



## Herbal Soap Production Training Based on Fresh Fruits to Enhance Teachers' Skills at MI Assalafiyah, Kediri Regency

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**Abstract:** This community service program aims to enhance teachers' skills and creativity in producing natural herbal soaps derived from fresh fruits. The program was implemented at MI Assalafiyah, Kediri Regency, using socialization and hands-on training methods. The training began with the administration of a pre-test, followed by the delivery of instructional materials and practical sessions. A post-test was conducted at the final stage to evaluate participants' understanding and the skills acquired. The results indicate that the herbal soap-making training was highly beneficial in equipping teachers with new practical skills. A significant improvement in participants' competencies was observed, as reflected in the increase in mean scores from the pre-test ( $50.38 \pm 19.36$ ) to the post-test ( $85.33 \pm 11.06$ ). Furthermore, this training has the potential to be integrated as an extracurricular activity in schools to support students' skill development, particularly in herbal soap production.

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## Introduction

Knowledge about personal hygiene should be instilled from an early age, as it is closely related to health. We use soap to cleanse ourselves because it is a surfactant that can remove dirt and oil, which water alone cannot eliminate (Djoru & Adi, 2023). Herbal soap results from the saponification of various oils and alkalis, commonly derived from palm, coconut, olive, or other oils readily accessible to the community. The active compounds of herbal plants with antioxidant properties play an essential role in preventing premature skin aging, making herbal ingredients suitable for formulation into simple cosmetic preparations such as soap (Arifah et al., 2025). Soap is a chemical compound of sodium or potassium salts of fatty acids derived from vegetable oils or animal fats. It can be solid or liquid, which cleanses the skin of dirt, oil, and bacteria. Liquid soap can emulsify water and oil/dirt. This form effectively removes both water-soluble and fat-soluble impurities from the skin surface, while also eliminating odor and providing a pleasant fragrance (Susilowati et al., 2022).

Using natural ingredients as raw materials for cosmetics has long been practiced. Employing natural materials in beauty care can minimize side effects compared to chemical ingredients. Cosmetics derived from natural sources, whether from plants, animals, or other materials, have existed for more than 3,500 years, one example being soap made from herbal ingredients (Beandrade et al., 2019). Education is one of the responsibilities of pharmacists in contributing positively to society (Atmadani & Hidayati, 2020). This activity also aims to enhance community knowledge regarding the role of pharmacists and the utilization of local plants for health and economic purposes (Ridwan et al., 2025). Community service activities



packaged as training in making natural herbal soap represent an effort to foster innovation and creativity among teachers (Sartika et al., 2021). People still rely on plants around them daily for medicinal or cosmetic purposes (Simaremare et al., 2024). Traditional cosmetics are gaining popularity, with increasing consumer demand for herbal-based cosmetic products, as natural raw materials are considered safer than modern synthetic ingredients (Jalil et al., 2020).

Every higher education institution refers to and aligns with the Sustainable Development Goals (SDGs) set by the government in developing research and community service programs. This community service program refers specifically to SDGs 4 and 10. It was implemented through training on herbal soap making and packaging techniques, which are expected to provide valuable skills to improve community economic opportunities. This program was carried out for teachers at MI Assalafiyah, Kediri Regency.

MI Assalafiyah was originally a non-binding educational institution that specifically taught Islamic law and sharia issues without a formal curriculum. MI Assalafiyah is located at Jl. Menco No. 09, Pule Village, Kediri District, within a rural area, far from urban centers. The school consists of grades 1 through 6, with approximately 20 students per class, and employs around 30 teachers and staff. The fertile soil around the school and several residents' rice fields or gardens make it suitable for use as herbal soap ingredients. However, the teachers lack the skills and expertise to make herbal soap. This is the basis for this community service program, as locally available fruits and plants can be used to make herbal soap that is safe for teachers and children. The objective of this activity was to provide training in the production of herbal-based soap as well as in the design of packaging for the resulting products, in alignment with Sustainable Development Goal (SDG) No. 4 on Quality Education and SDG No. 10 on Reduced Inequalities.

## **Method**

The implementation of this community service activity for teachers at MI Assalafiyah, Kediri Regency, was carried out through several stages, including school visits, community service program socialization, pretest, delivery of basic materials on herbal soap, training on herbal soap making from fresh fruits, training on Canva usage, training in packaging and product labeling, and posttest. The main stages of the program were as follows:

- 1) Socialization of the planned activities with the principal of MI Assalafiyah, Kediri Regency.
- 2) Delivery of basic material on soap theory and formulas that can be used to produce high-quality soap.
- 3) Preparation of tools and materials, including strawberries, oranges, lemons, apples, lavender essence, lemongrass, and glassware.
- 4) Training in herbal soap making with teachers at MI Assalafiyah, Kediri Regency.
- 5) Implementation of technology by creating soap packaging designs using Canva, Chat GPT, and Gemini to help participants design and obtain information related to the herbal ingredients used.
- 6) Mentoring, evaluation, and program sustainability were conducted after participants completed their packaging designs, with the expectation of encouraging entrepreneurial initiatives.

The method of this community service activity began with a pretest and concluded with a posttest, intending to measure the program's effectiveness (Atmadani et al., 2021). Both the pretest and posttest employed the Guttman scale to assess the level of understanding



of the material delivered (Abianingsih, E.S., Pristianty, L., Hidayati, 2017). The pretest and posttest were analyzed using percentage improvement to assess the baseline before the material and training were provided and after the training.

## Result and Discussion

This community service program involved classroom teachers at MI Assalafiyah in Kediri City. The activity was conducted face-to-face at the school, using one of its classrooms. Thirty teachers participated. The program, which included providing materials and training, was conducted by suspending classroom activities so that they could focus on the training. The topics given in the material are about soap making, the benefits of soap, soap making ingredients, soap evaluation after production, and the types of herbal ingredients that can be used in soap making and soap packaging design, such as what information should be included on the packaging, and how to use Canva to create attractive designs for soap products that have been produced. The next material is about entrepreneurship, which aims to foster an entrepreneurial spirit among teachers outside of their routine duties as educators at school and calculate the cost of soap made.

The pretest results for the presented material showed an average score of  $50.38 \pm 19.36$ . This score is considered low because almost all teachers had no prior knowledge of herbal soap making and its application in packaging design. Some teachers expressed unfamiliarity with the terms used in questions about soap and skin health in general. However, this data motivated the facilitators to provide more precise and detailed explanations, considering that teachers at partner schools are truly laypeople who are still far from health-related terminology and the rapidly developing technology currently available through social media. This condition is in stark contrast to the campus environment, where many students influence technological advancements in the surrounding community. Shops around campus often see homemade soap, packaged without a brand, at a relatively lower price than industrially packaged soap sold in supermarkets or nearby shops.



**Figure 2. Sequence of Activities in the Herbal Soap-Making Training Program**

Herbal soap is produced by saponification of various oils and alkali, where the raw materials can include palm oil, coconut oil, olive oil, or other commonly available oils. Active ingredients derived from herbal plants with antioxidant activity play a vital role in preventing premature skin aging, making herbal ingredients suitable for formulation into simple cosmetic products such as soap (Arifah et al., 2025). Currently, traditional cosmetics are very popular, with a growing number of consumers choosing herbal-based cosmetic products due to the perception that natural raw materials are safer than synthetic ones (Sartika et al., 2021). Essentially, soap is a compound of sodium or potassium with fatty acids derived from vegetable oils or animal fats, available in solid, soft, or liquid forms, and capable of producing foam. Soap is produced through saponification, the hydrolysis of fats into fatty acids and glycerol under alkaline conditions. In addition to cleansing the skin, some soaps



also provide moisturizing, nourishing, and soothing benefits for skin problems. The soap formula that has been developed in the laboratory is used in this community service activity, the formula is as follows (Engrid Juni Astuti et al., 2024):

- Texapon: 30 g
- NaCl: 10 g
- Glycerin: 15 ml
- Strawberry/Orange extract: 45 ml (from 100 g of fresh strawberries blended with 100 ml of water)
- Betel leaf water/distilled water: up to 250 ml
- Essence: as needed

The evaluation conducted involved measuring the acidity level (pH), which is one of the quality requirements for liquid soap, as it comes into direct contact with the skin and may cause adverse effects if its pH is not compatible with the skin's natural pH. In general, soaps tend to be alkaline because their primary raw material, potassium hydroxide (KOH), undergoes a saponification reaction with oils. The acceptable pH range for liquid soap is between 8 and 11 (Sari et al., 2019).

The entrepreneurship materials provided include guidance on how to market soap, calculate capital and selling prices, and estimate profits if the product is developed for future entrepreneurial activities. The training begins with weighing the required ingredients according to the formula, followed by a step-by-step process of mixing the soap components and preparing the fruits used to produce the herbal soap. After the soap is produced, quality control is carried out by checking the pH of the soap using a pH meter. This pH test is carried out to ensure that the herbal soap matches the natural pH of human skin, thus preventing potential irritation such as redness or dryness. The natural pH of human skin is generally in the weakly acidic range of 4.5–6.0, with an average of around 5.5. This range is called the acid mantle, the skin's natural acidic protective layer. The acid mantle plays an important role in (Lambers et al., 2006) (World Health Organization, 2009):

- Maintaining the skin barrier against pathogenic microorganisms
- Preserving skin moisture
- Supporting the protective enzymatic functions of the stratum corneum layer

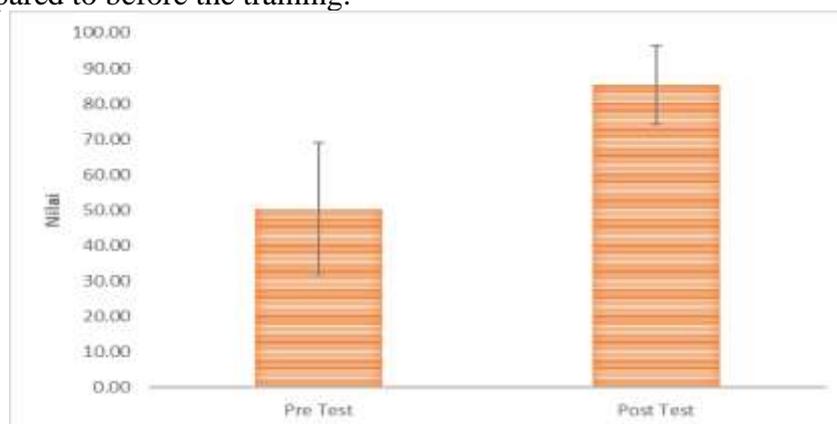
The pH value of soap as required by SNI (Indonesian National Standard) for liquid soap falls within the range of pH 8–11, making it safe for skin application since, at this level, skin irritation is not expected to occur. In the pH measurement process of the prepared formulations, those using strawberry extract generally showed results within the 4.5–6.0 range. However, formulations using lemon extract exhibited a decrease in pH to around 4.2 due to the high acidity of the lemon fruit. To address this issue, pH adjustment can be carried out using NaOH, ensuring that the soap achieves a suitable pH level.

The teachers learned to package the soap in 250 ml pump bottles, which were then labeled according to the ingredients. Secondary packaging was then carried out using plastic wrap. However, the plastic wrapping process was not as simple as simply heating the plastic wrap, as some participants experienced difficulties due to excessive heating or holding the heating tool too close to the bottle, which caused the plastic to shrink unevenly and failed to seal the bottle properly. This process required repeated trials until participants successfully achieved the correct and safe packaging.

The training concluded with a posttest. The same set of questions used in the pretest were administered again in the posttest to evaluate participants' improvement after receiving



the material and practical training (Tentrem Budihartini, 2022). During the posttest, participants were able to complete the questions more quickly than during the pretest. The average posttest score obtained was  $85.33 \pm 11.06$ , indicating a substantial increase of 69.54% compared to the pretest score. This data was also reflected in the decrease in the standard deviation value, which decreased from 18.66 at the beginning of the program to 11.06 after the training, thus concluding that participants' understanding became more uniform compared to before the training.



**Figure 1. Results of Skill Improvement in the Partners**

The figure above shows a significant improvement after the program's implementation, and the level of skills became more homogeneous. This community service program provides an opportunity for school teachers to develop soft skills that they had not previously possessed, enabling them to produce herbal soap independently. This new skill is expected to support entrepreneurship initiatives that are to be developed within the school. Hopefully, this program can help narrow the gap between rural and urban schools, while also allowing students to indirectly gain additional soft skills through the guidance of their teachers (Rahmawati & Ustiawaty, 2024)(Handayani et al., 2024).

## Conclusion

Based on this community service activity, it can be concluded that: (1) the making of herbal soap was highly beneficial for teachers in providing them with new skill development, (2) there was an improvement in skill level as indicated by the pretest and posttest results, from  $50.38 \pm 19.36$  to  $85.33 \pm 11.06$ , and (3) this training can enrich extracurricular activities at school by supporting students' skill development, particularly in herbal soap-making.

## Recommendation

It is recommended that further training be developed in the production of bar soap, which is more commonly used in the community around the school, so it can serve as entrepreneurial capital and for household use. Principals and teachers can apply the training results to extracurricular activities or science lessons.

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