



Food and Agriculture Organization
of the United Nations



INCLUDING GASTRONOMY IN THE SCHOOL FEEDING PROGRAMME

A NECESSARY CHANGE TO GUARANTEE CHILDREN'S RIGHT TO HEALTHY,
TASTY AND WASTE-FREE FOOD

GUIDANCE NOTE FOR THE PILOT PROJECT IN SAN MARCOS, **GUATEMALA**

I. SUMMARY

Each year, the Guatemalan State invests around 1 869.2 million Quetzales (USD 245 million) in the national School Feeding Programme (PAE, by its acronym in Spanish), which feeds 2 400 000 children. This research estimated that in a school year (180 days), it would be possible to prevent the waste of 561.6 tonnes of food in the PAE, which is equivalent to 6.5 million Quetzales (USD 864 000), or about 0.35 percent of the budget invested. This food waste is partly due to students leaving the food they do not find tasty on their plate.

These data come from a small-scale pilot intervention, with a before-and-after assessment design, carried out in an educational institution in the department of San Marcos, Guatemala, where the gastronomic quality of a school menu was improved through reinforcement training provided by a professional chef for the PAE cooks. To identify whether there were differences before and after the intervention, a survey was applied to a sample of children aged 8 to 14 years, which resulted in an increase in acceptance (from 84 percent to 90 percent) and a decrease in food waste.

Taking as a reference the cost of implementing a gastronomic laboratory in the Chilean PAE (0.017 percent of the total budget), the implementation cost in Guatemala was estimated at 318 000 Quetzales or USD 41 000 per year. Comparing these resources with those that would correspond to food waste in the PAE Guatemala (6.5 million Quetzales), it is clear that investing in gastronomy is a useful mechanism to optimise the use of PAE public resources. For this reason, based on the findings of this study, it is highly advisable to incorporate gastronomic personnel into the PAE team, who can advise throughout the entire implementation chain.



II. INTRODUCTION

Guatemala faces the greatest problem of child stunting (46.5 percent) in Latin America and the Caribbean, in addition to an accelerated increase in overweight and obesity in children, adolescents and the adult population (WHO, 2020; Ministry of Public Health, National Institute of Statistics of Guatemala, and ICF International, 2015).

Also, the situation in the region contemplates severe environmental risks due to climate change. For example, in relation to food loss¹ alone, it has been estimated that 11.6 percent of the food produced is lost between the post-harvest stage and distribution (Swinburn *et al.*, 2019; FAO, 2019). On the other hand, although there is no concrete estimate, food waste occurs mainly at the consumer level for several reasons, including poor planning of purchase and food selection, poor organisation and use of ingredients when preparing meals, over-buying, confusion about labels and inadequate storage (FAO, 2019). Guatemala does not escape this reality.

Solutions to these challenges are complex and must encompass policies, programmes, projects and strategies that address the social determinants of health and are also based on the right to health and adequate food; such instruments, of binding nature for countries, are described in the International Declaration of Human Rights, among other pacts and treaties (FAO, 2005). Examples of these policies include: food labelling legislation, development of food-based dietary guidelines, taxation of unhealthy food products, protection and regulation of school environments to promote healthy practices, among others (Swinburn *et al.*, 2019; PAHO and WHO, 2014).

In Latin America and the Caribbean, the Food and Agriculture Organisation of the United Nations (FAO) is already undertaking activities along these lines, particularly in relation to PAE. Thus, FAO advises countries to establish activities for the adoption of healthy school menus, the implementation of pedagogical school gardens, food and nutrition education, multisectoral coordination and articulation, social and community participation, the reform of school kitchens and canteens, and direct purchase of local family farming products, among other measures (FAO and WFP, 2019).

¹ Food loss occurs along the food supply chain from harvest to – but not including – the retail level; food waste occurs at the retail and consumption level (FAO, 2019).



The **inclusion** of **gastronomy** in School Feeding Programmes is a **powerful strategy** that contributes to guaranteeing children's **right to nutritious and tasty food**, and in turn, has the potential to **reduce food waste**. All of this will improve the **efficiency** of the PAE.

In this context, taking as a reference the experience of the Gastronomic Laboratory of the National School Aid Board (JUNAEB, by its acronym in Spanish) in Chile, FAO is implementing a pilot project in three Latin American and Caribbean countries (Guatemala, Colombia and the Dominican Republic) to include gastronomy² in the different processes of planning, implementation and evaluation of the PAE (JUNAEB, 2017).

Although in Guatemala the PAE already has an institutionalised mechanism for validating the acceptance of menus, this proposal has a broader scope as it also seeks to contribute to the reduction of food waste generated by students, which in turn will help to ensure that public resources invested in the PAE are used more efficiently (Secretariat of Food and Nutrition Security of Guatemala, 2019).

In these circumstances, FAO, together with the Ministry of National Education of Guatemala (MINEDUC), through the General Directorate for the Strengthening of the School Community (DIGEFOCE, by its acronym in Spanish), launched the pilot project *Including Gastronomy in School Feeding Programmes* (IGPAE, by its acronym in Spanish).

The purpose of this document is to present how the project was implemented in Guatemala, its results and some strategic thinking so that the actors involved in the PAE become interested in the insertion of gastronomy in these programmes as a measure that can potentially improve their efficiency.

² For the purposes of this document, gastronomy is understood as the science and art that studies the relationship of human beings with their food, environment and culture, taking food as the central axis; while gastronomic techniques are the practical elements used to implement this objective.

III. KEY INFORMATION OF THE SCHOOL FEEDING PROGRAM IN GUATEMALA

Backed by the Political Constitution of Guatemala and the School Feeding Law (decree number 16-2017), the PAE aims to "guarantee school feeding, promote health, and encourage healthy eating among children and adolescents attending public or private schools, so that they can take advantage of their teaching-learning process, as well as the formation of healthy eating habits, through food and nutrition education actions and the provision of food for students during the school year" (Government of the Republic of Guatemala, 2017).

As described, the PAE in Guatemala establishes that good nutrition should be:

- Sufficient: it should provide calories and nutrients according to the characteristics of each individual.
- Complete: it must provide the nutrients and water that the body needs.
- Balanced: there should be no deficiency or excess.
- Varied: requires the consumption of all types of food.
- Safe: there must be no biological, chemical or physical contamination.
- Relevant: it should respect socio-cultural patterns related to food.

Concerning its organisational structure, the PAE is led by the Ministry of Education, which in turn hands over responsibility for its implementation to the Parents' Organisations (OPF, by its acronym in Spanish) (Ministry of Education of Guatemala, 2018). For their part, the OPF are responsible for budget execution, provision and food preparation in each school. In a previous step, the construction of the menus is carried out by the Departmental Directorate of Education. To this end, an annual on-site validation is carried out through a verification of the feasibility of preparing the menus and the subsequent tasting and approval (using a hedonic scale) by the students of ten randomly selected schools.

Figure 1. Selected features of the PAE Guatemala



*Exchange rate October 2019

Source: Elaborated by the authors.

Reports on the PAE operation in 2019 indicate that more than 2.4 million beneficiaries were served at the national level, with a budget of almost 1 869.2 million Quetzales allocated to the programme – or the equivalent of USD 245 million per year (Alvizures, 2020). Besides, 53 206 parents voluntarily participate in food preparation, investing an average of two to four hours per day (Ministry of Education of Guatemala, 2019a). All this information highlights the social and economic reach of PAE in Guatemala.

IV. GENERAL DESCRIPTION OF THE PROJECT

a. Aim of the project

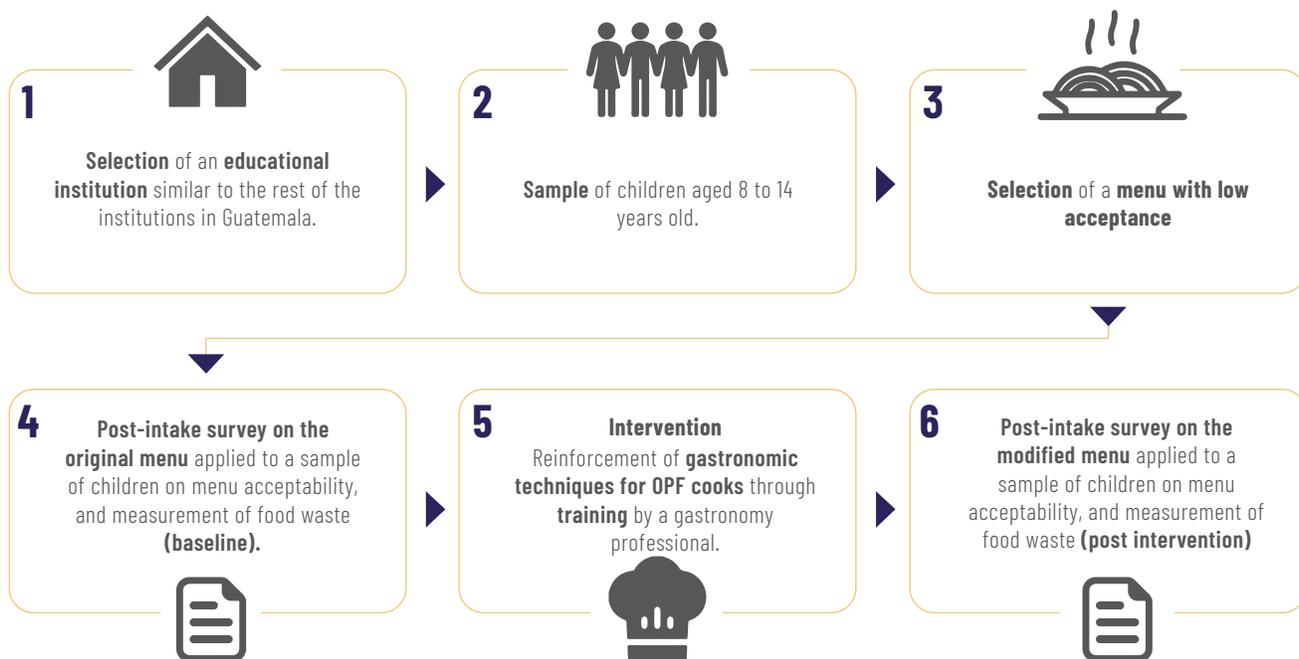
The IGPAE seeks to contribute to increasing the efficiency of the PAE by including gastronomic criteria and techniques in the different planning and execution processes, which allow the menus served to be nutritious and tastier, increasing their acceptance and intake, and reducing food waste.

b. Intervention design

Case study with a "before-and-after" design, applied in October 2019, in which the children at an Educational Institution received a school menu modified by the cooks of the Parents' Organisation, according to the gastronomic techniques recommended by a professional in the area (Figure 2).

To identify whether there were differences in acceptance and generation of food waste resulting from the inclusion of gastronomic techniques in the selected menu, a survey was applied before and after the intervention to a sample of 10 percent of students aged 8 to 14 years, who consumed the menu³.

Figure 2. Design of the project IGPAE GUATEMALA



Source: Elaborated by the authors.

³ The selected educational institution has 116 students, which results in a small sample. For this reason, a second intervention was planned for March 2020 in an Educational Institution in Guatemala City with a larger sample of students; however, as face-to-face classes were suspended due to the COVID-19 pandemic, this activity had to be suspended as well.

What was the menu selected and what gastronomic techniques were included at no additional cost?

The selected menu corresponds to Menu 9 of the technical ruling No. DIGEFOCE-SAN-06-2019 and is called "pasta with spinach, chicken and broccoli, and tortilla, accompanied by seed, pineapple and lemon soda" (Ministry of Education of Guatemala, 2019b). Considering the methodology applied by the Ministry of Education for menu approval, the menu has an expected approval of 80 percent. However, it was selected because of its elements of low acceptability (vegetables such as broccoli and spinach and their recurrent use in school).

In response to the characteristics and potential of the preparation, the gastronomic techniques added were:

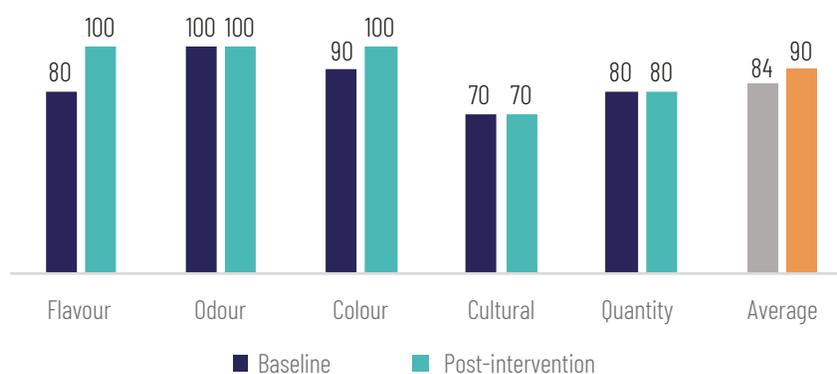
- determination of optimal cooking points according to acceptability of consumption;
- definition of cooking times (for vegetables, pasta and grains);
- use of broths for cooking;
- vegetable cut according to their importance for flavour and even cooking;
- knife sharpening and use of equipment;
- reinforcement of food cleanliness and food safety practices;
- healthy soft drink making.

c. Results

Acceptance

The acceptability test included an evaluation of five categories (taste, smell, presentation, cultural acceptability and quantity acceptability) in hedonic scale. With the application of the gastronomic techniques in the selected menu, the level of acceptability increased in the categories of taste and colour, reaching 100 percent satisfaction (Figure 3). The rest of the categories remained similarly accepted before and after the intervention. On average, across all categories, there was an estimated increase in acceptability from 84 to 90 percent.

Figure 3. Changes in menu acceptability



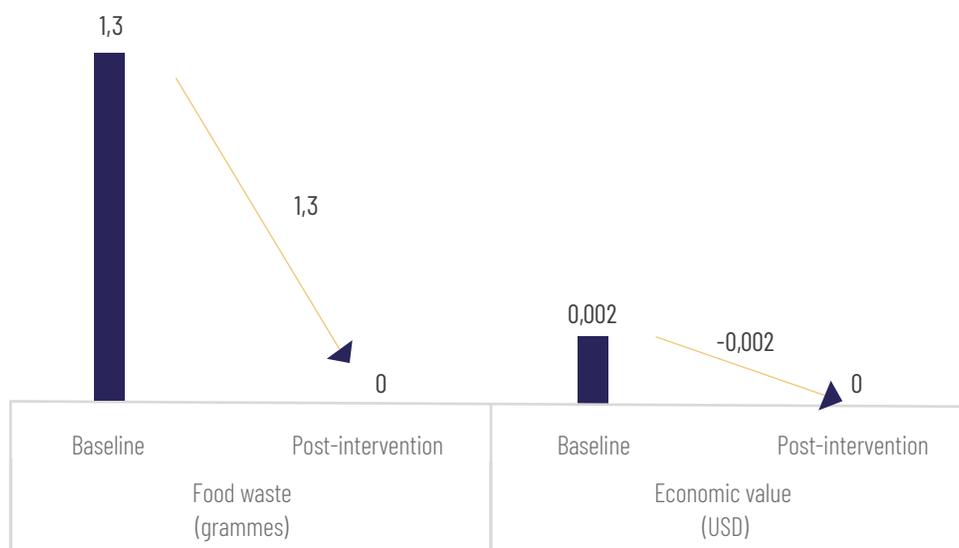
Source: Elaborated by the authors.

Food waste and economic value

After including gastronomic techniques in the selected menu, food waste was reduced by an average of 1.3 grammes per child per day. In economic terms, this implies a resource optimisation of USD 0.002 on average per child per day (Figure 4).

If we take into account the high level of acceptance of school menus in Guatemala (above 80 percent), it is reasonable to assume a similar waste reduction (1.3 grammes) in all menus consumed by PAE beneficiaries nationwide. Following this line of analysis, if we calculate the volume of food that would not be wasted in a school year, we obtain a value of 561.6 tonnes⁴, which means optimising USD 864 000⁵.

Figure. 4 Food waste and economic value



Source: Elaborated by the authors.

*By inserting gastronomic techniques into a selected menu, up to **USD 864 000** per school year could be optimised; in volume terms, this represents **561.6 tonnes** of food that would not be wasted.*

⁴ For this calculation, the average value of food waste avoided per child per day (1.3 grammes) is multiplied by the total number of students receiving the PAE in Guatemala (2 400 000 beneficiaries) and then by the total number of days (180) the PAE is received in a school year.

⁵ For this calculation, the average value of optimised resources per child per day (USD 0.002) is multiplied by the total number of students receiving the PAE in Guatemala (2 400 000 beneficiaries) and then by the total number of days (180) that the school menu is received in a school year.

Nutritional aspects

Prior to the intervention, a single measurement of the calories served in the selected menu was performed. The caloric value per portion served contains 344 calories per child on average. While calorie requirements vary according to age and level of physical activity, based on a 2 000-calorie diet, this value represents 17 percent of the daily recommended intake. This proportion is below the average provided by other countries in the region, which in some cases is as much as 30 percent.

Gastronomic results

- organoleptic improvement of the dishes: meals are more appreciated without directly modifying the recipe;
- determination of optimal cooking points according to acceptability of consumption;
- involvement of gastronomic techniques including: cooking time of vegetables, pasta and grains, use of broths for cooking;
- knife sharpening and use of equipment, food cleaning and safety, vegetable cutting and its importance for flavour and even cooking, making soft drinks;
- upgrading of kitchen equipment including whetstone, strainer, containers, tongs;
- improved sanitary practices, including cleanliness of raw materials and use of cooking utensils.



Gender focus

The implementation of the pilot in San Marcos, Guatemala, is an initiative with a strong gender focus as it concentrates on strengthening the gastronomic skills of women whose profession is food handling. Thus, the results of the pilot contribute to giving greater visibility and value to the work of these women both within the educational community and in society in general.



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V. GASTRONOMY IN THE PAE: SMALL ACTIONS, BIG RESULTS

Guatemala has three very particular characteristics in its School Feeding Programme: i) the cooks are the mothers of the children who receive the food; since they cook for their own children – they are not just food handlers from an external company, it can be assumed that the food is prepared with special care and affection. ii) The menus delivered to schools are previously tested on a sample of the school population and must have over 80 percent acceptability: that is, the dishes already come with a high acceptance rate. iii) The food is delivered in a context of a double burden of malnutrition (high rate of child stunting coupled with an increase in overweight and obesity). Besides, in many cases, it is children's main meal.



The combination of the three factors results in a PAE with very high acceptability and intake rates, namely, dishes that are highly valued by children who eat them with pleasure. Given the above, one might think that it is difficult to add improvements to a PAE with good acceptability and intake. However, the pilot shows even better results after incorporating gastronomic techniques and criteria, and the potential consequences in terms of reduced food waste and efficiency in the use of public resources indicate that every gramme of food matters.

Also, it is critical to consider that while good acceptability and intake rates are observed at this stage, there is no guarantee that these good figures will be maintained in the future. In the case of the PAE in Chile, there were very high intake rates from the beginning until the 1980s; but, as the country's economic conditions improved and students had more access to foods other than those provided by the PAE, these rates dropped. As a result, the incorporation of gastronomy into the Chilean PAE corrected this gap, and in recent years, intake and acceptability have increased again.

The case cannot be extrapolated directly, but it is food for thought for the PAE Guatemala: its current good acceptability and intake figures may be affected by changes that may occur in the future. Examples of such changes are: possible increase in access to different types of food by the student population, change in the model of service delivery – currently provided by mothers *ad-honorem* – to food handlers from external companies, among others. In this sense, it seems logical that the incorporation of gastronomy in the PAE, which may present the aforementioned changes in the future, could be a tool to prevent these changes from resulting in a decrease in acceptance and intake by students.

Finally, the incorporation of gastronomy in a school feeding programme implies certain costs. Although these will be directly associated with the management model of the PAE and the degree of depth of this incorporation, it is important to mention that, in the Chilean case, the project has an annual cost of 0.017 percent of the total PAE budget, and the results in terms of acceptance and intake with the inclusion of gastronomy have shown improvements of more than 9 percent and 22 percent, respectively, with consequent efficiency in the use of public resources. Therefore, the implementation of a Gastronomic Laboratory in Guatemala with potential benefits in the acceptance of menus and the reduction of food waste could cost around 318 000 Quetzales or 41 000 USD per year. It appears clearly, then, that investing in gastronomy is definitely an alternative that can achieve great results.



VI. FINAL RECOMMENDATION

The most important recommendation, in short, is to find a mechanism to include technical and gastronomic planning aspects in the PAE Guatemala, with a broad vision for the future, but with a step-by-step implementation. In this sense, the most important steps to follow would be:

- Extend the pilot developed in San Marcos to a larger number of schools in Guatemala, with a consequent increase in measurable samples to corroborate the pilot results.
- Incorporate gastronomic personnel in the PAE at the central level as expert consultants for the implementation of a second phase, as well as for the modification of menus, with an emphasis on their regionalisation, thus promoting culinary culture and the local commercialisation of food.
- Finally, add the word "tasty" to the list in the law describing how school meals should be (sufficient, complete, balanced, varied, safe and relevant), as a gesture to enshrine the intention that these meals should also be delicious so that students will eat them with pleasure, today and in the future.

VII. ACKNOWLEDGEMENTS

Our sincere gratitude is extended to the Departmental Directorate of Education of San Marcos (DIDEDUC San Marcos) and the General Directorate for the Strengthening of the Educational Community (DIGEFOCE); thanks to the openness and willingness of their representatives, this initiative could be carried out successfully. We would also like to thank La Ceiba school, in the municipality of La Reforma, San Marcos, which participated in the implementation of the project, especially its authorities, teachers, students and Parents' Organisation; without their participation, this intervention would not have been possible.

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