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DISH-BASED BAKING SOAP MAKING TRAINING CHEMO-ENTREPRENEURSHIP AS AN EFFORT COMMUNITY EMPOWERMENT

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Abstrak

Kegiatan pengabdian kepada masyarakat ini bertujuan meningkatkan keterampilan pembuatan sabun cuci piring serta menumbuhkan jiwa kewirausahaan masyarakat melalui pendekatan chemo-entrepreneurship. Kegiatan dilaksanakan dengan melibatkan 30 anggota Pemberdayaan dan Kesejahteraan Keluarga (PKK) Desa Manyar. Metode yang digunakan meliputi sosialisasi, demonstrasi, praktik langsung, dan evaluasi. Evaluasi dilakukan dengan menggunakan lembar penilaian keterampilan peserta dan kuisioner kepuasan serta dampak pelatihan. Hasil evaluasi keterampilan menunjukkan bahwa 86,1% peserta memperoleh kategori baik. Tingkat kepuasan peserta dalam kegiatan ini sebesar 80,4% dengan kategori sangat puas. Lebih lanjut, 83% peserta menyatakan bahwa kegiatan ini memberikan dampak positif dari aspek pengetahuan, manfaat, dan kewirausahaan. Selama kegiatan, peserta berhasil memproduksi 60 botol sabun cuci piring yang memenuhi kriteria penilaian produk. Kegiatan ini menunjukkan bahwa pendekatan berbasis chemo-entrepreneurship efektif dalam meningkatkan keterampilan produktif dan wawasan kewirausahaan peserta, sehingga dapat menjadi salah satu alternatif model pemberdayaan masyarakat untuk mendukung kemandirian ekonomi keluarga.

***Kata kunci**: Sabun Cuci Piring; Chemo-Entrepreneurship; Pemberdayaan Masyarakat.*

Abstract

This community service initiative aimed to enhance dishwashing soap-making skills and foster an entrepreneurial spirit among residents through a chemo-entrepreneurship approach. The activity involved 30 members of the Manyar Village Family Welfare Empowerment group. The methods employed included information sessions, demonstrations, hands-on practice, and evaluation. Evaluation was conducted using participant skill assessment sheets and questionnaires measuring satisfaction and the training's impact. Skill assessment results indicated that 86.1% of participants achieved a "good" rating. Participant satisfaction reached 80.4%, falling into the "very satisfied" category. Furthermore, 83% of participants stated that the activity had a positive impact regarding knowledge, practical benefits, and entrepreneurship. During the event, participants successfully produced 60 bottles of dishwashing soap that met product quality criteria. The activity demonstrates that the chemo-entrepreneurship approach is effective in improving participants' productive skills and entrepreneurial insight, offering a viable model for community empowerment to support family economic self-reliance.

Keywords: Dishwashing Liquid; Chemo-entrepreneurship; Community Empowerment.

INTRODUCTION

The need for household cleaning products has become an inseparable part of people's daily lives. Data from the Central Statistics Agency of East Java (2022) reports that household consumption such as hygiene products is one of the routine household needs. The need for cleaning products such as dish soap makes this product one of the routine needs of the community (Agustina et al., 2023; Ali & Sari, 2024). Changes in consumer behavior that have begun to abandon the use of soap or rubbing ash and increased awareness of hygiene and health have also affected the growth of the use of dish soap (Dewi et al., 2020; Purwaniati et al., 2020). On the other hand, people still depend on commercial soap products while the skills of making these products independently have not been optimally developed. In fact, these products have the potential to be developed into products with selling value and can increase family income (Nasution et al., 2022; Prianto et al., 2023; Purwasih et al., 2024).

The picture of this condition is also seen in the people of Manyar Village, Sekaran District, Lamongan Regency. Based on initial observations and coordination with the village government and Manyar village Family Welfare and Empowerment members, information was obtained that Family Welfare and Empowerment members did not have skills in making dish soap or developing it into a business opportunity. Therefore, an empowerment program is needed that integrates improving the skills of making products based on simple chemical concepts with strengthening entrepreneurial insights. Community empowerment aims to encourage the community to be more active in the development process through involvement in the planning, implementation, and development of various activities. With this involvement, the community is expected to be able to optimize their potential to improve their quality of life and welfare (Mardikanto & Soebiato, 2019). Through this program, the community is expected not only to have the skills to produce quality products, but also to encourage the use of these skills into household-based business opportunities.

One of the strategies that can be taken to overcome the limited productive skills of the community is to carry out empowerment activities in the form of training according to the needs of the community. This type of activity not only aims to improve technical capabilities in producing products, but also increases confidence and creativity and takes advantage of business opportunities in a sustainable manner. Skills-based training is able to improve the technical skills of the community, grow business groups, and strengthen the entrepreneurial spirit (Mardikanto & Soebianto, 2019; Nasution et al., 2022; Zulys et al., 2023); Afrida et al., 2024). The integration of skills training with strengthening the entrepreneurial aspect has proven to have a more optimal impact on the development of household businesses because in addition to producing goods, they also understand the marketing strategy (Syofiani et al., 2023; Maharanni et al., 2026). Therefore,

empowerment activities that integrate technical skills with the development of an entrepreneurial spirit are one of the relevant strategies in increasing economic independence. The implementation of this strategy is very relevant for PKK members considering its role as a driver of family empowerment as well as the development of household-scale businesses.

The chemo-entrepreneurship approach is a learning approach that combines the concept of chemistry with the development of an entrepreneurial spirit. This approach provides an understanding of the underlying scientific principles of a product. In addition, it also encourages the development of products that have added value and have the opportunity to provide economic benefits. Supartono (2006) stated that the chemo-entrepreneurship approach integrates chemical concepts with productive activities so that students or the community can apply their knowledge to produce useful products and potentially be developed as business opportunities. Some research results state that the application of chemo-entrepreneurship in product manufacturing activities can increase concept understanding, creativity, practical skills, and entrepreneurial interest (Ni'mah & Suwardi, 2023; Prayitno et al., 2022) . The chemo-entrepreneurship approach is also able to strengthen life skills and take advantage of science-based business opportunities (Muna, 2022; Diana et al., 2023; Ramlah et al., 2023) . Based on some of the results of these studies, this approach is considered suitable to be applied in the training on making dish soap.

A number of community service activities in recent years have utilized training in making dish soap as one of the efforts to increase community capacity and independence. In general, the activity aims to equip the community with technical skills, introduce the use of raw materials, and encourage product development as an alternative to small-scale businesses (Nasution et al., 2022; Nursamsu et al., 2022; Sa'diyah et al., 2023; lilawati et al., 2023; Syofiani et al., 2023; Afrida et al., 2024). Based on the analysis of the various research results, the integration of simple chemistry concepts with the formation of an entrepreneurial spirit through the chemo-entrepreneurship approach is still not widely applied in community empowerment. In addition to describing the implementation of the activity, the evaluation carried out discussed more about improving the knowledge of the participants. Meanwhile, aspects of assessing participants' skills, product quality, and participant satisfaction as well as the impact of training as a measure of program success are still rarely discussed. As an effort to answer these problems, this service activity applies a chemo-entrepreneurship approach as a community empowerment strategy. The success of the activity was evaluated through the assessment of participants' skills and satisfaction as well as the impact of the training so as to provide a complete picture of the effectiveness of this program.

The results of problem identification and analysis of previous service activities show that empowerment programs need to be designed not only to

improve technical skills, but also to foster community entrepreneurial insights. Therefore, this service activity aims to improve the skills of Manyar Village PKK members in making dish soap through a chemo-entrepreneurship approach. Through this approach, participants are expected to not only be able to understand the process of making dish soap based on simple chemical concepts, but also provide motivation to develop it into business opportunities to support the family economy.

METHOD

This service activity was held on November 14, 2024 at the Manyar Village Hall, Sekaran District, Lamongan Regency with 30 participants from Family Welfare and Empowerment Member in the Manyar Village. The selection of Manyar Village was based on the results of initial observations that showed that the community had never received training in making chemo-entrepreneurship-based dish soap. Family Welfare and Empowerment members were chosen as participants because they play an active role in family empowerment and have the potential to become economic drivers of the community. Based on the results of coordination with the Village Government and Family Welfare and Empowerment management, the community identified the need for skills training that can be developed into a household-scale business.

This activity uses a chemo-entrepreneurship approach that integrates simple chemical concepts in making dish soap with the development of entrepreneurial skills. This community service consists of several stages, namely preparation, implementation and evaluation.

Preparation Stage

At this stage, all activity needs are ensured to be well available before the implementation of training. The service team coordinated with the Manyar village apparatus regarding the technical implementation of the activity. In addition, the team also prepared tools and materials to be used and compiled socialization materials. Before implementation, the team conducted a trial of making dish soap with several variations in the composition of the ingredients. It aims to obtain a formula that produces a product with a good level of viscosity, aroma, foam, color, and cleanliness.

Stages of Implementation of Activities

The activity began with socialization which aimed to provide a basic understanding to participants about dish soap and its development opportunities as a household business. The material presented included the types and characteristics of laundry soap, the function of each chemical used, the basic principles of soap making, and the economic potential that can be developed. Next, the team conducted a demonstration of making dish soap by practicing how to make dish soap with steps and measurements of ingredients that have been

adjusted. At this stage, participants were also given the opportunity to discuss and convey their experiences and obstacles faced related to the use of cleaning products.

After the socialization session, the activity continued with the direct practice of making dish soap. Participants were divided into six groups with each group totaling 5 participants to facilitate the practice and mentoring process. During the practice process, the team went around to each group to provide assistance. The team checks the suitability of the dosage of the ingredients used, the color, aroma, foam, and the viscosity of the product produced.

Evaluation

Evaluation is carried out after the implementation of the activity is completed through direct observation of the participants' involvement and skills during the training through discussions, questions and answers and the provision of questionnaires. Discussions and questions and answers were conducted to determine the level of participants' understanding of the material that had been provided, difficulties, or challenges during the process of making dish soap. Questionnaires were given to participants to find out their satisfaction, the effectiveness of the methods used, and the impact felt by the participants. This is useful as advice and input for the implementation and development of similar or different programs in the future.

RESULTS AND DISCUSSION

RESULT

The service activity was held on November 14, 2024 at the Manyar Village Hall starting at 08.00 until it was finished involving 30 Family Welfare and Empowerment members of the Manyar Village. Socialization as the initial stage was carried out by delivering material that not only focused on the steps of making dish soap, but also the type of soap as a cleaning agent, raw material for making soap, and introducing simple chemical concepts that are very close in daily life. Furthermore, it also introduces the concept of chemo-entrepreneurship as an approach that connects chemistry with home-based business opportunities.

This initial activity showed a very good and enthusiastic response from the participants. This is illustrated by the active participation in asking about raw materials, the safety of their use, and the possibility of marketing business opportunities that can be opened. This shows that the material presented is in accordance with needs and is able to increase participants' interest in learning new things. Next, the team conducted a demonstration of making dish soap according to the material that had been described on Figure 1.

Figure 1. Socialization and Presentation of Material

The tools used include: (1) 7 Liter plastic containers; (2) wood stirrer; (3) 1 liter measuring cup; (4) plastic bottles; (5) digital scales; (6) plastic gloves as shown in Figure 2.

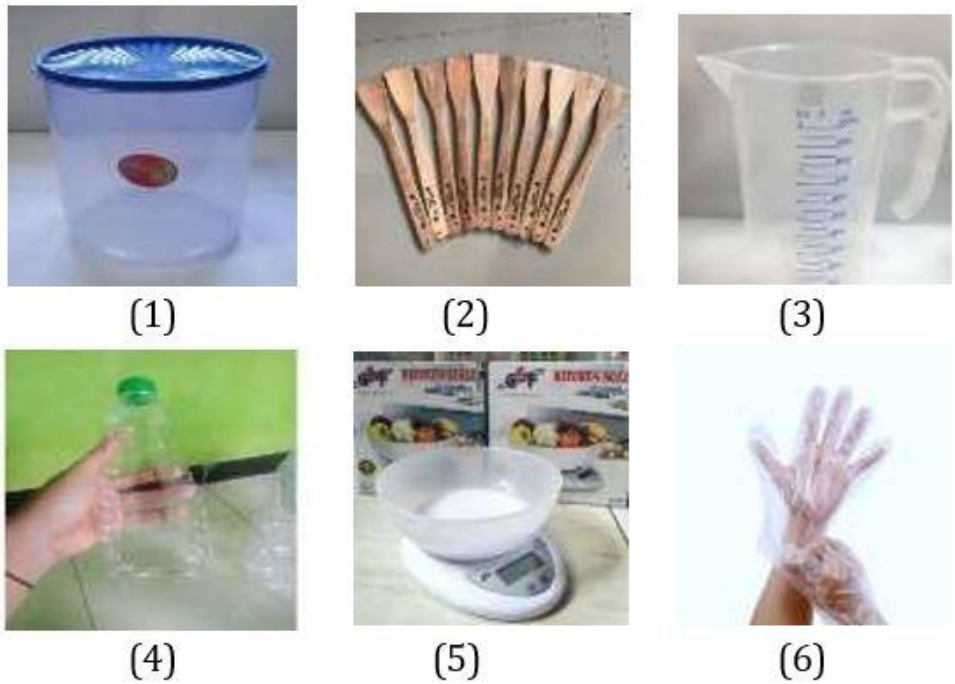

Figure 2. Dishwashing Soap Making Tools

The materials used other than clean water as solvents are as follows: (1) texapon; (2) foam booster; (3) sodium chloride or table salt; (4) soda ash (Na2SO4 +Na2CO3); (5) Anti-bacterial; (6) fruit aroma perfume seeds; (7) Food coloring as shown in Figure 3.

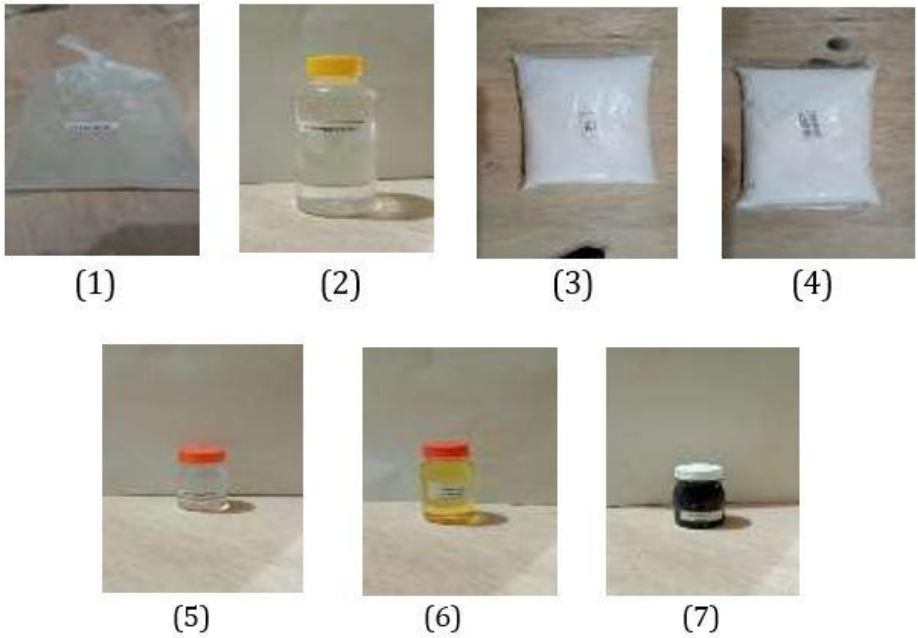

Figure 3. Ingredients for Making Dish Soap

The steps to make dish soap begin with mixing the main raw materials in the form of 200 grams of texapon, 100 ml of foam booster, and 25 ml of anti-bacterial into a plastic container containing 3 liters of clean water. Next, the mixture is added to water little by little while stirring for 2 liters until all ingredients dissolve homogeneously. After that, 5 ml of food coloring and 10-15 ml of perfume seeds are added as needed to increase the attractiveness of the product. The next stage is to add 100-200 grams of table salt in stages until the desired level of consistency is obtained. After completion, the mixture is left to sit for 5 minutes and the finished product is then packaged into a 650 ml plastic bottle and labeled as the identity of the product from each group. The practice of making dish soap is described in Figure 4.

Figure 4. Dishwashing Soap Making Practices

During the practice process, the service team provides assistance to each

group to ensure that the manufacturing procedure is carried out correctly. During the mentoring, an evaluation was also carried out by assessing the quality of the product based on the color, aroma, viscosity level and soap foam produced. The finished product is then tested to clean the kitchen utensils that have been provided. In addition to technical skills, participants were given insights into product packaging, selling price, and marketing opportunities as an implementation of the chemo-entrepreneurship approach. In this activity, a total of 6 groups managed to make 60 bottles of dish soap as described in Figure 5.


Figure 5. Dish Soap Products

At the end of this activity, an evaluation was carried out which contained discussions and questions and answers. This aims to explore the extent to which participants understand the material and are skilled in making dish soap and understand the concept of chemo-entrepreneurship. In addition, the questionnaires given to participants showed good results. The results of the evaluation of participants' skills during the practice of making products and the results of the participant satisfaction questionnaire and the impact of the training are shown in Table 1.

Table 1. Evaluation of Participants' Skills in Product Manufacturing

No	Aspects	Category (%)		
		Good	Enough	Less
1	Preparation of tools and materials	100	-	-
2	Product manufacturing process	66,7	33,3	-
3	Product Results (Color)	83,3	16,7	-
4	Product yield (Viscosity)	83,3	16,7	-
5	Product yield (aroma and foam)	83,3	16,7	-
6	Product packaging	100	-	-
	Average	86,1	13,9	-

The implementation of the training was also evaluated through a participant satisfaction questionnaire to determine participants' perceptions of the relevance of the materials, the quality of the training delivery, and the overall implementation of the activities. The results indicate that participants expressed a high level of satisfaction with both the training materials and the implementation

process, reflecting that the program was well organized and met participants' expectations. The detailed results of the participant satisfaction questionnaire are presented in Table 2.

Table 2. Participant Satisfaction with Training

No	Aspects	Statement	Category (%)			
			VS	S	QS	NS
1	Material	Materials according to the needs of participants and can be applied.	80	20	-	-
2		The material is delivered concisely and easy to understand.	80	20	-	-
3		Materials increase knowledge of materials, tools, and processes.	93,3	6,7	-	-
4		Demonstrations and practices help participants understand.	80	20	-	-
5	Implementation	Orderly and scheduled implementation.	73,3	26,7	-	-
6		Tools and materials are available adequately.	80	20	-	-
7		Adequate activity time.	83,3	16,7	-	-
8		The training atmosphere is comfortable.	73,3	26,7	-	-
		Average	80,4	19,6	-	-

Description: VS=Very Satisfied, S=Satisfied, QS=Quite Satisfied, NS=Not satisfied

To assess the effectiveness of the chemo-entrepreneurship approach, participants were asked to complete a post-training questionnaire measuring changes in knowledge, perceived benefits, and entrepreneurial motivation. The findings indicate that the training successfully improved participants' understanding of the soap-making process, increased awareness of the economic value of chemistry-based products, and enhanced entrepreneurial interest and confidence in marketing the products. The detailed impact of the chemo-entrepreneurship training on participants is presented in Table 3.

Table 3. The Impact of Chemo-Entrepreneurship on Participants

No	Aspects	Statement	Category (%)	
			Yes	No
1	Knowledge	Knowing the function of each soap making ingredient.	86,7	13,3
2		Understanding the stages of making soap correctly.	83,3	16,7
3		Understand that chemistry can be used to produce products with economic value.	80	20
4	Benefits	Training improves knowledge and skills.	80	20
5		Training improves the ability to produce quality products.	90	10

No	Aspects	Statement	Category (%)	
			Yes	No
6		Training is beneficial in everyday life.	83,3	16,7
7	Entrepreneurship	Training increases interest and motivation for entrepreneurship.	90	10
8		Training provides an understanding of business opportunities.	83,3	16,7
9		Training increases confidence in marketing products.	80	20
10		The material provides insight into increasing the selling value of products.	73,3	26,7
		Average	83	17

Based on the results of the evaluation of participants' skills in product manufacturing, 86.1% of participants had skills in the good category. All participants expressed satisfaction with this activity with a percentage of 80.4% stating that they were very satisfied and 19.6% expressed satisfaction. In addition, participants felt the impact of this activity and were motivated to try entrepreneurship which was shown by an average percentage result of 83%. Overall, this activity shows that it has provided a positive impact and energy for participants to continue to be active and move to improve family skills and economic independence as shown on Figure 6.

Figure 6. Team and Participant Photo Documentation

DISCUSSION

This service in Manyar Village provides a direct learning experience that is applicable to all participants. Members of the Manyar Village Family Welfare and Empowerment who are actively involved in this series of activities show that this type of skills training is still a relevant need as an effort to empower the community. The stages of activities starting from socialization, demonstrations and direct practice to evaluation not only add new information and knowledge to participants, but also participants are also able to make products that are useful for daily needs that are worth selling. Training programs like this can increase household economic resilience by developing small and micro businesses (Hayati

et al., 2024) . Hal senada juga diungkapkan oleh Fauzi et al., (2025) which states that skills training is proven to increase the capacity of participants and encourage the emergence of economic opportunities if assisted by regular assistance.

The dish soap products produced by the participants in this activity showed good and appropriate results. These results are an indication that the manufacturing process can be understood and applied quite easily by participants. The selection of demonstration methods and hands-on practice provides participants with the opportunity to learn directly through real experience. The method gives them the opportunity to easily understand the characteristics, chemical functions, and soap-making process. Practice-based activities are known to improve skill mastery due to the direct involvement of participants in the process and in solving problems that arise during activities (Hidayat et al., 2026).

The chemo-entrepreneurship approach in this activity is different from similar activities in general because it connects the concept of chemistry with productive activities that have economic prospects. Through this activity, participants were able to understand simple chemistry that was considered difficult and only theoretical in school, but it turned out that it could also be applied to produce household products with economic value. Through the study of chemo-entrepreneurship, it can be found that the concept of chemistry, skills training, and entrepreneurial spirit can be connected through products in daily life (Prayitno et al., 2022).

The manufacture of dish soap in terms of economic empowerment has a great opportunity to be developed as a household-scale business. This cannot be separated from the fact that the public's need for these products is high, raw materials are relatively cheap and easy to find on the market, even the manufacturing process is quite easy and simple. Participants are expected to be able to meet household needs for dish soap armed with the skills that have been acquired while participating in this activity. In addition, it is possible to be an alternative source of additional income for the family. This is in accordance with the findings of community empowerment programs that show that productive skills-based training is able to increase confidence, independence and community participation in local economic activities (Fauzi et al., 2025).

In general, the training activity on making baking soap with a chemo-entrepreneurship approach has a positive impact on improving the participants' knowledge, skills, and entrepreneurial spirit. In general, based on the data from the results of the participants' skill evaluations, satisfaction questionnaires, and the perceived impact showed good results with an average of above 80%. The concept of chemistry linked to productive business activities increases participants' opportunities to gain relevant and close hands-on learning experiences in daily life. In the end, this approach can be an alternative

community empowerment strategy to support the capacity building of participants in order to encourage the economic independence of households and village communities.

CONCLUSIONS AND SUGGESTIONS

Community service activities through chemo-entrepreneurship-based dish soap making training have achieved the set goal, which is to improve the skills of participants in producing dish soap and expand the entrepreneurial horizons of Manyar Village Family Welfare and Empowerment members. During the implementation of the activity, participants were able to follow each stage of making products well and produce laundry soap according to the procedures that had been given. The success of the activity was supported by the results of the participants' skills evaluation, satisfaction questionnaires, and training impact that showed that participants responded positively to the implementation of the activity. The chemo-entrepreneurship approach provides a contextual learning experience by integrating the application of chemical concepts into the manufacture of products that have economic potential. Thus, this approach can be an alternative community empowerment strategy that supports the development of productive skills and encourages the growth of entrepreneurial spirit.

To support the sustainability of the results of activities, continuous assistance efforts are needed that not only focus on the process of making laundry soap, but also include the development of entrepreneurial aspects. The assistance can be directed to improving product quality, more attractive packaging, building brand identity, marketing strategies, and simple business financial management. In addition, the synergy between universities, village governments, and Family Welfare and Empowerment groups needs to be strengthened so that the skills that have been acquired by participants can develop into sustainable household businesses and provide economic benefits for the community.

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