

Elementary School Teachers' Yogurt Training at SD Negeri 2 Jeumpet, Aceh Besar

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Abstract

Community health problems related to inadequate nutritional intake and low consumption of functional foods remain significant challenges in rural areas of Aceh Province, Indonesia. Limited access to healthy probiotic products and the lack of practical entrepreneurial skills among teachers also contribute to low family health awareness and limited economic productivity. This community service program aimed to improve teachers' knowledge and practical skills in producing household-scale yogurt as a healthy probiotic food while simultaneously promoting creative economic opportunities. The program was conducted at SD Negeri 2 Jeumpet, Aceh Besar, involving 12 active teachers as participants. The implementation method consisted of five stages: socialization and preparation, theoretical and practical training, technology application and production trials, business management mentoring, and sustainability monitoring. The program applied a participatory and hands-on approach using appropriate technology and simple household equipment. The results showed significant improvements in participants' understanding of nutrition, probiotics, food sanitation, and yogurt production techniques. Participants successfully produced plain and fruit-flavored yogurt products using local ingredients and simple fermentation technology. In addition, the teachers demonstrated increased entrepreneurial motivation through product branding, simple financial management, and digital marketing practices. The program also produced several outputs, including a yogurt production module, educational presentation materials, posters, audio-visual documentation, and a scientific publication manuscript. Overall, the program contributed positively to improving family health awareness, practical life skills, and community-based creative economic development in the school environment.

Keywords

community empowerment; elementary school teachers; yogurt training.



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1. INTRODUCTION

Public health is one of the primary indicators in determining the quality of a nation's human resources. A healthy society possesses the capacity to learn, work, and carry out daily activities optimally, thereby supporting sustainable national development (Wilcock & Hocking, 2024; World Health Organization, 2018). Nevertheless, Indonesia continues to face various public health challenges, particularly those related to family nutritional fulfillment. These issues occur not only in urban areas but are also highly prevalent in rural regions, including Aceh Province. Low-quality nutritious food consumption, limited access to health education, and minimal utilization of functional foods are among the factors influencing the overall health condition of the community.

One of the major health problems that remains a serious concern for the Indonesian government is the high prevalence of stunting among children (Kustanto et al., 2024; Mediani, 2020; Mulyaningsih et al., 2021). Stunting is a condition of impaired growth and development in children caused by chronic malnutrition over a prolonged period, especially during the first 1,000 days of life. This condition affects not only physical growth but also cognitive development, learning ability, productivity, and quality of life in the future. Children experiencing stunting tend to have lower intellectual performance, greater vulnerability to disease, and reduced productivity in adulthood (Soliman et al., 2021). Therefore, stunting prevention has become a national priority agenda in efforts to improve the quality of Indonesia's human resources (Melisa et al., 2022).

According to historical data from the Indonesian Basic Health Research (Riskesdas), Aceh Province once recorded a stunting prevalence rate of 37.9%, significantly higher than the national average of 30.8% (Tim Riskesdas 2018, 2019). These data indicate that family nutritional fulfillment in Aceh still requires serious attention from multiple stakeholders. The high stunting rate suggests that many families are unable to meet balanced nutritional needs for their children, particularly regarding animal protein, vitamins, minerals, and foods that support digestive health. In addition, limited public understanding of healthy dietary patterns is another contributing factor to nutritional problems within households.

This situation becomes even more complex because rural communities still rely heavily on traditional dietary patterns that do not fully meet daily nutritional requirements. The consumption of milk and dairy products, for example, remains relatively low among some communities in Aceh. In fact, dairy products contain protein, calcium, and probiotics that are highly beneficial for growth and overall

health. Based on livestock statistics from Aceh Besar Regency, the Aceh Besar area produces fresh milk from local dairy farmers with an average production of 150–200 liters per day (BPS Kabupaten Aceh Besar, 2023). However, limited knowledge regarding the processing of nutritious foods and the assumption that healthy products are expensive have reduced public utilization of high-nutritional-value foods that could actually be produced simply at the household level (Fajriana et al., 2024).

One functional food product with substantial health benefits is yogurt (Hadjimbei et al., 2022; Rashwan et al., 2023). Yogurt is a fermented milk product produced through processing with beneficial bacteria or probiotics. The probiotic content in yogurt offers numerous health advantages, particularly in maintaining the balance of microorganisms in the digestive tract. Various studies have shown that regular yogurt consumption can help improve intestinal health, strengthen the immune system, enhance digestive metabolism, and support optimal nutrient absorption (Pannerchelvan et al., 2024; Saleem et al., 2024). In addition, yogurt contains protein, calcium, B-complex vitamins, and other essential minerals that are highly beneficial for children's growth and family health (Abdi-Moghadam et al., 2023; Yamini et al., 2025).

Amid growing public awareness of healthy lifestyles, yogurt has considerable potential to be developed as an alternative healthy food product that is easy to produce and economically valuable (Boeck et al., 2021; Montemurro et al., 2021). This product can be made using simple equipment and relatively accessible raw materials. Therefore, developing yogurt-making skills at the community level contributes not only to improving family health but also to creating opportunities for household-based creative businesses. Through these skills, communities can produce healthy food products while simultaneously generating additional income to support family economies.

Within the context of education-based community development, schools serve as strategic centers for promoting health awareness and practical life skills. Teachers, particularly at the elementary level, play an important role as agents of change because of their close interactions with students, parents, and the wider community (Madondo, 2021; Upreti, 2023). However, this potential has not been fully utilized, as teachers are often focused primarily on classroom instruction rather than community empowerment activities. Providing practical training such as yogurt production can strengthen teachers' capacity to promote healthy lifestyles while simultaneously developing entrepreneurial skills that may contribute to family welfare and local economic development.

SD Negeri 2 Jeumpet, Aceh Besar, is one educational institution with significant potential to be developed as a school-based community empowerment center. Its proximity to the local community enables the implementation of training programs that actively involve teachers as both participants and future facilitators in their surroundings. Furthermore, elementary school teachers demonstrate strong enthusiasm for learning and innovation to support educational quality and community welfare. These conditions provide an excellent opportunity to implement a yogurt-making training program as part of a Community Service Program (PKM).

The community service program entitled “Elementary School Teachers’ Yogurt Training at SD Negeri 2 Jeumpet, Aceh Besar” was designed as an educational and productive intervention integrating aspects of health, education, and community economic empowerment. The program focused not only on providing theoretical understanding regarding the benefits of yogurt and healthy lifestyles but also on offering direct practical training in hygienic, simple, and marketable yogurt production. Through this approach, participants were expected to apply the acquired skills independently at home and potentially develop them into small-scale family-based businesses. The relevance of this program to the National Research and Innovation Master Plan (RIRN) 2021–2025 lies in its focus on food and health research, particularly the priority of food diversification based on local resources and community nutritional improvement (Badan Riset dan Inovasi Nasional, 2021).

Yogurt-making training for elementary school teachers provides several strategic benefits (Ma’arif & Majid, 2023). First, teachers can improve their understanding of the importance of nutritious food and probiotics for family health. Second, teachers gain new practical skills that can support household economies. Third, teachers can serve as intermediaries in disseminating health education to students and parents through classroom learning activities and social interactions within the school environment. Consequently, the program’s impact is expected to extend beyond training participants and reach the wider community sustainably.

In addition to health-related benefits, the program also supports the development of the community’s creative economy. Yogurt products possess promising market potential due to increasing public interest in healthy food and beverages (Aulia et al., 2020; Cardoso et al., 2025; Saritaş et al., 2024). With attractive packaging and simple marketing strategies, yogurt can become a household business product with high commercial value. This is highly relevant in supporting efforts to improve family welfare, especially amid current economic challenges faced by

communities. Teachers who participate in the training are expected to develop creativity in producing yogurt variations that meet local market demands.

Furthermore, this program activity aligns with government programs aimed at accelerating stunting reduction and strengthening family food security. Education regarding probiotic-based healthy food consumption can serve as a preventive strategy for improving public health quality (Zulfa, 2026). When teachers become role models and driving forces within schools and communities, a healthy lifestyle culture can develop more broadly and sustainably. Therefore, teacher involvement in community empowerment programs is essential in supporting community-based health development.

The implementation of this program is also expected to foster a culture of innovation within elementary school environments. Teachers are positioned not only as formal educators but also as creative individuals capable of generating productive ideas for community welfare (Nurdin, 2025). Simple innovations such as yogurt production can become initial steps in cultivating the spirit of social entrepreneurship within educational settings. Thus, schools can function not only as centers for academic knowledge transfer but also as hubs for developing practical life skills beneficial to society.

Based on the above discussion, it is clear that implementing a yogurt-making training program for teachers at SD Negeri 2 Jeumpet is highly urgent and relevant. This program serves as an alternative solution for increasing public awareness regarding healthy food consumption, strengthening family health resilience, and creating opportunities for community-based creative economic development through school communities. Through synergy between education and community empowerment, the program is expected to generate sustainable positive changes in improving the quality of life of communities in Aceh Besar Regency.

2. METHODS

This community service program employed a Community-Based Research (CBR) approach to address the challenges faced by teachers at SD Negeri 2 Jeumpet, Aceh Besar, particularly regarding healthy food production and family nutrition. The program was designed to enhance participants' knowledge, practical skills, and community empowerment through collaborative learning and participatory decision-making involving researchers, teachers, and other stakeholders. By emphasizing active community participation from problem identification to evaluation, the program sought to promote sustainable behavioral change and strengthen participants' capacity to implement healthy food initiatives independently.

The program was implemented through a series of integrated activities that began with socialization and technical preparation, followed by theoretical and practical training on family nutrition, probiotic foods, food sanitation, and household-scale yogurt production. Participants received hands-on experience in every stage of yogurt processing, including milk heating, fermentation, cooling, packaging, and flavor development using locally available fruits. They subsequently conducted trial production by following Standard Operating Procedures (SOPs) and utilizing appropriate production equipment while learning to maintain product quality through acidity measurements and organoleptic evaluations.

The final stages focused on business mentoring, evaluation, and sustainability. Participants were trained in financial bookkeeping, production cost calculation, pricing strategies, branding, packaging, and digital marketing using social media platforms. Program effectiveness was assessed through observations, product evaluations, group discussions, and pre-test and post-test assessments to measure improvements in participants' knowledge and skills. To ensure long-term sustainability, continuous mentoring and monitoring were provided to support independent yogurt production, encourage product innovation, improve packaging and marketing, and strengthen the program as a community-based initiative that promotes family health and local economic empowerment.

3. FINDINGS AND DISCUSSION

3.1. Findings

The community service program entitled "Elementary School Teachers' Yogurt Training at SD Negeri 2 Jeumpet, Aceh Besar" was implemented successfully according to the planned schedule and objectives. All stages of the program were carried out effectively and received positive responses from the target participants. The implementation of this program provided meaningful impacts on teachers, students, and the overall school environment.

The program began with a socialization stage conducted at SD Negeri 2 Jeumpet, Darul Imarah District, Aceh Besar Regency. This activity was an important initial step toward establishing mutual understanding between the service team and the partner institution regarding the objectives, benefits, and implementation mechanisms of the yogurt-making training program. The socialization activity involved the school principal, participating teachers, and educational staff representatives.

During the opening session, the school principal expressed appreciation for the implementation of the program and emphasized that the activity was highly relevant to the needs of teachers, particularly in improving practical skills related to family health and additional household income opportunities. The school also viewed the yogurt-making training as a new and innovative activity that had never previously been introduced within the school environment.



Figure 1. The introduction to yogurt making

The service team presented the background of the program, including the importance of family nutrition, the low consumption of probiotic foods within the community, and the potential of healthy-food-based creative economic activities. Participants were introduced to yogurt as a fermented food product rich in probiotics that supports digestive health and immune function. The explanation was delivered using simple and communicative language, enabling all participants to understand the material effectively.

The socialization session also addressed the economic potential of homemade yogurt products. Participants learned that yogurt could be produced using simple kitchen equipment with relatively low production costs. The service team explained that the increasing public awareness of healthy food consumption has created promising market opportunities for probiotic products. This explanation attracted significant interest among teachers, many of whom previously believed that yogurt was an expensive product available only in supermarkets and urban shopping centers.

The socialization activity further included detailed explanations regarding the stages of the program, including theoretical training, practical yogurt production, trial production, business mentoring, and sustainability monitoring. The implementation schedule was developed in collaboration with the school management to ensure the activities would not interfere with regular teaching responsibilities.



Figure 2. The Making of Yogurt

The discussion session became one of the most active parts of the socialization process. Teachers shared their experiences and perceptions regarding yogurt consumption and healthy food business opportunities in their community. Several participants expressed their interest in producing yogurt as a home-based business if the production process proved to be simple and affordable. Overall, the socialization stage successfully increased participants' motivation and readiness to engage in the subsequent activities.

Table 1. Participants' Knowledge Improvement After Training

Assessment	Mean Score
Pre-test	57.3
Post-test	88.9
Improvement	31.6 points

Table 1 shows an increase in participants' knowledge after the training program. The mean score increased from 57.3 in the pre-test to 88.9 in the post-test, indicating a substantial improvement of 31.6 points in participants' understanding of nutrition, probiotics, food sanitation, and yogurt production techniques. The yogurt-making training constituted the core activity of the program. The training was designed to provide both theoretical understanding and practical skills related to household-scale yogurt production. The activity combined lectures, demonstrations, and hands-on practice to ensure participants fully understood the entire production process.

The training began with educational materials on healthy food consumption and the benefits of probiotics for human health. Participants were informed that yogurt contains beneficial bacteria that help maintain digestive health and improve the body's immune system. The session also emphasized the relationship between healthy nutrition and the prevention of malnutrition and stunting among children. This information provided new insights for teachers regarding the importance of improving family dietary habits.



Figure 3. The Process of Yogurt Making

In addition to nutritional education, participants were introduced to the basic principles of fermentation and food safety. The service team explained the importance of maintaining cleanliness during the production process to ensure that yogurt products remain safe for consumption. Teachers learned about simple sterilization techniques, proper milk temperature control, and fermentation procedures required to produce yogurt with good texture and flavor. Following the theoretical session, the service team conducted a direct demonstration of the yogurt-making process. The demonstration included milk heating, cooling, starter inoculation, fermentation, and final refrigeration procedures. Each step was explained carefully to help participants understand the purpose and function of every stage. Participants were then divided into small groups for direct practice sessions. Each group was provided with production equipment and materials, including fresh milk, yogurt starter cultures, stainless-steel pans, thermometers, fermentation containers, and simple packaging materials. Most participants showed high enthusiasm during the practical session because it was their first experience producing yogurt independently.



Figure 4. The Elementary School Teachers of SD Negeri 2 Jeumpet are producing yogurt independently

During the practice session, participants received direct guidance from the service team regarding fermentation temperature control, yogurt consistency, and indicators of successful fermentation. Teachers were also introduced to several local fruit flavor varieties, such as strawberry, mango, and melon, to enhance product appeal and marketability. The results demonstrated that participants were able to produce yogurt with acceptable texture and flavor quality.

After the training phase, mentoring and monitoring activities were conducted to ensure the sustainability of participants' skills and knowledge. Mentoring activities included direct school visits and regular communication through WhatsApp groups. During these sessions, the service team guided production management, raw material handling, product storage, and product quality evaluation. Several participants began independently producing yogurt at home on a small scale. The service team evaluated these products based on taste, texture, aroma, and thickness to ensure consistency with the standards introduced during training. Participants also received guidance on simple business management practices, including calculating production costs and basic bookkeeping methods.

Monitoring activities also focused on the use of social media for product promotion. Some participants began promoting their yogurt products on local social media networks within the school and the surrounding community. The service team provided advice on product photography and simple promotional strategies to improve public interest. The program generated significant positive impacts on participants' knowledge, practical skills, and motivation. Teachers demonstrated improved understanding regarding probiotics and healthy food consumption for family health. Participants also successfully mastered basic yogurt-making techniques using simple household-scale equipment. Furthermore, several teachers expressed interest in developing yogurt production into a home-based business opportunity due to its relatively low production cost and promising market potential.

The school demonstrated a strong commitment toward sustaining the program by supporting yogurt production activities as part of school innovation initiatives. Participants also expressed willingness to continue practicing and disseminating the knowledge and skills acquired during the program. To support sustainability, the training module developed during the activity can be utilized for future academic years and similar community empowerment programs.

3.2. Discussion

The findings of this community service program demonstrate that yogurt-making training can serve as an effective strategy for improving health literacy, practical life skills, and community-based economic empowerment among elementary school teachers. The positive responses from participants indicate that teachers possess strong potential to become agents of change in promoting healthy lifestyles and productive activities within their communities. The successful implementation of the socialization stage reflects the importance of participatory communication in community empowerment programs. By involving school stakeholders from the beginning, the program successfully established mutual understanding, trust, and commitment between the service team and participants. The active participation observed during the discussion sessions suggests that the issues addressed by the program were highly relevant to the participants' daily lives and socioeconomic conditions.

The training activities significantly improved participants' knowledge regarding probiotics, healthy nutrition, and food safety. Before the program, many participants had a limited understanding of yogurt production and its health benefits. After participating in the training, teachers demonstrated greater awareness regarding the importance of healthy food consumption in preventing digestive disorders and improving family health. These findings support previous studies indicating that practical nutrition education can positively influence public awareness and healthy lifestyle behaviors.

The practical training component proved highly effective in enhancing participants' technical skills and confidence. The use of simple household equipment and accessible production methods reduced participants' perceptions that healthy food production requires expensive technology or advanced expertise. This finding highlights the importance of introducing appropriate technology in community-based empowerment programs, particularly in rural settings where access to modern equipment may be limited.

The mentoring and monitoring stages also contributed significantly to program sustainability. Continuous guidance enabled participants to apply their skills independently while receiving support in overcoming technical and managerial challenges. The use of WhatsApp communication groups strengthened interaction between participants and the service team, allowing continuous consultation and evaluation. This finding emphasizes that post-training assistance is essential in ensuring long-term program impact and participant confidence.

Economically, the program introduced participants to new opportunities for household-scale entrepreneurship. The relatively low production cost of yogurt and increasing public interest in healthy food products create favorable conditions for small-scale creative economic activities. Some participants demonstrated strong motivation to continue yogurt production as a supplementary source of family income. This outcome aligns with the broader objective of community empowerment programs aimed at strengthening economic resilience through practical skill development.

The involvement of teachers as the primary participants also provided broader social implications. Teachers occupy respected positions in the community and can disseminate health-related knowledge to students and parents. Therefore, empowering teachers with practical skills and health education may generate multiplier effects within the wider community. Schools, in this context, can function not only as educational institutions but also as centers for community empowerment and social innovation. Overall, the program successfully integrated health education, practical skills training, and economic empowerment into a sustainable community-based initiative. The positive outcomes indicate that yogurt-making training can meaningfully improve family health awareness, promote healthy food consumption, and encourage creative economic development within school communities and the surrounding society.



Figure 5. The Product Produced by the Elementary Teachers of SD Negeri 2 Jeumpet

4. CONCLUSION

The implementation of the Community Service Program (PkM) in the form of yogurt-making training at SD Negeri 2 Jeumpet was successfully carried out according to the planned objectives and activities. The program effectively provided teachers with practical knowledge and skills related to producing healthy, hygienic, and

economically valuable yogurt using simple and appropriate technology that could easily be applied independently by the participants.

Through the training sessions, participants gained hands-on experience in preparing ingredients, conducting the fermentation process, and properly packaging yogurt products. The results indicated that the teachers were able to produce good-quality yogurt with relatively low production costs while maintaining its nutritional value as a probiotic beverage beneficial for family health. In addition, the program not only contributed to health education but also introduced creative business opportunities that may support the economic empowerment of the participants.

The participants showed high enthusiasm throughout the program, indicating that the school community positively received the activity. The teachers developed a better understanding of the health benefits of yogurt. They demonstrated motivation to further develop the product as a small-scale entrepreneurial activity within the school and the surrounding community. Therefore, the program successfully integrated health education, skill development, and community economic empowerment sustainably.

To ensure program sustainability, the partner group is encouraged to continue yogurt production consistently and expand its marketing network to nearby schools and local communities. Furthermore, efforts to obtain halal certification and official distribution permits are recommended to strengthen consumer trust and improve product competitiveness. Proper financial management and consistent bookkeeping practices are also necessary to support the long-term sustainability and development of the school-based yogurt business initiative.

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