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Ecoprinting as an Environmentally Friendly Effort in Malaysia

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Abstract

Ecoprint is an effort to preserve nature and develop a creative economy. Therefore, this community service aims to provide skills training to Universiti Malaysia Kelantan students to help them become entrepreneurs using ecoprint techniques by utilizing the potential of leaf media. This service method uses community-based Research (CBR) through forum group discussion (FGD), which provides training on ecoprint making techniques. Partners in this community service activity are 14 students from Universiti Malaysia Kelantan. The results of this community service show an increase in participants' knowledge regarding ecoprint techniques. Before the counseling, some participants had less knowledge of 73%. Almost all participants had good knowledge after the Ecoprint counseling and training 80%. This ecoprint counseling and training is hoped that students from Universiti Malaysia Kelantan can initiate an Ecoprint entrepreneurship development program in their country.

Keywords Economy; Ecoprint; Environmentally Friendly

1. INTRODUCTION

Liquid waste in the form of residual dye/synthetic dye liquid from the fabric dyeing process, which contains several dangerous chemicals, is one of the waste products from the textile industry. The advantages of synthetic dyes are the variety of color types, guaranteed availability, ease of obtaining, more practicality use, economical price, and stronger coloring power. The resulting colors are bright and stable and do not fade easily. Hazardous waste from synthetic dyes can cause environmental pollution, such as polluting surrounding soil, sediment, and surface water (D. A. Yaseen & M. Scholz, 2018).

With the weaknesses of synthetic dyes, interest in using natural dyes has begun to increase. This is in line with increasing public awareness of the dangers of synthetic waste by choosing to use natural dyes to protect the environment. In Indonesia, using natural dyes is also considered a cultural treasure inherited from our ancestors. Its existence is still maintained, especially in batik making and fashion design. The world of trade provides incentives for textile products that use natural dyes to enter certain markets at high selling prices.

Natural dyes that can be used include teak leaves. The coloring agent used in Ecoprinting can take ingredients from plants that have been extracted (Baby Ayu et al., 2022). Apart from teak leaves, another natural ingredient that can be used is red betel. Red betel gives a characteristic color appearance that tends to be blocky without any visible leaf veins (Wardatul Firdaus Arif & Marsudi, 2019).

This is what makes the Ecoprint technique have high artistic value (Ulin Naini & Hasmah, 2021). Ecoprint is a process of transferring colors and shapes from natural materials to fabric through direct contact. This Ecoprint technique is a form of development and innovation from Eco fashion to produce environmentally friendly fashion products (Nining Irianingsih, 2018). In Indonesia, batik artisans have recently redeveloped the ecoprint technique. Initially, batik was made using a patterned coloring technique covered with wax on a piece of cloth. However, the use of batik is no longer like in ancient times, when there were various rules. Batik cloth is free to create in any form; it can be worn daily or for traveling (Dwita Anja Asmara & Sarasati Melani, 2020; Wiwik Purwati Widyaningsih et al., 2020).

It is felt that the ecoprint engineering business can develop, especially in rural areas, because it has natural potential, namely lots of lush trees, fertile plants, and various kinds of leaves that can be used to make ecoprint products (Agus Sifaunajah et al., 2020). There is Ecoprint training for university students. Malaysia Kelantan is expected to provide an introduction and knowledge about making patterned fabrics

and easily develop an interest in innovations to preserve the environment. Apart from that, it will also increase cooperation between Indonesian and Malaysian educational institutions. The participants in this community service activity are students from Malaysia. Next, the student will be able to teach Ecoprinting techniques to friends at their institution. In Malaysia, many students do not know about ecoprinting activities. so that community service activities regarding ecoprinting can develop the skills and creativity of Malaysian students in using natural materials.

2. METHODS

This service method uses community-based Research (CBR) through forum group discussion (FGD), which provides training on ecoprint-making techniques. Partners in this community service activity are 14 students from Universiti Malaysia Kelantan. The method that will be applied in this community service is an educational model and providing demonstrations with the following explanation:

2.1. Time and place of implementation

This community service program will be conducted face-to-face on August 24, 2023. The target participants in this community service activity are 14 Universiti Malaysia Kelantan students.

2.2. Preparation Stage

- Proposal Preparation
- Coordination with Universiti Malaysia Kelantan regarding existing topics and problems.
- The proposing chairman and members ask for permission
- Preparation of outreach facilities in the form of PPT, Leaflets, Posters
- Counseling or health education is carried out, as well as training in making ecoprints
- Preparation of Ecoprint tools and materials

2.3. Implementation stage

The basic Ecoprint consists of 3 main activities, namely:

2.3.1. Scouring

Scouring is the process of washing the tools or materials that we will print. We need 50 grams of Soda Ash DV and 10 liters of water at the scouring stage. After the

materials and tools are ready, we wash them and then dry the cloth in the sun until dry. After the cloth is dry, the next process can be carried out.

2.3.2. Mordanting

At the mordanting stage, we need 80 ml of kitchen vinegar, 150 grams of alum, 50 grams of baking soda, 15 grams of Tanjung, and 1500 ml of water. The mordanting process is to prepare a container filled with water. All ingredients are mixed in order. After the ingredients are mixed, the cloth is ready to be dipped. Squeeze for 5-10 minutes. After that, dry it in the sun until dry. Once dry, put the cloth in a lime solution (1 tablespoon of lime with 5 liters of water). After soaking for 10 minutes, wash it thoroughly, and the cloth is ready to be eco-friendly (Khodijah, I. ., Afriani, R. I. ., Yuliah, Y., & Octavitri, Y., 2021).

2.3.3. Ecoprint

The table/floor is covered with plastic, and then the cloth is spread over it according to the technique that was created. We are now practicing the mirror method. The fabric is folded in half, and then one side is folded to make a covering. One side of the cloth is decorated with leaves/flowers. After the arrangement, the covering cloth is ready to be covered, followed by covering it with plastic. The rolls are steamed for 2 hours on medium heat. After 2 hours, the fire is turned off, and the roll is ready to be opened and aired for three days (Faridatun, 2022). After three days or more, the cloth is ready to be washed with clean, dry water and ironed. Then, the Ecoprint results are ready to be used/sold.

2.4. Evaluation Stage

The evaluation stage is carried out using a questionnaire. Questionnaires were distributed before participants received counseling and training about ecoprinting. Then, after ecoprinting counseling and training, their knowledge was again measured.

The questionnaire to measure this knowledge contains 15 questions covering the process/stages of ecoprinting, materials used, and coloring after the mordanting process. The measurement results of knowledge are grouped into three criteria: good if the percentage value is 76-100%, sufficient criteria if the percentage value is 56-75%, and poor criteria if it is less than 56%.

They are giving a questionnaire before the presentation and training activities about ecoprinting, aiming to determine the initial knowledge limits of the respondents/targets of community service. So that the presenter can adjust to the important points when carrying out the activity. Meanwhile, giving a questionnaire after this activity aims to find out how much the material and training provided was absorbed by the participants.

3. FINDINGS AND DISCUSSION

Before training on making ecoprints, participants explained the concept of ecoprints. Participants were first given a questionnaire to measure their knowledge about Ecoprint in the material presentation activities. This was then continued with the presentation of the material by the community service team, and then they continued measuring their knowledge again.

Table 1. Respondents' knowledge before and after being given Ecoprint material

Knowledge	Pre-Test		Post Test	
	n	**%**	**n**	**%**
1. Good	0	0	12	80
2. Enough	4	27	3	20
3. Less	11	73	0	0
Total	15	100	15	100

Table 1 shows that most participants had insufficient knowledge at the time of the pretest, namely 73%. Meanwhile, after Ecoprint was explained, almost all of them had good knowledge, namely 80%.

Figure 1. Providing material about ecoprint to participants from the University of Malaysia Kelantan.

After providing knowledge about Ecoprinting, community service activities continued by providing training in making tote bags and fabrics using Ecoprint techniques. The training process starts from the scouring stage, mordanting and up to the tricking stage. Selain itu, dalam kegiatan ini tim pengabdian kepada masyarakat juga mengajarkan bagaimana cara mendesain dan merancang produk. Berdasarkan hasil literatur menunjukkan bahwa dalam proses pembuatan ecoprinting diperlukan efikasi diri terutama pada kemampuan mendesain dan merancang produk (Muhamad Imaduddin et al., 2022).

Figure 2. Scouring Stage.

Figure 3. Mordanting stage

Figure 4. Deception stage

This ecoprint concept produces personal, limited, intimate, and exclusive products compared to digital prints, whose results tend to be visually consistent, time efficient, and can be mass-produced. From the training programs that have been implemented, the majority of participants are interested in developing this activity in their country.

They are also interested because this activity can be used as a form of entrepreneurship that produces suitable goods for sale. This is based on the results of research conducted by Endah (Endah Saptutyningsih & Berli Paripurna Kamiel, 2019).

The media used for Ecoprints uses various kinds of plants, such as teak leaves, strawberries, guava, and eucalyptus. Sweet potato leaves can also be used as ecoprint coloring using alum, lime, and Tanjung fixator (Bayu Wirawan D. S & M. Alvin, 2019). It turns out that the Ecoprint technique can be used using plant media and waste iron material. Rusty iron waste is used as a color producer, which also becomes a mordant in dyeing natural colors on fabric. This iron waste can also produce a deep color. If seen from an economic perspective, Ecoprint processing using iron waste is affordable and easy to obtain (Norma Puspitasari., 2019). The research results also show that natural coloring using the ecoprinting method can also be applied to sheepskin. The results of this research are that soaking improves the quality of wet friction resistance, sweat resistance, and washing resistance (W Pancapalaga et al., 2021).

After being given knowledge and training, the participants were interested in developing Ecoprint techniques in the business world. Ecoprinting techniques can provide entrepreneurial opportunities, and everyone can start an ecoprint business because the process is quite easy (Cucu Sutianah, 2021). There are many developments in ecoprinting in the business world, including fashion and batik. With the Ecoprint technique, Batik has high artistic and selling value (Alima Rohmatul Hikmah & Dian Retnasari, 2021). Ecoprint ini dapat berkembang dengan cepat di dunia usaha karena merupakan kegiatan sumber daya manusia mandiri dengan mengutamakan kemandirian dan kreativitas (Yane Puspito Sari, 2022).

Apart from batik using ecoprinting techniques, it can also be developed for various home needs, such as curtains, tablecloths, pillowcases, and bolsters. Many batik artisans in the Yogyakarta area. have developed this business (Noto Pamungkas et. al, 2020). In this community service activity, it can be understood that ecoprint is an independent human resource. With this method, people can create their own businesses (Ine Kusuma Aryani et al., 2022).

4. CONCLUSION

There was an increase in participants' knowledge and skills regarding the ecoprint manufacturing process and coloring directions. This can help participants to make innovations regarding models and color play. Participants looked enthusiastic and interested in ecoprinting activities. It is hoped that the results of this community

service will increase enthusiasm to continue to innovate to preserve the environment and develop an entrepreneurial spirit.

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