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Optimizing the Potential of Islamic Boarding School Agroindustry through the Production of Solid Soap Based on Natural Ingredients

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Abstract:
Community service program was conducted to address partner issues at Darussalam Gontor Islamic Boarding School for Girls Campus 3, including the lack of knowledge and skills in natural soap production and the suboptimal marketing strategies for pesantren-based products. The program aimed to enhance students' practical skills in producing natural soap and to strengthen their independence and entrepreneurial mindset. The training involved 13 final-year students. The implementation methods consisted of socialization, pre-test, material presentation, hands-on soap-making using a learning by doing approach, marketing and packaging design training, followed by post-test and observation for evaluation. The activity was carried out in three stages: preparation, implementation, and evaluation. The results showed an improvement in students' knowledge and skills with an N-gain score of 0.50 (moderate category), as well as increased motivation to develop a pesantren-based soap business unit. The program successfully achieved its objectives; however, continuous assistance is recommended to support production, marketing, and business sustainability.

Keyword: Training, Natural Soap, Students' Independence, Islamic Boarding School, Marketing

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Introduction

Pondok Modern Darussalam Gontor Putri Campus 3 Ngawi is one of the Islamic educational institutions that plays a strategic role in shaping the character of female students who are not only proficient in religious knowledge but also possess practical skills as a foundation for independent living. As part of the Gontor education system, which emphasizes the integration of knowledge and practice, every educational activity is aimed at developing individuals who are knowledgeable, of noble character, and capable of making tangible contributions to society. In the context of a competitive modern era that demands independence, the empowerment of practical skills becomes highly relevant to be implemented in the pesantren environment. One form of actualizing these values of independence is through training activities in the production of non-food products, particularly natural soap, which can be independently produced by the female students.

The resilience of female students is not only measured by their ability to consistently engage in learning and religious practices, but also by their capacity to independently meet their livelihood needs, both while at the boarding school and after returning to society.(Cahyaningrum & Tresnawaty, 2024) Amid the growing public awareness of the importance of using safe, natural, and environmentally friendly products, herbal soap has become one of the non-food products with high added value. Herbal soap is made from natural ingredients and does not contain harmful chemicals such as Sodium Lauryl Sulfate (SLS) (Putri et al., 2024).

Soap is a process of saponification that reacts fats with alkali through the saponification process (Widyasanti et al., 2017). This soap is made from natural ingredients such as vegetable oils, herbal extracts, and other organic materials that are safe for the skin and do not pollute the environment. In addition to its economic value, natural soap also supports a healthy lifestyle and aligns with the principle of thayyib in Islam (Anuar & Tukiran, 2022). Therefore, training in making natural soap is highly relevant as a form of strengthening independence while also empowering the pesantren's economy.

Pondok Gontor Putri Campus 3 has great potential to develop programs like this because it has an integrated education system that focuses on the holistic development of the students' potential. The tradition of independence has long been instilled through various pesantren business units that involve direct participation from the students, such as agriculture, livestock, and food production. With training in making natural soap, it is hoped that a new business unit can be formed that not only supports the internal needs of the pesantren but also opens up business opportunities that can be marketed to the wider community, considering the growing trend of healthy and natural lifestyles.

This non-food product development training also supports the Sustainable Development Goals (SDGs), particularly in terms of improving health (Goal 3), empowering the local economy (Goal 8), and responsible consumption and production (Goal 12). Research by (Majumdar et al., 2023) shows that the use of natural ingredients in natural soaps makes them products that are not only safe for the skin but also environmentally friendly.

The challenges faced in developing non-food products in pesantren environments, particularly natural soap, include the low knowledge and skills of female students in the soap-making process and the suboptimal marketing strategies for pesantren community products (Suharyati et al., 2024). Therefore, a systematic training approach is needed, starting from the identification of local raw materials, soap formulation, production practice, and marketing strategies. The learning by doing method will be applied in this activity, so that participants not only understand the theory but also become skilled in practice.

Method

Community service was carried out on Tuesday, October 7, 2025, at Atisari, Karangbanyu, Widodaren District, Ngawi Regency, East Java 63257. Training in solid soap making was conducted for 13 santri who participated. The series of activities carried out were as follows:

1) Initial test (pre-test), conducted at the beginning to determine how well the material to be delivered was already mastered by the santri (Magdalena et al., 2021). In this pre-test, all santri completed questions related to solid soap making training.
2) Material presentation, the materials provided were related to the steps of making soap, its contents, the tools and materials used, as well as marketing aspects.
3) Solid soap making training, making solid soap starting from weighing the ingredients to molding the solid soap.
4) Final test (post-test), conducted at the end to determine the extent of the santri's understanding of the material learned (Magdalena et al., 2021). All santri who participated in the solid soap making training completed the questions.

Tools used in making solid soap: 1) measuring cup, 2) mold, 3) parchment paper, 4) spatula, 5) scale, 6) hand blender, 7) mask, 8) gloves, 9) tissue. The ingredients used are: 1) palm oil, 2) coconut oil, 3) olive oil, 4) NaOH, 5) colorant, 6) fragrance, 7) cornstarch, and 8) distilled water.

The stages of the community service implementation method include:

1. **Socialization:** The initial stage begins with socialization to build mutual understanding and commitment from all elements (Muzarohmah, 2022). The service team conducts a hearing with the Pondok to explain the objectives, scope, implementation schedule, and program outputs.

2. **Training:** Training is a core stage in this community service activity. The training uses the learning by doing method (Al Farishi et al., 2024) and is divided into several sessions:
   - Management and Marketing Training: Provides understanding of packaging design and digital marketing.
   - Herbal Soap Production Training: Students are taught natural soap formulations, raw material selection, cold process soap making techniques, and production sanitation.
3. **Technology Implementation**

The technology implemented in this program is environmentally friendly natural soap production technology based on the cold process (Suharyati et al., 2024). This technology is appropriate, easy to apply, and does not require large-scale industrial machinery. Below is an illustration of the process flow diagram and the specifications of the science and technology applied:

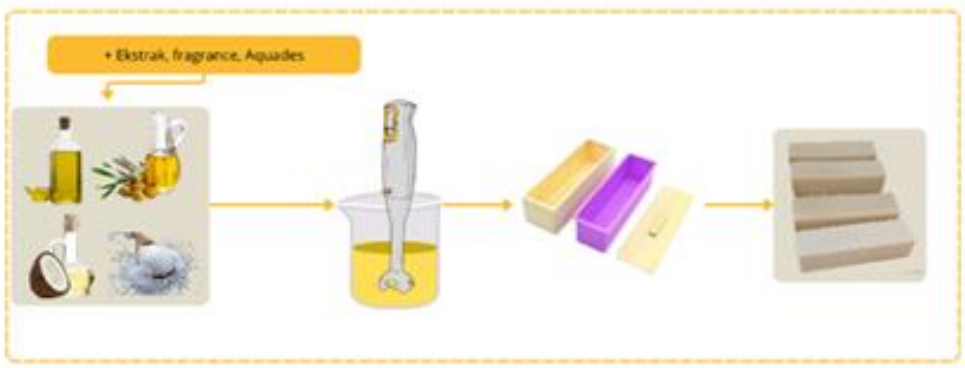

Figure 1. Flowchart diagram depiction

Figure 1 shows the flow diagram of the natural soap manufacturing process. The soap produced measures 7 cm x 4 cm x 2 cm per bar with a composition of palm oil, olive oil, palm oil, NaOH, distilled water, herbal extract, and fragrance. The production time is 2-3 hours per batch, with a curing process of 14 days. The production equipment used includes:

- Thermometer: to measure temperature
- Beaker: to dissolve NaOH
- Measuring cup: to measure the required distilled water
- Hand blender (200–300 Watt): to speed up the mixing process
- Silicone mold: to mold soap with a capacity of 1200 grams
- Soap cutting knife: to cut soap after molding
- Digital scale (capacity 5 kg, accuracy 0.1 gram): ensures formulation accuracy
- Spoon: for manual shaping process
- Spatula, heat-resistant plastic container, gloves & mask: supporting equipment

4. **Problems Addressed**

   This program targets two main areas:
   - Production: Improving technical skills in producing quality soap products.
   - Management and Marketing: Enhancing students' understanding of managing and marketing products.

5. **Partner Participation**

   The number of participants is 13 students. Partners actively participate by:
   - Providing simple production room facilities.

- Facilitating students to fully participate in training.

6. **Program Evaluation**

   Evaluation is carried out through:

- Pre-test and post-test of students' competencies.
- Direct observation during production practice.

7. **Usefulness and Benefits**

   The usefulness and benefits of the community service program include:

- Providing practical skills to students in the field of natural product production.
- Soap products can be used by the pesantren itself (saving on the cost of consumable soap) or marketed to increase the pesantren's income.
- Serving as a means of advanced training and regeneration for student entrepreneurs.

Results and discussions

There are 3 series of activities that have been carried out at Gontor Putri Campus 3 Ngawi, namely: 1) the preparation stage; 2) the implementation stage; and 3) the activity evaluation stage. The following are the results of the natural soap making training activities at Gontor Putri Campus 3 Ngawi:

1) Preparation Stage

The preparation activities carried out included preparing the training venue, preparing tools and materials, and preparing the training participants. The preparation activities were carried out in coordination with the caretakers of Gontor Putri Campus 3 Ngawi, who are more familiar with the schedule for 6th-grade KMI students. Gontor Putri Campus 3 Ngawi provided the venue and some of the tools and materials needed for natural soap making training.

During the coordination with Gontor Putri Campus 3 Ngawi, it was proposed to offer training in natural soap making and was very well received by the caretaking staff. Previously, the participants had never made natural soap, although some had used natural soap before. In addition to soap making, coordination was also carried out to determine the training venue. The result of the coordination was that the natural soap making training would be conducted in the Al-Azhar Building at Gontor Putri Campus 3 Ngawi, which was considered easier for mobilization due to the availability of training tools and materials.

After coordinating with Gontor Putri Campus 3 Ngawi, the team then conducted a trial making of natural soap carried out by the service team, with the aim of ensuring the formulation to be used in the training. The chosen formulation is one that is easy to follow and can be carried out by the 6th-grade KMI students.

2) Implementation Stage

Improving the skills of KMI Grade 6 students through natural soap making training on Tuesday, October 7, 2025. Material related to the content and steps of making natural soap was presented by Riska Sumirat, S.TP., M.T.P. Marketing material for natural soap products was presented by Agustin Rani Nurfadila, S.Tr.P., M.Tr.P. Here are some of the steps carried out, among others:

a) Pre-Test

   Before the material is presented, participants are given questions or a pre-test with the aim of assessing their level of knowledge related to the content and steps of making soap, as well as marketing for natural soap products. The questions given to 6th-grade KMI students are in the form of multiple choice. What is measured in the pre-test is:

- Knowledge related to the steps of making natural soap
- Knowledge related to the marketing of natural soap

b) Delivery of materialThe material delivered to the 6th grade KMI students is:

Table 1. Delivering material to participants

No	The material presented
1	Making natural soap - Steps to make natural soap - Hazardous materials not allowed in soap making- Types of solid soap
2	Natural soap marketing - Skills in selling natural soap - How to determine the selling price for natural soap products

Figure 2. Implementation of natural soap making with KMI 6th grade students

The next session after the lecturing is soap-making practice. The training process uses a participatory approach method, actively involving participants in soap production (Dwiratna et al., 2016). The soap made in this training is solid soap. According to (Widyasanti & Rohani, 2017), solid soap is divided into three types: opaque, translucent, and transparent. The soap-making process takes about one hour, starting from ingredient preparation, mixing, and molding. The use of natural ingredients in this training is an advantage and a unique attraction compared to chemical soaps on the market. One of these ingredients is olive oil.

Olive oil contains a high amount of oleic acid, making it good for skin health, helping to moisturize dry skin, remove dead skin cells, and address various skin disorders (Widyasanti & Rohani, 2017). In addition to olive oil, palm oil and coconut oil have different functions. Palm oil functions to solidify soap, while coconut oil functions to provide good foaming properties to soap because it contains a relatively high amount of lauric acid (Uswah et al., 2019).

c) Question and answer session between participants and the speaker

Regarding the challenges faced by KMI 6th-grade students in making natural soap after a Q&A session with the instructor, they include:

- Limited knowledge in making natural soap
- Limited tools and materials available
- Limited time for implementation
- Limited skills in marketing and designing natural soap products

After identifying the challenges faced by the 6th-grade KMI students, the service team provided several solutions for making natural soap, namely:

- Guiding the soap-making process
- Assistance in marketing natural soap products
- Support in designing packaging for natural soap products

3) Activity Evaluation Stage

a) Post-Test

The material was delivered, after which questions or a post-test were given using the same items as the pre-test provided to the 6th-grade KMI students. The purpose of conducting the post-test was to determine the increase in students' knowledge regarding the making and marketing of natural soap products. The tabulation of the pre-test and post-test results is shown in Figure 3.

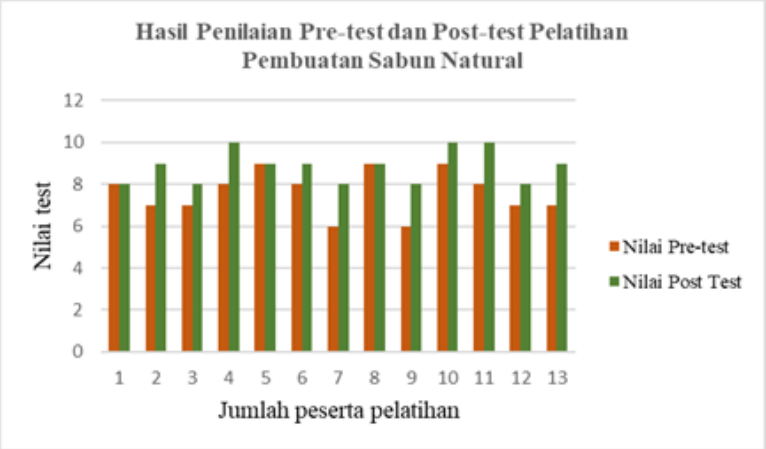

Figure 3. Tabulation of pre-test and post-test scores for natural soap making training

From the calculation results, the N-gain value obtained is 0.50, which falls into the moderate category, meaning there is a moderate or sufficient improvement in skills and understanding between the post-test and pre-test based on the scores of the 6th-grade KMI students.

It can be seen that after conducting training on making natural soap and its marketing, the 6th-grade KMI students learned important points, including hazardous materials that are not allowed in making natural soap, the steps in making natural soap, and marketing natural soap.

Conclusion

Based on the series of natural soap training activities at Gontor Putri Campus 3 Ngawi, it can be concluded that the training participants, or 6th-grade KMI students, showed very good enthusiasm in participating in the solid soap making training, from the material presentation to the soap making practice. There was an increase in knowledge in natural soap making, with an N-gain score of 0.50, which can be interpreted as the knowledge level of 6th-grade KMI students being moderate. However, continuous guidance is needed so that the skills possessed can improve, along with assistance related to the marketing of natural soap.

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