	1.67	.976	.252				
Toilet soap	With Intervention	30	1.67	.547	.160	- .406	43	.687	-.067
	Without Intervention	15	1.73	.458	.118				
Hand towel	With Intervention	30	1.03	.183	.033	.692	43	.493	-.167
	Without Intervention	15	.60	.828	.214				
Well	With Intervention	30	1.03	.183	.033	.703	43	.486	.033
	With Intervention	15	1.100	.00	.157				
Pipe borne water	With Intervention	30	1.30	.702	.128	.480	43	.000	.100
	Without Intervention	15	1.20	.561	.145				
Borehole	With Intervention	30	.153	.860	.157			.642	-.133
	Without Intervention	15	.167	.976	.252	- .469	43		
Comfortable sitting arrangement	With Intervention	30	1.87	.819	.150				
	Without Intervention	15	1.87	.834	.215	.000	43	1.00	.000

Table 4.3.3 shows the comparison of the child friendly facilities in the schools with intervention and schools without intervention. There was significant difference in the availability of electricity in the intervention and non-intervention. The schools with-intervention had a mean of 1.07, while the schools without intervention had a mean of 1.40; this was in favour of the schools without intervention. The mean difference was statistically significant at 0.05 alpha level (t (43) = - 2.041 $p<0.05$). This implies that electricity was more available as a facility in the schools without-intervention, than the schools with intervention.

There was also significant difference in the possession of merry-go-round. The schools with intervention had a mean score of 1.10, while the schools without intervention had mean score of 1.53.The mean difference was statistically significant $t_{(43)} = - 2.365 p<0.05$. Thus, merry-go-round was available in the schools without intervention than the schools with intervention.

There was also significant difference in the availability of bore-holes in the schools with and the schools without intervention. The schools with intervention had a mean score of 1.30 while school without intervention had a mean of 1.20. The mean difference was statistically significant at 0.05 alpha level $t_{(43)} = 0.480$.

The conditions in the two groups of schools were almost the same. As for comfortable sitting arrangement, it was observed that the difference was not statistically strong. The schools without intervention possessed child friendly facilities more than the schools with intervention. As such, it is expected that the schools without intervention should be more attractive to pupils in terms of enrolment and attendance than schools with intervention.

Discussion

4.3.1 Difference in the achievement of the schools with intervention and the schools without intervention

There was significant difference in the achievement of the pupils in favour of schools with intervention in both numeracy test and literacy test. This finding is in support of earlier research in feeding intervention (Simeon, Gratham-McGregor, 1990; Pollitt, 1990). The study of Simeon et al. (1990) provided considerable evidence that children who are better nourished have more efficient cognitive function than those who are undernourished. It is, therefore, conceivable that school meals could indirectly improve cognitive function by improving the nutritional status of undernourished children. Other studies have found that elementary school

pupils from food insecure homes have significantly lower Mathematics scores and are more likely to have repeated a grade than their peers from food-secure homes (Alaimo, Olson, Frongillo, 2001; Kristjansson et al., 2007). Evidently, Kristjansson et al. (2007) asserts that children who are fed at school also did better than those in control group on mathematics achievement tests and on some tasks requiring rational psychological processing of information. It is also evident that school meals may have small physical, psychological and social benefits for disadvantaged children. Although there are other contributory factors, such as teachers' quality, facilities in the schools, psychological readiness of the pupils, personal interest, opportunity of remedial classes, and many other. Children who struggle in school with lower grades, difficult social interactions, and repeating grades are also at a much greater risk of dropping out in high school, an outcome with dramatic economic consequences.

4.3.2 Child environment friendliness in schools with intervention and schools without intervention

The findings showed that child-friendly facilities were lacking in some of the schools. Evidently, schools with intervention and schools without intervention did not possess basic facilities. This is peculiar to most Nigeria schools. Most of the schools do not possess boundary fences, painted walls, play grounds, football fields, swings, climbers, toys, charts or diagrams on walls, covered water containers, cups for drinking water, washbasins, toilet facilities, hand towels, wells, pipe-borne water, modern classrooms, comfortable seat arrangements. These tallies with the findings of Grathan-McGregor et al. (1998), that there was a significant difference in the provision of facilities by different schools. Their comparative study found that these schools differed greatly in terms of facilities and they affected educational outcomes to a large extent. Thus, there is link between the school facilities and educational outcomes. This corroborates the findings of Rosenfield et al. (1985) that school facilities are important determinants of school attainment in developing than in developed countries. Possession of facilities may add to the quality of a school. Some studies in classroom behaviour observation have also established that small differences in the possession of facilities become critically important (Rutter, 1980, Fuller, 1987; UNICEF, 2006 and Joy et al., 2010). For example, Joy et al. (2010) found that dilapidated school environment contributes to high dropout rate of learners from school. This is true, and it agrees well with the finding of this study, that the existing buildings in these schools were in a state of decay owing to lack of maintenance and repair. Moreover, UNICEF (2008)

observed that with their estimation of current enrollment in Lao PDR, most robust finding was that children in villages with schools that gained toilets between 2006 and 2008 were more likely to enrol.

The finding of Fuller (1987), that desk arrangement can affect child's classroom attainment has also been corroborated by this study. The existing facilities in terms of desk or seat arrangement in schools were not adequate, most of the available desks or seats were not in good condition even where they were available. Electricity supply was more available in the schools without intervention than the schools with intervention. Water source, like borehole, was more available in the schools with intervention. Provision of merry-go-rounds was more available in schools without intervention. School toilets were either not available or in poor condition in the schools with intervention and schools without intervention. Modern classrooms were either not available or in poor condition in the schools with intervention and schools without intervention. The result was not significant in respect of the differences in the possession of facilities in schools with intervention and schools without intervention.

The finding of Joy et al. (2010), that lack or inadequate of the necessary facilities in schools may cause absenteeism confirms this study, which found that most of the facilities (buildings) that were necessary to ensure good health condition of the children were lacking and were inadequate in the schools. This implies that pupils are susceptible to infection in an environment that is not child-friendly. This may lead to illness and may eventually lead to school absenteeism. When such happens, there may be low attendance in schools, which may invariably result into reduction in school enrolment. School quality depends on a variety of factors, including: physical infrastructure (quality of building, classrooms, playing feild), presence of teaching aids, reading and writing materials, drinking water, functioning toilet facilities, electric supply, etc. In a nutshell, the quality of the school itself may modify any benefit from school feeding.

4.4 Research Question 4: Is there any difference in the girls' and boys'

(i) enrolment;

(ii) attendance;

(iii) retention;

(iv) nutrition status and

(v) achievement in schools with intervention and schools without intervention?

(i) Enrolment

Table 4.4.1: Comparison of enrolment for boys and girls in primary 2 for schools with intervention and schools without intervention before the School Feeding Programme (2001/2002-2005/2006)

Schools	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means			
						t	df	Sig (2tailed)	Mean Diff
With Intervention	Boys	30	164.1	± 76.4	13.9	3.87	58	.000	58.5
	Girls	30	105.7	±31.8	5.8				
Without intervention	Boys	15	146.6	±77.0	19.89	2.41	28	.023	52.3
	Girls	15	94.1	±34.5	8.90				

Table 4.4.1 reveals the comparison of enrolment for the boys and the girls in schools with intervention between 2001/2002 to 2005/2006. The mean score for the boys was 164.1, while the mean score for the girls was 105.7. The mean difference was statistically significant $t_{(58)} = 3.87$ $p<0.05$. Therefore, there was significant difference in the enrolments of boys and girls for the schools with intervention. The boys had more enrolments than the girls in the schools with intervention before the school feeding programme started.

The Table also presents the comparison of enrolment for boys and girls in schools without intervention between 2001/2002 and 2005/2006. The mean enrolment for boys was 146.66, while the mean enrolment for girls was 94.13, which were statistically significant. The mean difference was statistically significant $t_{(28)} = 2.41$ $p<0.05$. Therefore, there was significant difference in the mean enrolments for the boys and the girls in schools without intervention. The mean difference in enrolment in the schools without intervention is in favour of the boys. This result indicates that there were significant differences in enrolments for the boys and the girls in schools with intervention and schools without intervention before school feeding programme started in Osun State. Thus, the two groups were barely the same in terms of enrolments for boys and girls.

Table 4.4.2: Comparison of enrolment for boys and girls in primary 2 for the schools with and schools without intervention after the School Feeding Programme started (2006/2007-2011/2012)

Variables	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means			
						t	df	Sig (2tailed)	Mean Diff
With Intervention	Boys	30	206.30	±62.67	11.44	.828	58	.411	14.00
	Girls	30	192.30	±68.12	12.43				
Without Intervention	Boys	15	154.06	±67.66	17.47	2.08	28	.046	40.40
	Girls	15	113.66	±32.50	8.39				

Table 4.4.2 presents the comparison of enrolments for the boys and the girls in primary 2 for the schools with intervention after the School Feeding Programme started (2006/2007-2011/2012). The mean enrolment for the boys was 206.30 while the mean enrolment for the girls was 192.30. The mean difference was not statistically significant at 0.05 alpha level of confidence. Therefore, there is no significant difference in the mean enrolments for boys and girls in the schools with intervention after the school feeding started. Table 4.4.2 also shows the comparison of enrolment for the boys and the girls in schools without intervention during the period between 2006/2007 and 2011/2012. The mean enrolment for the boys was 154.06, while the mean enrolment for the girls was 113.66. The mean difference was statistically significant at 0.05 alpha level $t_{(28)} = 2.08$ $p<0.05$. Therefore, there was significant difference in the mean enrolments for boys and girls in the schools without intervention during the period 2006/2007 to 2011/2012. The mean difference in enrolment in the schools without intervention was in favour of the boys. The results in Table 4.4.2 implies that there was no difference in enrolments for boys and girls in the schools with intervention, whereas the boys had more enrolments than girls in the schools without intervention. Boys' enrolment remained higher than girls in schools without intervention, while there was no difference in schools with intervention between 2006 and 2012.

(ii) Attendance

Table 4.4.3: Comparison of attendance rate for boys and girls in the schools with intervention and the schools without intervention before the School Feeding Programme (2001/2002-2005/2006)

Variables	Group	N	Mean	SD	Standard Error Mean	t-test for equality of means			
						t	df	Sig (2tailed)	Mean Diff
With intervention	Boys	30	77.5	±7.3	1.33	1.79	58	.077	3.03
	Girls	30	74.6	±5.6	1.03				
Without intervention	Boys	15	79.9	±4.5	1.2	2.9	28	.007	5.40
	Girls	15	74.5	±5.5	1.4				

Table 4.4.3 captures the comparison of attendance rate for boys and girls in the schools with intervention. The mean attendance rate of boys was 77.5%, while the mean attendance rate for girls was 74.6%. The mean difference of 3.03 was not statistically significant at 0.05. Therefore, there was no significant difference in the mean attendance rate for boys and girls in the schools with intervention.

Table 4.4.3 also shows the comparison of the attendance for the boys and the girls in the schools without intervention. The comparison of pupils' attendance showed a significant difference in the mean scores. The means for boys was 79.9%, while the mean was 74.5% for girls. The mean difference was statistically significant $t_{(28)} = 2.9$ $p<0.05$. This result implies that boys recorded higher attendance at school than the girls in the schools without intervention. Therefore, the attendance of the girls was higher than that of the boys in schools with intervention, while the attendance of the boys was higher than the girls' in the schools without intervention.

Table 4.4.4: Comparison of attendance for boys and girls in the schools with and the school without intervention after the School Feeding Programme started (2006/2007-2011/2012)

Schools	Sex	N	Mean	SD	Standard Error Mean	t-test for equality of means			
						t	df	Sig. 2 (tailed)	Mean diff
With Intervention	Boys	30	83.3	±7.30	1.33	-2.23	58	.029	- 3.83
	Girls	30	87.1	±5.85	1.06				
Without-intervention	Boys	15	81.0	±7.7	1.99	2.15	28	.040	4.86
	Girls	15	76.2	± 4.1	1.04				

Table 4.4.4 shows the comparison of attendance for the boys and the girls in the schools with intervention. The mean attendance of the boys was 83.3%, while the mean attendance for the girls was 87.1%. The mean difference was statistically significant $t_{(58)} = -2.23$ $p<0.05$. Therefore, there was a significant difference in the mean scores for boys and girls in attendance. The mean difference in attendance was in favour of the girls. This implies that girls attended school more than boys in the schools with intervention after the school feeding programme.

Table 4.4.4 also shows the comparison of attendance for boys' and girls' in the schools without intervention. The comparison of pupils' attendance shows a significant difference in the mean scores. The means for boys was 81.0%, while the mean for girls was 76.2%. The mean difference was statistically significant $t_{(28)} = 2.15$ $p<0.05$. This result implies that boys recorded higher attendance rate at school than the girls in the schools without intervention. Therefore, the attendance of girls was higher than the boys' in the schools with intervention, while the attendance for boys was higher in the schools without intervention.

(iii) Achievement

Table 4.4.5: Comparison of the boys' and the girls' academic achievement in the schools with intervention

Variables	Intervention (Sex)	N	Mean	SD	Std Error Mean	t-test for equality of means.			
						t	df	Sig (2-ailed)	Mean diff
Numeracy Test	Boys	195	4.6	±1.43	.102	-5.36	448	.000*	.091
	Girls	255	5.5	±2.01	.126				
Literacy Test	Boys	195	4.0	±1.49	.106	-3.86	448	.037*	-.050.
	Girls	255	4.5	±1.26	.078				

*statistically significant

Table 4.4.5 shows the comparison of test scores for the boys' and the girls' academic achievement in the schools with intervention. The mean score for the boys was 4.6, while the mean score for the girls was 5.5.The mean difference was statistically significant at 0.05 alpha level ($t_{(448)}$ =-5.36 $p<0.05$). Therefore, there was a significant difference in the mean scores for boys and girls in Numeracy test (ATN). The mean difference in academic achievement was in favour of the girls in the schools with intervention.

The comparison of pupils' achievement in literacy test (ATL) showed a significant difference in the mean scores. The mean for boys was 4.01, while the mean for the girls was 4.51. The mean difference was statistically significant at 0.05 alpha level ($t_{(448)}$ =-3.86 $p<0.05$). This implies that the girls had higher academic achievement in literacy test than the boys in the schools with intervention.

Table 4.4.6: Comparison of achievement test scores for the boys and the girls in schools without intervention

Variables	Non-intervention (Sex)	N	Mean	SD	Standard Error Mean	t-test for equality of means			
						t	df	Sig. (tailed)	Mean diff
Numeracy Test	Boys	201	4.3	±1.46	.103	-2.01	448	.045	-0.328
	Girls	249	4.6	±1.90	.120				
Literacy Test	Boys	201	3.5	±1.33	.093	.068	448	.946	-.007
	Girls	249	3.4	±1.13	.072				

Table 4.4.6 captures the comparison of achievement test scores for the boys and the girls in the schools without intervention. The mean score for the boys was 4.3, while that of the girls was 4.6. The mean difference was statistically significant at 0.05 alpha level ($t_{(448)} = -2.01$ $p<0.05$). Therefore, there was a significant difference in the mean scores of the boys and the girls in ATN in the schools without intervention. The mean difference in the achievement test scores for boys and girls in the schools without intervention was also in favour of the girls.

Table 4.4.6 also shows the comparison of the boys' and girls' achievement in literacy test (ATL) in the schools without intervention. The result shows that there was no significant difference in the mean scores. The mean score for the boys was 3.5, while the mean score for the girls was 3.4. The difference in the mean scores was not significant at 0.05 alpha level of confidence. These results show that, even though the girls performed better in numeracy test than the boys, there was no significant difference in the academic achievement in literacy between the boys and the girls in the schools without intervention.

Table 4.4.7: Comparison of achievement pupils' in ATN and ATL in schools with intervention and schools without intervention

Achievement	Schools with intervention N=450		χ^2	p-value	Schools without intervention		χ^2	p-value
	boys n (%)	Girls n (%)			**Male** n (%)	**Female** n (%)		
ATN								
Low Achievement	83 (42.6)	87 (34.1)	3.35	.042*	95 (47.2)	123 (49.4)	0.586	0.251ns
High Achievement	112 (57.4)	168(65.9)			106 (52.7)	126 (50.6)		
Total	195 (43.3)	255(56.7)			201 (44.7)	249 (55.3)		
ATL								
Low Achievement	68(34.9)	59(46.5)	7.51	.006*	115 (45.1)	140 (54.9)	0.144	.435ns
High Achievement	127 (65.1)	196(60.7)			86 (44.1)	109 (55.9)		
Total	195 (43.3)	255(56.7)			201 (44.7)	249 (55.3)		

***Statistically significant**

Table 4.4.7 further shows the comparison of achievement of boys and girls in ATN and ATL in the schools with intervention and the schools without intervention. In the schools with intervention, a total of 83(42.6%) boys and 87 (34.1%) girls had low achievement, while 112 (57.4%) boys and 168 (65.9%) ($p<0.05$) girls had high achievement in ATN. The proportion of girls with low achievement was far less than that of boys; also the proportion of girls that had high achievement was more than that of the boys. Thus, girls were better than the boys in numeracy achievement in the schools with intervention. In the schools without intervention, the difference in numeracy achievement was not statistically significant. The result of achievement in ATL showed that, in the schools with intervention, 68 (34.9%) boys and 59 (46.5%) girls had low achievement, while 127 (65.1%) boys and 196 (60.7%) girls had high achievement in ATL ($P<0.05$). But for the schools without intervention, the result was not statistically significant.

(iv) Nutrition status

Table 4.4.8: Comparison of Nutrition status of boys and girls in the schools with intervention

Variables	Non-intervention (Sex)	N	Mean	SD	Standard Error Mean	t-test for equality of means		
						t	df	Sig. (2 tailed)
Age	Boys	195	7.2	±.798	.057	.448	448	.654
	Girls	255	7.2	±.724	.045			
Height	Boys	195	121.6	±8.16	.705	-.143	448	.888
	Girls	255	121.7	±9.84	.541			
Weight	Boys	195	22.17	±2.73	.196	.274	448	.784
	Girls	255	22.11	±2.05	.129			

The result presented in table 4.4.8 shows the comparison of nutrition status of the boys and the girls in the schools with intervention. The mean age of the boys was 7.2 years, while that of the girls was 7.2 years; the difference was not statistically significant at 0.05.

The mean height for boys was 121.6cm, while that of the girls was 121.7cm. The difference in the means of these groups was not statistically significant.

Also, Table 4.4.8 shows that the mean weight of boys was 22.17kg as compared to that of their female counterparts which was 22.11kg. The mean weight difference is not statistically significant at 0.05 alpha level of confidence. There is no significant difference in the weight of the boys and girls in the schools with-intervention.

Table 4.4.9: Comparison of nutrition status of the boys and the girls in the schools without intervention

Variables	Group	N	Mean	Standard Deviation	Standard Error Mean	t-test of quality of means		
						t	F	Sig (2tailed)
Age	Boys	201	7.7	± .967	.068	2.308	448	.021
	Girls	249	7.5	± .889	.056			
Height	Boys	201	121.5	± 4.29	.303	1.027	448	.302
	Girls	249	120.8	±8.37	.530			
Weight	Boys	201	21.3	± 2.42	.171	1.63	448	.104
	Girls	249	20.9	± 2.20	.139			

The result presented in Table 4.4.9 shows the comparison of nutrition status of the boys and the girls in the schools with and schools without-intervention. The mean age of the boys was 7.7 years, while the mean age of the girls was 7.3 years; the difference was statistically significant at 0.05 alpha level of confidence ($t_{(448)}$ = 2.308 $p<0.05$). The mean difference in age for the boys and the girls was in favour of the girls. The result implies that the girls were enrolled in school at a younger age than the boys in the schools without intervention.

The mean height for the boys was 121.5cm, while that of the girls was 120.8cm. The difference in means of these groups was not statistically significant. Therefore, there was no significant difference in the height of the boys and the girls in the schools without intervention.

Also, the table shows that the mean weight of the boys was 21.3kg and 20.9kg for the girls. The mean difference in weight was not statistically significant at 0.05 alpha level of confidence. There was no significant difference in the weight of the boys and the girls in the schools without intervention.

Table 4.4.10: Comparison of BMI for Age of boys and girls in the schools with intervention and the schools without intervention

Schools	Sex	N	Mean	SD	Standard Error Mean	t- test for equality of means			
						t	df	Sig. (tailed)	Mean diff
With intervention	Boys	195	1.95	±.210	.015	-2.62	448	.009	-.004
	Girls	255	1.99	±.088	.005				
Without Intervention	Boys	201	1.89	±.312	.022	-.748	448	.455	-.021
	Girls	249	1.91	±.284	.018				

Table 4.4.10 shows the comparison of nutrition status of the boys and the girls in the schools with intervention. The mean BMI for age of the boys in the schools with intervention was 1.95 and that of the girls' was 1.99. The difference in the mean BMI for age was statistically significant ($t_{(448)} = 2.62 p<0.05$). It, therefore, means that the girls had higher nutrition status than the boys in the schools with intervention. The BMI for age of the boys in the schools without intervention was 1.89 and that of the girls' was 1.91. The mean difference of the BMI for age was not statistically significant at 0.05. It, therefore, connotes that there was no significant difference in the boys' and girls' nutritional status in the schools without intervention.

Discussion

4.4.1 Difference in boys' and girls' enrolment.

There was no significant difference in the enrolment of boys and girls in the schools with intervention after the programme started; whereas, there was a significant difference in the enrolment of boys and girls in the schools without intervention. The finding that there was no difference in the enrolment of boys and girls in the schools with intervention indicates that the gender gap in the schools with intervention is narrowing down over time since the programme started (2006/2007). This confirms earlier the findings of Dreze and Goel (2003) in Rajasthan, Karanataka and Chattisgarh, India, that cooked midday meal has many impacts, like narrowing the gaps of social distances (gender, religion and caste).

The other finding for the schools without intervention, that boys enrolment were more than girls' also agrees with Jacoby and Pollitt, (1997), Jacoby et al. (1998), Alaimo et al., (2001), Van Stuvernberg (2005), Neumman and Gelli (2007). Olubodun (2008) also confirms, that there was a decline in gross enrolment rate between 1991 and 1998, and that girls' enrolment was 45% wide disparity between the states of the federation. The fact remains that the educational participation of girls notably trails behind that of boys. Another aspect of the SFPs is the reduction of the gap between boys and girls in school enrolment. Schools without SFP tend to show larger differences between enrolments of boys versus girls while the schools with SFP intervention did not show any significant difference. The School Feeding Programme could be said to have impacted the enrolment in terms of bridging the gap between boys and girls.

4.4.2 Difference in boys' and girls' attendance

There was a significant difference in the attendance of boys and girls in the schools with intervention and the schools without intervention. This study found that there was significant difference in the attendance of boys and girls in the schools with intervention since school feeding started, this indicates that the gender gap in attendance is narrowing down over time since the programme started (2006/2007). Girls' attends school more than boys in the schools with intervention whereas, the attendance of boys and girls were still the same in schools without intervention. This agrees with earlier findings (Del Rosso et al., 1996; Powell et al., 1998; Bergerson et al., 2001; Bennett et al., 2003; Ahmed, 2004; Gelli, 2006 and Wallingo et al., 2008). Ahmed (2004), found an increase in the attendance of girls in school feeding intervention groups. Gelli (2006) also found Take Home Ration to increase

girls' school attendance in Parkistan. It is glaring from this finding that SFPs can reduce the gap between boys and girls in school attendance. Non-SFP schools tend to show larger differences between attendances of boys compared with that of the girls than SFP schools. The change in girls' attendance might not be unconnected with the implementation of school feeding programme.

4.4.3: Difference in boys' and girls' achievement boys'

There was a significant difference in the achievements of boys and girls numeracy and literacy tests in favour of the girls for both schools with intervention and schools without intervention. This agrees with the findings, (Jacoby and Pollitt 1997; Grantham-McGregor et al., 1998; Allen et al., 2001; Alaimo, Olson, Frongillo 2001 and Levitsky, 2005).

There was significant difference in the achievement of boys and girls in the schools without intervention, achievement in numeracy test in favour of the girls. This implies that the girls in the schools without intervention had better achievement than boys' in numeracy tests. There was no significant difference in the achievement of the boys and the girls in literacy test, but the mean difference was in the favour of the boys'. This implies that the boys possess literacy skills more than the girls in the schools without intervention.

Several studies have also demonstrated that poorly nourished children benefit cognitively from SFPs (Moore and Kunze, 1994; Taras, 2005; Del Rosso and Marek, 1996). School feeding programme consistently lower repeater rates and produces higher success rates on national examinations, especially among girls (Moore and Kunze, 1994) It is, therefore, conceivable that school meals could indirectly improve cognitive function by improving the nutritional status of undernourished children. It is also possible that better-nourished children will attend school more often, and when pupils attends school regularly there is the likelihood that they will attend lessons consistently thereby resulting in learning. The number of days that a child attends school is related to cognition and performance (Ceci, 1995; Jacoby, Cueto and Pollitt, 1997). Del Rosso and Marek (1996) rightly opined that weak health and poor nutrition among school-age children diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences or both. Thus, feeding provided at school can allow children to attend school regularly, attend lessons consistently, have adequate learning experiences and therefore possess higher cognitive achievement than those children without feeding at school.

4.4.4: Difference in boys' and girls' nutrition status

There was significant difference in the mean Body Mass Index (BMI) for age of boys and girls in the schools with intervention. The girls have higher BMI for age than the boys in schools with intervention. It therefore, implies that the girls had higher nutrition status than the boys in schools with intervention. The mean difference of the BMI for age was not statistically significant in schools without intervention. Thus, there was no significant difference in the boys' and girls' nutritional status in the schools without intervention. This finding agrees with earlier studies (Agarwal, Upadhyay Tripathi and Agarwal, 1987; World Bank, 2006; Kazianga, de Walque and Alderman, 2010).

World Bank, (2006), notes that the available evidence seems to indicate that these school feeding programmes help in improving children nutrition within a shorter time frame (between two and three years) compared to the longer horizon of other interventions such as income and food policies.

Research Question 5: What are the perceptions of the stakeholders (parents, teachers, teacher- supervisors, LGEA secretaries, school feeding agency staff and cooks) of the School Feeding Programme in Osun State primary schools?

Table 4.5.1: Parents' and other stakeholders' perceptions of the School Feeding Programme

S/N	Item	Respondent	SA (%)	A (%)	D (%)	SD (%)
1.	Primary school is very important for both boys and girls.	Parent Other Stakeholder	324 (72.0) 104 (95.4)	117 (26) 5 (4.6)	8(1.7)	1 (0.2)
2.	Free feeding in schools has improved nutrition of pupils.	Parent Other Stakeholder	270 (60.0) 84 (77.1)	167 (35.) 4 (3.6)	3(0.6) 15(13.7)	2 (0.4) 6 (5.5)
3.	School feeding has made schools more attractive to pupils.	Parent Other Stakeholder	284 (63.1) 93 (85.3)	154 (33.0) 10 (9.4)	3(0.6) 5(4.6)	1 (0.2) -
4.	The meals provided in school have improved enrolment.	Parent Other Stakeholder	250 (55.6) 104 (95.4)	188 (40.6) 5 (4.6)	- -	- -
5.	With feeding programme in school girl- child education has been encouraged.	Parent Other Stakeholder	241 (53.6) 102 (78.0)	191 (41.0) 7 (21.1)	10(2.2) -	1 (0.20) -
6.	Most children show willingness to attend school regularly.	Parent Other Stakeholder	270 (60.0) 46 (42.2)	166(35.6) 42 (38.5)	3(0.6) 14(12.8)	1 (0.2)
7.	With feeding in schools pupils dropout rates has reduced.	Parent Other Stakeholder	224 (49.8) 57 (52.3)	184 (39.5) 30 (27.5)	(27.5)24 14(12.8)	8 (1.7) 8 (7.3)
8.	Since the school feeding started, incidence of malnutrition has reduced.	Parent Other Stakeholder	248 (55.8) 74 (67.9)	160 (36.0) 23 (21.1)	32 (8.2) 14(12.8)	- 7(6.4)
9.	Pupils are physically more active since feeding started in schools	Parent Other Stakeholder	252 (56.7) 47 (43.1)	150 (33.7) 41 (37.6)	35 (7.8) 14(12.8)	7 (1.5) 8 (7.3)
10.	Pupils may stay away from school due to unfriendly environment.	Parent Other Stakeholder	253(56.9) 55 (50.5)	160(36.0) 57 (52.3)	17 (3.8) 2 (1.8)	14 (3.1) -
11.	The school feeding is not necessary in schools.	Parent Other Stakeholder	9(8.3) 6 (5.5)	47 (7.7) 2 (1.8)	170(38.2) 43(39.4)	218 (46.8) 60 (55.0)
12.	School feeding programme is a waste of money.	Parent Other Stakeholder	13 (2.0) 3 (2.8)	20 (4.3) 3 (2.8)	204(43.8) 66 (60.6)	205 (44.0) 32 (29.4)
13.	Parents should be left alone to give whatever food they like to their children.	Parent Other Stakeholder	23 (4.9) 5 (4.6)	21 (4.7) 6 (5.5)	203(45.6) 49 (45.0)	193 (43.4) 56(51.4)
14.	The programme should be stopped.	Parent Other Stakeholder	35 (7.7) 4 (3.7)	21 (4.7) -	203(45.1) 55 (50.5	205 (42.5) 43 (39.4)
15.	The school feeding programme allows children to learn table manners.	Parent Other Stakeholder	239 (53.1) 53 (48.8)	160 (35.5) 47 (43.1)	26(5.7) 6(5.5)	17 (3.7) 3(2.8)
16	School feeding programme could have been implemented differently.	Parent Other Stakeholder	40 (8.8) 21 (19.3)	42 (9.3) 30 (27.5)	124 (27.5) 46(42.2)	239(53.1) 12(11.0)

Key: SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

Table 4.5.1 shows the perceptions of parents and other stakeholders (class teachers, head teachers, teacher supervisors, LGEA secretaries and Agency staff) of the benefits of the School Feeding Programme in Osun State. By collapsing the responses of Strongly Agree and Agree, as well as Disagree and Strongly Disagree and by taking 50% as a benchmark for positive perception and negative perception respectively, it could be observed that the result reveals that 441(98.0%) parents and 109 (100.0%) other stakeholders indicated that primary school education is very important for boys and girls. Moreover, 437(97.1%) parents and 88(80.7%) other stakeholders indicated that the school feeding programme has improved the nutrition of the pupils. Furthermore, 410(91.1%) of parents and 108(99.1%) of the other stakeholders indicated that incidence of malnutrition have reduced since schools feeding started in Osun State. Based on the responses, it is observed that parents and stakeholders agreed that the school feeding programme is producing benefits in the area of improved nutrition. Table 4.5.1 further shows that 399(88.6%) parents and 100(91.1%) other stakeholders agreed that school feeding programme teaches the pupils table manners. This finding was supported by comments of parents made during data collection that most of their children now pray before they eat at home. Thirty-three-33(6.3%) parents and 6(5.6. %) stakeholders indicated that the School Feeding Programme is a waste of money. However, 409 (87.8%) of the parents disagreed. This implies that most parents did not see the programme as a waste of money.

Table 4.5.2: Parents' and stakeholders' perception of the level of satisfaction of school feeding programme

S/N	Item	Categories of respondent	VS (%)	S (%)	U (%)	US (%)	VUS (%)
1	Willingness of the stake holders in promoting school feeding programme	Parents	158(35.1)	267(59.3)	16(3.5)	4(0.9)	5(1.1)
		Other Stakeholders	47(43.1)	56(51.4)	5(4.6)	1(0.9)	0(0.0)
2.	The monitoring of the school feeding programme	Parents	133(29.5)	271(60.2)	29(6.4)	12(2.6)	5(1.1)
		Other Stakeholders	41(37.6)	59(54.1)	5(4.6)	4(3.7)	0(0.0)
3.	Effective maintenance culture	Parents	201(44.6)	223(49.5)	9(0.2)	15(3.3)	2(0.4)
		Other Stakeholders	30(27.5)	62(56.9)	12(11.1)	5(4.6)	0(0.0)
4.	The staff welfare as conceived in the programme	Parents	211(46.8)	179(39.7)	9(2.0)	50(11.1)	0(0.0)
		Other Stakeholders	27(24.8)	40(36.7)	27(24.8)	10(9.2)	5(4.6)
5.	Cooks cleanliness	Parents	197(43.7)	166(36.8)	35(7.7)	50(11.1)	2(0.4)
		Other Stakeholders	33(30.3)	66(60.6)	8(7.3)	2(1.8)	0(0.0)
6.	Delivery of school feeding	Parents	190(42.2)	174(38.6)	6(1.3)	2(11.5)	28(6.2)
		Other Stakeholders	36 (33.0)	64(58.7)	7(6.4)	2(1.8)	0(0.0)
7.	How do you view the school feeding services in schools?	Parents	137(30.4)	226(50.2)	9(2.0)	58(12.8)	20(4.4)
		Other Stakeholders	39(35.8)	64(58.7)	4(3.7)	1(0.9)	1(0.9)

Key: VS=Very Satisfactory, S=Satisfactory, U=Undecided, US=Unsatisfactory, VUS=Very Unsatisfactory

Table 4.5.2 presents the opinion of parents and other stakeholders on the implementation of the school feeding programme. The table shows that 425(94.4%) of the parents and 103(94.5%) other stakeholders indicated that they have the willingness to promote the school feeding programme. The table shows further that 404(89.7%) parents and 100(91.7%) other stakeholders indicated that the monitoring of the programme is done properly. About 424(94.1%) are satisfied with the maintenance culture in the programme implementation. About 390(86.5%) parents and 67(61.5%) other stakeholders indicated satisfaction with the staff welfare in the school feeding programme. The parents (363/80.5%) indicated satisfaction with the cooks' cleanliness and the general delivery of the school feeding programme. Other stakeholders also registered their satisfaction (99/90.9%). Parents (363/80.6%) and other stakeholders (103/94.5%) viewed the school feeding services in schools as satisfactory. This implies that the responses recorded for the implementation processes of the school feeding programme are satisfactory to the majority of the people. This implies that the general perception of parents and other stakeholders on the implementation and monitoring of the School Feeding Programme is satisfactory and acceptable.

Table 4.5.3: Parents' perception of the direct effect of School Feeding Programme on their household

S/N	Item	VC (%)	C (%)	IC (%)	VIC (%)
1.	School Feeding Programme has a lasting positive influence on average school enrolment.	182(40.4)	263(58.4)	5 (1.2)	0 (0.0)
2.	School feeding can contribute to achieve gender equality in primary education.	219(48.6)	217(48.2)	9 (2.0)	5 (1.2)
3.	School feeding is an incentive for enrolment.	228(50.6)	214(47.6)	0 (0.0)	8 (1.2)
4.	School feeding is a sure path towards achieving goals of free and compulsory basic education	296(65.7)	143(31.7)	6 (1.4)	5 (1.2)
5.	School feeding could foster sound social behaviours among school children	257(57.2)	179(39.8)	9 (2.0)	5 (1.2)
6.	School feeding makes pupils learn better	238(52.8)	194(43.2)	11 (2.4	7 (1.6)
7.	Food served in school is highly hygienic	259(57.6)	176(39.2)	10 (2.2)	5 (1.2)
8.	I don't have to give lunch money to my children since school feeding has started.	124(27.6)	170(37.8)	80(17.8)	76 (16.8)
9.	I have been able to save more money since less amount is spent on my children schooling	183(40.6)	160(35.6)	79(17.6)	28 (6.2)
10	The school feeding food is of superior quality compared with that of vendors who operated informally at school.	243(54.0)	169(37.6)	30 (6.6)	8 (1.8)
11.	The school food replaces the normal breakfast/ lunch served at home.	52(11.6)	21(4.6)	184(40.9)	189 (42.2)
12.	School feeding programme is good because pupils get healthy.	274(60.8)	155(34.4)	10 (2.2)	5 (1.1)

Key: VC= Very Correct, C= Correct, IC= Incorrect, VIC=Very Incorrect

Table 4.5.3 shows parents' perceptions of the direct effect of the School Feeding Programme on their households. A total of 445(98.8%) parents were of the opinion that school feeding programme in schools can have lasting positive influence on pupils enrolments. About 436 (96.8%) parents indicated that school feeding can contribute to achieve gender equality in basic education. Similarly, a total of 439(97.6%) viewed the school feeding programme as a sure path towards achieving the goals of UBE. About 436(96.8%) indicated that the school feeding programme could foster sound social behaviours among school children. Also, 294 (65.3%) parents indicated that they don't have to give lunch money to their children since the programme started. Similarly, 343(76.2%) parents claimed to have been able to save more money since they spent fewer amounts on children schooling. The result shows that parents gained direct benefits accruing from the Osun State school feeding programme.

Discussion

4.5.1: Parents and other stakeholders are satisfied with the implementation of the school feeding programme.

This finding presupposes that parents gained direct benefits accruing from the Osun State school feeding programme. Most of them reported that they notice several positive effects of the SFP on their children and those children's interests in attending school and concentration on studies have increased since school feeding. Moreover, parents and stakeholders indicated that the programme teaches the pupils table manners. Although, these benefits are unintended, but they might probably accompanied the programme. An extremely high percentage of mothers reported that children are livelier and happier than before. They are physically more active. Their health status has improved. The incidence of illness has decline. Most parent and other stakeholders indicated that since the school feeding started, they have been saving some money they ought to have expended on children's pocket money.

4.6 Research Question 6: Does the school feeding programme impact the financial empowerment of the cooks?

Table 4.6.1: Comparison of Cooks' Income before and after taking up the job as a cook

Variables	Cook's Income	N	Mean	SD	Std Error Mean	One sample t-test		
						t	Df	Sig
Cooks' Income	Month income before	60	₦I0,166.6	6960.3	898.5	15.7	59	000
	Monthly income after	60	₦15,033.3	7686.5	992.3			

Table 4.6.1 shows the comparison of cooks' income before and after taking up the job as a cook in the School Feeding Programme. The mean score of the monthly income before taking up the job as a cook was ₦10,166.6 while the mean score of monthly income as a cook was ₦15,033.3. The mean difference was statistically significant at 0.05 alpha level ($t_{(59)} = 15.7$ $p<0.05$). Therefore, there was a significant difference in the mean scores of the cooks' monthly income before taking up the job as a cook. The result indicates that the cooks benefited from the school feeding programme in the area of financial empowerment.

Table 4.6.2: Cooks' perception of the impact of the School Feeding Programme on knowledge and skills acquisition

S/N	Variable	Correct (%)	InCorrect (%)	Total(%)
10	I received training before starting the job as a cook	52 (86.6)	5(8.3)	57(95.0)
11.	My job now is better than the job before	52 (86.6)	4(6.8)	57(89.6)
12.	The training received on food purchasing has improved my skill.	50 (83.3)	1(1.6)	51(85.0)
13.	The training I received has helped learning food preparation in a better way	52 (86.6)	0(0.0)	52(86.6)
14.	With school feeding I get active and highly motivated	52 (86.6)	0(0.0)	52 (86.6)
15.	With school feeding I have learnt to cook hygienically.	52 (86.6)	0(0.0)	52 (86.6)
16.	I now have enough knowledge as a cook	49 (81.7)	2 (3.3)	51 (85.0)

Table 4.6.2 shows the impact of the School Feeding Programme on cooks' knowledge and skills acquisition. A total of 52(86.6%) of the cooks claimed that they received training before starting the job. Also, 50 (83.3%) of them indicated that the training they received on food purchase has improved their purchasing skill. Similarly, 52(86.6%) of them claimed the training they received has helped them in food preparation. A total of 52(86.6%) of them asserted that they have learnt how to prepare food in hygienic manner, while 49(81.7%) claimed that they now possess enough knowledge as a cook. The knowledge and skill gained by the cooks improved their purchasing skill; they now cook in a hygienic manner. This implied that respondents had positive perception of the impact of the School Feeding Programme on knowledge and skills acquisition.

Table 4.6.3: Cooks' level of acceptance of the facilities provided for the school feeding programme

S/N	Item	Not Available	Inadequate	Minimally	Averagely	Excellent	Total
1.	Water source	26(43.3)	0(0.0)	4(6.6)	2(3.3)	22(36.6)	54(90.0)
2.	Kitchen in the School	25(41.6)	8(13.3)	1(1.7)	5(8.3)	15(25.0)	54(90.0)
3.	Cooking Utensils	9(16.0)	7(11.6)	3(5.0)	13(21.7)	22(36.6)	54(90.0)
4.	Plates, Cup	0(0.0)	15(25.0)	5(8.3)	12(20.0)	23(38.3)	55(91.6)
5.	Freezing facilities	53(88.3)	1(1.6)	1(1.6)	0(0.0)	0(0.0)	55(91.6)
6.	Storage Facilities in schools	39(65.0)	5(8.3)	4(6.6)	1(1.6)	6(10.0)	55(91.6)
7.	Refuse Disposal	11(18.3)	2(3.3)	4(6.7)	10(16.7)	26(43.3)	53(88.3)
8.	Food Procurement	3(5.0)	1(1.6)	5(8.3)	13(21.7)	32(89.8)	58(96.7)
9.	Training Received for the programme	1(1.6)	1(1.6)	0(0.0)	3(5.0)	53(88.3)	58(96.7)
10	Medical Test Before Participating in SFP	1(1.6)	0(0.0)	0(0.0)	3(5.0)	53(88.3)	57(95.0)

Table 4.6.3 shows the cooks' level of acceptance of the facilities provided for the School Feeding Programme. It could be observed from the Table that the result reveals that 26(43.3%) of the cooks indicated that water source was not available to them, while 28(46.6%) indicated that it was available, out of which only 22(36.6%) indicated that the water source provided was excellent. As regards provision of Kitchen, 29(48.3%) indicated that it was available but only 15(25.0%) indicated its adequacy. About 55(92.1%) of the cooks indicated that plates and cups were provided for the school feeding. A total 53(88.3%) of them indicated that freezing facilities are not available at all. Also, 39(65.0%) of them indicated that storage facilities were not available and about 16(26.6%) indicated that it was provided but only 6(10.0%) of them indicated that the facilities are excellent. This result implied that most of the facilities necessary for the implementation of school feeding programme are not available, and where they were available, they were inadequate.

Discussion

4.6.1: There is a significant difference in the mean scores of cooks' monthly income before and after taking up the job as a cook.

The result shows that the cooks benefited from the School Feeding Programme in the area of financial empowerment. This implies that there has been improvement in their income and, as such, they can make contributions to national economy. This is in line with the view of Osokoya (2008) that discussion about national development usually centres on the transformation of the economic and socio-cultural structure of a people leading to improvement in their living condition. This is a sort of women empowerment and is one of the keys to ending poverty among the women folk. This finding corroborates Adepoju and Babalola's (2011) claim that individuals who receive empowerment are better able to earn a livelihood that provides purchasing power to sustain their family. The empowerment received can afford the cooks the opportunity to reconnect with their core values; this is by taking care of things they hold in high esteem independently. With the financial empowerment, the cooks can prioritize their self-interest and this would allow them to regulate their emotions so that they would not be anxious unnecessarily over trivial monetary issues they can handle without much stress.

4.6.2 The knowledge and skills gained by the cooks has improved their purchasing skills and they cook in hygienic manner

The training received by the cooks is a form of knowledge and skill transfer to enable them to remain up-to-date in this ever-changing technology. This finding is in line with the view of Adepoju and Babalola (2011) that vocationally trained women are more likely to practise safe food storage and preparation techniques and to practise basic principles of self-employment, nutrition, health and family care. The needed skills given to people either to improve their employability or to start their own enterprise liberate them socially and financially so as to meet challenges. Some of these cooks claimed that they now possess purchasing skills, they have learnt to prepare food hygienically; and that they now have more knowledge as cooks.

4.7 Research Question 7: What are the challenges in the implementation of the programme?

Table 4.7.1: Challenges of the programme as perceived by the stakeholders (class teachers, teacher supervisors, LGEA Secretaries and Agency Staff)

S/N	ITEM	SA	A	D	SD
1.	Lack of fund is a challenge to the School Feeding Programme.	12(11.0)	25(22.9)	37(33.9)	35(32.1)
2	The institutional arrangement for the School Feeding Programme is not good enough.	9(8.3)	18(16.5)	45(41.3)	37(33.9)
3	Funds are not usually disbursed on time.	8 (7.3)	19(17.4)	52(47.7)	30(27.5)
4	Food supply is inadequate.	22(20.2)	22(20.2)	41(37.6)	24(22.0)
5	Kitchen equipment made available for the feeding programme are not adequate.	53(48.6)	6(5.5)	23(21.1)	27(24.8)
6	Personnel in use for the proogramme do not have adequate training.	10(9.2)	13(11.9)	59(54.1)	27(24.8)
7	Cooks used for the programme do not have training.	21(19.3)	20(18.3)	46(42.2)	22(20.2)
8	Classroom teachers do not have frequent seminars / workshops.	28(25.7)	31(28.4)	35(32.1)	15(13.8)
9	There is lack of good storage facilities for food stuffs.	17(15.6)	47(43.1)	30(27.5)	15(13.8)
10	There are no adequate plates, cups & cutlery for the feeding programme.	13(11.9)	26(23.9)	42(38.5)	28(25.7)
11	There is irregular water supply in schools	21(19.3)	54(49.5)	17(15.6)	17(15.6)
12	There are lots of problems encountered on transportation of food items to the schools.	21()19.3	40(36.0)	33(30.3)	15(13.8)
13	Cooks do not usually get funds adequately.	7(6.4)	21(19.3)	51(46.8)	30(27.5)
14	Cooks do not get necessary remunerations on time.	21(19.3)	17(15.6)	44(40.4)	27(24.8)
15	There are poor toilet facilities in schools.	51(46.8)	39(35.8)	9(8.3)	10(9.2)
16	There is nonchalant attitude of the parent towards the pupils' feed33ing in school.	33(30.3)	20(18.3)	34(31.2)	22(20.2)

Key: SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree

Table 4.7.1 presents the analysis of the challenges of the programme as perceived by the stakeholders (class teachers, teacher supervisors, LGEA secretaries and agency staff). Altogether, 89(81.7%) of the stakeholders admitted that there are challenges in the School Feeding Programmes. Some of the identified challenges include lack of fund. While 37(33.9%) of the stakeholders agreed that fund is a challenge to the programme, 72(66%) of the stakeholders did not see it as a challenge.

The stakeholders 59/55.1%) agreed that classroom teachers are not being given adequate seminars/workshops on their roles in the programme and this has been a challenge to the programme. Random comments from the teachers also revealed that they were not carried along in the programme. Prominent among the challenges in the implementation of the programme, were inadequacies of necessary materials for the operation of the programme, and poor toilet facilities. A total of 75 (68.8%) of the stakeholders agreed that good water sources constitute a challenge to the implementation of the programme in the schools.

On the issue of what could be done to improve the school feeding programme, a good number of parents expressed their feelings on the issue of food being cooked from home and not in the school premises. Some of them preferred that the food should be cooked in school for hygienic reasons. More over some of the operators were of the opinion that the government should review the policy of cooking from home so as to ensure proper monitoring of the cook on the basis on hygiene. Thus, parent and stakeholders want food to be cooked in the schools for hygienic reasons and proper monitoring.

Discussion

4.7.1 There are challenges in the implementation of the school feeding programme

This study found that there were challenges in the implementation of the school feeding programme, prominent among those identified are; inadequacy of necessary materials for the operation of the programme; poor toilet facilities; lack of fund and portable water supply.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusion and recommendations of the study. Suggestions are also included in the chapter.

5.1 Summary

This study evaluates the school feeding programme in primary schools in Osun State. The study adopted a non-equivalent control group, post-test only design, which is a type of quasi-experimental design to evaluate the impact the Osun State School Feeding Programme had on the beneficiaries. The sample for the study consisted of 900 primary 2 pupils, 450 parents of the school feeding intervention pupils, 109 stakeholders (head teachers, teachers, teacher supervisors and LGEA secretaries) and 60 cooks that served in the programme. Seven instruments were used for data collection. Six of them were developed and validated by the researcher, while one of the instruments was from a UNICEF instrument. The data were analyzed with the use of descriptive statistics, line graphs, t-test of independent means, WHO Anthroplus software and chi-square. Results were used to answer seven research questions of the study.

5.2 Highlight of findings

The major findings of this study include the following:

i. Primary school enrolment increased consistently in Osun State; average enrolment in primary two increased by 19.2%, since the introduction of the School Feeding Programme in 2006/2007.
ii. Pupils' average attendance rate increased by 9.2% after feeding started.
iii. Pupils' retention rates increased by 3% after feeding started.
iv. There was a huge gap in the enrolments between the schools with intervention and the schools without intervention. It implies that enrolment increased in schools with feeding programme intervention more than schools without feeding intervention.
v. There was a substantial increase in the attendance of pupils in Osun State Primary Schools compared to the State without intervention since the school feeding intervention started.

vi. Girls had higher rates of attendance at school than boys in the schools without intervention.

vii. Retention in primary 4 was notable and encouraging in schools with intervention compared to schools without intervention since the feeding programme started.

viii. Pupils attended schools more regularly in the schools with intervention than the schools without intervention.

ix. The pupils in the schools with intervention had better weight, better height at a lower age compared to the schools without intervention.

x. The pupils in schools with intervention had higher nutrition status than the pupils in the schools without intervention.

xi. In the schools with intervention, girls had higher nutrition status than the boys.

xii. Prevalence of undernourished pupils was significantly higher in the schools without intervention than from schools with intervention

xiii. There was significant difference in the academic achievement in literacy and numeracy in the schools with intervention and schools without intervention. The difference was in favour of the schools with intervention.

xiv. Child-friendly facilities were lacking in most of the schools.

xv. Stakeholders perceived that the school feeding programmes was well implemented, and expressed their satisfaction with the programme.

xvi. The result shows that parents gained direct benefits accruing from the Osun State school feeding.

xvii. There was a significant difference in the mean scores of cooks' monthly income before and after taking up the job as cook. The cooks benefited from the school feeding programme in the area of financial empowerment.

xviii. The knowledge and skills gained by the cooks improved their purchasing skills and that they now cook in hygienic manner.

xix. There were challenges in the implementation of the programme which included; inadequate toilet facilities, fund and potable water.

xx. Stakeholders wanted food to be cooked in the schools for hygienic reasons and proper monitoring.

5.3 Conclusion

This study showed that the School Feeding Programme had a positive impact on educational indicators and social skills for both the children and the adult members of the

community. The programme had many positive results. There was significant improvement in school enrolment, attendance and retention of pupils, since the start of the programme.

Although there was no significant impact on the pupils' nutritional status, the Osun State School Feeding Programme was an incentive to increase enrolment, attendance and academic achievement. These are good indicators of access to education and quality of education. Also, the study revealed satisfaction of parents and stakeholders with the Osun State Feeding Programme. The programme also impacted the cooks' financial empowerment. This explains the programme's success and acceptance. The study has increased the sphere of knowledge in the area of rigorous impact evaluation of school feeding programmes, even without a baseline survey. Therefore, in the future, for laudable programmes such as this, the government needs to conduct a baseline survey before programme implementation.

These merits notwithstanding, there were some implementation challenges that need attention.

5.4 Constraints of the study

There were constraints in undertaking this study. The major constraint of this study was that the necessary records are not readily available in schools. This was as a result of poor record keeping. Most of the schools had poor record keeping attitudes. The research team had to encourage some of the head teachers by assisting them to search for the needed attendance registers from their stores before leaving the schools.

5.5 Recommendations

The findings of this study have implications for government, educational managers (teachers, head teachers, teacher supervisors, and LGEA secretaries). If maximum benefits from school feeding programme are desired, the following are recommended:

1. **Government**

   This study has generated information that are based on empirical evidences that the school feeding intervention programme facilitates efficiency in the educational sector and has shown a strong relationship between the school feeding programme and cooks empowerment,

   i. The Federal Government should try to encourage other non-implementing states of the federation to replicate the school feeding programme. This may go a long way in enhancing the attainment of the objectives of UBE, EFA and MDGs.

ii. Each state government should strive to replicate the Osun School Feeding Programme for the enhancement of educational and economic development. This will bring about the much desired national development.

iii. The Osun State Government should consider the findings of this study, which provide empirical information on the efficiency and effectiveness of the school feeding, to bring about enhanced educational development and make informed policy choices to refine the school feeding programme for more benefits.

iv. The Osun State Government should provide adequate accommodation and other necessary facilities that will match the population of pupils. For example, desks and seats are grossly lacking in the schools. Also, washbasins, toilet facilities and other sanitary provisions are not available in schools. The provision of these could have complemented the efforts of the school feeding in achieving greater result.

v. To allow more success on the programme the state government should re-consider the use of kitchen within the school premises. Most parents want to know and see the source of the food given to their children and since kitchens are there already built in the school most of them want government to renovate the kitchens and use them.,

2. Educational managers

This study found that some of the facilities needed for the successful implementation of the School Feeding Programme are inadequate. There should be a link between the programme and the provision of adequate facilities. This will bring about the desired educational goals and improvements. For example, the basic facilities, like plates, spoon, cups, and potable water source should be made available.

i. Educational managers at different levels should ensure that such programme introduced is executed with the spirit of commitment and loyalty it deserves, for successful implementation.

ii. Teachers should endeavour to keep adequate records that are expected of them. Records of enrolment should be carefully taken and adequately kept for future reference. The researcher and research assistants went through some problems before records of enrolment and attendance were collected from schools. Moreover, classroom teachers should acquire necessary skills at organized seminars/workshops so as to be acquainted with their roles in the programme implementation in schools.

iii. Head teachers should facilitate the provision of storage facilities like shelves and adequately provide accommodation for record keeping in schools. Head teachers should ensure that comprehensive school records are put in place.

iv. Teacher supervisors and LGEA secretaries should ensure that necessary records are kept in schools to facilitate prompt access whenever such is required.

3. Parents

i. The study found that parents attested to the fact that school feeding programme teaches table manners among the pupils and some of the pupils have learnt to pray before eating at home. This is an evidence of moral teaching which resulted from the school feeding programme. Although it is not intended, it is an added advantage. Parent should see this as a positive effect of the programme and thus embrace the programme the more.

ii. Parents' participation should be encouraged to engender more support for the programme.

iii. Parent can give more materials to support the government for the sustenance of the programme. For example, parents could be involved in specific tasks, like monitoring to improve the implementation of the programme.

4. School Feeding Agency

i. There should be a continuous sensitization and training of the stakeholders. This is necessary to assist the programme to achieve much better results.

ii. Periodic evaluation should be carried out, now that the Osun state government is planning to scale up the programme to include primary three and primary four.

iii. There should also be measurements of weight and height of pupils admitted to beneficiary classes periodically, whether on monthly or term basis, so that the pupils' growth could be monitored. This will facilitate assessment of the indicator at a glance.

iv. There is need for a baseline survey for any meaningful programme impact to be measured. Thus, the school feeding agency should endeavour to construct baseline survey.

v. Lastly, some data generated from the findings of this study could serve as a baseline data because the study involved a rigorous evaluation with high objectivity.

5.6 Suggestion for further studies

There may be the need to explore the facilities in these schools in order to establish if indeed it was the child-friendly environment that has attracted pupil to school and kept them enroled.

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APPENDIX I

UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION
Investigation of Impact of School Feeding Programme in Osun State Primary Schools

SCHOOL RESOURCES INVENTORY (SRI)

Dear Ma/Sir,
This inventory is designed to gather some information on the facilities in your school. Kindly respond to items below as sincerely as possible. All information given will be used for research purpose only.

Thanks
Ayoola R.A

SECTION A: Personal Data

1. Name of school: ……
2. Location:……
3. Position held in the School: ……

SECTION B: Please tick the appropriate response to indicate the position of the following facilities in your school.

S/N	Facility	Not available	Available But not in good condition	Available & in good condition
1.	Boundary Fence			
2	Painted Walls to enhance aesthetics			
3	Electricity supply			
4	Play ground			
5.	Football field			
6.	Swings			
7.	Merry - go – round			
8.	Climbers			
9.	Toys			
10.	Charts on walls			
11.	Pictures / Diagrams on walls			
12.	Covered water containers			
13.	Cups for drinking water			
14.	Wash hand basin			
15	Wash hand basin stand			
16.	Toilets facilities			
17.	Toilet soap			
18.	Hand towel			
19	Well			
21	Pipe borne water			
22	Borehole			
23	Modern classroom			
24	Comfortable seat/desk arrangement			

Section C: Enrolment Record According to Sex

Session	Pry 1		Pry 2		Pry 3		Pty 4	
	M	F	M	F	M	F	M	F
2001/2002								
2002/2003								
2003/2004								
2004/2005								
2005/2006								
2006/2007								
2007/2008								
2008/2009								
2009/2010								
2010/2011								
2011/2012								

Section C: Attendance Record According to Sex

Session	Pry 1		Pry 2		Pry 3		Pty 4	
	M	F	M	F	M	F	M	F
2001/2002								
2002/2003								
2003/2004								
2004/2005								
2005/2006								
2006/2007								
2007/2008								
2008/2009								
2009/2010								
2010/2011								
2011/2012								

APPENDIX II

UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION

Investigation of Impact of School Feeding Programme in Osun State Primary Schools

PARENTS' PERCEPTION OF SCHOOL FEEDING QUESTIONNAIRE (PPSFQ)

Dear Parent,

This questionnaire is designed to generate some information from the parent of the school feeding programme as regards their perception towards the feeding programme in Osun state primary schools.

Kindly respond to the items below as sincerely as possible. All information given will be strictly confidential and used for research purposes only.

Thanks.

Ayoola R.A

Section A: Background Information

Instruction: kindly provide the information in spaces provided.

1. Name of child's school:……
2. Location:……..
3. Local Govt Area:……..
4. Father's Occupation :(specify)…….
5. Mother's Occupation :(specify)……
6. How many children do you have between ages 3-9?(specify)……
7. How many are boys?(specify)……
8. How many are girls? (specify)……
9. How many children do you have in public primary school? (specify)……

Please tick as appropriate [✓]

10. Sex of parent: Male [ ] Female [ ]
11. Age range (a) 20-30 [ ] (b) 31-4 0 [ ] (c) 41-50 [ ] (d) 51&above [ ]
12. Mother's highest level of school education attained.
    (a) No schooling [ ] (b) Primary education [ ](c) Secondary education [ ]
    (d) NCE, OND [ ](e) University education [ ]
13. Father's highest level of school education attained.
    (a) No schooling [ ] (b) Primary education [ ]
    (c) Secondary education [ ] (d) NCE, OND [ ]
    (e) University education [ ]
14. Mother's Marital status: (a) Married [ ] (b) Single [ ]
    (c) Separated [ ] (d) Widowed [ ] (e) Others [ ]

15. An estimated monthly income.

(a) Below N5,000 [ ] (b) N5, 000 - N10,000 [ ] (c) N11,000-20,000 [ ]

(d) N21, 000- N30, 000 [ ] (d) N31, 000 and above [ ].

16. How important is it to you that your children attend to school?

(a) Not important at all [ ] (b) Not very important [ ]

(c) Very important [ ] (d) Extremely important [ ]

17 Do you normally give your child money to buy in the school? (a) Yes ( ) (b) No (

18 Do you normally give your child food from home? (a) Yes ( ) (b) No ( )

SECTION B: What can you say about the followings?

S/N	Item	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	Schooling in primary education is very important for both boys and girls				
2	Free feeding in school has improved nutrition of pupils				
3.	School Feeding has made school more attractive to pupils				
4.	The meals provided in school has improved enrolment				
5.	With feeding programme in school girl- child education has been encouraged				
6.	Most children show willingness to attend school regularly				
7.	With feeding in schools pupils drop-out rate have reduced				
8.	Since the school feeding started ,incidence of malnutrition have reduced				
9.	Pupils are physically more active since feeding started in schools				
10.	Pupils may stay away from school due to unfriendly environment				
11.	The school feeding is not necessary in school				
12.	School feeding programme is a waste of money				
13.	Parents should be left alone to give whatever food they like to their children.				
14.	The programme should be stopped				
15.	The school feeding programme allows children to learn table manners				
16	School feeding programme could have been implemented differently from what it is at present.				

SECTION C. How would you rate the followings.

S/N	Item	Very Satisfactory	Satisfactory	Undecided	Unsatisfactory	Very Unsatisfactory
1.	Willingness of the stake holders in promoting schoolfeeding programme					
2.	The monitoring of the school feeding programme					
3.	Effective maintenance culture					
4.	The staff welfare as conceived in the programme					
5.	Cooks cleanliness					
6.	Delivery of school feeding in school					
7.	How do you view the school feeding services in schools.					
8.	To what extent have you gained information					

2SECTION D: Please give your response to the followings?

S/N	Item	Very Correct	Correct	Incorrect	Very incorrect
1.	School Feeding Programme has a lasting positive influence on average school enrolment.				
2.	School feeding can contribute to achieve gender equality in primary education.				
3.	School feeding is an incentive for enrolment.				
4.	School feeding is a sure path towards achieving goals of free and compulsory basic education				
5.	School feeding could foster sound social behaviours among school children				
6.	School feeding makes pupil learn better				
7.	Food served in school is highly hygienic				
8.	I don't have to give lunch money to my children since school feeding has started.				
9.	I have been able to save more money since less amount is spent on my children schooling				
10	The school feeding food is of superior quality compared with that of vendors who operated				

	in formally at school.				
11.	The school food replaces the normal breakfast/ lunch served at home.				
12.	School feeding programme is good because pupils get healthy.				

What could be done to improve the school feeding programme

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APPENDIX III

UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION
Investigation of Impact of School Feeding Programme in Osun State Primary Schools

School Feeding Programme Operators Questionnaire [SFPOQ]

Dear Respondents,

This questionnaire is designed to gather some information from the programme operators' (teachers, School Feeding Programme Agency staff and other stakeholders) perception of school feeding programme in primary schools. Kindly respond to the items below as sincerely as possible. All information given will be used for research only.

Thanks.

Ayoola R.A

SECTION A: BACKGROUND INFORMATION

Instruction: kindly provide the information in spaces provided.

1. Name of school/office……
2. Location……
3. Local Govt Area ……
4. Sex: Male [ ] Female [ ]

Please tick [✓] as appropriate.

5. Age range (a) 21-30 [ ] (b) 31-40 [ ] (c) 41-50 [ ] (d) 51&Above
6. Education Qualification (a) TC 11 [ ] (b) NCE, OND [ ]
   (c) B.Ed,B.A (Ed) [ ] (d) M.Ed [ ]
7. Position held: (a) Head teacher [ ] (b) Classroom teacher [ ]
   (c) Agency staff [ ] (d) Others Specify ……..
8. How many years of experience have you had in your present position.
   (a) 1-5 [ ] (b) 6-10 [ ] (c) 11-15 [ ]. (d). 15 &above
9. If you are a teacher what class are you teaching presently?
   (a) KG 1 [ ] (b) KG 11 [ ] (c) Pry 1 [ ] (d) Pry 2[ ]
10. What is your area of specialisation?
    (a) Primary Education [ ] (b) Early childhood Education [ ]
    (c) Social Sciences [ ] (d)Science [ ]
    (e) Accounting [ ]

SECTION B: What can you say about the followings?

S/N	Item	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	Schooling in primary education is very important for both boys and girls				
2	Free feeding in school has improved nutrition of pupils				
3.	School Feeding has made school more attractive to pupils				
4.	The meals provided in school has improved enrolment				
5.	With feeding programme in school girl- child education has been encouraged				
6.	Most children show willingness to attend school regularly				
7.	With feeding in schools pupils drop-out rate have reduced				
8.	Since the school feeding started ,incidence of malnutrition have reduced				
9.	Pupils are physically more active since feeding started in schools				
10.	Pupils may stay away from school due to unfriendly environment				
11.	The school feeding is not necessary in school				
12.	School feeding programme is a waste of money				
13.	Parents should be left alone to give whatever food they like to their children.				
14.	The programme should be stopped				
15.	The school feeding programme allows children to learn table manners				
16	School feeding programme copuld have been implemented differently from what it is at present.				

SECTION C: How can you rate the following about school feeding?

Sn	Item	Very Satisfactory	Satisfactory	Undecided	Unsatisfactory	Very Unsatisfactory
1.	Willingness of the stake holders in promoting school feeding programme					
2.	The monitoring of the school feeding programme					
3.	Effective maintainance culture					
4.	The staff welfare as conceived in the programme					
5.	Cooks cleanliness					
6.	Delivery of school feeding in school					
7.	How do you view the school feeding services in schools.					

SECTION D: Please give your response to the followings?

Do you think there are challenges in the implementation of this programme?

(a) Yes ( ) (b) No ( )

SA=Strongly Agree

A=Agree

D=Disagree

SD=StronglyDisagree

S/N	ITEM	SA	A	D	SD
1.	Lack of Fund is a challenge to the school feeding programme				
2	The institutional arrangement for the school feeding programme is not good enough				
3	Funds are not usually disbursed on time				
4	Food supply is inadequate				
5	Kitchen equipment made available for the feeding programme are not adequate				
6	Personnel in use for the proogramme do not have adequate training				
7	Cooks used for the programme do not have enough training				
8	Classroom teachers do not have frequent seminars / workshops				
9	There is lack of good storage facilities for food stuffs.				
10	There are no adequate plates, cups & cutlery for the feeding programme				
11	There is irregular water supply in schools				
12	There are lots of problems encountered on transportation of food items to the schools.				
13	Cooks do not usually get funds adequately.				
14	Cooks do not get necessary remunerations on time				
15	There are poor toilet facilities in schools.				
16	There is non-challant attitude of the parent towards the pupils' feeding in school				

What could be done to improve the school feeding programme

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APPENDIX IV

UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION
Investigation of Impact of School Feeding Programme in Osun State Primary Schools

COOK EMPOWERMENT QUESTIONNAIRE (CEQ)

Dear Ma,

This instrument is designed to generate some information from the cooks used for school feeding programme, as regards economic empowerment.

Kindly fill the information supplied appropriately. Please assure the cooks that all information given will be strictly confidential and used for research purposes only which may also result to better implementation of the programme.

Thanks.

Ayoola R.A

SECTION A: BACKGROUND INFORMATION

Instruction: kindly provide the information in spaces provided.

1. Name of school:……
2. Location:……
3. Local Govt Area:……

Please tick as appropriate [✓]

4. Age range (a) 20 - 30years [ ] (b) 31-40 [ ] (c) 41-50 [ ]
5. Marital status: (a) Single [ ] (b) Married [ ]
   (c) Divorced [ ] (d) Windowed [ ]
6. Highest Level of Education (a) Primary Education [ ] (b) Secondary education [ ]
   (c) OND/NCE [ ] (d) HND/BSc / B.ED [ ]
6. What type of job are you engaged in before employed as cook?.Specify …….
7. An estimated monthly income before employed as a cook.
   (a) #5,000 & below [ ] (b) N5, 000 - N10,000 [ ] (c) N11,000-20,000 [ ]
   (d) N21, 000- N30, 000 [ ] (e) N31, 000 and above [ ].
8. When did you start working as cook under the school feeding programme? (a)Below 1 year [ ] (b) 1-2years [ ] (c) 3-4years [ ] (d) 5years & Above
9. Which of the followings were provided for your services as a cook?

SECTION B: Which of the following are provided for your services as a cook?.

S/N	Materials / facilities	Not Available	Inadequate	Minimally acceptable	Averagely Acceptable	Excellent
1.	Water sources in the school					
2.	Kitchen in the school					
3.	Cooking utensils					
4.	Plates, cups					
5.	Freezing facilities					
6.	Storage facilities in the school					
7.	Refuse Disposal					
8.	Food procurement					
9.	Training					

SECTION C: How would you rate the followings?

S/N	ITEMS	Very Correct	Correct	Incorrect	Very Incorrect
10.	I received training before starting the job as a cook				
11.	My job now is better than the job before				
12.	The training received on food purchasing has improved my skill.				
13.	The training I received has helped learning food preparation in a better way				
14.	With school feeding I get active and highly motivated				
15.	With school feeding I have learnt to cook hygienically.				
16.	I now have enough knowledge as a cook				
17.	This work is a burden to me.				
18.	School feeding programme is good because pupils get healthy.				
19.	Government should continue to give free feeding to our children in school				
20.	School utensils are clearly marked with school/programme logo.				
21.	Grains we usually cook in school are without weevils.				
22.	Inspectors come regularly to monitor your services.				
23.	There is delay in disbursement of funds from the government to me.				
24.	As a cook, I find it easier now to take care of little expenses in the home?				
25.	It is convenient to pay house rent now, since I started work in the school feeding programme.				
26.	School feeding programme has boost my income.				

SECTION D: Cooks financial status

1. What is your estimated daily income as a cook?

   (a) N500 - N1,000 [ ] (b) N1,100 - 2,000 [ ]

   (c) N2,100- N3,000 [ ] (d) N3,100 and above [ ].

2. How much do you make in a month as a cook?

   (a) N10, 000 – 20,000[ ] (b) N21,000 - 41,000 [ ]

   (c) N42, 000&above [ ]

3. How do you find spending in the home?

   (a) more convenient [ ]

   (b) convenient [ ]

   (c) not convenient [ ]

   (d) not convenient at all [ ]

APPENDIX V
UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION
Investigation of Impact of School Feeding Programme in Osun State Primary Schools

Achievement Test in Numeracy (ATN)

Instruction: fill as appropriate **Primary 2** **Time: 15 minutes**
Name:
Sex: Male ( ) **Female ( )** **Age:** **Weight: ----------kg**
Height: ---------cm

Instruction: Choose the correct option by tick ( )

1. How many balls are shaded? ○○○○○●●●●●
   (a) 20 (b) 15 (c) 5 (d) 2
2. Find ¼ of 8 eggs
   (a) 2 (b) 12 (c) 6 (d) 9
3. Arrange in order, smallest first 80, 82, 76, 81
   (a) 80, 81, 82, 76
   (b) 76, 81, 80, 82
   (c) 82, 81, 80, 76
   (d) 76, 80, 81, 82
4. Arrange in order, biggest first 86, 85, 87, 84
   (a) 87, 85, 84, 86
   (b) 84, 85, 86, 87
   (c) 87, 86, 85, 84
   (d) 87, 86, 84, 85
5. 8+5 =
   (a) 3 (b) 5 (c) 13 (d) 10
6. From 82 take away 32
   (a) 60 (b)50 (c) 111 (d) 52
7. 10 x 10 =
   (a) 1000 (b) 1.10 (c) 100 (d) 20
8. Add 69, 16, and 40
   (a) 125 (b) 109 (c) 85 (d)56
9. 73-38 =
   (a) 25 (b) 45 (c) 35 (d) 111
10. 6 girls have ☐ x ☐ = ☐ eyes
    (a) 3 X 6 = 6 eyes (b) 2 X 6 = 12 eyes
    (b) 6 X 6 = 36 eyes (d) 4 X 6 = 24 eyes

APPENDIX VI

UNIVERSITY OF IBADAN
INSTITUTE OF EDUCATION
INTERNATIONAL CENTRE FOR EDUCATION EVALUATION

Investigation of Impact of School Feeding Programme in Osun State Primary Schools
Achievement Test in Literacy (ATL)

Instruction: fill as appropriate **Primary 2** **Time: 15 minutes**

Name:

Sex: Male ( ) Female ( ) Age:

Instruction: Read the questions carefully

Answer ALL Questions

1. What are the two things used for building

   (a) Scissors and Cement (b) Red pen and chalk (c) cement and needle (d) Cement and sand

2. Tailors uses---------- to make dress

   (a) Chalk and needle (b) needle and sciessors (c) Scissors and comb (d) sand and red pen

Comprehension

Read this passage carefully and answer the questions which follows:

Tade is six years old. He is now in primary 2… he is happy to come back to school after a long holiday. He has two twin sisters, Sade and Sewa. They are five years old. They are not in primary 2. They are in primary 1. Tade also has a friend called Nkem. Nkem is in Tade's class. Nkem has a sister Ngozi, she is five years old and in primary 1 like Tade's sister.

3. How old are Sade and Sewa?

   (a) Three years (b) Four years (c) Five years (d) Six years

4. Who is Tade's friend?

   (a) Ngozi (b) Nkem (c) Sade (d) Sewa

5. How old is Ngozi?

   (a) Six years (b) Five years (c) Three years (d) Four years

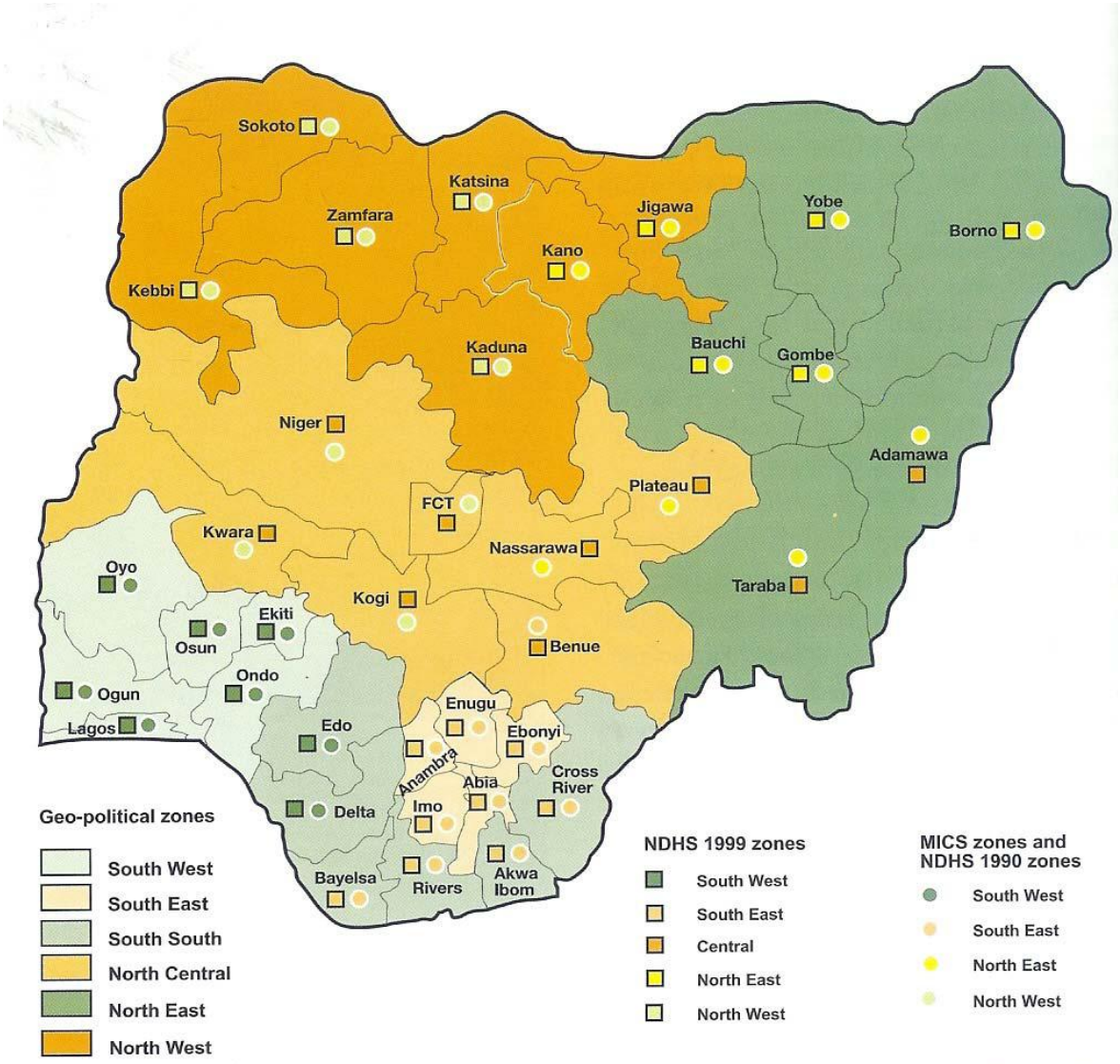
6. In what class is Nkem

   (a) Primary 1 (b) Primary 2 (c) Primary 3 (d) primary 4

Match 'A' with B write the story

A	**B**
e.g Tade is	are Sade and Sewa
7. His twin Sisters	are in primary 1
8. They are	six years old
9. Ngozi is	five years old
10. Sade and Sewa	Nkem's Sister

Appendix VII: Map of Nigeria showing the location of Osun State in the Southwest



APPENDIX VIII: Map of Osun State, Nigeria

APPENDIX IX

Food already served at YTD Primary School, Ede South Local Government, Osun State

Pupils praying on their food at NUD Primary School, Ibokun, Obokun Local Government, Osun State

One of the cooks responding CEQ at John Mackay Primary School C, Oke Ayepe, Osogbo, Osun State

One of the cooks getting ready to serve the food at Baptist Day School, Iragberi, Egbedore Local Government, Osun State

Pupils busy eating their food at Baptist Day School , Iragberi, Egbedore Local Government, Osun State

Pupils filling to collect their food at John Mackay Primary School (A), Oke Ayepe, Osogbo, Osun State

Pupils waiting for others to be ready before eating their food at St Moronba Primary School, Ife, Ife Central Local Government, Osun State

One of the cooks getting ready to serve food at St Peters Iragbiji Primary School, Iragbiji, Boripe Local Government, Osun State

A research assistant assisting one of the cooks to fill CEQ at Ifon in Orolu Local Government, Osun State

Across section of parents that came for PTA meeting at St Georges Primary School, Ofatedo, Egbedore Local Government, Osun

Across section of parents that came for PTA meeting at St Micheal Primary School, Ipetu-Ile Obokun Local Government, Osun State

A Pupil being measured on SBBS at Baptist Basic School, Iresadu, Surulere Local Government, Oyo State