



## The Enhancement of Skills Through Eco-Printing Training With Pounding Technique Among PKK Groups in Bangunjiwo Village, Bantul

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**Abstract:** The objective of this Community Service Program (PkM) is to enhance the skills in creating ecoprinting products using the pounding technique for small business owners or novice entrepreneurs, specifically the PKK women's group in Bangunjiwo Village, Bantul. This program involves twenty participants and a ten-member organizing committee from UNY's Vocational Faculty's Fashion Design Study Program, including five lecturers and five students. The stages of the PkM activities include needs analysis, preparation, implementation, and evaluation, conducted from March to June 2023. The outcomes of the PkM activities indicate that the feedback from the ecoprinting instructors using the pounding technique averaged 4.2 out of 5.0, categorized as good. The increase in participants' knowledge was obtained with an average N-gain value of 0.56 (56.27%) which was categorized as quite effective. The creativity of the products produced had an average score of 84.5 out of 100. Specific skills that need to be considered to produce high-quality products include recognizing the characteristics and experimental treatment of certain leaves, the type of surface of the pounding tool, the position, and accuracy on the stem and vein ends of the leaves, fabric dyeing strategies, and the patterns produced, as well as drying the fabric naturally or by air-drying. Another important aspect is the creativity in arranging leaves to achieve high artistic value and meaningful aesthetics. The quality of ecoprinting products using the pounding technique requires repeated training and experimentation to produce varied colors from leaf pigments and to select leaves with unique and interesting patterns.

**Keywords:** Ecoprinting, Community Engagement Program, PKK, Pounding Technique, creative products

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## INTRODUCTION

A significant issue faced by the textile industry and small and medium-sized enterprises (SMEs) is the use of synthetic dyes for fabric coloring and patterning (Kholifah et al., 2024; Kholifah, Majid, et al., 2023; Kholifah, Sudira, et al., 2023). These synthetic materials generate hazardous chemical waste, disrupt ecological balance, and pose long-term health risks to humans and the environment. An alternative for fabric dyeing and pattern creation is the use of natural materials. Researchers and academics are currently advocating for unique and authentic motifs while promoting eco-friendly practices through the technique of eco-printing (Aryani et al., 2022). The benefits of eco-printing include the reduction of chemical waste, the use of natural materials, the development of local and sustainable economies, enhancement of product quality, and fostering innovation and creativity in human

resources (Arranz et al., 2020; Jędrzejczyk, 2022). According to Andajani (2023) in the fashion industry, eco-printing provides an opportunity for entrepreneurs to adopt environmentally friendly practices by utilizing readily available natural materials.

Eco-printing products in the fashion sector include garments, shoes, jackets, bags, clothing, hats, traditional Javanese shirts (Surjan), and other items (Pancapalaga et al., 2022). The production principle involves applying pressure (by pounding or steaming) to natural materials such as leaves, flowers, or plant parts with strong pigment content to transfer the patterns (Fidiana et al., 2020; Ismal, 2016; Manuja et al., 2023). This simple process can reduce environmental impact, although it currently requires relatively longer production times and lacks alternative technology. For small and micro-business owners, eco-printing offers a solution to enhance economic value (Susilowati et al., 2023). The primary materials are freely available in nature, and the resulting motifs are unique and impart a natural aesthetic without posing risks to users. Additionally, it aids in developing a creative and sustainable economy, providing broader business opportunities and improving the welfare of small business owners. From a technical and dyeing process perspective, eco-printing can be considered an alternative aligned with sustainable design principles in textile processing (Sulaiman et al., 2022). Thus, eco-printing has the potential to exemplify sustainable fashion development and provide solutions to global issues such as global warming while utilizing natural materials to create "eco-friendly" products.

Eco-printing patterns can be created through three techniques: steaming, leaf fermentation, and pounding (Salma & Eskak, 2022; Satria et al., 2023). This community service training (PkM) focuses on eco-printing using the pounding technique. This technique, though more complex than others, produces more effective and sharp patterns. Furthermore, understanding the eco-printing process is recommended to start with conventional techniques before advancing to more complex ones (steaming and fermentation). Several studies highlight the advantages of the pounding technique, including a relatively short process, easily accessible materials and tools, and no need for specialized skills (Adisurya et al., 2023). This technique is highly relevant for small business characteristics, such as the PKK group in Bangunjiwo Village, Bantul, who are beginners in eco-printing.

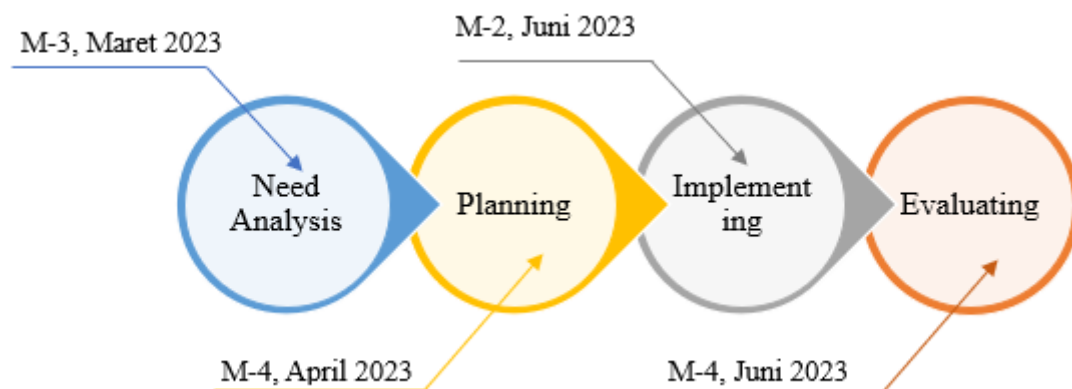
The PKK women in Bangunjiwo Village, Bantul, have been engaged in eco-printing crafts for over two years, currently developing high-quality trial patterns and leaf colors. For them, eco-printing presents new opportunities to support ecotourism efforts in Yogyakarta. Some challenges identified by the PKK group during surveys include the complex production process, requiring precision and patience, and the need for repeated experimentation to gain experience. Additionally, the variety of leaves used has been limited, and achieving consistent patterns and colors has been challenging. Consequently, innovation and creativity in product outcomes have not been maximized, and there is a need for guidance to address these issues.

Similar PkM activities on eco-printing training using the pounding technique have been conducted (Adisurya et al., 2023; Nurliana et al., 2021), yielding positive impressions among the community, particularly in enhancing understanding and acquiring new skills. However, previous training sessions emphasized the need to pay attention to correct patterns and techniques for pounding, as there is a risk of failure in producing accurate leaf fibers. Learning from previous training shortcomings, the PkM team conducted preliminary experiments to ensure success in using the pounding technique. Additionally, similar activities by the team included eco-printing training using the pounding technique on tote bag products, which were

successfully implemented (Triyanto et al., 2024). The main objective of this Community Service Program (PkM) is to enhance the skills in creating patterns on fabric through eco-printing training using the pounding technique for the PKK group in Bangunjiwo Village, Bantul, Yogyakarta. The PkM activities have led to improved eco-printing production quality and increased market value.

## IMPLEMENTATION METHOD

The Community Service Program (PkM) was conducted in Kalipucang, Bangunjiwo Village, Kasihan District, Bantul Regency, DI Yogyakarta. The training and mentoring sessions were held over three months, from March to June 2023, in collaboration with a group of 20 PKK women, most of whom are housewives actively involved in the PKK organization. The organizing committee consisted of 10 members from UNY's D4 Fashion Design Study Program, Vocational Faculty, including five lecturers and five students.



**Figure 1.** Implementation Stages of the Ecoprint Training Service Program

The stages of the PkM activities included: (1) needs analysis; (2) preparation; (3) implementation; and (4) evaluation (See **Figure 1**). The **needs analysis** stage aimed to identify issues within the eco-printing business through on-site surveys coordinated with the PKK group. The survey sought to directly observe business developments and pose critical questions regarding their business experience, available human resources, and other technical challenges. Tools and materials required for this stage included documentation and questionnaires. During the **preparation** stage, issues faced by the PKK group were identified using the small group FGD (Focus Group Discussion) method. The PkM team, comprising lecturers and students, then planned the PkM activities, determining necessary resources and assigning responsibilities for each task. Additionally, experiments were conducted to create eco-printing training guidelines, complete with illustrative images of the processes involved. The **implementation** stage employed observation, discussion, and Q&A methods. Activities at this stage included lectures by the faculty team and hands-on mentoring by students and lecturers. Interactive discussions occurred between participants and the instructional team throughout the implementation process. Finally, the **evaluation** stage used observation and Q&A to assess product creativity. Comprehensive evaluation was conducted by measuring the achievements of the PkM activities, producing outputs such as MoUs, IAs, and dissemination through mass media and journals.

**Table 1.** Stages of the Community Service Program (PkM) through Eco-Printing Training with the Punch Technique

No	Stage	Activity	Method	Instrument	Output
1	Needs Analysis	Identify problems, set objectives, and determine the implementation date	- Survey	- Open-ended questions	- MoU and IA
2	Preparation	Identify required equipment and materials, design the training curriculum, and allocate tasks among the PkM team	- FGD Small Group	- Discussion topics include preparation of equipment and materials, curriculum design (theory and practice/mentoring) , and evaluation implementation	
3	Implementation	Identify strategies for material delivery, training, and mentoring strategies, and group product creation	- Observation, Discussion, and Q&A	- Observation sheets, pre-test and post-test questionnaires, instructor evaluation sheets	- 100% participation
4	Evaluation	Presentation of produced items, assessment of product creativity, and activity documentation	- Observation, Discussion, and Q&A	- Creative product assessment sheets	- 80% succeeded in having product understanding and skills and creativity

The tools and materials required for the eco-printing training are presented in the **Table 2**. Certain leaves require special treatment to release pigments and produce perfect leaf patterns. One solution is to soak the leaves before pounding. Soaking can be done using water mixed with alum solution, vinegar, lime juice, or tannins. Conversely, leaves that already have strong colors and pigments can be directly experimented with without prior soaking.

**Table 2.** Tools and Materials in Ecoprinting Practices

Tool and Materials	Types of Leaves and Their Treatment
Transparent plastic	Young Teak Leaves
Hammer (as a pounding tool)	Lanang Leaves
Wooden board (flat surface)	Kesumba Leaves
Water container or bucket	Jenitri Leaves
Fabric	Jatropha Leaves*
Leaves	Ketapang Kebo Leaves*
Iron sulfate powder	Bodhi Leaves*
Water	Pepaya Leaves*
Vinegar/Lime/Alum	Dern Leaves*

Note: \*Leaves require soaking with a specific mixture

The evaluation sheet for the PkM activities consists of three main components: instructor feedback, knowledge improvement, and product quality assessment. Instructor feedback is measured using several indicators, including knowledge of the subject matter, communication skills, relevance of the material, use of media and supporting materials, clarity and structure of the presentation, ability to provide motivation, and capability to deliver solutions, with a target average score of 4.00 and a minimum category of "good." Knowledge improvement is assessed through pre-test and post-test evaluations using ten open-ended essay questions covering various aspects of the eco-printing process, such as the definition of eco-printing, commonly used natural materials, primary outcomes, environmental benefits, initial steps, the role of mordants, the use of natural materials, methods for producing different colors, post-printing procedures, and the main benefits of adopting eco-printing in textile production. The success of knowledge evaluation is calculated from the results of the pre-test and post-test scores with an N-gain score of  $0.3 \leq g \leq 0.7$ , including the **"medium"** category (Meltzer, 2002) and the effectiveness of the N-gain at a percentage of 56-75 in the **"quite effective"** category (Hake, 1998). The product quality and creativity assessment considers parameters such as pattern and detail quality, color fastness, motif harmony, cleanliness and tidiness, and creativity and innovation, with a success indicator of a minimum score of 80 out of 100.

## RESULT AND DISCUSSION

### Stage of Need Analysis with Pathners

This stage was carried out with the aim of analyzing the potential and needs of the PKK group in implementing the PKM program through the enhancement of Ecoprint skills. The partner needs analysis technique was conducted through a survey approach, meeting with the PKK group coordinator, Titik Suryani, S.Pd, to inquire about several issues and needs in the Eco-Printing business. Some priority activities identified included: (1) identifying the problems faced by PKK mothers; (2) analyzing the readiness and resource needs such as infrastructure, raw materials, and existing skills; (3) setting goals and planning further actions. The survey was conducted in March 2023. The survey results concluded that the PKK group had good potential to develop the Eco-Printing business as they had prior experience in the batik industry. This is still related to the connection between batik fabrics and eco-printing, even as a new alternative or development due to saturation in batik motifs. Additionally, the potential of the area as an educational tourism destination became a target for introducing and selling Eco-Printing products. In terms of readiness, the PKK group was well-managed through the existing human resources. Furthermore, there were abundant raw materials available such as papaya leaves (*Carica papaya* L), teak leaves (*Tectona grandis*), rengat leaves (*Marsdenia tinctoria*), tarum leaves (*Indigofera tictoria*), and harendong leaves (*Malestoma malabathricum*). Based on the analysis, it was decided to carry out engagement activities in the form of training and mentoring for the PKK group, focusing on Eco-Printing using the Pounding Technique as it is simple to apply. This ensured that the mentoring process wasn't overly complicated and allowed for observation of changes and developments at each stage.



### Stage of Planning

During the planning stage, discussions were held on how the engagement activities would be conducted. The technique used was a focus group discussion (FGD) involving the entire community engagement team consisting of lecturers and students. The planning activities took place in April 2023 at Wates Campus, Kulon Progo. Some activities from this planning phase included setting the implementation dates, deciding on speakers and mentoring strategies, drafting evaluation instruments or sheets during the mentoring process, and task allocation. The training and mentoring implementation were scheduled for June 2023. The speakers consisted of expert team members from the fashion design lecturers specializing in Eco-Printing, namely Nur Kholifah, Gina Eka Putri, and Triyanto, covering six main topics: introduction to eco-printing, material preparation, fabric preparation, basic eco-printing techniques, advanced eco-printing processes, and dyeing-drying-finishing products. Evaluation sheets prepared included satisfaction with the speakers, initial and final understanding evaluations, and product quality assessments within the group.

### Stage of Implementation

The implementation stage of the community engagement comprised three core activities: understanding eco-printing, eco-printing practice, and evaluation of eco-printing products using the pounding technique.

#### **Eco-Printing Understanding Workshop**

This workshop was attended by PKK mothers, the team of lecturers, and the student team. Initially, the designated lecturer team presented the Eco-Printing workshop curriculum as outlined in **Table 3**. The presenters alternately explained the definition and process of Eco-Printing using the Pounding Technique.

**Table 3.** Eco-Printing Workshop Curriculum

Training Curriculum			Training and Mentoring Objectives	
Material 1	Introduction to Eco-Printing		✓	Definition and concept of eco-printing
			✓	History and development of eco-printing techniques
			✓	Benefits and principles of sustainability
Material 2	Material Preparation		✓	Identification and selection of natural materials suitable for eco-printing
			✓	Collection and processing of materials
			✓	Introduction of natural colors and additional ingredients
Material 3	Fabric Preparation		✓	Selection of the appropriate type of fabric
			✓	Fabric preparation, including initial dyeing
			✓	Use of mordant (color binder)
Material 4	Basic Eco-Printing Techniques		✓	Basic printing process with leaves and natural materials
			✓	Design and composition arrangement
			✓	Introduction of "pounding" or "tapping" techniques
Material 5	Advanced Eco-Printing Process		✓	Experiment with different types of natural ingredients
			✓	Combining eco-printing techniques with natural dyes
			✓	Creativity in design and color selection
Material 6	Drying and Finishing		✓	Proper drying steps
			✓	Completion of prints (washing and maintenance)
			✓	Assessment and improvement of results

The enthusiasm of the PKK mothers in following the explanations about Eco-Printing can be observed in **Figure 2**. The presentation was conducted using PowerPoint displayed through an LCD projector. **Figure 2 (b)** shows an example of

the presentation regarding Tools and materials in Eco-Printing. Throughout the presentation, workshop participants were allowed to ask questions directly to facilitate their understanding, as shown in **Figure 2 (a)**. At the end of the activity, all participants, organizers, and speakers were awarded certificates as a token of appreciation, as shown in **Figure 3 (a)** and **Figure 3 (b)**.



**Figure 2.** Implementation of training (a) atmosphere of delivering the material, and (b) understanding of the tools and materials used



**Figure 3.** (a) Question and answer from one of the participants, and (b) Certificate as Presenter for Community Service Activities

Understanding or knowledge about eco-printing is the key to driving the PKK group in Bangunjiwo Village, Bantul, towards skill development and sustainability. Eco-printing is a technique for printing textiles using natural materials such as leaves, flowers, and bark without harming the environment (Aryani et al., 2022; Faridatun, 2022). In eco-printing training, the PKK group will be taught about selecting appropriate natural materials, the printing process, and how to produce unique and attractive designs. The PKK members will learn how eco-printing can support sustainability principles and minimize negative impacts on the environment. They will understand the importance of using organic materials and natural dyes in preserving the environment. With a deep understanding of eco-printing, the PKK group in Bangunjiwo Village has a strong foundation to develop their skills in this art and craft while also appreciating its positive environmental impact. This understanding will serve as a solid foundation in achieving the goal of this

community engagement, which is to enhance the skills and income of the PKK group while maintaining environmental sustainability.

### ***Mentoring in Eco-Printing with Pounding Technique***

The next core activity is mentoring in eco-printing after participants have gained some understanding through the workshop. Mentoring activities include tool and material preparation, working with the pounding technique, dyeing and setting, and air-drying.

#### **1. Tool and material preparation**

Preparation of tools and materials in the pounding technique of eco-printing is a crucial step before starting the manufacturing process. The necessary tools include fabric, plastic sheets, dye, color fixative materials (mordants), wax paper, leaf prints, or other natural materials, and pounding tools such as a hammer (**Figure 4**). Additionally, material preparation involves selecting natural materials to be used for printing, such as leaves, flowers, or bark. The process of collecting and preparing these natural materials may also involve washing and soaking to enhance the PKK mothers' ability to release pigments or colors when printed on fabric. In addition to the main tools and materials, make sure to prepare a clean and organized workspace, as well as safety equipment such as gloves. With meticulous tool and material preparation, the eco-printing process will run more smoothly and produce better print results.



**Figure 4.** (a) preparation of tools and plastic, and (b) preparation of leaves

#### **2. Practice of pounding technique**

The pounding technique process is a key stage in eco-printing, involving the printing of natural motifs on fabric using physical pressure. This process began with the artistic arrangement of selected leaves and natural materials on the prepared fabric. Once arranged, the fabric and natural materials were coated with wax paper to help seal the pigments and maintain the neatness of the motif (**Figure 5**). Subsequently, using pounding tools like a hammer, gentle pressure was applied to the fabric so that pigments from the natural materials could transfer their color and motif onto the fabric. After the pounding process was completed, the fabric was carefully lifted, revealing the printed result, creating a unique and beautiful natural motif on the fabric. The pounding technique process combined creativity and skill to produce captivating eco-printing products. Failures in the pounding technique occurred due to uneven strikes and required more careful and detailed treatment in



certain areas. For example, on the leaf's veins to obtain leaf framework and on the leaf tips to obtain motifs. The type of strike used also influenced the result, especially in pigment release onto the fabric. Errors in motifs not adhering were caused by either upside-down leaf placement or leaf characteristics requiring soaking in vinegar water before the pounding process.



**Figure 5.** (a) arranging the leaves according to the planned motif, and (b) pounding evenly

### 3. Coloring and drying process

The coloring and drying process is a crucial step in eco-printing after successfully creating natural motif prints. After the fabric is printed with motifs using the pounding technique, the next step is to add additional colors or enhance the produced motifs. Coloring can be done through various methods, including the use of natural dyes or textile inks that adhere to eco-printing principles. Natural dye materials such as plant extracts or ink from organic substances are used to add color to the fabric according to the desired design. Coloring can be done through immersion or direct application to specific parts of the fabric (**Figure 6**).



**Figure 6.** (a) staining with alum solution and washing with alum solution, and (b) drying with air

Once the coloring process is completed, the fabric needs to be carefully monitored to ensure that the color absorbs well. Each coloring technique and dye material has different setting times, and these need to be meticulously followed to achieve the desired results. After the coloring process, the fabric undergoes the drying process. Drying can be done by naturally hanging the fabric or using a dryer

machine with adjusted temperature settings. Proper drying is crucial to lock in the colors and produce durable eco-printing products.

When the fabric is completely dry, the final results will be visible, revealing the beauty of the natural motifs and colors produced in the eco-printing process. The coloring and drying process in eco-printing combines artist creativity with technical expertise in color selection and fabric care. This is an essential step in producing high-quality eco-printing products that can be enjoyed and used in various contexts. The final outcome of the mentoring is presented in **Figure 7**.



**Figure 7.** Final result of Ecoprint

#### **4. Factors Influencing the Success and Failure of Eco-Printing Practices Using the Pounding Technique**

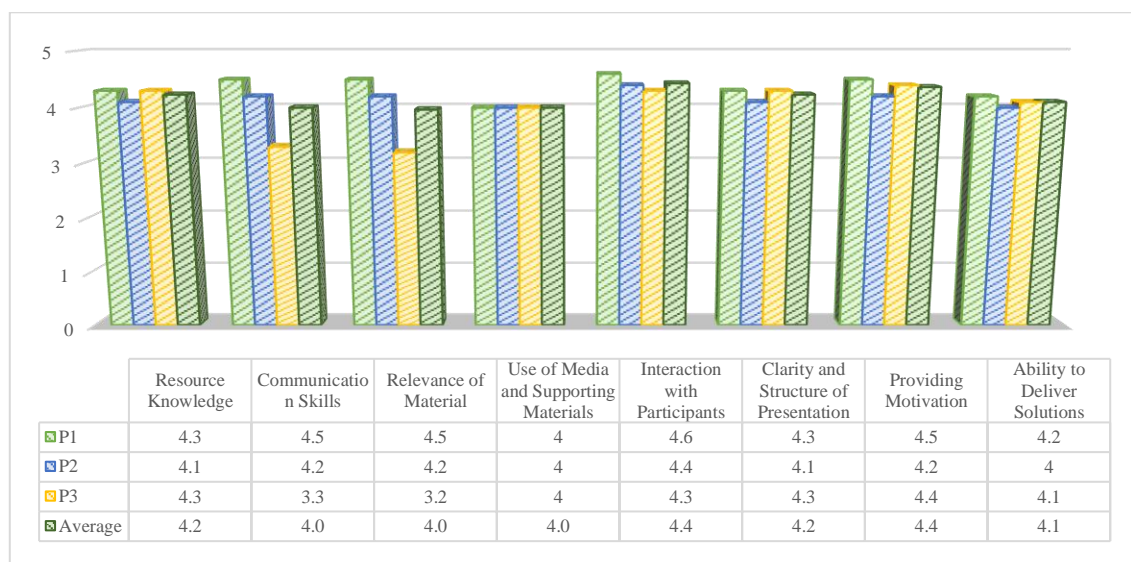
Several factors influence the production of eco-printing using the pounding technique, including: (1) understanding the selection and treatment of leaves with specific solutions; (2) knowledge of leaf types and their pigment or dye properties; (3) skills in applying the pounding technique, including the position and accuracy of the applied pressure; (4) expertise in fabric dyeing considering the resulting leaf motifs; and (5) comprehension of natural drying processes. The observations align with the study by Musdalifah et al. (2022), which emphasizes that understanding the selection and treatment of leaves with specific solutions is crucial to achieving the desired colors and motifs. Furthermore, Lusiana & Maryanti (2020) revealed that creating varied and visually appealing eco-printing motifs is influenced by one's knowledge of different types of leaves and their pigment or dye properties. Musdalifah et al. (2022) further assert that skills in the pounding technique, mastery of the position, and accuracy of the applied pressure are essential for effectively transferring leaf pigments to fabric. Additionally, Musdalifah et al. (2022) highlight the importance of understanding natural drying processes to successfully complete eco-friendly printing. Therefore, these five aspects are key to producing attractive and high-quality motifs.

Despite the potential for success in eco-printing practices, there are also aspects that may lead to failure, such as: (1) failure to achieve the desired color due to improper processing and pounding techniques; (2) failure to obtain the desired motifs; and (3) failure in combining leaf motifs and fabric dyeing. The study by Chen et al. (2012) highlights that failure to achieve the desired colors is often due to improper processing and pounding techniques. It is crucial to focus on precision and accuracy during execution. Furthermore, Wahyuningsih et al. (2022) identified failures in obtaining motifs as a result of incorrect pounding techniques and improper leaf treatment. They also noted that poor leaf motif and fabric dyeing techniques lead

to unsatisfactory outcomes, influenced by the practitioner's skill level. Amankwah-Amoah (2023) explains that success and failure in eco-printing are influenced by understanding, skills, and work attitudes during limited trial processes. To address potential failures and enhance results, practitioners can engage in repeated experimentation, self-development through various training sessions, and seek expert feedback to improve production quality. Continuous improvisation is essential to maintain the effectiveness of eco-friendly printing practices (Amankwah-Amoah, 2023). Eco-printing requires meticulous attention, precise strategies, and accurate techniques to successfully produce the desired motifs.

### Evaluation of Community Service Activities

Evaluation data from the speakers during the eco-printing workshop and pounding technique mentoring showed consistent results in several aspects. The speakers' knowledge had an average score of around 4.2, indicating a good understanding of the material presented. Communication skills, clarity, and presentation structure also received high scores, ranging from 4.0 to 4.2, demonstrating their ability to effectively deliver the material (**Figure 8**). However, there were some interesting differences to discuss. For instance, in terms of interaction with participants, it was observed that speaker P1 gave a slightly higher score (4.6) compared to P2 (4.4) and P3 (4.3). This indicates differences in the speakers' ability to interact with participants, which could be a focus of further discussion to identify the factors contributing to these differences. Overall, the speakers demonstrated good performance in most evaluation aspects. However, there are some differences that need to be noted and further analyzed to understand the factors influencing the evaluation outcomes. This can aid in improving and refining the eco-printing workshop and mentoring activities in the future.



**Figure 8.** Average of Resource Evaluation Results

The evaluation of understanding during the eco-printing workshop using the pounding technique demonstrated a significant improvement from pre-test to post-test. The pre-test results showed an average score of 61.22, while the post-test results showed an average score of 80.67. The N-gain analysis yielded an overall score of 0.56, placing it in the medium category. The effectiveness, measured by the



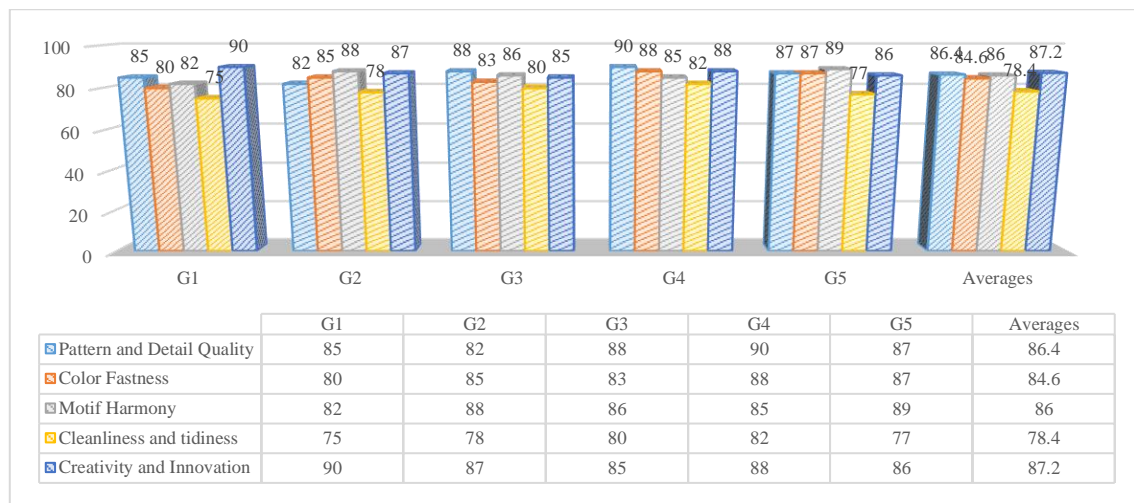
percentage of N-gain acquisition, was 56.27% (see **Table 4**), categorizing it as "quite effective." These results indicate that the knowledge acquired by the eco-printing training participants met the minimum established standards. However, future training sessions need to enhance the quality of the presenters, focusing on improving communication skills, utilizing interactive media, providing clear and practical examples, ensuring effective participant engagement, and using language tailored to the participants' level of understanding (Fransiska, 2023). These improvements will contribute to greater training success.

**Table 4.** Knowledge Achievement, N-Gain and N-Gain Effectiveness (%)

No	Question	Pre-test (1)	Post-test (2)	(2)-(1)	(100) - (1)	N-Gain	N-Gain (%)
1	What is meant by eco-printing?	65	87	22	35	0.63	62.86
2	The main benefits of eco-printing are:	60	85	25	40	0.63	62.50
3	One of the principles of sustainability in eco-printing is:	55	81	26	45	0.58	57.78
4	What do you need to pay attention to when choosing natural materials for eco-printing?	68	82	14	32	0.44	43.75
5	What is meant by mordant in eco-printing?	50	79	29	50	0.58	58.00
6	Eco-printing techniques often involve the use of:	70	88	18	30	0.60	60.00
7	The basic printing process in eco-printing generally involves the use of:	62	85	23	38	0.61	60.53
8	Why is it important to carry out correct drying steps after the eco-printing process?	58	80	22	42	0.52	52.38
9	What is done in the final step in the eco-printing process?	63	81	18	37	0.49	48.65
	<b>Mean</b>	<b>61.22</b>	<b>83.11</b>	<b>21.89</b>	<b>38.78</b>	<b>0.56</b>	<b>56.27</b>

Evaluation data on the quality assessment of eco-printing results with the pounding technique showed variations in assessments from five groups (G1 to G5) for each assessment aspect. The highest average assessment was obtained in the Creativity and Innovation aspect with a score of 87.2, followed by the Quality of Patterns and Details aspect with an average score of 86.4 (**Figure 9**). Meanwhile, the Cleanliness and Neatness aspect received the lowest average assessment with a score of 78.4. It is interesting to discuss the differences in assessments between groups, which may indicate differences in preferences or standards in evaluating the quality of eco-printing products. In conclusion, there is variation in the abilities of groups, but overall, the eco-printing results received fairly high ratings, with emphasis on creativity and innovation in design and attention to pattern details. It is also necessary to pay attention to improving cleanliness and neatness in the production process to enhance overall quality.





**Figure 9.** Product Quality Assessment Results Based on Five Groups

The success of the eco-printing community service activity using the pounding technique is inseparable from the planning and cooperation of all involved parties. Furthermore, providing material to enhance participants' understanding of the workshop must be tailored to the characteristics of the participants, such as age, gender, and other factors. In this activity, considering the PKK mothers, the strategy used was to be concise in the core material and engage in discussions to create a relaxed atmosphere. Group mentoring provided a sense of camaraderie and mutual feedback. However, in the ongoing community service activity, it still remained a project within the team. Therefore, independent eco-printing production needs to be carried out. Additionally, other techniques such as steaming and leaf fermentation were also employed.

## CONCLUSION

The objective of the Community Service (PkM) activity was to enhance eco-printing skills using the pounding technique among the PKK women in Bangunjiwo Village, Bantul. The PkM activity had a positive impact, as evidenced by the evaluation scores: instructor feedback reached 4.2, understanding increased by 56.27%, and product creativity averaged 86.4. The success of the PkM eco-printing activities was influenced by five key aspects: understanding the selection and treatment of leaves with specific solutions, knowledge of different types of leaves and their pigment or dye properties, skill in the pounding technique including the position and accuracy of applied pressure, expertise in fabric dyeing considering the resulting leaf motifs, and comprehension of natural drying processes. The success and quality of the products were influenced by knowledge, skills, and work behavior regarding eco-printing with the pounding technique, which need continuous improvement.

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