
Creating Ecoprint Batiks to Enrich Local Women's Economic Independence in Sidomulyo Village, Yogyakarta

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Abstract:

Sidomulyo Village in Bantul Regency, Yogyakarta, holds untapped potential in its rich biodiversity, particularly for economic empowerment among women, who comprise 53% of the population. The Women Skills Academy (WSA) were established with the aim of facilitating women's empowerment in Sidomulyo Village. In a previous program, training on ecoprint creation was conducted but several challenges were identified. These included limited diversity in ecoprint materials and designs, which restricted the ability to highlight the unique local identity of Sidomulyo Village. Furthermore, participation was predominantly limited to members of the Kelompok Wanita Tani (KWT), emphasizing the need to engage a wider spectrum of Women Skills Academy (WSA) members. To address these issues, the current program focuses on enhancing ecoprint techniques while incorporating e-commerce training. This integrated approach aims to empower participants with the skills needed to achieve economic independence and better represent the cultural richness of the village. The program included socialization, preparation, training, mentoring, and evaluation stages. The participants, guided by the community service team, significantly improved their knowledge and skills in both ecoprint production and online marketing, as shown by pre- and post-training evaluations. Participants successfully created ecoprint products using natural resources and learned to market these products via e-commerce platforms. Despite these achievements, challenges remain in diversifying materials, enhancing design uniqueness, and fully utilizing digital marketing. This program underscores the importance of leveraging local resources and providing continuous support to develop innovative, eco-friendly products that contribute to sustainable economic growth in rural communities.

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

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Introduction

Sidomulyo Village, located in Kapanewon Bambanglipuro, Bantul Regency, Yogyakarta, is a community endowed with abundant local biological resources (Ernawati & Aryani, 2019). Despite this wealth, the potential remains underutilized for enhancing the welfare of its residents. Statistical data indicates that approximately 53% of Sidomulyo's population are women, most of whom are housewives (BPS, 2024). Low educational attainment and a lack of skills to harness local resources are the main factors contributing to the limited productivity and income of these women. Recognizing these challenges, the

Women Skills Academy (WSA) was established in 2022 as a dedicated organization to empower women in Sidomulyo Village (Pratiwi et al., 2022). Its primary mission is to elevate women's skills, promote empowerment, and improve their socioeconomic well-being. WSA provides non-formal education by leveraging local resources to create economically valuable products and fostering innovation grounded in the village's rich biodiversity (Pratiwi, et al., 2023).

WSA actively supports the diversification of local products through comprehensive training programs that utilize biological resources, such as corn, butterfly pea flowers, oyster mushrooms, and bananas. These resources are transformed into high-value food products, including egg rolls, butterfly pea flower candies, nuggets, crispy brownies, banana flour, and banana cakes (Listina et al., 2023; Pratiwi, Auli Zahra, et al., 2023). Furthermore, WSA has also conducted training in ecoprint techniques, an environmentally friendly fabric dyeing method that uses natural plant materials (Aji et al., 2023). This technique not only promotes ecological sustainability but also creates new business opportunities for local women, aligning with the growing global demand for eco-conscious fashion and crafts (Aji et al., 2024). WSA employs a community-based approach in its programs, combining education, hands-on practice, and performance evaluations to ensure effectiveness. This approach has significantly enhanced participants' knowledge and skills, empowering them to contribute to their families' economic stability more confidently. By focusing on the specific needs of women and adopting an inclusive strategy, WSA has successfully engaged the local community in developing skills that align with the village's unique potential (Pratiwi et al., 2022). In addition, Sidomulyo Village is home to the Kelompok Wanita Tani (KWT), a women's group focused on agricultural activities and community empowerment. This group was established prior to the formation of the Women Skills Academy (WSA). This program involves both groups with the aim of reaching a broader number of women in Sidomulyo Village.

Several areas still need improvement to enhance the program's overall impact. The key limitation is the lack of diversity in ecoprint materials and designs, which hinders the ability to fully showcase the unique local identity of Sidomulyo Village. Additionally, past ecoprint training sessions were primarily attended by representatives of the Kelompok Wanita Tani (KWT), underscoring the need to involve a broader range of Women Skills Academy (WSA) members. Furthermore, the potential of digital technology for marketing these products remains underutilized. While participants have shown significant interest in online marketing, platforms such as Shopee, Tokopedia, and others have yet to be effectively leveraged for optimal outreach and sales.

Ecoprint, as a natural dyeing technique, uses plant-based pigments from leaves and flowers to create unique patterns on fabric (Flint, 2010). Textile waste has become a significant global concern, and ecoprint offers an environmentally friendly alternative (Made Wipra Pratistita et al., 2024). This sustainable method minimizes environmental impact

compared to synthetic dyes, making it increasingly popular in the fashion and textile industries (Enrico, 2019). This method not only reduces water pollution but also decreases textile waste, directly addressing some of the most pressing environmental challenges posed by conventional dyeing processes (Irdalisa et al., 2023). By utilizing renewable resources such as natural pigments from local flora, ecoprint aligns with sustainable practices and promotes the conservation of biodiversity (Nuraeni et al., 2020). Many empowerment programs now leverage ecoprint to boost local community development (Hikmah & Sumarni, 2021; Widhiastuti et al., 2022). By integrating this technique into training and entrepreneurship initiatives, these programs enable communities to create eco-friendly products, enhance local identity, and contribute to sustainable economic growth (Asmara, 2020). E-commerce further amplifies the potential of ecoprint products by providing a platform for local artisans to reach broader markets (Ahmad et al., 2023). Platforms such as Shopee, Tokopedia, and other online marketplaces enable small-scale producers and artisans to overcome geographical barriers and showcase their products widely. Digital technology not only enhances product presentation but also boosts visibility through strategic social media optimization, making online shopping more accessible for consumers (Nuseir et al., 2023). It also allows sellers to gain insights into consumer preferences and adapt their offerings to align with current market trends (Sharma, 2024). To address these challenges, the training program emphasizes a deeper exploration of local natural materials, such as flowers and leaves grown by Sidomulyo residents, while also incorporating digital marketing strategies. By enhancing the use of locally sourced natural materials and embracing digital technology, WSA aims to elevate its role as a leading centre for women's empowerment. The goal is to not only provide fundamental skills but also foster the creation of innovative products that highlight the biodiversity of Sidomulyo Village. Ultimately, this initiative seeks to establish distinctive, high-quality products that enhance the competitiveness of local goods, yielding significant economic benefits for the entire community.

Research Methodology

Approach and Design

The training program was attended by members of the Women Skills Academy and Kelompok Wanita Tani (KWT) Amanah, consisting of women and young girls residing in Sidomulyo Village. The training involved 15 participants and was conducted at the Sidomulyo Village Hall. The program was carried out in several stages: socialization, preparation, training, mentoring, and evaluation (Figure 1). The socialization stage introduced the program to WSA members, explaining its objectives and benefits. The preparation stage involved gathering the necessary tools and materials. Participants were asked to collect local plants (leaves and flowers) from their homes with interesting pigments, such as teak leaves, cherry leaves, teak flowers, hibiscus flowers, and frangipani flowers. The

community service team provided other tools and materials, including white fabric, strings for tying fabric rolls, scissors, steam pots, stoves, vinegar, natural dyes, and buckets.

The training began with a lecture, a question-and-answer session, demonstrations, and hands-on practice. The material presented includes ecoprint techniques and the utilization of e-commerce. Mentoring was provided by experts as participants independently practised making ecoprint. The ecoprint fabric-making process involved several steps. First, the fabric was prepared through a mordanting process to remove chemicals and create a base for dye absorption. Next, the cleaned leaves and flowers were arranged on the mordanted fabric according to the participants' preferences. A cover fabric dipped in natural dye was then placed over the fabric layered with leaves, and both layers were wrapped in plastic, rolled, and securely tied. The fabric roll was steamed for 2 hours to set the natural dyes. After steaming, the ecoprinted fabric was air-dried in a shaded area. After 5-7 days, the fabric was soaked in a diluted alum solution to fix the natural dyes and enhance colour vibrancy, then rinsed and left to air-dry again. The evaluation stage involved administering pre-tests and post-tests to assess participants' understanding before and after the training. Participants applied their knowledge under the guidance of the training team during the mentoring phase to ensure they could effectively master the ecoprint technique in practice. Continuous monitoring and evaluation were conducted to assess participants' understanding and application of ecoprint skills, with feedback collected to inform ongoing program improvements.

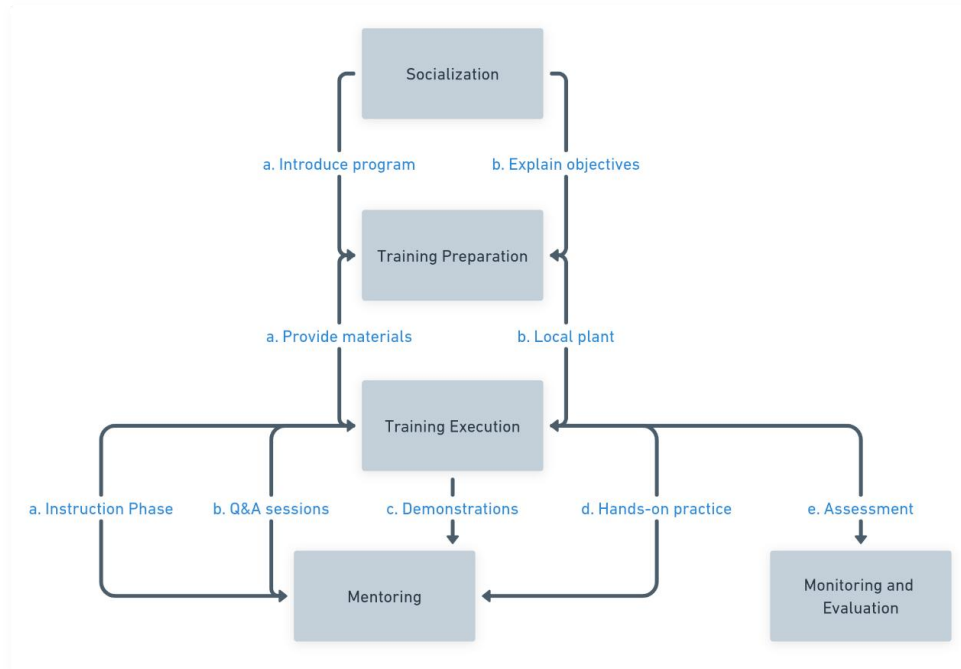


Figure 1. Workflow for Ecoprint Training Program

Results and Discussion

The formation of social construction among tutors involves changes in both administrative and academic fields driven by a strong motivation to provide quality tutorial services at UT Surabaya. This social construction process includes changes in the understanding of administrative and academic aspects during the tutorial teaching process, visible in the tutors' administrative abilities and academic improvements. The tutorial teaching process during the pandemic could not proceed with face-to-face interactions due to the risk of COVID-19 transmission and the prohibition by the COVID-19 Team, as it violated health protocols, leading to potential transmission among students.

The training program provided members of the Women Skills Academy (WSA) and Kelompok Wanita Tani (KWT) Amanah in Sidomulyo Village with valuable experience in mastering ecoprint techniques and utilizing e-commerce platforms. By integrating hands-on practice with theoretical learning, the sessions facilitated skill enhancement and promoted using local natural resources for sustainable product development. This section explores the outcomes of the training, focusing on the participants' acquired skills, their satisfaction with the program, and the potential for applying these skills to generate economic benefits for the community. The participants consist of the Women Skills Academy (WSA) members and Kelompok Wanita Tani (KWT) Amanah from Sidomulyo Village demonstrated a diverse demographic profile, as shown in Table 1. The program consisted entirely of women, aligning with its goal of empowering females in the community. Participants spanned a wide age range, with 40% in the elderly group (46-65 years), 33.3% in the adolescent group (12-25 years), and 26.7% in the adult group (26-45 years). This age diversity reflects a broad interest in skill development across different life stages. Older participants, for example, may have more life experience but might require additional support in adapting to new techniques like ecoprinting or e-commerce, whereas younger participants may be more familiar with digital platforms. In terms of marital status, a significant proportion (66.7%) of the participants were married, reflecting the target demographic of women who are often balancing family responsibilities. Additionally, the fact that a significant portion of the participants were married likely influenced their motivation to improve their skills, as they may be more focused on creating economic stability for their families. The educational background of the participants varied, with the majority having completed senior high school (60%), followed by those with junior high school education (13.3%), and a smaller proportion holding a bachelor's degree (13.3%) or elementary school qualifications (6.7%).

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

Category		Percentage (%)
Gender	Male	0,0
	Female	100,0
Age	Adolescent (12-25 years)	33,3

Category		Percentage (%)
	Adult (26-45 years)	26,7
	Elderly (46-65 years)	40,0
Marital Status	Married	66,7
	Unmarried	33,3
Education	Elementary school or equivalent	6,7
	Junior high school or equivalent	13,3
	Senior high school or equivalent	60,0
	Diploma	6,7
	Bachelor's degree (S1)	13,3

Ecoprint is an environmentally friendly fabric dyeing technique that utilizes natural pigments extracted from plants, such as flowers and leaves, to create unique patterns on fabric (Wahyuningsih et al., 2022). This method is sustainable and avoids the use of synthetic dyes, making it an appealing choice for eco-conscious consumers and artisans (Nurmin et al., 2023; Syafril & Agel, 2023). The resulting designs are distinctive and reflect the organic shapes and colors of the plant materials used. As shown in Figure 2, the ecoprint process during the training session included the mordanting of fabric, arranging flowers and leaves creatively, layering the design with a cover fabric dipped in natural dye, and producing intricate, vibrant patterns as the final result. This hands-on approach allowed participants to engage deeply with the technique and produce high-quality, personalized creations.

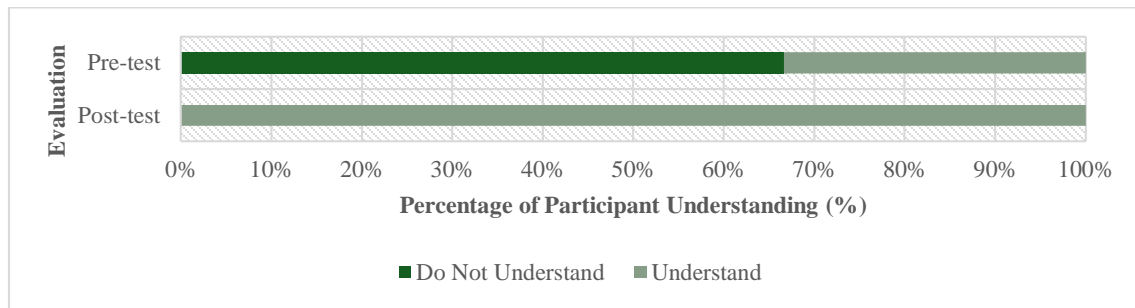


Figure 2: Ecoprint-making process during the training session. (a) Mordanting process (b) Arrangement of flowers and leaves (c) Cover fabric dipped in natural dye (d) Ecoprint results.

The training program significantly improved participants' understanding of both ecoprint techniques and e-commerce usage, as shown in Figure 3. Before the training, 66.7% of participants reported not understanding the ecoprint process, with only 33.3% having some prior knowledge. Post-training, 100% of participants demonstrated a clear understanding of the technique, reflecting the success of the hands-on and practical approach employed. Similarly, understanding of e-commerce usage showed remarkable progress. Prior to the

training, 85% of participants lacked knowledge of e-commerce platforms, with only 15% indicating some familiarity. Following the training, all participants (100%) reported understanding how to utilize e-commerce effectively for online marketing and product promotion. These results underscore the program's overall effectiveness in equipping participants with both creative and digital skills to enhance their economic potential

a.



b

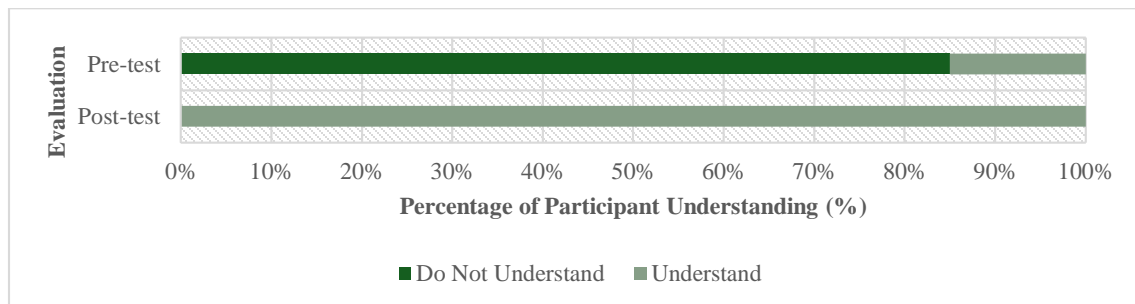


Figure 3: Evaluation (pre-test and post-test) results. (a) Percentage of participant understanding of ecoprint (b) Percentage of participant understanding of e-commerce usage.

The feedback from participants, as summarized in Table 2, highlights the overall satisfaction and effectiveness of the training program organized by the community service team. For the ecoprint techniques, 80% of participants expressed satisfaction with the practical demonstrations provided during the sessions, while 73.3% found the training effective in enabling them to independently create ecoprint products. Furthermore, 86.7% recognized the usefulness of the ecoprint material in inspiring ideas for developing unique and marketable products, underscoring the relevance of the training content in supporting the WSA's mission of empowering women through creative and sustainable practices. Regarding e-commerce utilization, the training successfully addressed a key need for participants, equipping them with essential skills for digital marketing. After the program, 66.7% of participants reported feeling confident in using e-commerce platforms to sell their products, a notable achievement given their initial lack of familiarity. Additionally, 73.3%

acknowledged the practical value of the e-commerce information provided, as it helped them better understand how to market their products effectively. The same percentage expressed interest in leveraging social media and e-commerce platforms to promote their products, reflecting an increased motivation to adopt digital tools as a means of expanding their market reach and enhancing sales. The organizational aspects of the training, managed by the community service team, received the highest ratings. Participants were unanimously satisfied with the overall organization, communication, training materials, and facilities, all scoring 100%. Meanwhile, the management of the training schedule received 93.3%, further demonstrating the commitment of the organizers to providing a supportive and conducive learning environment.

Table 2: Summary of Participant Feedback on Ratings of Satisfaction and Effectiveness (%)

Section	Question	Percentage (%)
Ecoprint Techniques	How satisfied are you with the practical demonstration of ecoprint techniques?	80,0
	How effective was the training in helping you create ecoprint products on your own?	73,3
	How useful was the ecoprint material in giving you ideas for developing unique and marketable products?	86,7
Utilization of E-commerce	How confident are you in using e-commerce platforms to sell your products?	66,7
	How useful was the information about e-commerce in helping you market your products effectively?	73,3
	How interested are you in using social media and e-commerce platforms to promote your products after the training?	73,3
Training Organization	How satisfied are you with the overall organization of the training?	100,0
	How would you rate the quality of communication from the committee before and during the training?	100,0
	How effective were the training materials (e.g., handouts, tools, etc.) provided by the committee?	100,0
	How satisfied are you with the facilities provided during the training (location, equipment, etc.)?	100,0
	How well did the committee manage the overall training schedule (timing, breaks, etc.)?	93,3

The training program for members of the Women Skills Academy (WSA) and KWT Amanah in Sidomulyo Village was successfully conducted and achieved its intended objectives. The sessions ran smoothly, with active participation and enthusiasm from all attendees. The community service team's efforts to design a comprehensive program combining ecoprint techniques and e-commerce utilization proved effective in enhancing

participants' skills and knowledge. Significant improvements were observed in participants' understanding and ability to apply the techniques taught, as demonstrated by the results of pre- and post-training evaluations. These improvements aligned with the team's goal of fostering community empowerment, as participants not only gained practical skills in creating ecoprint products but also developed the capability to market them effectively through digital platforms. These outcomes highlighted the success of the program in equipping WSA and KWT Amanah members with valuable tools for economic self-reliance and sustainability.

Conclusion

In conclusion, the training program organized by the community service team for members of the Women Skills Academy (WSA) and Kelompok Wanita Tani (KWT) Amanah in Sidomulyo Village has successfully achieved its objectives. Participants demonstrated significant improvements in understanding and applying ecoprint techniques, as well as utilizing e-commerce platforms to market their products. These achievements highlight the effectiveness of the program's integrated approach, combining hands-on practice, mentoring, and theoretical learning. The participants' ability to produce eco-friendly products using local resources reflects the program's success in promoting innovation and sustainability. Incorporating digital marketing skills has opened new opportunities for expanding market reach and aligning local products with current consumer trends. However, challenges such as material diversity, design uniqueness, and broader digital marketing adoption will be critical to sustaining and enhancing these outcomes. Overall, the program serves as a model for rural economic empowerment through the strategic combination of traditional craftsmanship and modern technology.

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