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Nutrition and Food Safety Literacy Based on Local Javanese Culture for Fifth Grade Elementary School Students in Semarang

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Abstract

Nutrition and food safety remain pressing challenges in Indonesia, particularly among. elementary schoolchildren aged 10–11 who are beginning to make independent food choices. This article examines the result of research on fifth grade schoolchildren's food preferences influenced by peers, family, and media. This triggered a multidiscipline of scholars to conduct a community service program at two Catholic elementary schools in Semarang. The integration of Cultural Studies, Food Technology, Communication Science, and English Language Education aim to improve students' nutrition literacy, food safety awareness, appreciation of Javanese foods, advertising literacy, and English vocabulary related to healthy eating. Conducted alongside the intervention of a Free Nutritious Meal (MBG) program, the activities employed participatory counselling, educational games, simulations, and group discussions. Six lecturers delivered the sessions, and one student collected five-question pre and post-tests administered during the teachings, student questionnaires, student and teacher interviews, and participatory observation. Quantitative data were analyzed descriptively, while qualitative findings were examined thematically. Results showed: 97% understood the importance of healthy food, while 95% recognized food safety practices, like handwashing and checking expiration dates. As many as 85% expressed pride in Javanese traditional foods, and 93.8% considered the 'Ad Detective' game helpful in making wiser food choices. As many as 87.1% acquired strong English vocabulary, with 87.1% learning new words and 97.4% retaining them. Teacher interviews showed positive behavioral changes: a greater vegetable consumption and improved hygiene practices. The multidisciplinary, culturally grounded education in strengthening schoolchildren's nutrition and food safety literacy program has provided a healthier school environment.

Keywords: *Content and language integrated learning (CLIL); food safety; free nutritious meal; local Javanese culture; nutrition literacy*

INTRODUCTION

Indonesia continues to face serious nutritional challenges among children. Reports from the national health department reveal that one in four children suffers from stunting, one in ten is underweight, one in five is obese, and one in four has anemia (Kompas, 2022). These conditions

negatively affect the growth of children, the development of their thinking, how well they do in school, and how they are accomplished when they become older. The coexistence of undernutrition and overnutrition represents a double burden of malnutrition, which is a phenomenon increasingly common in developing countries undergoing rapid dietary transitions.

Children aged 10-11 are at an important stage of physical, cognitive, and social development. As they grow, their ability to understand information, express preferences, and make independent decisions gradually increases. At this age, children also begin to exercise greater autonomy in food choices, which includes selecting and purchasing snacks with their own pocket money and under less direct parental supervision (Hamulka et al., 2024). Their decisions are influenced by several social and environmental factors, particularly family members, peer groups, and food marketing through television and digital media (World Health Organization, 2022). Without adequate nutrition and food literacy, schoolchildren may find it difficult to evaluate food products critically and may be attracted by taste, packaging, promotional characters, or persuasive advertising rather than nutritional value (Ares et al., 2024; World Health Organization, 2023) Therefore, nutrition education at this development stage is important to help children make informed and healthier food choices.

In response to these challenges, the Indonesian government has introduced a Free Nutritious Meal (MBG: *Makanan Bergizi Gratis*) program, which provides balanced meals to schoolchildren. The MBG program is designed to ensure that every child receives at least one nutritious meal per day, regardless of socioeconomic background. Meals typically include rice, protein sources such as chicken, tempeh, or tofu, and vegetables that are complemented by fruits. The MBG program addresses both the undernutrition and overnutrition of children who are at risk of stunting or anemia. MBG meals are meant to provide essential nutrients. For children prone to obesity, MBG meals also encourage balanced diets and reduce reliance on processed snacks. In this program, MBG serves as a practical platform for nutrition literacy (Stejiriawan et al., 2024; Surendra et al., 2026).

Nutrition literacy refers to the ability to obtain information, understand, evaluate and apply it ti make choices about what to consume. Rahmiati et al. (2026) argue that nutrition literacy or literacy during elementary school years significantly improves knowledge, eating habits, and health outcomes. They argue that children with higher nutrition literacy are more likely to consume fruits and vegetables regularly, prefer to reduce excessive sugar and fat intake, and make healthier food choices. Food safety is inseparable from nutrition. This is because nutritious food that is contaminated can cause illness, while hygienic food lacking nutrients cannot support growth. Sudewi et al. (2025) highlight the need to address nutrition and food safety simultaneously. Food safety literacy teaches children to recognize biological hazards, such as bacteria, viruses, parasites. Then there are also chemical hazards, such as the leftovers from pesticides added to food, borax, formaldehyde, and physical ones like pieces of plastic, hair, and metal. In support of this, the World Health Organization (2022) identifies food safety literacy as a key strategy for preventing foodborne diseases in children.

The implementation of the Free Nutritious Meal (MBG) program in Indonesian schools provides an opportunity to introduce children to the importance of food hygiene and safety. However, the provision of meals through professional food-service units does not automatically guarantee safe food preparation, storage, and distribution. Surendra et al. (2026) highlight the importance of food-handler training, hygienic kitchen facilities, proper food storage, and effective monitoring throughout the MBG food-supply chain. Therefore, school-based nutrition programs should also emphasize practical hygiene habits, such as washing hands before meals and using clean eating utensils. These practices can be reinforced through daily routines at school and continued at home. Ismail et al. (2024) found that school-based hygiene interventions can improve

children's handwashing practices and may reduce infection-related absenteeism. Thus, MBG provides a meaningful context for teaching children that nutritious food must also be prepared, handled, and consumed safely.

Java has a rich food culture supported by diverse agricultural products and local culinary traditions. Rice, corn, cassava, soybeans, vegetables, fruits, fish, and livestock products contribute to the variety of food available to local communities. Traditional dishes such as *gado-gado* and *pecel* combine vegetables with peanut-based sauces, while *lemper* commonly consists of sticky rice filled with shredded chicken. These foods provide different nutritional contributions depending on their ingredients, preparation methods, and serving portions. For example, Rahmadi and Pangestuti (2026) explain that *pecel* combines vegetables, peanuts, and herbs, offering dietary fibre, plant-based protein, vitamins, minerals, and other beneficial compounds. Similarly, tempeh is recognized as an affordable, protein-rich fermented food with nutritional and sustainability benefits (Ahnan-Winarno et al., 2021).

Introducing these traditional foods in school nutrition education can help children understand that healthy eating does not require abandoning local culinary traditions. Traditional food also carries cultural meanings and contributes to social identity (Dewantari et al., 2020). This appreciation can be connected to Indonesia's Balanced Nutrition Guidelines and the *Isi Piringku* concept, which encourage balanced portions of staple foods, side dishes, vegetables, and fruits (Dewantari et al., 2020). The Javanese expression *mangan ora mung wareg nanging uga sehat* (eating is not merely about feeling full but also about maintaining health) can serve as a meaningful local interpretation of this principle. When children choose foods such as tempeh and *pecel* as part of their school meals, they learn to appreciate both the nutritional value and cultural heritage of their local cuisine.

Nowadays, the influence of children consuming modern processed foods are mostly caused by the attractive food and beverage advertisements that appear on television, and the social media such as YouTube, Instagram, and TikTok. Similarly, colorful and interesting product packaging with attractive cartoon characters and promotional gifts is also influencing children to buy and consume foreign products. Fill (1999) and Shimp (2014) note that advertising does build awareness, while at the same time influencing children’s consumption. Usually, product advertisements are usually particularly persuasive that children would overlook the expiry date of the food and beverage products. This gives reason for a multidisciplinary community service activity that is designed by facilitators from the Cultural Studies, Food Technology, Communication Science, and English Language Literacy departments. This multidisciplinary approach from the multidisciplinary team is significant to do because it answers the gap for nutritional literacy and food safety that are not only related to health aspects, but also related to the understanding of culture, media, communication, and global information.

In this MBG community service program, the presence of a multidisciplinary team allows grade five Elementary schoolchildren to gain a comprehensive understanding of food from various perspectives. This enables them to not only know which foods are healthy and safe, but also understand the cultural values behind it. This way, schoolchildren are trained to think critically about food promotion or advertising, in addition to acquiring a rich English vocabulary for everyday life usage.

As with nutrition literacy, media literacy is, therefore, important for fifth grade schoolchildren. The literacy equips them to critically analyze advertising claims, evaluate product labels, and distinguish between promotional messages and factual information. Fortunately, the MBG program provides a counterbalance to advertising’s offerings. When schoolchildren compare MBG meals with advertised snacks, they indirectly learn to question marketing messages and recognize healthier alternatives.

In nutrition literacy, the CILL (Content and Language Integrated Learning) method can foster deeper learning for schoolchildren because it allows the integration of content, communication, cognition, and culture (Coyle et al., 2010). CILL enables them to learn about nutrition in addition to learn English vocabulary related to food and health while mastering nutrition concepts. When they learn the English words, such as fruit, vegetable, fish, and milk, they can connect immediately to these terms via the menu they receive from their MBG packages.

This contextual learning not only strengthens the memory of English vocabulary but also of nutrition knowledge. Meanwhile, food safety is not only a health issue but also a cultural knowledge of the Javanese local menu variants and philosophy that brings in the interplay of communication and linguistic knowledge when schoolchildren begin to critically read food and beverage advertisements and packages. The implementation of the program, which involves facilitators from multidiscipline is, therefore, commendable in creating a holistic model for schoolchildren's nutrition literacy.

METHOD

Research Design

This study employed a community service-based educational intervention using a participatory engagement approach, which aligns with the models described by Pramesthi, et al. (2025) and Gannika, et al. (2026). The design integrated theory and practice, interactive discussions, simulations, educational games, and evaluative instruments for the students, teachers, and facilitators. The multidisciplinary facilitators' intervention with the incorporation of the MBG is both a contextual anchor and a practical reinforcement of the lessons delivered.

Participants

This program targeted fifth-grade students (aged 10–11) and their accompanying teachers from two Catholic elementary schools in Semarang, ie. SD PL Don Bosko and SD Kanisius Jatingaleh. These schools were selected because of their near proximity to the university (only around 5-10 minute drive by car), which facilitated quick coordination, and also because of their close affiliation with the Soegijapranata Catholic University (SCU). Both schools were chosen also due to their active participation with the government's MBG program, thus, providing a natural setting for the SCU facilitators' intervention of nutrition and safe food literacy with the students' daily meal consumption.

A total of 96 students participated in the program. These students were from three classes that had approximately equal distribution of students between the two schools. A total of three teachers were also involved as informants, providing observations of behavioral changes before and after the intervention.

Program Design

The program consisted of integrated educational sessions delivered by a multidisciplinary team of six Soegijapranata Catholic University (SCU) lecturers and supported by one student assistant. The Cultural Studies lecturer explained the relationship between local Javanese food culture and health. Three Food Technology lecturers provided complementary materials on balanced nutrition and diet, food safety practices, and how to identify unsafe foods. The Communication Science lecturer introduced food advertising strategies and media literacy to help students evaluate food promotions critically. Meanwhile, the English Language Education lecturer introduced nutrition-related vocabulary through Content and Language Integrated Learning (CLIL) activities. The student assistant supported the program through photo and video documentation, participatory observation, interview data collection, and data processing.

Procedures

Stage 1: Preparation

Preparation started with the project team, school principals, and fifth-grade teachers working on an agreed plan. This stage identified student needs, determined class counselling schedules, and selected materials relevant to the characteristics of learners aged 10-11. The learning tools included PowerPoint presentations for counselling, educational songs, and games featuring images of healthy and unhealthy foods, evaluation sheets, and infographics on food resources.

Stage 2: Intervention implementation

The intervention was implemented through a series of integrated educational activities, beginning with a pre-activity orientation. Students were first given five multiple-choice questions covering healthy food, food safety, protein, and hygiene. Illustrated cards were projected on an LCD screen to make the questions more engaging and accessible. Following this initial assessment, the facilitators introduced the programme objectives and explained the importance of nutrition literacy in making healthy food choices.

The integrated educational sessions were delivered by SCU lecturers from four academic disciplines. In the Cultural Studies session, students were introduced to the diversity of Javanese food resources originating from rice fields, mountains, livestock, rivers, and coastal areas. Traditional foods such as tempeh, tofu, *pecel*, *lemper*, *klepon*, *getuk*, steamed bananas, corn rice, freshwater fish, and seafood were highlighted. Storytelling was used to explain how Javanese food traditions reflect cultural values of balance, togetherness, simplicity, and gratitude.

In the Food Technology sessions, students learned about macronutrients and micronutrients, the functions of protein, vitamins, and minerals, and the importance of eating breakfast. The facilitators explained the nutritional benefits of tempeh, tofu, eggs, chicken, fish, vegetables, and fruits using simple language. The MBG meals served at school were used as practical examples to help students identify sources of carbohydrates, protein, and vitamins in their daily meals. Food safety was also discussed through practical activities, including reading food labels, checking expiration dates, and distinguishing safe from unsafe foods. Handwashing demonstrations reinforced the importance of personal hygiene before eating.

The Communication Science session focused on how advertising influences children's food choices. Students were encouraged to analyze food advertisements and compare the products promoted with the MBG meals they had consumed. Through an ‘Ad Detective’ game, they learned to distinguish visually attractive food products from genuinely nutritious options. The activity also encouraged critical thinking about the persuasive use of packaging colours, promotional prizes, cartoon characters, and social media advertisements.

In the English Language Education session, vocabulary learning was integrated with nutrition topics through Content and Language Integrated Learning (CLIL) activities. Words such as fruit, vegetable, fish, milk, and protein were introduced through songs, interactive quizzes, and repetition exercises. By connecting these words with familiar foods and their MBG meals, students could immediately relate English vocabulary to their everyday experiences.

Following the educational sessions, students completed a post-activity assessment consisting of five questions similar to those used in the pre-test. Selected students were also invited to explain their understanding orally, thereby, allowing the facilitators to reinforce key learning points and assess students' ability to express what they had learned. One week after the intervention, students completed questionnaires designed to assess their knowledge, attitudes, and reported behaviours concerning nutrition, food safety, local food, advertising, and English vocabulary. In-depth interviews were subsequently conducted with selected students and teachers to obtain further insights into their learning experiences and possible behavioural changes. The

interviews also helped contextualise the questionnaire findings through teachers' observations of students' eating habits, food choices, and hygiene practices.

Data Analysis
Quantitative data were analysed using descriptive statistics that were expressed as percentages of student responses. Qualitative data were thematically analysed, by focusing on changes in students' knowledge, attitudes, and behaviours. Triangulation was then employed by comparing the questionnaire results with the interview data from selected students and that of teacher observations to ensure validity.

Evaluation/ Indicators of Success
The findings demonstrated several positive learning outcomes among the students. Interviews with six randomly selected students indicated that they had developed a better understanding of nutritious food, the importance of breakfast, fruit and vegetable consumption, and the functions of protein. All interviewed students (100%) understood the importance of handwashing, checking expiration dates, and choosing safe foods. Questionnaire responses also revealed greater appreciation for traditional Javanese foods. Furthermore, teacher interviews suggested that students had become more critical of food advertisements and promotional messages. All interviewed students (100%) could recall basic English vocabulary related to healthy food. Teachers also observed positive behavioural changes in students, including increased vegetable consumption, bringing their own eating utensils, washing their hands before meals, and paying greater attention to the sugar content of foods and drinks.

Ethical Considerations
Participation in the program was voluntary, with consents obtained from the teachers through WhatsApp communication before the questionnaires were distributed and interview questions were given to students. The questionnaire stated that the students' identity for the responses would remain confidential. The MBG program was used as a pedagogical tool, not as an experimental manipulation, thus ensuring that no child was deprived of meals.

RESULTS AND DISCUSSION

Cultural Studies Perspective
The activity began with an introduction from the Cultural Studies facilitator about the rich food resources of Java and the philosophy of balance in eating. Staple foods such as rice, corn, cassava, soybeans, tempeh, tofu, vegetables, fruits, fish, and livestock products were introduced (see Figure 1). These foods were not presented as abstract concepts but as tangible items through storytelling until students realized that the food brought to discussion were encountered daily, especially through the MBG program. Quantitative data revealed that 97.5% of students recognized the richness of local foods after the intervention. This appreciation was reinforced by students' pride in local food, sometimes contained in their MBG meals. Through an interview, the students expressed pride in these foods. One student remarked: "Tempeh and *pecel* are foods that make me proud to be Javanese." Another student added: "I like *lemper* and *kue putu*". Yet, another informed: "I learned about the health nutrients of *klepon* and *lumpia* during the activity.*"*

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Figure 1. Cultural Studies presentation

Teachers observed that after the class counselling on Javanese food, students started to be curious about traditional foods they had never cared about before. For example, children who had never tasted *klepon* expressed that they wanted to try it after learning about its nutritional value and what it means to their culture. This is similar to Monalisa's (2026) argument that MBG helps people connect with the Javanese culture and makes them more ready to learn when it is done in a way that shows respect to the community. The following answers to the questionnaire confirmed this:

83.8% understood that Javanese foods can make the body healthy.

85.1% wanted to try traditional foods.

93.8% understood the link between geography and food diversity.

Data show that the MBG program reminded students about the importance of food as they compared what they ate from the free meal package with what they have learned about Javanese food resources. By reflecting back on the cultural literacy, students would feel more connected to their grassroots and have better decisions in choosing healthier and more meaningful local versus modern processed food.

Food Technology Perspective

The food technology facilitators focused on balanced nutrition and food safety. From the facilitators, students learned about the functions of carbohydrates, proteins, fats, vitamins, and minerals, as well as hygiene practices (see Figure 2). The facilitators were creative in connecting the MBG program as a practical platform for these health concept lessons. For example, when students ate MBG meals, the facilitators showed students the proteins in tempeh, the carbohydrates in rice, and the vitamins in vegetables. Consequently, it was understandable to see that 100% of students showed their understanding that tempeh, tofu, eggs, and chicken help the body grow strong. This is supported by 97.5% students who selected which food are good for the body and why, 97.5% of the students agreed that the program gave them understanding why the body needed healthy food.



Figure 2. Food Nutrient and Safety presentation

An interview response from a student supported the understanding that "Healthy food is food that contains protein, carbohydrates and fruits." Interestingly, one teacher remarked: "They are now more mindful of their sugar intake, drinking more water, and starting to choose healthier snacks." These agreements on healthy food aligned with Pramesthi, et al.'s (2025) report that MBG or ProGAS (the national school feeding program) improved the student's ability to identify balanced nutrition components.

From observation, the facilitators, however, saw MBG boxes with vegetable leftovers. This showed students' low interest in vegetables. According to a student's interview response, the left-over vegetables are caused by the bitter taste and strong fibre that made some vegetables inedible. However, when students learned the importance of vegetables for balanced nutrition from the facilitators, teachers confirmed an increasing number of students who changed their habit of leaving the vegetables to finish them. One teacher observed: "After receiving the MBG, the children have started eating their vegetables. Previously, they only ate chicken or rice. Now, almost everything is eaten in one serving." This is consistent with WHO guidelines, which emphasize that good nutrition literacy can shape lifelong dietary habits. In comparison however, 83.9% reported enjoying fruits better than 68.1%. Reflecting to a previous student's claim that vegetables are bitter, the preference for fruit is mostly because they are sweeter in taste.

It was interesting, however, to find in class discussions that some students were not aware of the importance of breakfast to maintain a healthy body. Some claimed they skip it due to the limited time they have left to go to school. Others surprisingly stated that their mother deliberately did not make time for any breakfast menu because they seem to rely on the MBG for breakfast and lunch. Fortunately, only 3.7% of the students were in this category.

In addition to nutrient literacy, the food technology facilitators also taught food safety literacy. The questionnaire showed 97.5% of the students recognized the importance of handwashing before eating. This occurrence was confirmed by an interview result with a teacher who observed that some students began washing their hands more frequently and even brought their own spoons to school to avoid food contamination. There are also 96.3% who knew how to choose clean snacks, 95% who understood the need to check expiration dates on food packaging, and 95% who recognized that expired food should not be eaten. The checking of expiration dates on food packages was understood as a result of the students' understanding of food hygiene literacy. An interview with two students confirmed these findings. One student said: "Now I look at the expiration date before buying snacks." Another added: "The important thing is that it tastes good and is safe to eat."

Communication Science Perspective

Most children are nowadays wrapped up in a media environment saturated with food and beverage advertisements. Because of this, the communication science facilitator addressed this challenge by teaching students to critically analyse advertising strategies.



Figure 3. Communication Science presentation

Before the intervention, as many as 67.6% of students admitted wanting to try foods they saw on YouTube or Instagram. This became proof of the powerful influence of digital media. However, after participating in an 'Ad Detective' game (see Figure 3), as many as 93.8% of the students claimed that the activity helped them make wiser choices.

Table 2. Media Literacy Outcomes

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
I do not immediately believe advertisements	55.4%	33.3%	11.3%	0%
I think carefully before buying advertised products	60.2%	32%	7.8%	0%
The 'Ad Detective' game helped me	70.5%	23.3%	6.2%	0%

Data from the table showed how students expressed new critical thinking skills. This data was reconfirmed in the interview session (see Figure 4) where one commented, "I realized that packaging colours and prizes are tricks to make us buy things." Another said, "Now I check what is inside the food, not just the picture." Teachers observed that students began questioning advertisements in class discussions by asking whether products were truly healthy or just attractive. Fortunately, the presence of the MBG provided a counterbalance. When students compared MBG meals with advertised snacks, they recognized that choosing nutritious foods could be more beneficial than flashy packaging.



Figure 4. Interview session with students

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English Language Literacy Perspective

The integration of English language learning through CLIL was another innovative aspect of the program. Students learned vocabulary related to nutrition and food safety while engaging in interactive activities such as songs, games, and quizzes. Quantitative data showed that 87.1% of students acquired new vocabulary, and 97.4% retained words such as fruit, vegetable, fish, milk, and protein. Each of the English vocabulary acquisition is found in Table 3:

Table 3. English Vocabulary Acquisition

Vocabulary	Remembered by Students (%)
fruit	97.4%
vegetable	95.6%
fish	92.3%
milk	90.1%
protein	88.7%

From observation, the facilitators saw that students expressed enthusiasm for the English session (see Figure 4). One said, "Learning vocabulary about fruits and protein was my favorite part." Another added: "I enjoyed singing the song about vegetables."



Figure 4. English language literacy presentation

Teachers also noted that students were more engaged in English lessons when the content was linked to nutrition. Fortunately, the MBG program enhanced CLIL by providing real-life content. Consequently, when students learned the English words *fruit* and *vegetable*, they could immediately connect them to the foods in their MBG meals.

CONCLUSION

Overall, this activity has demonstrated that nutrition and food safety literacy is most effective when delivered through a multidisciplinary community service model that integrates Cultural Studies, Food Technology, Communication Science, and English Language Education literacy. Rather than presenting nutrition as merely a scientific issue, the program enabled students to understand healthy eating from multiple and complementary perspectives. First, the Cultural Studies session connected healthy eating with Javanese food tradition, local wisdom, and appreciation of indigenous food resources. Second, the Food Technology session brought in the concepts of food safety and balanced nutrition for children. Third, the Communication Science session encouraged students to read persuasive media messages, product packaging, and food

advertisements critically. Fourth, the English Language Educaton session provided interactive classroom activities, instructional games through songs, and vocabulary enrichment of food. The integration of these disciplines produced a meaningful learning experience that promoted a more holistic understanding of healthy eating rather than through a single disciplinary approach.

A distinctive feature of this community service program lies in its comprehensive evaluation approach, which assessed learning outcomes through several stages. First, students had to complete a five-question pre-test that measured their initial knowledge of healthy versus unhealthy food, in addition to food safety, nutrients, balanced and hygienic eating behaviours criteria. At the end of the class counselling sessions, a five-question post-test were also given to assess related ideas. Through this quick assessment, the six facilitators could monitor and analyse the success of their knowledge transfer. In addition to these evaluations, a post-activity questionnaire gave quantitative data on students' knowledge, attitudes, and perceptions to what was transferred. Lastly, qualitative evidence of behavioural changes that went beyond the classroom was confirmed through in-depth interviews with students and teachers. The data on students' choices on healthier food, increased willingness to eat vegetables, better handwashing practices, increased attention to food labels and expiration dates, and more critical reactions to food advertisements were provided from the interview data. Through methodological triangulation of the combination of pre- and post-tests, questionnaires, and interviews, a strong evaluation framework was produced that allowed the results to capture students' self-perceptions, visible behavioural changes, and instantaneous cognitive improvement. Basically, the multi-layered assessment strengthened the credibility of the activity by demonstrating that, in addition to short-term knowledge, it had a considerable impact on students' everyday eating habits.

The execution of Indonesia's MBG (*Makan Bergizi Gratis*/ Free Nutritious Meals) program was timely and significant to clarify local Javanese food literacy in terms of health and safety because it provided a suitable educational environment for this multidisciplinary activity, even though it was not the main emphasis. Because students were already receiving nutritious meals at schools, the educational intervention complemented the national policy by helping students understand the importance of food literacy. The MBG meals turned into genuine learning tools that allowed students to immediately apply the concepts learned.

The wholeness of this community service activity has recommended future collaboration among teachers, families, and the wider community to sustain the practice of healthy eating and appropriate behavioural change for food safety. In reinforcing it, teachers are encouraged to continually play an important role in observing and giving daily encouragements to students. Meanwhile, parents will also remain important to help children decide their food choices. This integrated educational model that transforms nutrition literacy should be adopted by others to ensure a lifelong learning process. In brief, it is a model that recommended to others to preserve local Javanese food culture, make children smart when seeing food advertisements, and develop better communication skills with people from other countries in English.

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