

Conference Paper

Green Technology Manifestation in Community Service Activities at Nurul Iman Islamic Boarding, Probolinggo

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ABSTRACT

Cleansation limescale soap is a floor cleaning soap created by students of UPN “Veteran” East Java who are carrying out community service at the Nurul Iman Islamic Boarding School, Probolinggo. The method used is qualitative, with data collection through observation, analysis, execution, and documentation methods. This study discusses the ingredients for making limescale soap, tools for making limescale soap, procedures for making limescale soap, and procedures for applying limescale soap, as well as how the product is socialized to the Islamic boarding school. This study concludes that the floor scale cleaning product created by students of UPN “Veteran” East Java works according to its function and reacts to floor scale as expected. This product is also an educational medium for the Nurul Iman Islamic boarding school so that it can provide knowledge on how to clean floor scale without having to continuously buy floor cleaners on the market. This study suggests that further products can be added with several other mixtures such as fragrances or other substances. The community service activity itself showed commitment from both institutions on how green technology should be fostered in nowadays sustainable living. This green manifestation also proved that creating sustainable living in rural areas was effectively possible.

Keywords: cleansation, Islamic Boarding School Nurul Iman, product, soap

Introduction

Islamic boarding schools are a form of Islamic educational institution with the aim of studying religious knowledge that can be applied to everyday life (Adib, 2021). Students of Islamic boarding schools or what can be called santri, undergo full learning activities at the Islamic boarding school. In other words, they are required to live independently at the Islamic boarding school. This has many positive impacts that can be realized, Islamic boarding schools have a major role in educating the nation's generation, shaping personality, and providing broad knowledge (Islam, 2021). However, with the demands of carrying out daily activities independently. Not a few students still have difficulty in maintaining the cleanliness of the environment that is usually used, such as bathrooms. In managing environmental sanitation, there is often a lack of concern for various problems related to environmental sanitation in Islamic boarding schools (Khotimah, 2021). Based on this, scale is a very common problem in Islamic boarding school environments, such as bathrooms or other damp places. Scale is one of the problems that often occurs in bathrooms. The water used for bathing can leave dirt on the walls. Calcium and magnesium content can remain in the bathroom, causing bathroom scale (Dwiwanto, 2020). Scale in the bathroom is very difficult to anticipate, especially if the bathroom is often used. Accumulated scale not only makes the bathroom look dirty, but can also cause the surface to become slippery and dangerous. Therefore, scale needs to be cleaned regularly to maintain sanitation and safety in using the bathroom.

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The appearance of scale on ceramics can be caused by several things, including dried liquid soap, settled water clots, and stubborn dirt residue (Setiawan, 2023). These three things are often considered small things that are left alone. Then over time it can cause the appearance of scale that is difficult to clean. However, scale can still be overcome by using a scale cleaning fluid that can be made independently. The East Java "Veteran" National Development University, as one of the national defense campuses, presents the *Pesantren* Innovation KKN program. Where several groups are spread out to carry out community service activities at certain Islamic boarding schools. One of them is the Nurul Iman Islamic Boarding School in Probolinggo, East Java. Community service participants are expected to be able to analyze problems and provide effective solutions at this location. One of the problems found is related to scale in the bathroom and ablution area of the student dormitory. Therefore, the Nurul Iman Islamic Boarding School Community Service group provided an innovation in a scale cleaning formula that can be an effective solution to the cleanliness problems found.

Islamic boarding schools are places for the educational process of Muslims adopted through the results of the Hindu-Buddhist religious education process, where the spreaders of Islam in the past implemented an education system with distinctive Nusantara characteristics with the concept of dormitories or *padepokan* (Resky, 2022). Islamic boarding schools also act as centers for the development of knowledge and character, where students are guided to understand and practice Islamic teachings in depth. Since the beginning of their growth, Islamic boarding schools have had different forms from one another, so there is no standardization that applies to all Islamic boarding schools. However, in the process of growth and development, Islamic boarding schools have a general pattern or general elements that are their characteristics, for example: kiai, mosques, students and student residences (dormitories), as well as studying yellow books (Zainuddin, 2013).

Material and Methods

This study uses the methods of observation, analysis, execution, and documentation in realizing the implementation of handmade crust soap making efforts at the Nurul Iman Islamic Boarding School in Gebangan Village, Krejengan District, Probolinggo Regency, East Java. This activity is carried out in stages, in the initial stage of observation in the boarding school environment which is the target of the application of crust soap, especially bathrooms and ablution places that have the potential for crust accumulation. The second stage is team discussion, selection of materials, purchase and provision of materials, preparation of formulas. The third stage is the trial of the specified formula including direct use trials in certain places, packaging. The last stage is the program for preparing socialization and teaching to the Nurul Iman Islamic Boarding School community, teaching and the process of handing over finished products. The resulting crust soap is given the brand name "Cleansation". The contribution of the Islamic Boarding School community as partners in this activity is to provide facilities and infrastructure in the form of tools for making crust soap, namely spoons, bowls, and raw materials in the form of distilled water, providing a place for the implementation and trial of crust soap. The preparatory activities that our team carried out included coordinating and discussing the formula for the scale soap that would be applied, purchasing materials and preparing tools, conducting soap trials as well as compiling the steps for making scale soap.

The steps in making crust soap are quite simple and do not take much time. Do not forget to wear safety equipment such as latex gloves and masks to further protect yourself from the chemicals that will be used. The first step is to take 650 ml of water or distilled water using a measuring cup, make sure the measurements are in accordance with the instructions given, then put it in a pan to be heated until the water or distilled water reaches a temperature of around 60-80 ° C. If the water temperature is too hot, let it sit for a while or at least add cold water so that the temperature decreases according to the instructions. The second step is to weigh 50 grams of oxalic acid and 5 grams of caustic soda using a

digital scale. The third step is to pour HCl into a measuring cup up to 500 ml. HCl will emit pungent smoke, do not get too close and do not inhale it for too long, make sure to use a mask and latex gloves. After that, add the oxalic acid first into the HCl and stir until dissolved. The next step, add 5 grams of caustic soda to the HCl and oxalic acid solution, then stir until completely dissolved. The next step is to add water that has been heated at a temperature of 60-80 ° C to minimize the smoke produced by HCl and to dilute the soap solution. Add dye if you really want to add to the appearance to make it more attractive, the dye does not provide any effect, only as an additional attraction. After the color is evenly mixed, proceed to the last step, namely packaging. Packaging can use used bottles or others.

Results and Discussion

The trial practice of applying floor scale soap directly gave quite good and satisfying results because it gave the expected effect. When applying scale soap, it creates foam that reacts to the effect of decomposing scale so that the scale is easy to melt and the scale soap causes a little acid due to the effect of HCl but does not cause anything dangerous, at least provide a little space for ventilation so that there is air exchange and reduce the smell of scale soap. Another thing to note when using it is to be more careful to avoid possible dangers because the effect of HCl will cause a little itching if it comes into contact with the skin, but that is only a small possibility. The results of the application of the cleansing scale soap went smoothly. The method of use is very simple, the scale soap is sprayed and then rubbed with a brush until the scale disappears, then rinse with water. The results of the scale soap experiment are quite satisfying.

The students held training sessions for the students and staff of the *pesantren* on how to use the porcelain cleaner they created. Through live demonstrations, they showed how to effectively and efficiently clean the limescale and stains that build up in the bathroom and ablution area. The students enthusiastically followed each step, realizing the importance of maintaining cleanliness as part of their daily worship practices. In addition to focusing on cleanliness, the students also tried to build awareness among the students about the importance of protecting the environment. They held discussions and group activities that discussed the impact of using hazardous chemicals on the environment and health. In this way, the students not only learned to clean physically, but also understood the importance of choosing materials that do not harm the environment.

At the end of their service period, the students succeeded in creating a structured cleaning system and involving all students in maintaining the cleanliness of the bathrooms and ablution areas. This program not only left the *pesantren* cleaner, but also students who were more aware of the importance of cleanliness and the environment. The ustaz and the *pesantren* management were very grateful for the students' contributions, and hoped that this innovation could continue to be implemented at the Nurul Iman Islamic Boarding School and become an inspiration for other *pesantren* in Indonesia. During their KKN period, the students not only focused on creating the cleaning formulation, but also tried to integrate this innovation into the daily routine of the *pesantren*. In addition, the students also conducted regular evaluations to measure the effectiveness of the cleaning formulation they created. They collected feedback from students and *pesantren* staff on product performance, and made adjustments based on the suggestions received. This approach ensured that the cleaning formulation not only met high standards of cleanliness but also suited local needs and preferences. This KKN program also provided valuable lessons for the students about the challenges and opportunities in community service. They learn how to adapt to existing limitations, communicate effectively with various stakeholders, and manage projects with an inclusive approach. This experience is expected to be a valuable provision for them in their future professional careers, as well as foster a spirit to continue contributing to society.

The final activity is a socialization to present the results of our work and products. The socialized achievement targets are knowledge about crust soap, its uses, formula composition, ingredients, properties of the ingredients used, side effects of each ingredient if exposed to or entering the body, how

to handle it, how to make it, detailed explanations related to making soap through powerpoint and video, explanations on how to use crust soap, handover of crust soap to the Nurul Iman Islamic Boarding School.

Conclusion

The results of the activity of making the crust soap product went smoothly and gave the best results, in terms of the application of the crust soap, it showed satisfactory results. Several bathrooms and ablution areas became cleaner than before. A special formula that works well is able to facilitate stubborn stains or crusts on the floor. Efforts to form cleaning activities for the boarding school were carried out well through several stages that were studied and carried out in detail, providing results according to our expectations and those of the Islamic Boarding School community. The socialization and teaching carried out on Sunday, August 11, 2024 went well without any problems. The community of the Nurul Iman Islamic Boarding School was educated and understood about teaching the making and use of crust soap. The enthusiasm of the Islamic Boarding School community and also the cooperation related to this program greatly support the success of making the crust soap cleansation. Suggestions for the future, the cleansing product can be developed by adding fragrances to make it more fragrant and better. The product packaging process can also be an alternative related to the development of this product in the future.

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