

Creative Activation for Community Nutrition Education: Integrating Health Counselling, Culinary Training, and Mural-Based Visual Recall

Otje Herman Wibowo¹, Marina Wardaya^{2*}, Pandu Rukmi Utomo³, Victor Kurniawan Yuwono⁴

^{1,4}Culinary Business, School of Tourism, Universitas Ciputra, Surabaya, 60214, Indonesia

^{2,3}Visual Communication Design, School of Creative Industry, Universitas Ciputra, Surabaya, 60214, Indonesia

*Correspondence should be addressed to Marina Wardaya; marina.wardaya@ciputra.ac.id

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Abstract

This project addresses the stunting problem in Kampung Plampitan by increasing community awareness of the health benefits of tempe, a nutritious and affordable source of plant-based protein. Health and stunting prevention topics were delivered through two main formats: health education presentations and hands-on tempe-based cooking demonstrations. The murals functioned as continuous visual reinforcement, supporting recall of key messages, while the primary educational focus remained on improving nutrition knowledge and practical food preparation skills using tempe. By placing the murals in highly visible public locations, community members were encouraged to reflect on their own practices and share information with others, thereby fostering an ongoing understanding of healthy eating and supporting sustained community-level awareness. Program effectiveness was evaluated using pre- and post-intervention measures of knowledge, attitudes, and practices related to tempe consumption, complemented by qualitative observations during implementation. The results indicated increased awareness of tempe's health benefits, more positive attitudes toward its consumption, and stronger intentions to adopt healthier cooking and eating behaviours. The murals were rated positively for their visual appeal, clarity, and effectiveness in reinforcing key nutrition messages related to balanced diets and stunting prevention. These findings suggest that mural-based visual recall, when integrated into experiential and educational interventions, offers a cost-efficient and scalable approach to community nutrition communication.

Keywords: mural-based education, nutrition, tempe, visual communication

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Introduction

The nutritional component is important to the health and development of both individuals and communities. Many regions across the globe face barriers preventing them from attaining maximum nutrition from their diets due to unbalanced diets, not knowing which locally grown foods can provide high nutrients, and a lack of nutritional education about these foods (Gowder, 2024). One of the major barriers to the communities is the lack of knowledge regarding affordable sources of protein that the communities will accept as cultural traditions. *Tempe* is an example of an affordable source of protein that is accepted by multiple communities. *Tempe* is an Indonesian fermented soy product and is considered nutritious and a good source of plant-based protein. Also, it has a high concentration of iron and vitamins (Majdua et al., 2024). However, these same reasons may cause differences in opinions, thoughts, and actions on the eating of *tempe* for families with young children.

Communities face increasing levels of malnutrition and stunted growth; therefore, it is clear that interventions are also necessary to encourage and provide access to healthy foods for all members of the general population who wish to become educated about the nutritional value of their diets (Yusriadi et al., 2024). Many factors contribute to the gap between knowledge of nutrition and its application in daily life. For example, while many families may be learning about proper nutrition and how to access healthy foods, they do not have adequate opportunities to learn these topics in a way that is easy for the family to understand and apply to their daily lives. Thus, the lack of connection between the knowledge of nutrition and the ability to apply that knowledge to achieve optimal health and wellness for families is apparent. "It is important that proper nutrition be understood as part of an overall system of healthy living, including exercise and mental wellness".

Families often do not have access to nutrition education in a way that is engaging and easy for them to digest. This can lead to families being exposed to more formal (e.g., the seminar format and printed materials) nutrition education, which most families feel is far too formal and not at all easy to understand, and has resulted in very little knowledge being retained by families about nutrition. When families have not been able to engage with and understand how to apply nutrition education using easy-to-digest formats, they develop a lot of misinterpretations about nutrition. For instance, there are still many families that believe animal protein is a superior source of nutrition compared to plant-based protein and that the only way to cook and prepare

healthy foods is to spend a significant amount of money and use complicated preparation techniques. Because of this, many families in communities are not utilizing their local food sources to attain the full nutritional value from the available resources (Pratiwi & Subrata, 2025). Additionally, communities and families are not aware of how to use many of the available resources to maximize their nutritional value. In addition, many community members do not have access to or the opportunity to interact with innovative educational media that present nutrition concepts in a fun, interactive, and user-friendly manner.

The use of visual communication is a means of developing an alternative strategy in reaction to these challenges. It has been agreed that murals can be considered forms of community-based education, as they are accessible and permanent and have a prominent visual presence in non-industrialized public spaces. Rather than communicating a specific health message directly, murals instead visually represent the core message to the community that they are associated with (Nursanty et al., 2025). By utilizing color, icon, and illustrated narratives, murals turn event messages into works of art that are visually appealing, encourage discussion and interaction, and provide opportunities for interpretation (Bowyer et al., 2024). When the community sees the murals as sources of local pride and feelings of "bragging rights," it creates motivation for community members to share with others what is represented and/or contained in the murals. In this way, the health-related educational messages are preserved and distributed in an organically developed fashion, which enables communities to have increased awareness, as well as the potential for positive behavioural influence. Murals also serve as a means of creating a sense of collective identity and pride in a community, as public health messages become culturally shared experiences (Manjur et al., 2021). Therefore, the mural approach to development of health-related educational programs is consistent with participatory and context-sensitive health promotion principles.

Murals makers that are part of the Visual Communication Design programs in nutrition education are additional resources used in community engagement programs through participatory learning processes that happen directly and indirectly. The main methods of hands-on, participatory nutrition education are delivered through community service activities, facilitated by Medical Programs lecturers and students, complete with cooking workshops demonstrating the use of *tempe* in cooking, such as making *tempe*-based snacks, facilitated by the Culinary Business program. Murals do not serve as a primary teaching medium; instead,

murals act as a visual identity of a space within the community, as well as a lasting reminder of the two primary components (key messages or information related to the nutritional needs and stunting prevention measures discussed and promoted throughout the program). Including these key messages visually offers a form of collective memory as well as sustained awareness of nutrition education initiatives that continue after the completion of community service activities (Travere, 2023). An example is *tempe*, which has a very high level of protein, iron, and fibre, making it an excellent source of nutrition to support child growth and an individual's overall health within the family. However, it is not uncommon for people to have knowledge of the positive health benefits of *tempe* without practicing those health benefits in their home kitchens. Most families choose to fry their food, while few families know about healthy cooking methods, such as steaming or sautéing, which would improve the nutritional content of their meals (Teoh et al., 2024). These gaps highlight how important it is to develop and implement targeted education and marketing programs to simplify nutrition information for people and to connect nutrition information with their daily lives.

The community that is participating in the program demonstrates similar behaviours as compared to the community around *tempe*. Although *tempe* can be purchased from stores, many families do not follow guidelines for how to properly feed their families, especially if they have young children (Adelina et al., 2021). Food choices are shaped by cultural traditions, and because many people do not have access to educational materials, familial patterns have continued for many generations. Participating and engaging with the community in a participatory manner, using creativity and the use of different academic disciplines, is an approach to help the community make behaviour changes that are long-lasting and meaningful.

Past efforts involving the use of murals, in combination with public health education, have shown effectiveness in improving communities' nutritional literacy. The use of murals has created an opportunity for families to see the same key messages at the same time, thus promoting the idea of continued inter-generational learning and creating an opportunity for both parents and children to learn and interpret what they are viewing. Community members have used these murals as a springboard for discussion and have the opportunity to reinforce the key messages as they engage with one another. Within the program, the mural serves not only as an educational tool but also as a tool to engage the community.

The current initiative aimed to assess the impact of a mural-based nutrition education program on three key areas: knowledge, attitudes, and practices (KAP) associated with *tempe* consumption. KAP has been shown to be an effective way to measure the effects of interventions to support behaviour change and also acts as an indicator of household decision-making (Zarei et al., 2024). Participants completed pre- and post-assessments as a means of determining what impact the program had on participants' awareness of nutrition.

Therefore, the purpose of this article is to describe how the program was implemented and what results were obtained through its implementation. This article highlights the rationale for implementing murals as part of an educational strategy, explains how the community was engaged in creating the murals, and discusses the KAP results. These results build upon the existing literature regarding community-based nutrition education and illustrate a way for visual communications to promote healthy eating practices that are both effective and culturally appropriate.

Methods

This Community Service Program incorporated a multisectoral approach based on an Active Participation Research (PAR) philosophy and utilized Community Development methods to develop three components of its activities that will work together to support the target group (Sharifzadeh & Abdollahzadeh, 2021). The PAR approach positioned community members not only as participants but also as contributors in planning, implementation, and reflection processes. Each of the components of the Program does not stand on its own as a single method of educating participants but provides knowledge through the combination of three distinct methods: (1) collaborative mural design and creation by Visual Communication Design Faculty and Students, (2) community-based nutrition education regarding the nutritional value and benefits of *tempe* by Medical Faculty and Students, and (3) practical training regarding the production of *tempe* and the healthy preparation of foods containing *tempe* by Culinary Business Faculty and Students. Participants were able to take advantage of the interactive demonstrations and cooking workshops, as well as apply the information they had acquired from these sources to their daily meals. Based on the results obtained, the combination of these three approaches was demonstrated to have had a positive impact on participants' attitudes,

knowledge, and practices of eating *tempe*. In addition, this combination encouraged active community involvement as well as a feeling of ownership of the program's results.

Community Action Planning

Based on early observations and conversations with community members, local leaders, and youth representatives to determine the nutritional needs of the community, this initial phase of learning suggested that many residents do not understand the nutritional value of *tempe* or how to properly prepare it. This was the motivation for conducting this community action. Working together with community members, the community service team determined that using the mural as a form of visual communication would be an effective means of reaching a large portion of the community, and that using a culturally familiar medium would enable the team to create a lasting reminder about *tempe* (Marusek & Wagner, 2025). Next, community members were engaged in a participatory design process, allowing them to share input on imagery, color selection, and messaging. This collaborative effort enhanced the cultural connections, increased the sense of ownership, and linked the visual messaging to the daily lives of the households in the community.

Location, Duration, and Participants

The program was executed in Plampitan Surabaya, East Java, located in a residential area with various types of households, such as those with small children, working-age individuals, and seniors. This site was chosen due to its high population density, ease of obtaining resources, and having many common areas where groups could come together to perform activities supporting this program. Around four weeks were dedicated to implementing this program, during which participants were recruited through their volunteer attendance to the programs, facilitated by local community leaders, who supported their participation through pre- and post-questionnaires (complete participation for residents of the Plampitan area). A total of thirty-three (33) participants signed up to participate in the program. Twenty (20) participants completed both pre- and post-assessments, providing a 60.6% participant response rate. All participants completed pre- and post-assessments, which were analyzed using paired sample statistical tests for evaluation of changes after the intervention. Participants were also asked to keep a journal, documenting their thoughts and feelings throughout the program. Qualitative data derived through these journals, as well as the researcher's observational notes, were

thematically analyzed to develop context to assist in the interpretation of the quantitative results.

Data Collection Procedures

A pre- and post-test evaluation design was utilized to measure the impact of the intervention, using a structured survey as the data collection method to assess the level of change across three different areas, as highlighted (Zarei et al., 2024):

1. Knowledge, particularly regarding the nutritional benefits and protein content of *tempe*,
2. Attitudes, especially around nutrition and the protein content of *tempe*, and
3. Practices, focusing on cooking methods and the frequency of *tempe* use in daily household meals.

The questionnaire consisted of multiple-choice items, Likert-scale statements, and short open-ended questions. In addition, observational notes were recorded during mural development, educational sessions, and cooking activities to document levels of participation, interaction, and community engagement.

Program Implementation

Three components made up the entirety of the intervention. The first component of the intervention consisted of a mural designed and constructed by the Visual Communication Design faculty and students, featuring visual representations of Dupont's many simplified nutrition graphics, imagery depicting protein-rich *tempe*, and examples of healthy methods of preparation. As part of the project, community members had the opportunity to be part of producing and preparing the wall surface, painting it, and providing feedback on how well the mural conveyed the intended messages. The mural's completion and public unveiling occurred in RT 4, the community's most important venue for hosting large-scale community events, facilitating dissemination activities among residents, and achieving overall visibility and recognition of the mural, which is intended to serve as the identification of RT 4 within the larger residential area of the community.

The second element of the intervention was the delivery of a community-oriented educational presentation on the nutritional function and benefits of *tempe* by Medical faculty and students. This activity was organized in cooperation with the organizing committee, through

collaboration with supporting academic groups, to highlight the association of *tempe* with good nutrition, quality sources of protein, and affordability for all demographic categories of the population. These functions corresponded with the representations of the mural designed and created to illustrate the messages presented at the educational event and supported the participants' comprehension of *tempe*'s role in supporting their way of life and personal well-being.

The Culinary Business faculty and students provided practical, hands-on education about *tempe* production and cooking in an approach based on good health through cooking. As part of this effort, the Culinary Business program offered the opportunity for community members to participate in a culinary competition and demonstrate their *tempe* products at the local RT 4 community kitchen.

Data Analysis

Analyses were performed through close statistical analysis. The means of knowledge, attitude, and practice scores were gathered, processed, and analyzed, whereby the pre- and post-program or study participant scores were compared (Zarei et al., 2024). Examples of how knowledge was measured include the percentage of correct answers provided to factual knowledge-related items, whereas changes in attitudes and practice were measured through changes in indicators of attitude and practice. Data analysis was conducted by comparing the mean scores of knowledge, attitude, and practice domains before and after the intervention. Descriptive statistical analysis was applied to examine changes in pre- and post-scores, focusing on mean differences to identify directional improvements associated with the program. Given the community service context and limited sample size, the analysis emphasized practical significance and observed change rather than inferential statistical testing.

Qualitative data were gathered to add strength to the findings. Thematic analysis of observational notes and open-ended answers, usually done on the perceptual experiences of the participants, was used to understand how useful participants perceived the information to be, how clear the information provided was, and how visually attractive the wall painting could be as an educational tool. Systematic observation of individuals and analysis of open-ended questionnaire responses were used in qualitative data collection. The themes emphasised in the qualitative data, such as visual appeal, the clarity of the message delivered, and how useful

participants thought the activity was, will provide context for and support the combined quantitative evaluations provided by the entire community of participants. The mural was a tool that complemented the process of revitalising and educating the community through stimulating visuals, as well as advocating for healthy cooking.

Results and Discussions

The results and discussion contain the study's findings in the five stages of sequential implementation of the intervention, which include: (1) community action planning, (2) site and participant characteristics, (3) data collection procedures, (4) implementation of the program, and (5) data analysis. The results section presents the empirical data resulting from implementing the five sequential phases of the program: community engagement, mural development, educational delivery, and evaluation outcomes. The descriptive results of the study are provided without interpretation; however, the interpretation and contextualization of the results are reported separately in the Discussion section. This is in line with providing clarity in analysis and giving the results of this empirical work an academic basis.

This strategy allows for a more thorough understanding of the method and results of the intervention, based on the comparison between how the methodology was designed and how it impacts the analyses resulting from that methodology. When findings are discussed in relation to each implementation phase, these findings demonstrate what changes occurred within knowledge, attitudes, and practices as a result of being engaged in the community and what the participatory contexts and methods surrounding those engagements were, throughout the intervention.

Figure 1 shows the initial coordination and discussion with Plampitan community members, conducted to explore and verify demographic and health data obtained from local population records. These discussions confirmed the presence of stunting cases among young children in the area and indicated the need for further nutrition education. The creative activation framework is vital to help interpret the data collected from this study. The main interventions implemented through this framework included health counselling and culinary training, while the mural that was created served as an additional educational reinforcement tool for participants in their efforts to learn about *tempe*. Instead of providing a solitary health message,

the mural provided a way for participants to recall the nutritional information presented during nutritional education and remain aware of the information after nutritional education sessions. The subsequent chapters will detail the findings from each of the stages of the study, with a particular focus on how community participation in the planning and development of the study and their participation in nutrition education, culinary training, and use of visual media all played an integral role in improving the community's understanding of *tempe*, as well as developing new food practices using healthier ingredients and cooking methods.



Fig. 1. Discussion with Plampitan community members

Results

The community service program was made up of several planned activities created to fill the gaps in household nutritional literacy and support greater levels of healthy food consumption, specifically around the topic of *tempe*. This intervention combined methods of visual messaging, participatory interaction, and direct education to help facilitate long-lasting changes in dietary behaviour (van der Heijden et al., 2024). Below is a description of the processes used during the intervention, as well as the manner in which the intervention was implemented and some of the immediate results that were observed within the community.

Community Engagement and Preparation

Collaboration and coordination with local leaders, residents, and youth volunteers allowed researchers to develop an understanding of where to place murals and what the dietary habits

of the communities were. The purpose of this intervention was to create long-term change in the behaviours associated with healthy eating through the use of visual messaging, interactive participation, and direct education. The following is a description of how these processes were implemented in the intervention, as well as what we have observed regarding the immediate impact of this intervention on the communities served.

Development of Mural-Based Nutrition Media

A collaborative team consisting of facilitators, a visual communication design student, and community members developed the mural design. The final version featured:

1. simplified illustrations of *tempe* as a protein-rich food
2. messages promoting nutritious and affordable dietary habits
3. visual guidance on healthy cooking methods
4. culturally relevant imagery to ensure relatability

The community actively participated in preparing the wall surface, assisting with painting, and providing feedback on color choices and message clarity. This participatory approach strengthened ownership of the educational media and increased daily engagement with the visual content.



Fig. 2. Mural implementation process by students of Visual Communication Design Universitas Ciputra

In Figure 2, community members actively participate in the mural creation process, engaging not only in visual production but also in direct interaction with university students as part of

the community engagement program. Many different groups of people who are involved in the making of the mural support and appreciate the collaboration process. Parents of students who are part of this project feel that the mural will allow students to learn valuable real-life skills and apply that knowledge in a way that helps their community as well. The parents said this type of involvement in the mural supports their child's cognitive and social growth by developing a heightened awareness of nutrition, health, and community values, along with an appealing and creative form of delivery.



Fig. 3. Mural as *tempe*-based nutrition information and *kampung* identity

The mural illustrated in Figure 3 was the culmination of the community-based program. It serves as both a means of transmitting *tempe* nutrition information and as a representation of *kampung* identity. The visual nature of the mural provided continual reinforcement to the local community through its repetitive visibility and allowed for repeat exposure to nutrition-related imagery within their daily activities, increasing the likelihood that individuals will be positively influenced by this imagery toward healthy choices (Setyawati & Khamadi, 2023). The use of interactive experiences was also essential to supplement the visual experience through question and answer sessions, cooking demonstrations, and other discussion groups, providing opportunities to utilize the information on a more personal level by engaging in the learning process and using the education in an interactive way.

Implementation of Nutrition Education Sessions

Educational workshops were held in addition to mural installations in order to strengthen the visual messages of the murals by providing a verbal explanation of the murals and providing an opportunity for interaction. This combination of educational methods provided a clearer economic and social impact on both individuals and communities, as well as presenting *tempe* as an affordable, locally-sourced protein source for families to prepare low-cost yet nutritionally clean meals. The use of simple recipes, along with the use of inexpensive ingredients, resulted in decreased barriers to adoption, while the use of a group-based educational model significantly reduced the need for expensive resources, allowing for easy replication and scalability in communities with few resources available.



Fig. 4. Educational programs about *tempe* nutrition

Figure 4 shows interactive health talks focusing on balanced nutrition and infant health, delivered through participatory discussion from Ciputra University Medical faculty with community members. Educational programs are also designed to provide a practical and clear understanding of balanced nutrition. Presenters introduced balanced diets and stressed the importance of plant-based proteins as an inexpensive and widely available nutrient source. The presenters were especially focused on explaining the health benefits of *tempe* for various age groups (i.e., children, adults, and older adults) (Langyan et al., 2022). Students from the Faculty of Medicine complemented the visual and participatory approaches by providing structured educational sessions on balanced nutrition and stunting prevention, highlighting the critical importance of adequate nutrient intake from pregnancy through early childhood.

The Culinary Business program also played its role by sponsoring two cooking workshop demonstrations in conjunction with two chefs who had separate teaching streams. Otje Herman Wibowo led a culinary demonstration on preparing *tempe*-based snacks with a focus on simple yet original processing/making techniques to show *tempe* as a healthy and easily accessible food option. Victor Kurniawan Yuwono, the second chef, led another culinary workshop on preparing *tempe*-based side dishes based on practical suggestions of incorporating these into daily meal plans.



Fig. 5. *Tempe*-based cooking workshop by chef Otje Herman Wibowo

Figure 5 shows the cooking workshop on *tempe* that was conducted over two weeks. The cooking workshops were designed to teach participants how to cook with *tempe* as a main meal and snack. There was also an open discussion held at some point during the workshop for participants to discuss what they had learned from the cooking workshops, share their own experiences with cooking, voice any worries they had about cooking, and reflect on what their families currently eat. Along with the cooking workshops, the facilitators provided participants with several types of behavioral adaptability strategies that would help them implement what they had learned into their daily lifestyle. The strategies that were discussed with the participants were basic and attainable for them to use. These strategies included reducing the use of frying oil and combining *tempe* with vegetables to promote healthier meal compositions. Additionally, through community-based reinforcement, the individuals within a household were able to meet together throughout the day to discuss their *tempe* use and what nutrition messages they learned, with children acting as a reminder to parents of what they learned

regarding proper nutrition. In this way, these collective reinforcements created a higher sense of collective responsibility and led to an environment where healthful dietary patterns were gradually defining a household’s daily eating choices.

Discussion

The discussion section synthesizes quantitative and qualitative findings to explain how the integrated intervention influenced participants’ knowledge, attitudes, and practices related to *tempe* consumption. Rather than repeating procedural descriptions, this section focuses on interpreting outcomes in relation to community engagement, visual reinforcement, and experiential learning.

To evaluate the program's effectiveness, the team observed the pre-and post-intervention surveys of the participants to see if there were changes in the participants' knowledge, attitudes, and practices related to *tempe* consumption. The comparison of both pre-and post-intervention surveys indicated that there were significant improvements in all three areas of knowledge, attitude, and practice. Participants gained a greater understanding of the nutritional benefits of *tempe*, a better recognition of the low cost of *tempe*, as well as the high protein content of *tempe*. As shown through their answers to questions regarding their cooking/eating habits after completing the intervention program, many participants demonstrated a change in their behaviours. The results suggest that by combining mural-based visual education with experiential, hands-on activities, the team can provide an avenue for increased community engagement and positive community outcomes.

Table. 1. KAP comparison results

Practice Indicators	Pre test Score	Post test Score	Change	Description of Improvement
Frequency of <i>tempe</i> consumption in the household	3.5	4.4	+0.9	Increased frequency of <i>tempe</i> consumption after the educational program
Selection of healthy <i>tempe</i> cooking methods	3.2	4.8	+1.6	Highest improvement observed in healthier cooking practices Education encouraged
Interest in trying various <i>tempe</i> based dishes	3.8	4.6	+0.8	experimentation with diverse <i>tempe</i> recipes
Habit of serving <i>tempe</i> to children	3.9	4.7	+0.8	Improved practice of providing <i>tempe</i> to children as a protein source
Overall practice domain mean score	3.6	4.5	+0.9	Overall improvement in <i>tempe</i> consumption and preparation practices

In Table 1, pre-and post-intervention mean scores of the practice indicators, as measured by the Five-Point Likert Scale, represent changing scores; a score of 5 being 5 or higher indicates a higher likelihood of healthy eating compared with lower scores. Evaluating the post-test/pre-test differential yields the following results.

As a result of post-program follow-up observations, several positive behavioural changes were identified. Families were observed to purchase *tempe* more frequently, reflecting a growing preference for affordable and nutritious protein sources. Parents increasingly adopted alternative cooking techniques, such as steaming and sautéing, when preparing *tempe*, while children continued to engage with the mural illustrations during mealtime conversations. The presence of the artwork also encouraged social interaction between households and prompted informal discussions about health and nutrition among neighbours, further reinforcing the healthy eating themes introduced through the educational components of the program. Overall, the program demonstrated early signs of change in daily eating practices, along with increased community engagement with healthy eating materials.



Fig. 6. Finished mural in Plampitan

Figure 6 shows the “*Matahari*” mural that was created at the end of the community development program by the first-semester Visual Communication Design students, which represents the core objective of this program to support community access to affordable and sustainable healthy lifestyles. The mural is representative of life, hope, and resilience. It visually represents the community and consolidates the messages about good nutrition (healthy

lifestyles) and good health. The mural functioned as a persistent visual reinforcement that supported memory recall and intergenerational discussion within households. This program demonstrates novelty by integrating mural-based visual recall with structured nutrition counselling and experiential culinary training, rather than implementing murals or education as standalone interventions. While previous nutrition programs have relied primarily on verbal instruction or printed materials, this approach combines visual identity, participatory learning, and skill-based practice within a single creative activation framework.

Through this community program approach, the program also demonstrated how students were encouraged to apply empathy, creativity, and teamwork to generate positive social impact beyond classroom-based learning. Feedback from parents and local residents was overwhelmingly positive, particularly as first-year students were given opportunities to participate in real-world, community-focused experiences. Through its multi-disciplinary approach, the program integrated art-based communication, health messaging, and culinary innovation to support the development of healthier eating habits, enhance community participation, and provide a sustainable, community-centered model for nutrition education.

Conclusion

The community service program was successful in educating and positively influencing people's food choices through both visual communication and educational activities regarding health and practical culinary education. The use of visual activation as a framework to connect participants with nutrition resources provided a culturally sensitive and easily understandable way for people to learn about nutrition while overcoming barriers to the application of nutrition in everyday life.

The use of large murals in conjunction with a structured series of counselling sessions and cooking demonstrations was effective in reinforcing key messages about biscuits and healthy meals for all children, needed to prevent malnutrition and inhibit the stunting of growth of our future societies (children). The pre- and post-assessment data showed an overall positive move toward an acceptance of food value as part of a healthy balance of meals and using *tempe* as a low-cost protein source. More than just immediate educational outcomes, the mural itself provides a form of long-term visual communication, reminding the community of the

importance of continued engagement with their environment (community members). Future programs should employ longer periods of time between follow-up and continued reflection upon the behaviors of the individuals that participated in the program, thus enhancing the effectiveness of the behavior change and exploring a continuation of integration with local health initiatives in order to continue this type of education.

Looking ahead, it is important to develop the potential of this type of intervention by allowing for longer follow-up periods to evaluate ongoing behaviour change. The importance of collaboration between academic disciplines is critical in order to develop models that are effective for health promotion and that empower communities. Extending the programme to include a broader population, such as caregivers, young adults, and schoolchildren, will allow the programme to have a greater impact in preventing stunting and providing ongoing support for the community.

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