

Baseline Assessment of the Vegetable Gardens (Gulayan Sa Paaralan) in Public Elementary and Secondary Schools

ANITA L. MOLIJON

<http://orcid.org/0000-0002-5160-7123>

anitzmolijon67@gmail.com

Mindanao University of Science and Technology
Cagayan de Oro City, Philippines

JUANA M. DE LA RAMA

<http://orcid.org/0000-0003-0920-2082>

juanadelarama@gmail.com

Mindanao University of Science and Technology
Cagayan de Oro City, Philippines

ABSTRACT

“Gulayan sa Paaralan” (Vegetable Gardens) is one of the strategies of the National Greening Program of the government implemented to help promote food security. This study was undertaken to determine its status five years after its implementation. Descriptive research design was used. The 242 samples were randomly selected from the list of schools implementing Gulayan sa Paaralan from the Department of Agriculture-Regional Field Unit in Region X. A survey was done in 16 elementary and six high schools of Cagayan de Oro City, Philippines. About 77% of the schools maintained vegetable gardens to serve as food basket or main source of vegetables to sustain supplementary feeding. Also, 77% of the schools surveyed used organic vegetable production. The schools taught agriculture in their Edukasyong Pantahanan at Pangkabuhayan (EPP) in the elementary schools and also in the Technology Livelihood Education (TLE) classes in the high schools. About 87% of the 220 pupils and students interviewed said that Gulayan sa Paaralan through vegetable gardening helped the school and

their families economically. It is concluded that schools are still vibrant in the implementation of the program. Through the program, the pupils learned to love and appreciate the field of agriculture.

Keywords - Educational Planning and Management, Gulayan sa Paaralan, organic production, vegetable gardening, love of agriculture, descriptive design, Cagayan de Oro City, Philippines

INTRODUCTION

More and more farm lands are being left idle as the elderly farmers retire due to old age and disabilities (Bordado, 2012). Transferring the farming skills and techniques to their children or heirs and the love and commitment to till the land are important. Majority of our youth prefer working in the cities and urban centers as they find farming a less dignified job. As a consequence, the productivity of our country's agricultural sector is affected.

Advocating sustainable agriculture means promoting, propagating, developing, and implementing the practice of organic agriculture in the Philippines towards a competitive and sustainable organic industry that contributes to: 1) Better farm income and sustainable livelihood which lead to increase farm productivity and reducing expenses on external farm inputs, better income for farmers and reduction of poverty in the rural sector; 2) Improved health which means protected health among farmers, consumers and the public in general; 3) Environmental protection which means enhanced soil fertility and farm biodiversity, reduced pollution and destruction of the environment as well as prevention of further depletion of natural resources; 4) Disaster risk reduction and resilience to climate change through improved resiliency to disaster risks and climate change vulnerabilities caused by human interventions and naturally induced hazards; and 5) Social justice by means of meeting the basic material needs and improving the standard of living for all, upholding human rights, gender equality, labor standards and the right to self-determination.

Administrative Order Series 2011, No. 15 by the Department of Agriculture (2011) covers the amended guidelines on the Implementation of Programang Agrikulturang Pilipino (Gulayan sa Paaralan). The basic policy states that consistent with the goal of the Department of Agriculture to attain food self-reliance and self-sufficiency, it is the policy of the state to empower its constituency by enhancing their capability to produce their own food through adoption of various means of vegetable growing. Generally, the Gulayan sa Paaralan will

promote self-help food production activity values among children to appreciate agriculture as a life support system.

FRAMEWORK

The study adopted the Input-Process-Output-Outcome model approach where the following step-by-step procedures were involved: a) Profile of the schools to include the number of enrollment, the area allotted for the school garden which was commonly between 100 to 200 square meters, and the kind of vegetable seeds and cuttings planted which were of indigenous varieties and common seeds planted in the backyard like okra, pechay, eggplant, malunggay, beans, ampalaya, and squash. The seed cuttings planted were *Basella alba* (alugbati), sweet potato (camote), and *Moringa oleifera* (malunggay). Although cassava was recommended, no schools had planted this crop in the school gardens. The seeds and cuttings mentioned above were of indigenous varieties (seeds and cuttings can be banked for the next planting season). Also, these vegetable crops were those recommended by the Department of Agriculture (DA) and the Bureau of Plant Industry (BPI).

The legumes are rich in protein (Beans). Root crops such as sweet potatoes and cassava are rich in energy nutrients. Leafy and green vegetables like *Moringa oleifera*, *Corchorus* (saluyot), taro (gabi) leaves, water spinach (kangkong), Chinese spinach (kultitis), *Basella alba* (alugbati), and pechay are rich in vitamin A and iron.

The second part of the procedure is the b) Activities conducted by implementing agencies and material assistance such as the conduct of trainings, technical briefings, monitoring and evaluation, and provision of input assistance like vegetable seeds and cuttings, and organic fertilizers; c) Best practices like organic farming using animal and crop waste, nature farming technology using resources in the garden, mulching using recycled material, vegetable production with green manuring, diversified gardening, bio-intensive gardening, Food Always in the Home (FAITH), and urban gardening using recycled containers; d) Sustainability of *Gulayan sa Paaralan* brought about by the knowledge gained by the pupils and students from *Gulayan sa Paaralan*.

Meeting the target of *Gulayan sa Paaralan* (Vegetable Gardens) means that students learned and that they practice them at home. Active collaboration of the stakeholders is one great element that will contribute to the sustainability of *Gulayan sa Paaralan*. The stakeholders refer to the participants and the

implementers of Gulayan sa Paaralan: the pupils, the students, the Department of Agriculture (DA), the Bureau of Plant Industry (BPI), the Agricultural Training Institute (ATI), the Local Government Units (LGUs), and other program partners to mention the Department of Health-National Nutrition Council (DOH-NNC), the Non Governmental Organizations/Private Offices (NGOs/POs), private sectors and media, and other national agencies that may be involved in the succeeding years of the program; and lastly, it includes e) Economic benefit components such as sustainable production of vegetables, school gardens for source of supplemental feeding, and small-scale food production model. Vegetables from your own garden are free.

Though there are some initial expenses in starting a vegetable garden, most people agree that it is cost saving and weekly expenses were reduced by growing and producing your own. Also, families will have continuous supply of vegetables and food and it will always be available at home. Results from the study indicate that school gardening may affect children's vegetable consumption, including improved recognition of, attitudes toward, preferences for, and willingness to taste vegetables. Gardening also increases the variety of vegetables eaten (Ratcliffe et al., 2011).

OBJECTIVE OF THE STUDY

The study focused on the baseline assessment of the Gulayan sa Paaralan in the Division of Cagayan de Oro City, Region X, Philippines. It aimed to determine the status of the program after its implementation in 2007. The Department of Education Memorandum Order No. 293, Series of 2007 was signed by the Honorable Jesli A. Lapuz, Secretary of Education on July 27, 2007.

METHODOLOGY

To establish the baseline data, a survey was conducted from twenty-two (22) Public Elementary and Secondary Schools in Cagayan de Oro City, Region X in the Philippines. The 242 samples were randomly selected from the list of schools implementing Gulayan sa Paaralan taken from the Department of Agriculture-Regional Field Unit in Region X. The survey questionnaires were utilized in gathering the baseline data and information in relation to the problems defined in the study such as: a) the profile of schools implementing the Gulayan sa Paaralan; b) the extent of assistance given to Department of Education by the implementing agencies; c) the small-scale production food production models showcase in

school for the households and the community to replicate the sustainability; and d) the economic benefits of the Gulayan sa Paaralan. The questionnaires used were structured. In the structured questionnaire, there were questions that were only answered by the focal person and the pupils interviewed. There were instances that the respondents had to supply specific answers. The study used the descriptive design. The general characteristics of the respondents and effectiveness of the program were described using percentage, frequency counts, mean and standard deviation. Pearson Product Moment Correlation analysis was used to determine the correlations of the input-process-output-outcome; and the effectiveness of the Gulayan sa Paaralan in terms of sustainability and economic benefits.

RESULTS AND DISCUSSION

There were 242 respondents in the survey. Of the 242 respondents, 22 were teachers and focal persons of Gulayan sa Paaralan and the remaining other 220 respondents were pupils from the elementary and students from the secondary schools. The Department of Agriculture in Northern Mindanao (DA-10) through its Crops Division with the Department of Education-10 (DepEd-10), Department of Social Welfare and Development-10 (DSWD-10), local government units, and other government agencies have continued the implementation and the advocacy of the Agri-Pinoy Gulayan sa Paaralan Project. In May 2012, a meeting with key players was done to tackle the amended guidelines of the implementation as stipulated in Executive Order No. 15, series of 2011; criteria and composition of evaluators for the best school garden contest; status and accomplishments for the 2011 beneficiaries of the project; and the 2012 target beneficiaries.

There were 574 schools who had benefited from the Gulayan sa Paaralan in the year 2011. It went up to 650 beneficiaries in the year 2012. The school beneficiaries had received vegetable seeds and planting materials. Focal persons of the schools and districts had undergone training prior to the implementation of the program. As recipient of the project Gulayan sa Paaralan, the schools were encouraged to establish their own banking facility to sustain availability of vegetable seeds and cuttings for the next cropping. Seed banking was one of the criteria for the district level's search for best school garden contest.

The DA had also distributed five kilos of worms and vermi bed for each of the 316 beneficiary school from Calendar Year (CY) 2011 and 400 schools for

CY 2012 beneficiaries in the region. For the preparation, trainings on Vermicomposting were conducted. The focal persons disseminated the information to the heads of target school beneficiaries for the preparation of the area intended for the school gardens. Moreover, to continually monitor the development of the project, the focal persons were required to submit monthly reports on the distribution of inputs and production data of existing gardens every end of the month to DA Regional Field Office 10 (PIA, 2011).

On the onset of the implementation of *Gulayan sa Paaralan*, the Department of Agriculture as the lead agency provided support to the Department of Education such as trainings, technical briefings, monitoring and evaluation, and material inputs such as vegetable seeds and cuttings, garden tools, vermi-worms, and construction of vermi-beds.

Data showed that of the 22 schools surveyed, 77 % used organic vegetable production. Of the school surveyed, 73% were elementary schools and 27% were secondary schools. Majority of the schools had a population of 1500-2000 (32%) and they belong to the urban schools followed by schools with 501-1,000 (27%) and 500 and below (23%). Majority of the schools started *Gulayan sa Paaralan* in School Year 2011 (41%). There were other schools who implemented the program by 2012 (18%). The rest started in S.Y. 2007 (9%), S.Y. 2008 (5%), S.Y. 2009 (5%) and S.Y. 2010 (9%). Fifty percent (50%) of the schools had gardens with an area of 200 square meters as per guidelines.

Twenty-seven percent of the schools had gardens more than 200 square meters and nine percent (9%) had gardens below 200 square meters. It follows that the bigger the population and the bigger the area allotted for the school garden, the greater is the production. Usually in the rural school areas, wider spaces were utilized for the garden.

The researchers had observed that weeding was a problem in schools with wider gardens. In the urban areas like Macanhan Elementary School in Carmen, Cagayan de Oro City, the EPP teacher made use of hanging gardens and used containers of mineral water and it was really pleasing to the eye seeing the healthy plants. In Indahag Elementary School in the district II of Cagayan de Oro City, pechay were beautifully arranged in juice tetra packs made into squares. Okra was identified as the most common vegetable planted in the school gardens and the least cultivated was squash. Other vegetables seeds planted were malunggay, eggplant, pechay, ampalaya, beans.

All of the aforementioned vegetables were of indigenous varieties. Okra can thrive in both climatic conditions- wet and dry. This crop is productive year round

or more. The planting of squash is more recommended in wider areas because of its crawling characteristics. Also, squash like other types of vegetables are sun-loving crop and does not usually thrive in shady areas. The schools were able to identify the seeds and vegetable cuttings they planted, but only very few schools were able to specify the volume of the crop harvested from their school gardens. Only the schools that took active participation in the *Gulayan sa Paaralan* school competitions and contest were able to present the data on volume. Of the 22 schools surveyed, three (3) or 13.63% said trainings were always conducted, 17 or 77.27% said trainings were conducted on some occasions but not as frequently as needed, and 1 or 4.54 % said training was not conducted.

The trainings conducted covered the topics of growing vegetables, organic fertilizer production and vermi-composting, nature farming technology system, container and backyard gardening, bio-intensive and urban gardening, pests and diseases management, and school saved seed production.

As to the conduct of technical briefings, three or 13.63 said technical briefings were always conducted, 18 or 81.82% said that technical briefings were done on some occasions, and 1 or 4.54% said no technical briefing was conducted. For the monitoring and evaluation, three schools or 13.63% said that monitoring and evaluation were undertaken regularly, 18 or 81.82% said the monitoring and evaluation were undertaken on some occasions, and 1 or 4.54 does not remember that monitoring and evaluation were undertaken by the implementing agencies. According to the data gathered, 19 or 86.36 had received the seeds provided by the DA during the start of the *Gulayan sa Paaralan*, and 3 or 13.64 schools reported that the seeds were provided by DA every planting season. Most of the plant cuttings were secured from the nearby households shared by the pupils and students. The vermi-worms were also provided by the DA for organic fertilizer production through the process of vermi-composting. Sixteen or 72.72% of the school claimed that the DA supplied their school with five (5) kilos of vermi-worms. Vermi-beds were also constructed for this purpose. Also, the schools were reminded and advised to gather fallen leaves, crop, animal waste and other compostable materials, partially decompose them and use to feed the vermi. After 40 to 45 days, the vermi-compost will be ready for harvest and application in the school gardens. Garden tools were also provided to the schools implementing the *Gulayan sa Paaralan*. The most common garden tools distributed were bolos, rakes, wheel borrows, garden hose, and garden hoes.

As stipulated in the Department of Education Memorandum Order No 293, s. 2007, the Project “*Gulayan sa Paaralan*” seeks to raise the level of public

consciousness on the health and nutritional dimension as well as economic benefits of establishing school, household and community gardens. One of the requirements for the school is to showcase small-scale food production models in school for the household/community to replicate purposely and promote family food security and inculcate among the students the values of good health and nutrition, industry, love of labor and care for others. Of the small-scale food production models, organic farming using animal and crop waste were adopted among the 11 or 50% of the schools; urban gardening using recycled containers for the nine or 40.91% of the schools; Food Always at the Home (FAITH) for the seven or 31.82%; nature farming technology system using animal and crop waste, mulching using recycled material, bio-intensive gardening for the 4 or 18.18% of the schools respectively, and vegetable production with green manuring for the 3 or 13.64% of the schools.

The aforementioned small-scale food production models were based from the innovation of the schools, pupils and students and follow organic farming and waste recycling. Organic Farming means zero use of chemical pesticides and chemical-based fertilizers. Application of even a drop of chemical for pesticides and fertilizer is strictly prohibited. Waste recycling is a process wherein used materials such as empty bags of cement, empty bottles of mineral water, or garbage of tetra packs are used in planting vegetable crops. Mulching process enables the soil to retain moisture and control weeds. In green manuring, legumes like peanuts and mung are planted. Aside from the harvest, the crop waste materials such as are incorporated in the soil as green manure.

In terms of the sustainability of the *Gulayan sa Paaralan*, 17 or 77% said that they had sustained their school gardens and seven or 23% said they had not sustained their school gardens. The schools were able to sustain the *Gulayan sa Paaralan* because the schools had established their own small scale food production models. With the knowledge acquired by the pupils and students on the small-scale food production models, these were replicated to the households and in the community. Numerous subjects were taught in schools and imparted by the EPP and TLE teachers.

Of the 220 pupil and student respondents, 81% learned about vegetable production, 70% on good nutrition, 56% on benefits from fruits and vegetables, 42% on container gardening, 36% on school saved seed production, 34% on organic agriculture, and 31% on organic fertilizer production. Seventy-seven percent (77%) of the schools have maintained its vegetable gardens to serve as food basket or main source of vegetables to sustain supplementary feeding. Fifty

percent (50%) of the schools surveyed had Organic Farming using animal and crop waste as their small-scale food production model, 41% maintained urban gardening using recycled containers, 32% maintained Food Always in the Home (FAITH) concepts and 23% have diversified gardens.

Another factor that contributed to the sustainability of vegetable gardens was the active participation of the stakeholders and establishment of new partners. Nineteen or 86.87% of the total respondents said that *Gulayan sa Paaralan* was actively participated by the implementing agencies and the stakeholders while 3 or 13.64% reported that the project was not actively participated by the implementing agencies and the stakeholders. The new partners developed purposely for the school feeding were Balay Mindanao, Jollibee because of the Busog, Lusog, Talino Program, Save the Children, Barangay Council, 4Ps, and the Xavier University College of Agriculture.

The sustainability of the *Gulayan sa Paaralan* was also attained because the pupils had actively participated in gardening and that they had shared and contributed for the purchase of seeds (36%), the schools provided budget (27%), the DA provided fertilizers every planting period or every cropping (23%). Some reasons identified for the non-sustainability were: a) the area allotted for the garden were converted for construction of new school buildings; b) area of the garden was not susceptible for gardening (poor drainage system); c) no permanent *Gulayan sa Paaralan* Coordinator; d) lack of technical assistance and input assistance such as seeds and garden tools, and e) unable to fully implement the project.

The school, the households and the community had benefited economically from the *Gulayan sa Paaralan*. The schools were able to provide the vegetables necessary for the supplementary school feeding. The excess vegetables were sold. The schools had generated an annual income ranging from 11 USD (Php 500.00) to 44 USD or 1,500.00 in peso value. The sales were utilized to buy spices and other needs for the school feeding. The knowledge acquired by the pupils and students on small-scale food production models was applied and the small-scale food production models were replicated at the households and community. Food is always available at home. The pupils and students said the vegetables were used as their viands. The excess vegetables harvested from the gardens were sold and were utilized to pay for their basic needs such as food, daily school allowance, new clothing, and to some extent one of the respondents said that his family was able to have a new television set.

The result of the baseline survey on *Gulayan sa Paaralan* will be a good input in emphasizing the importance of the Section 9 of Agriculture's Administrative

Order Series 2011, No. 15 (Department of Agriculture, 2011): The Roles and Responsibilities of Key Players and Stakeholders. The active participation of both the key players (DA and DepEd) and the stakeholders (PTA and LGU) will be great contributing factors for the sustainability of Gulayan sa Paaralan. In this research, the number one contributing factor to sustainability was the students and pupils who contributed for the cost of production inputs such as seed costing aside from the school which provided budget for the project.

CONCLUSIONS

It is concluded that the schools are still vibrant in the implementation of the Gulayan sa Paaralan. The Department of Education (DepEd-GP) Gulayan sa Paaralan can be sustained and have economic benefits even with less assistance from the partner agencies which were expected to provide trainings, technical briefings, monitoring and evaluation, and material assistance like seeds, organic fertilizers, and garden tools.

The program was sustainable and had economic benefits after the students' innovations and best practices applied and level of participation of the people involved e.g. the effect of activities like school competitions and advocacy campaigns in partnership with the congressional, local government and private sector partnership, the LGUs and the local private companies.

The DepEd-GP can be sustained even in the absence of support assistance from the DA because the pupils, students, teachers and parents contributed for the production inputs such as seeds and organic fertilizers. The schools provided budget and they established seed banking. The schools adopted best practices for their production models such as organic farming utilizing crop and animal waste, nature farming technology system, and mulching using recycled material as used sacks which are least costly. These approaches engaged the schools as a vehicle in increasing awareness as well as cultivating the interest of the young children, the value of safe farming and producing nutritious food. The pupils and students actively engaged and participated.

It has also economic benefits since the acquired innovations or best practices applied in the established school gardens became a model for backyard gardening. These innovations were replicated by parents/elders at their respective homes. Food is always available and the surplus was sold to provide other basic needs. In a way, the level of knowledge acquired by the students coming from this small-scale production model was shared to their parents.

The pupils and students started to love agriculture as a life support system. Even though the teachers had moderately participated in the *Gulayan sa Paaralan*, the pupils and students had actively participated in the gardening activities as they learned and enjoyed cultivating the soil, plant the seeds and cuttings, water, fertilize, and pull the weeds (Bordado, 2012). Results from the study of middle school-aged students indicate that school gardening may affect children's vegetable consumption, including improved recognition of, attitudes toward, preferences for, and willingness to taste vegetables. Gardening also increases the variety of vegetables eaten (Ratcliffe et al., 2011).

Because of the trainings and the technical briefings, the knowledge, abilities, and the skills of the EPP teachers in the elementary and the TLE teachers in the secondary schools were enhanced.

TRANSLATIONAL RESEARCH

The results of this study would provide the EPP teachers in the elementary and the TLE teachers in secondary schools a proper record keeping, seed banking, teaching strategies, and evaluation techniques in the selection of instructional materials to ensure the effectiveness and efficiency of having *Gulayan sa Paaralan* in schools. The results of the study would also provide the pupils and students the appropriate knowledge, abilities and skills to do vegetable gardening. Learning various types of vegetables (their health benefits and advantages in their diet) made a huge difference because the pupils and/or students were encouraged to plant them. In *Gulayan sa Paaralan* Program, the children developed love in Agriculture at their early stage. Knowing the advantages of growing vegetables and practically doing how to nurture them is one of the best ways that pupils in the elementary and students in the high school did to continuously grow vegetables in school and at home. Thus, *Gulayan sa Paaralan* had sustainability.

LITERATURE CITED

Bordado, E.B., *Success Stories*, DA-RFU 5, pg. 1

Cavaliere, D. (1987). *How Zucchini Won Fifth-Grade Hearts*. *PTA Today*, 12(4), 9-11.

- Graham, H., Beall, D. L., Lussier, M., McLaughlin, P., & Zidenberg-Cherr, S. (2005). Use of school gardens in academic instruction. *Journal of Nutrition Education and behavior*, 37(3), 147-151.
- Graham, H., & Zidenberg-Cherr, S. (2005). California teachers perceive school gardens as an effective nutritional tool to promote healthful eating habits. *Journal of the American Dietetic Association*, 105(11), 1797-1800.
- Lineberger, S. E. (1999). *The effect of school gardens on children's attitudes and related behaviors regarding fruits and vegetables* (Master's thesis, Texas A&M University).
- McAleese, J. D., & Rankin, L. L. (2007). Garden-based nutrition education affects fruit and vegetable consumption in sixth-grade adolescents. *Journal of the American Dietetic Association*, 107(4), 662-665.
- Ratcliffe, M. M., Merrigan, K. A., Rogers, B. L., & Goldberg, J. P. (2011). The effects of school garden experiences on middle school-aged students' knowledge, attitudes, and behaviors associated with vegetable consumption. *Health Promotion Practice*, 12(1), 36-43.
- Administrative Order Series 2011, No. 15 (Department of Agriculture 2011). Retrieved from <http://www.da.gov.ph/index.php/laws-issuances/administrative-orders/25-ao-2011>