



Empowerment of Kelompok Wanita Tani (KWT) Amanah, Sidomulyo in Ecoprint Making

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Abstract

Sidomulyo Village, situated in Bantul Regency, Indonesia, is confronted with economic challenges, particularly among its predominantly female population who face limited educational and economic opportunities. Recognizing the village's abundant natural resources, this community service program facilitated by “Kelompok Wanita Tani (KWT)” Amanah aimed to empower local women through ecoprint batik making. The program focused on equipping participants with skills in ecoprint techniques using locally sourced plant materials. Through stages of socialization, training, mentoring, and evaluation, the participants learned to create vibrant fabric patterns without chemical dyes, promoting environmental sustainability and preserving local biodiversity. Positive feedback highlighted the program's effectiveness in enhancing participants' skills and knowledge, with a strong interest shown in further developing ecoprint skills and exploring entrepreneurial opportunities, including online marketing. This study underscores the transformative impact of community-based initiatives in promoting women's economic independence and sustainable development through traditional craft practices.

Keywords: Ecoprint, Empowerment, Kelompok Wanita Tani (KWT), Sidomulyo.

1. Introduction

Numerous villages encounter significant challenges due to the underutilization of their natural resources. The majority of the population, mainly comprised of housewives with minimal income, lack the necessary skills to manage these resources effectively. Therefore, it is crucial to provide training that enables villages to establish a creative economy by making use of the natural materials available locally. Sidomulyo Village, situated in the Bambanglipuro sub-district of Bantul Regency, has a female population of approximately 53% (BPS Kabupaten Bantul, 2017). According to population data, there are 3,158 women of productive age in Sidomulyo Village, with common occupations including civil servants, midwives, police officers, traders, entrepreneurs, farm labourers, and housewives. Notably, there are 324 housewives in Sidomulyo Village, highlighting a significant number of women who often lack the skills to work outside the home and face economic challenges (Pranta, 2024). Furthermore, the education level in Sidomulyo Village remains relatively low, leading to low productivity levels among women.

Sidomulyo Village is home to a rich diversity of plants, which presents significant potential for ecoprint fabric production. Ecoprinting is a technique that uses leaves or flowers as natural dyes to create unique patterns on fabric. This method has evolved to include materials such as animal leather. Ecoprinting, also known as ecodyeing, utilizes plants as natural dyes for textiles without the use of chemicals. The village is abundant with plants suitable for ecoprinting, including eucalyptus leaves, teak leaves, and various types of flowers, all of which offer exciting opportunities to create vibrant colors and unique patterns on fabrics. By tapping into this plant diversity, Sidomulyo Village has the potential to develop a sustainable ecoprint fabric industry, preserving nature and providing economic benefits to the local community, particularly women.

A group of housewives in Sidomulyo Village, known as Kelompok Wanita Tani (KWT) Amanah, is playing a vital role in empowering women through agricultural and creative activities. The group is instrumental in mobilizing women in the village, encouraging their participation in various training programs and community projects. After analyzing the situation and conditions of the partners, several issues have been identified: a lack of opportunities and

skills among women aged 15-46 to utilize natural resources for economic ventures, high unemployment rates among the working-age population, underutilization of local natural resources, limited knowledge of information technology, and a lack of involvement of village economic institutions. From these issues, two main problems have been identified: a high number of women with low education and unstable income, requiring skill enhancement, and the untapped potential of local biodiversity, calling for innovation to bring economic benefits to the community. Therefore, this community service program aims to improve the knowledge, skills, and empowerment of women in Sidomulyo Village through KWT Amanah. The program will focus on utilizing local biodiversity for ecoprint fabric production.

Ecoprint batik is a technique that creates natural patterns on fabric using dyes from leaves or flowers (Nuraeni et al., 2020; Syafril, 2024). This method, which has expanded to include applications on animal skins and other materials, relies on plant-based dyes, thus eliminating the need for chemical dyes. Sidomulyo village, with its abundant natural resources, offers various plants suitable for natural dyes in ecoprinting. Brightly colored leaves such as teak and castor leaves can create unique patterns and colors on fabric (Muspiroh, 2022). The basic principle of ecoprinting involves direct contact between plant parts and fabric, developed from the ecodyeing method by India Flint in 2006 (Flint, 2008). This technique provides an eco-friendly alternative to traditional batik, which commonly relies on synthetic dyes, harnessing Indonesia's diverse plant biodiversity (Kristanti, 2024). Indonesia is renowned for its vast array of plant species (Von Rintelen, 2017). This enriches textile patterns uniquely by integrating its rich biodiversity.

Despite the rapid growth of Indonesia's textile industry, it faces significant challenges in managing wastewater, which pollutes the environment (Pratistita et al., 2024). High production levels generate substantial waste, particularly from dyes and chemicals, leading to environmental pollution (Roy Choudhury, 2013). Ecoprint offers a sustainable solution by reusing natural materials as dyes, reducing the accumulation of waste that could harm the environment (Kristanti, 2024; Wahyuningsih, et al., 2024). Unlike traditional batik methods that rely on chemicals, ecoprint batik is environmentally safe (Sulaiman, 2017). The rich plant diversity in Indonesia, second only to Brazil, offers unique characteristics for natural pattern printing, making Indonesian ecoprint products highly attractive to both local and international markets (Retnowati et al., 2019; Laili, 2024). This aligns with the global shift towards environmentally friendly products, processed with optimal utilization and preservation of natural resources.

2. Materials and Methods

2.1. Materials

The ecoprint training program in Sidomulyo utilized a variety of local plant leaves, chosen for their pigments and unique shapes, as the primary materials. These included teak, guava, lanang, truja, biden, castor, kersen, and Japanese papaya leaves. The training provided all necessary materials and equipment such as white fabric, string for tying fabric rolls, scissors, steaming pots, stoves, vinegar, natural dyes, and buckets.

2.2. Methods

The community service program was conducted through several structured stages: socialization, training, mentoring, and monitoring and evaluation. Initially, the socialization stage introduced the program to the Sidomulyo community, explaining its objectives and the benefits of ecoprint training. During the training stage, participants received comprehensive instruction in the ecoprint technique and natural dyeing methods through lectures, Q&A sessions, demonstrations, and hands-on practice. Pre-tests and post-tests were conducted to assess participants' comprehension before and after the training. Following the training, participants applied their knowledge under the guidance of the training team during the mentoring stage, ensuring they could effectively master the ecoprint technique in practice. Continuous monitoring and evaluation assessed participants' understanding and application of ecoprint skills, with feedback collected to inform ongoing program enhancements. The training, attended by 44 participants, took place at the Sidomulyo Village Hall. Participants prepared various leaves as the primary materials. The ecoprint fabric creation process followed these steps:

- (a) Mordanting: Fabric was prepared to remove any chemicals and serve as a base for dye absorption.
- (b) Leaf Arrangement: Cleaned leaves were arranged on the mordanted fabric based on individual preferences.
- (c) Covering and Rolling: A fabric cover dipped in natural dye was placed over the leaf-covered fabric. Both layers were wrapped in plastic, rolled, and tied securely.
- (d) Steaming: The fabric roll underwent a 2-hour steaming process to set the natural dyes.
- (e) Drying: Ecoprinted fabric was air-dried in a shaded area.
- (f) Fixation: After 5-7 days, the fabric underwent a process of soaking in a diluted alum solution to fix the natural dyes and enhance color vibrancy. The fabric was rinsed and allowed to air-dry.

3. Results and Discussion

Demographic distribution of respondents based on gender, age group, marital status, and education level (Table 1.). The majority of respondents were female (93.2%), with males comprising 6.8%. The high participation of women (93.2%) indicates a strong emphasis on gender empowerment, potentially fostering economic independence and leadership roles within the community. In terms of age, the distribution was 25% adolescents (12-25 years), 31.8% adults (26-45 years), and 43.2% elderly (46-65 years). The diverse age groups represented, particularly the significant involvement of elderly participants (43.2%), suggests the program's success in preserving traditional knowledge and skills across generations. Marital status indicated that 72.7% of respondents were married, while 27.3% were unmarried. Regarding education level, the majority had completed senior high school or equivalent (72.7%), followed by elementary school or equivalent (9.1%), bachelor's degree (6.8%), junior high school (6.8%), and diploma (4.5%). The program's outreach to individuals with varying educational backgrounds, from elementary to bachelor's degree levels, highlights its inclusive approach to skill development and community engagement. These demographics provide insight into the diverse participant profile involved in the ecoprint batik making initiative led by KWT Amanah, highlighting their inclusivity across different age groups and educational backgrounds.

Table 1: Distribution of Respondents by Gender, Age Group, Marital Status, and Education Level

	Category	Percentage (%)
Gender	Male	6.8
	Female	93.2
Age	Adolescent (12-25 years)	25
	Adult (26-45 years)	31.8
	Elderly (46-65 years)	43.2
Marital Status	Married	72.7
	Unmarried	27.3
Education	Elementary school or equivalent	9.1
	Junior high school or equivalent	6.8
	Senior high school or equivalent	72.7
	Diploma	4.5
	Bachelor's degree (S1)	6.8

The training outcomes demonstrate successful mastery of ecoprint batik making techniques by the participants. The process begins with preparing the fabric through mordanting, essential for dye absorption and color durability. Carefully selected and cleaned plant leaves are then meticulously arranged on the fabric surface to create intricate and artistic patterns. The fabric, covered with natural dye, is wrapped in plastic, securely rolled, and tied with strings. This bundle undergoes approximately two hours of steaming to set the natural dyes. After steaming, the fabric is dried in shaded areas. Following several days, a fixation process using a diluted alum solution enhances color brightness and ensures the longevity of the ecoprint design. This method not only preserves the authenticity of the natural materials used but also promotes sustainable practices in textile arts (see Figure 1).



Figure 1: Ecoprint batik making process during the training session.

The data from the pre-test and post-test assessments reveal a significant improvement in understanding among participants of the Empowerment of Kelompok Wanita Tani (KWT) Amanah program in Sidomulyo regarding ecoprint batik making (Figure 2). Initially, 86.36% of participants indicated they did not understand ecoprint concepts during the pre-test, whereas none reported the same lack of understanding in the post-test, indicating a complete transformation in comprehension post-training. Conversely, 13.64% of participants already had some understanding in the pre-test, which rose to 100% in the post-test, demonstrating a comprehensive uptake of ecoprint techniques

following the training. This substantial improvement suggests that the training effectively bridged knowledge gaps and equipped participants with practical skills in ecoprint batik making. The implications of these results are profound as they indicate the program's success in enhancing knowledge and proficiency among participants, potentially leading to increased confidence in applying ecoprint techniques, fostering sustainable practices, and supporting economic empowerment through enhanced craft skills in Sidomulyo.

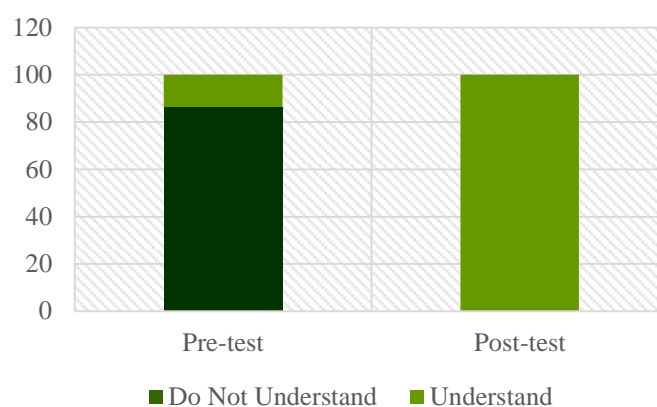


Figure 2: Pre-test and Post-test Results

Participants in the Empowerment of Kelompok Wanita Tani (KWT) Amanah program in Sidomulyo demonstrated significant implications from the training outcomes (Table 2.). The substantial number of participants who were previously unfamiliar with ecoprint (86.4%) underscores the program's success in introducing and expanding knowledge of sustainable textile practices within the community. Motivations centered around practical applications and economic empowerment, with a notable percentage (40.9%) interested in selling ecoprint products, suggesting potential economic benefits and market expansion for local crafts. The comprehensive positive feedback on training aspects such as clarity, enthusiasm, and perceived usefulness indicates high satisfaction and enhanced skill acquisition among participants, fostering confidence in applying ecoprint techniques effectively. Moreover, the participants' interest in online selling platforms (77.3% using Shopee, for example) reflects readiness to leverage digital platforms for ecoprint product marketing, highlighting opportunities for broader market reach and economic sustainability in Sidomulyo. These outcomes underscore the program's holistic impact in fostering both environmental stewardship and economic empowerment through ecoprint batik making.

Table 2: Distribution of Respondents by Gender, Age Group, Marital Status, and Education Level

Category	Percentage (%)	
Knowledge of Ecoprint before Training	Never heard of Ecoprint	34.1
	Heard of Ecoprint but don't know how to make it	52.3
	Know how to make Ecoprint	13.6
Motivation for Attending Training	Just curious	0
	Want to practice Ecoprint	59.1
	Want to practice and sell Ecoprint	40.9
Feedback on Training	Clarity of material presentation	100
	Enthusiasm in attending training	100
	Perception of training's usefulness	100
	Perception of gaining new insights on plant diversity utilization	100
	Improvement in Ecoprint-making skills	100
	Interest in further developing Ecoprint-making	100
	Interest in developing Ecoprint business	100
	Interest in selling Ecoprint products online	86
Use of Online Media for Buying and Selling	Have bought items online	45.5
	Know how to sell products online	18.2
Known Online Selling Platforms	Facebook	15.9
	Shopee	77.3
	Tokopedia	18.2

Instagram	25
Other platforms	18,2

The training has been unequivocally successful, receiving overwhelmingly positive feedback and notably enhancing participants' knowledge and skills in ecoprint batik making. The program effectively equipped participants with a thorough understanding and proficient application of the techniques involved. Feedback from attendees underscores their high satisfaction with the clarity of instruction, their enthusiastic engagement throughout the sessions, and the perceived practicality of the training. Furthermore, participants have expressed a strong desire to further advance their ecoprinting skills and explore entrepreneurial avenues in marketing ecoprint products. This accomplishment not only highlights the program's impact in empowering individuals with valuable skills but also reinforces its role in fostering sustainable practices within the realm of textile arts in the community.

4. Conclusion

In conclusion, the ecoprint batik making training program in Sidomulyo Village has been a resounding success, effectively empowering local women by enhancing their skills and knowledge. The program addressed significant challenges such as low educational attainment and limited economic opportunities among women in the village. Through stages of socialization, comprehensive training, mentoring, and evaluation, participants gained proficiency in ecoprint techniques using locally abundant plant resources, thereby promoting sustainable textile practices without chemical dyes. Positive feedback highlighted the clarity and practicality of the training, with participants showing enthusiasm and a strong interest in further developing their skills and exploring entrepreneurial ventures. This initiative not only supports economic empowerment and environmental sustainability but also underscores the potential of ecoprinting to generate income and preserve cultural traditions within the community.

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