COMMUNITY EMPOWERMENT OF WIDORO HAMLET THROUGH TRAINING ON SOAP MAKING FROM USED COOKING OIL WASTE

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Abstract - *Used cooking oil often ends up as a neglected waste in the home kitchen for the people of Widoro. The people of Widoro do not yet know that used of cooking oil can be reused such as making soap, biodiesel, or other alternative fuels. Used cooking oil discharge into the environment can cause water and soil pollution. Participatory Action Research (PAR) methods developed by Kurt Lewin aims to build community awareness in order to be able to empower themselves independently while bringing changes (transformative) in the social values of the community through counseling of determined materials. The type of method used was explanatory. The student group facilitates the community to participate in analyze need, problem, finding solutions before planning transformative actions. Used cooking oil purified before being used as a soap base. The material used for cooking oil refining is bamboo charcoal. Its components are fixed carbon, ash, water, nitrogen and sulfur Activated charcoal can adsorb odor, taste, color, and some organic substances. Soap is one kind of surfactant. From the results of the training, it was obtained that participants could practice soap making. Used cooking oil waste can be used as a material for making soap. This training provides knowledge and skills to participants in making soap from used cooking oil waste effectively.*

Keywords: *Used Cooking Oil, Waste, Soap*

1. INTRODUCTION

Community empowerment is an effort to improve the ability and potential of the community, so that people can maximize their identity, dignity and dignity in order to survive and develop independently both economically, socially, religiously and culturally. One form of community empowerment business is through various types of training.

Training is defined as various introductory efforts to develop the performance of the workforce in the work they carry or also something related to their work. This usually means making changes in specific or specific behaviors, attitudes, skills, and knowledge. Training is the activity of training or developing a skill and knowledge to oneself or others, which is related to certain competencies that are considered useful (wikipedia). For training to be effective it must include a learning of experiences, it must be an organizational activity planned and designed in response to identified needs.

People in Widoro Hamlet still have limited experience in terms of using used cooking oil. Most of them mostly only consider used cooking oil as waste that needs to be disposed of after being used in the cooking process. Unfortunately, awareness of the potential added value and environmental impact of used cooking oil is still limited among them.

Used cooking oil is a term for cooking oil that has been repeatedly used, too often consuming used cooking oil can cause the potential for cancer to increase. Ways to recycle used cooking oil include the use of coconut shell charcoal, rice flour, noni, then made into soap. Charcoal from coconut shells has very many pores so that it can absorb various impurities, rice flour is used to precipitate impurities contained in cooking oil, noni functions as an anti-oxidant, which has the ability to prevent damage and even sacrifice itself to stabilize free radicals. In used cooking there are many radical components. Used cooking oil produced by this stall reaches 2.4 liters per day or as much as 72/ month. The used cooking oil will be put in jerry cans and sold to middlemen who will come to take it to the stall at a price of Rp 6,000.00/ liter or Rp 432.00.00/ month. Used cooking oil can be reused by a refining process which can then be processed into non-food industry raw materials such as soap (Naomi *et al*., 2013). Used cooking oil can form atherosclerosis, which is narrowing or thickening of the arteries due to the accumulation of fat, cholesterol or other substances on the artery walls so that they have the potential to trigger oxidative stress and inflammation. The nature of lipids that are not mixed with water can cause a buildup in the drain. In addition, it can trigger ecosystem disturbances in the environment affected by the disposal of used cooking oil that already contains impurities (Bogoriani, 2015).

Used cooking oil, often produced by cooking, often ends up as neglected waste in their home kitchens. Widoro people often do not know that used cooking oil can

actually be reused for other purposes, such as making soap, biodiesel, or as other alternative fuels.

This ignorance not only becomes a potential loss of valuable resources, but also has a negative impact on the local environment. Used cooking oil discharge into the environment can cause water and soil pollution that can harm the surrounding ecosystem and public health.

Therefore, introducing knowledge and skills regarding the proper use of used cooking oil is a very important step in the effort to increase environmental awareness and enable the people of Widoro to utilize their resources more efficiently. Waste from used cooking that is no longer used by the community is disposed of carelessly, for example disposed of into sewers that flow into rivers. This condition is very concerning, because the oil waste can make the river polluted. To overcome this, various efforts are made so that used cooking waste does not become a problem in the environment. Reuse of used cooking waste into a useful material is one alternative to reduce the level of environmental pollution (Nane, 2017). Thus, it can not only reduce waste, but also open up new economic opportunities and support sustainable development in Widoro Hamlet.

One form of very valuable use of used cooking oil is its use as a basic ingredient in soap making. Used cooking oil, which is usually produced from various cooking processes, contains fat that can be converted into compounds that are important in soap making. This process is known as saponification, in which the fat molecules in the oil are separated into glycerol and compounds called soaps.

The use of used used cooking oil to make soap not only provides economic benefits, but also has a positive impact on the environment. As a sustainable alternative to irresponsible disposal of used cooking oil, the use of this oil in soap making helps reduce environmental pollution. This is a concrete example of how communities can participate in sustainable practices that support the preservation of natural resources.

In addition, soaps produced from used cooking oil are often of good quality and can be used in a variety of contexts, including household, personal, or even commercial purposes. By understanding and mastering the process of making soap from used cooking oil, communities can create products that are not only useful for themselves but also have the potential to increase incomes and empower their local economies.

2. METHOD

The UIN Sunan Kalijaga Yogyakarta's student group activity program for residents is carried out for 45 days, starting in early July 2023 at Widoro Hamlet, Kalurahan Giripurwo, Purwosari District, Giripurwo Regency. In organizing this program, an active participation method or also called the Participatory Action

Research (PAR) method was developed by a psychologist named Kurt Lewin in the early to mid-1900s. This method aims to build public awareness to be able to empower themselves independently while bringing changes (transformative) to the social values of the community through predetermined material counseling. In its implementation, the type of this method used is explanatory, where the student group facilitates the community to participate in analyzing needs, problems, and finding appropriate solutions before planning transformative actions.

There are several stages carried out based on the method with the type described above, including the following:

- Planning

a. Direct observation
   Identify the problems and needs of the residents of Widoro Hamlet in order to support the economy in conjunction with the programs that have been established in the Widoro.
b. Schedule preparation
   Scheduling socialization and implementation of counseling work programs for making dishwashing soaps to residents.
c. Tool preparation
   Provision of facilities and infrastructure as support in the implementation of work programs.

- Implementation/Application

a. Socialization
   Conducting socialization and survey activities by prioritizing people who can take part in training are people who are included in the middle to lower economic cluster as a process of delivering information on the implementation of work programs that cover all procedures in the method of making dish soap.
b. Practice
   Delivery of materials and practices of making dish soap to the community.

- Evaluation
  Evaluate the implementation of the program based on the Participatory Action Research (PAR) method with an explanatory type, as a whole so that a conclusion is produced.

A. Tools and materials

Tools and materials used in the soap-making process among others.

Tool:

1. Stove
2. Beaker glass
3. 3 glass cups

4. Glass stirrer
5. Measuring cup
6. Thermometer
7. Drip pipette

Material:
1. Used oil (already refined)
2. KOH 40%
3. Glycerine
4. Propylene glycol
5. Aquades
6. Fragrance (perfume)

The soap formula to be made for 100 ml is as follows:
1. Used cooking oil (pre-refined) 40 ml
2. KOH 40% 15 ml
3. Glycerin 25 ml
4. Propylene glycol 17.5 ml
5. Fragrance (perfume) 2.5 ml

B. Work procedures

The used cooking oil obtained is purified first before being used as a soap base. The ingredients used for cooking oil refining are bamboo charcoal. Charcoal or carbon is a porous solid material that is the result of combustion through the carbonization process. Its components consist of fixed carbon, ash, water, nitrogen and sulfur (Nasrun *et al*., t.t.). Activated charcoal can be used as an adsorbent (absorbency). Activated charcoal can adsorb odors, tastes, colors, and some organic substances.

After the refining process, new oil is used for soap making. In soap making, oil is mixed with chemicals so that the oil reacts and produces soap. The reaction that occurs when making soap is saponification reaction. Where saponification is the reaction of hydrolysis of fats in the presence of strong bases. The reaction between triglycerides and strong bases produces products in the form of soap and glycerol.

Soap is one kind of surfactant, which is a compound that can reduce the surface tension of water. These properties allow the soap solution to enter the fibers, expel and remove oil and dirt (Sari *et al*., 2010). Soap molecules consist of long hydrocarbon-like chains. The hydrocarbons in soap molecules consist of carbon with a highly polar or ionic group at one end. Its carbon chain is lipophilic (dissolved in oils and fats), and its polar end is hydrophilic (dissolved in water) (Gusviputri,

2013). Another prominent property of soap solutions is the very low surface tension, which makes soap solutions have better cleaning power than water alone.

Therefore, soap belongs to a class of substances called surfactants. The work of the surface of the soap solution makes it possible to remove dirt, oil and grease particles from the cleaned surface and tape them so that the dirt is washed away with water (Hart, 2004).

3. RESULTS AND DISCUSSION

During the activity, it can be known that the community is very enthusiastic in practicing used cooking oil processing as a basic ingredient for soap making. The community is also given education and stimulus to be active and skilled in the use of used cooking oil.

Figure 1. Documentation

During the implementation, remarks and direction were carried out from the father of Widoro Hamlet. Next, the implementation team provided an introduction to the tools and materials used in soap making. After that, an explanation was made on how to make liquid soap made from used cooking oil.

From the formulation used, some residents expressed liking for the formulation. There are also those who do not like the shape that is too thin and the color is still like the color of oil. Here are data on the degree of favorability of citizens for formulations.

Table 1. Data on the level of liking for formulations

No	Types of Testing	Favorability Level (Number of People)		
		Less Like	Like	Really like it
1	Shape	15	14	0
2	Color	17	12	0
3	Smell	0	20	9
4	Effects on Skin	7	12	10

From the results of the training, it was obtained that participants could practice soap making. From the interviews, some of the trainees said they were interested and able to make soap independently. 24 out of 29 participants expressed interest in making dish soap from used cooking oil. 15 of the 29 participants said they could practice soap making from purification to soap products.

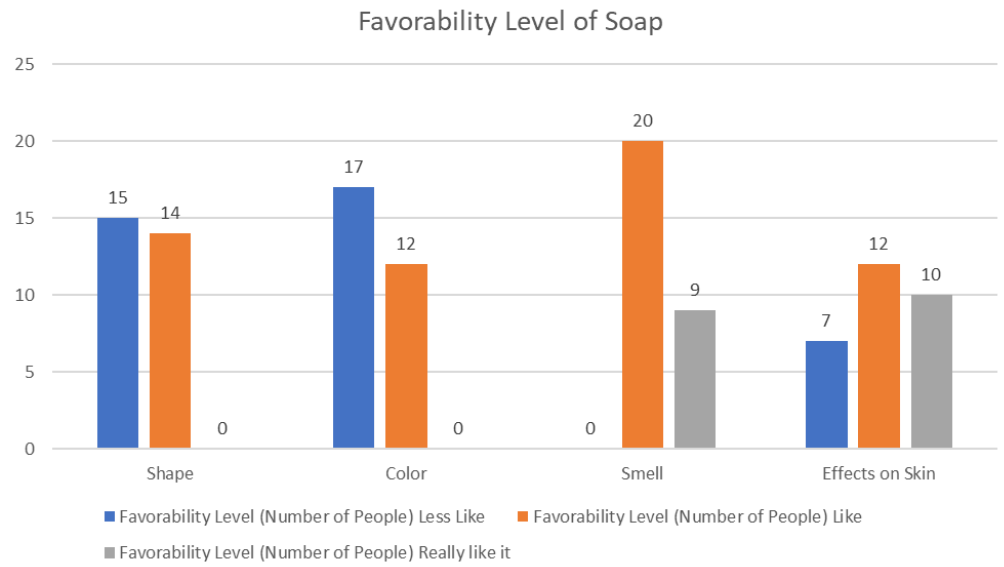

Figure 2. Favorability Level

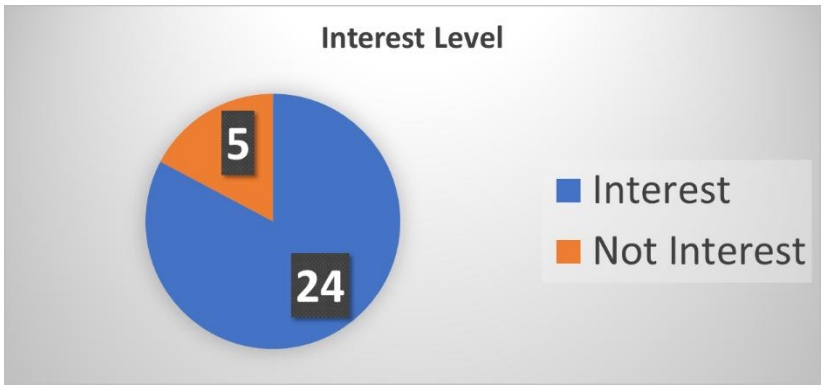

Figure 3. Interest Level

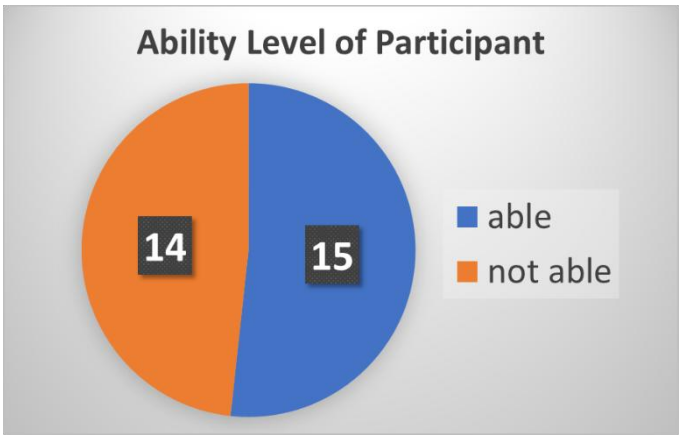

Figure 4. Ability Level

4. CONCLUSION

Based on training in making soap from used cooking oil waste, it can be concluded that:

- Used cooking oil waste can be used as raw material to make soap. By utilizing this waste, we can reduce its negative impact on the environment and create useful products.
- This training provides knowledge and skills to participants in making soap from used cooking oil waste effectively and safely.
- Making soap from used cooking oil waste is one of the environmentally friendly recycling efforts, because it reduces the amount of waste discharged into the environment.
- Through this training, participants are expected to get economic benefits by selling or using their own soap products.

- The importance of awareness of the importance of appropriate and sustainable waste treatment to maintain the cleanliness of the environment around us.

Thus, training in soap making from used cooking oil waste not only provides economic benefits but also helps reduce negative impacts on the environment through the recycling of the waste.

REFERENCE

Bogoriani, N. W., & Ratnayani, K. (2015). Efek Berbagai Minyak pada Metabolisme Kolesterol terhadap Tikus Wistar. *Jurnal Kimia, 9(*1), 53-60. Retrieved from https://ojs.unud.ac.id/index.php/jchem/article/view/15249

Gusviputri, A. (2013). *Pembuatan Sabun Dengan Lidah Buaya (Aloe Vera) Sebagai Antiseptik Alami*. 12(1), 11.

Hart, H. (2004). *Kimia Organik: Suatu Kuliah Singkat, Edisi Ke Sebelas*. Erlangga.

https://id.wikipedia.org/wiki/Pelatihan

Ismalia Mahira, Tengku. (2023). Pengembangan UMKM sabun cuci piring "mama meudhen" melalui KKN Melayu Serumpun di Aceh Jaya. *Jurnal Riset dan Pengabdian Masyarakat*, (3), 69.

Maulana Ahmad Soni, Sulistyowati. (2021). Pemberdayaan masyarakat budidaya maggot BSF dalam mengatasi kenaikan harga pakan ternak. *Jurnal of Empowerment*, (2). 246.

Nane, E., Imanuel, G. S., & Wardani, M. K. *Pemanfaatan Jelantah Sebagai Bahan Alternatif Pembuatan Lilin*.

Naomi, P. Anna, M., Lumban, G. & Yusuf, T. (2013). Pembuatan sabun lunak dari minyak goreng bekas ditinjau dari kinetika reaksi kimia. *Jurnal Teknik Kimia, 2*(19), 42.

Nasrun, D., Samangun, T., Iskandar, I. T., & Ma'sum, Z. (t.t.). *Pemurnian Minyak Jelantah Menggunakan Arang Aktif dari Sekam Padi*.

Rahmat Abdul, Mirnawati Mira. (2020). Model Participation Action Research dalam pemberdayaan Masyarakat. *Aksara*. (10). 64-65

Sari, T. I., Kasih, J. P., & Sari, T. J. N. (2010). P*embuatan Sabun Padat dan Sabun Cair dari Minyak Jarak*. 17(1), 6.