Governments around the world recognize school feeding as a key response to hunger and poverty; government investment in these programs is huge – US$ 75 billion per annum. Return on investment is substantial – for every $1 spent by governments and donors, at least $3 is gained in economic returns.

In the Philippines, there is an alarmingly high rate of underweight (31%), stunting (31%) and wasting (thin) (8.4%) among our schoolchildren as revealed by the National Nutrition Survey conducted by FNRI-DOST in 2015.

The response of DepEd to the undernutrition problem is the implementation of the School-based Feeding Program (SBFP). In the past, the link between feeding programs and gardening programs had been weak. Sustainability of gardening initiatives is regularly reported as a major concern, primarily because majority of gardens have relied on external inputs, which schools cannot fund on a regular basis. Nutrition education in schools for both parents and children remains a challenge in terms of time (of both teachers handling the nutrition sessions and parents attending the sessions) and capacities (technical and materials). SBFP has evolved since 1997, transitioning from addressing short-term hunger to tackling more serious issues of undernutrition. The nutrition issues and education-related objectives came along this evolution; the re-emergence of nutrition-focused programs calls for a holistic approach to respond to the multifaceted gaps in implementing the SBFP.

School feeding has achieved objectives that go beyond feeding the children. It gave value to various aspects that may have strong links to nutritional outcomes; school gardening, food safety and feeding facilities, menu selection, community and barangay relations, parent participation, and school prioritization and leadership.
• **Extended feeding period is more beneficial.** The feeding period could be extended to 180 days to allow higher weight gain of children. Our study showed that extending the feeding period, even for 60 days, yielded a significant increase in weight. The extended feeding period can be done in the school if funds are released by mid June of every school year.

• **Data accuracy.** There is a need to use more accurate and standard equipment for weighing and height taking to assess properly the nutritional status of the children and assess program impact accurately. Based on our data, the use of non-calibrated weighing scales resulted in a two-to-threefold increase in the number of wasted children in school. The funds for the purchase of these tools could come from external resource generation paper in this study.

• **Linking feeding and local food production.** Feeding program using vegetables that are locally produced or sourced out accompanied by food fortification, creates synergistic effect that definitely tackles the burden and prevalence of poor nutrition and iron deficiency in children.

• **Nutrition sensitive agriculture programs.** School gardens have proven to be an excellent mechanism to promote nutrition sensitive agriculture especially if agroecological are used ensuring safe food free of residues.

• **Agroecological and low external input gardening approaches** such as the bio-intensive gardening approach are viable way to revive, restore, and eventually sustain gardens while also linking them with ongoing feeding programs. A 200-square meter garden can produce 700 kg. of vegetables per year.

• **Many of the local vegetable varieties** have been proven to be excellent sources of vitamins and minerals. Local varieties of root crops, leafy vegetables, legumes and fruit-bearing vegetables are easy to grow, tolerant to drought and pest, and do not require so much inputs. Growing these vegetables in schools and communities does not only supplement nutritional requirements of children but also conserves Philippine genetic resources.

• **Diversification of gardens** with emphasis on climate-hardy and nutritionally relevant indigenous vegetables that thrive under extreme weather conditions can improve the availability of different types of vegetables with varying nutrient contents.
**Multifunctionality of schools.** School gardens deliver outcomes that go beyond their role in supporting school feeding. This include conservation of agro biodiversity, opportunity for food education, science and environmental education, source of safe and healthy food for the canteen and school children to take home, serve as model for community and local government and source of planting materials for communities.

**Nutrition outcomes.** There is a need to ensure that nutrition outcomes accrue in various programs through the deliberate inclusion of nutrition outcomes or nutrition objectives within program strategies. Nutrition education both to children and parents are essential components for sustainable gains.

**A supportive policy and administrative environment** for nutrition-sensitive agriculture program and integration of related programs helps pave the way for model building and scaling up of the integrated nutrition model. Lighthouse schools located in every school district provides evidence for local governments and regional offices.

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### Project Background

A 3-year action research project (Phase 1) implemented by the International Institute of Rural Reconstruction (IIRR) and funded by International Development Research Center (IDRC) from 2012 to 2015 has identified nutrition education as the missing link. An integrated model of gardening, supplementary feeding, and nutrition education (GarNESupp) among school children in Cavite Province in the Philippines was implemented. This study has revealed the effectiveness of the model in improving the nutritional status of children; improving the Knowledge, Attitudes and Practices (KAP) both among children and parents; and sustaining the implementation of bio-intensive nutrition gardens and crop museums that aim to retrieve and conserve crop cultivars while improving year-round availability of a diverse range of climate-resilient, locally adapted, and nutritionally important vegetables.

A total of 58 public elementary schools within Region 4A were selected for the implementation of GarNESupp that features a regular school feeding program, a well-sustained bio-intensive garden, and school-based nutrition education activities. Three schools were designated as research sites. Evidence-based messages were derived. The implementation of SBFP using the integrated approach resulted in bridging the gaps between components and has brought about unique implementation strategies of GarNESupp. The integrated model is crucial in seeking lasting impacts of nutrition intervention in schools.