South American Publishing

SAP Community and Interculturality in Dialogue. 2025; 5:161
doi: 10.56294/cid2025161

ORIGINAL

Ecoprint hijab-making training for community empowerment in Kampung Emas Sayegan

Capacitación en la elaboración de hijabs con ecoprint para el empoderamiento comunitario en Kampung Emas Sayegan

Nur Kholifah[1], Triyanto[1], Resi Sepsilia Elvera[1], Fitria Oktariani[1], Desnanda Putri Sagita[1]

[1]Universitas Negeri Yogyakarta, Department of Design Fashion at Vocational Studies. Yogyakarta, Indonesia.

Cite as
Kholifah N, Triyanto T, Sepsilia Elvera R, Oktariani F, Putri Sagita D. Ecoprint hijab-making training for community empowerment in Kampung Emas Sayegan. SAP Community and Interculturality in Dialogue. 2025; 5:161. https://doi.org/10.56294/cid2025161

Publication History
Submitted: 30-04-2024
Revised: 03-11-2024
Accepted: 15-01-2025
Published: 16-01-2025

Corresponding Author
Nur Kholifah

ABSTRACT

Introduction: kampung Emas Sayegan possesses abundant natural resources but faces low economic welfare, particularly among women whose creativity in the fashion sector remains underutilized. In 2024, the village was designated as a community empowerment laboratory by Universitas Negeri Yogyakarta.

Objective: this study aimed to empower women by providing training in hijab-making using natural ecoprint techniques to enhance creativity, technical skills, and economic opportunities.

Method: the program applied a Participatory Action Research (PAR) design involving 25 PKK women from Sayegan. The stages included assessment, planning, execution, mentoring, reflection, and follow-up. Data were collected through pre- and post-tests, observation, and product evaluation. Key variables measured were knowledge, production skills, and product quality. Analyses used descriptive statistics and normalized gain scores.

Results: participants' knowledge increased significantly, with a normalized gain score of 0,89 and a 43,06-point improvement from pre- to post-test. The hijabs achieved an average quality score of 4,30/5,00, excelling in motif clarity, colour composition, uniqueness, and proportionality. Scores for STEAM-based techniques, pre-treatment, and independent production averaged above 4,29. Participant satisfaction reached an average of 4,28 across all respondents.

Conclusions: the ecoprint hijab-making training effectively enhanced participants' skills, product quality, and entrepreneurial motivation. This initiative demonstrates that eco-fashion, integrated with STEAM-based methods, can serve as an innovative and sustainable approach to women's economic empowerment.

Keywords: Hijab; Ecoprint Pattern; Participatory Action Research; Empowerment; Fashion.

RESUMEN

Introducción: kampung Emas Sayegan posee abundantes recursos naturales, pero presenta bajos niveles de bienestar económico, especialmente entre las mujeres cuya creatividad en el sector de la moda permanece infrautilizada. En 2024, la aldea fue designada como laboratorio de empoderamiento comunitario por la Universitas Negeri Yogyakarta.

Objetivos: este estudio tuvo como objetivo empoderar a las mujeres mediante la formación en la elaboración de hiyabs utilizando técnicas naturales de ecoprint, con el fin de potenciar la creatividad, las habilidades técnicas y las oportunidades económicas.

Método: el programa aplicó un diseño de Investigación-Acción Participativa (IAP) con la participación de 25 mujeres de la organización PKK de Sayegan. Las etapas incluyeron diagnóstico, planificación, ejecución, tutoría, reflexión y seguimiento. Los datos se recopilaron mediante pruebas previas y posteriores, observación y evaluación de productos. Las variables clave evaluadas fueron el conocimiento, las competencias de producción y la calidad del producto. El análisis empleó estadística descriptiva y puntajes de ganancia normalizada.

Resultados: el conocimiento de las participantes aumentó significativamente, con un puntaje de ganancia normalizada de 0,89 y una mejora de 43,06 puntos entre la prueba previa y la posterior. Los hiyabs obtuvieron una puntuación media de calidad de 4,30/5,00, destacando en claridad de motivos, composición cromática, originalidad y proporcionalidad. Las puntuaciones en técnicas basadas en STEAM, pretratamiento y producción autónoma promediaron por encima de 4,29. La satisfacción de las participantes alcanzó un promedio de 4,28 en el total de las encuestadas.

Conclusiones: la formación en ecoprint para la confección de hiyabs mejoró de manera efectiva las habilidades, la calidad del producto y la motivación emprendedora de las participantes. Esta iniciativa demuestra que la moda ecológica, integrada con métodos basados en STEAM, puede constituir un enfoque innovador y sostenible para el empoderamiento económico de las mujeres.

Palabras clave: Hijab; Patrón de Ecoprint; Investigación-Acción Participativa; Empoderamiento; Moda.

© 2025; The Authors. This Open access article is distributed under the Creative Commons Attribution 4.0 license (https://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The global fashion industry faces the challenge of adopting sustainable fashion, emphasizing environmental awareness and responsiveness to social phenomena.[1,2] Conventional approaches in the textile field have shifted towards a return to local wisdom values and natural processes that do not harm the environment due to synthetic chemical use. One technique that is increasingly developed by micro, small, and medium-sized enterprises (MSMEs) and new businesses is ecoprint, which utilizes natural dyes derived from plants.[3] This method is recognized for its environmentally friendly nature, ethical production process, social responsibility, and the preservation of widely available natural resources.[4] Ecoprint is a technique for printing motifs using natural plant materials such as leaves, twigs, and flowers on fabric surfaces. This technique is widely appreciated for its aesthetic value, uniqueness, natural impression, and alignment with local cultural traditions.[5] Additionally, it has economic potential due to the availability and affordability of natural raw materials.

Several fashion products with ecoprint motifs, such as batik fabrics, clothing, bags, hats, and accessories, are commonly developed by MSMEs.[6,7] Although exact data on the number of ecoprint artisans is lacking, such products are frequently encountered in Yogyakarta, confirming their popularity and potential contribution to local economic development. Each artisan has a different formulation and artistic approach, affecting the final product quality and market value. Failed or imperfect motifs can reduce the economic value of the product. Therefore, strategies to improve pattern outcomes, accurate dyeing, and proper arrangement of materials are essential skills in ecoprint production. Despite appearing simple, this technique requires precise experimentation to produce optimal motif quality.

Kampung Emas Krapyak IX, a hamlet in Sleman Regency, Yogyakarta, was designated as a community empowerment laboratory by Yogyakarta State University starting in 2024. This location was chosen because the average household income is below the regional minimum wage. Most residents work as farmers or housewives and have relatively low education levels, typically only primary school graduates. Despite this, the village has rich natural potential for further development. Several programs have already been implemented in the area as part of its development as an educational tourism village, particularly in education, art, sports, and the economy. The results of limited discussions with local education managers revealed:

Youth and housewives in Kapyak Hamlet need simple knowledge and skills, namely the initial introduction and motivation stages. So that in the following year, they will have the ability and independence to develop new products from ecoprint.

Empowerment efforts aligned with the fashion design expertise of the implementing team focus on skill transfer, specifically in the ecoprint technique. This method has become a growing trend among MSMEs and is seen as a strategic choice for new business development, considering the affordability and abundance of natural raw materials. Moreover, its economic value increases significantly after the production process.

Every MSME that develops ecoprint techniques has unique characteristics, which can serve as cultural identity markers for local communities.[8,9]

Since Kampung Emas is already known as an educational tourism destination, the ecoprint technique can be introduced as an alternative hands-on activity for visitors interested in learning local textile art. Therefore, residents, particularly women, must be trained and accompanied in producing simple ecoprint-based products such as hijabs. The hijab product was selected because local women have limited knowledge and skills in ecoprint techniques. They need to be introduced to simple products that offer wide-ranging benefits regarding self-efficacy, interest, intention, and motivation to pursue new business opportunities. This type of training has the potential to increase women's awareness, confidence, and capacity in creative economic activities,[10] utilizing local plant resources.[11,12] Additionally, digital marketing strategies are included to enable broader market access for the products created.[13,14]

Improving the knowledge and skills of human resources in Kampung Emas Sayegan is essential to achieving long-term community empowerment. Despite having rich biodiversity and cultural assets, the village faces persistent challenges in translating these resources into economic opportunities, especially for women and youth, whose creative potential in the fashion sector remains largely untapped. The central scientific problem can be stated as follows: How can structured training and mentoring in ecoprint hijab-making transform underutilized local creativity into sustainable entrepreneurial capacity while preserving biodiversity and cultural heritage? This problem is significant because it lies at the intersection of economic development, environmental sustainability, and cultural preservation, making it highly relevant for designing scalable empowerment models in similar rural contexts. The present program addresses this question through a structured, Participatory Action Research–based training and mentoring process that strengthens women's and youth groups in line with the broader Mbangun Deso initiative. The program's core objective is to equip participants with the knowledge and technical skills necessary for producing ecoprint hijabs, thereby enhancing their interest, entrepreneurial intention, motivation, creativity, and innovation. Beyond individual skills, the initiative seeks to foster a distinctive local fashion identity capable of attracting educational tourism and creating home-based businesses rooted in local biodiversity. This integrated approach (combining skill development, market orientation, cultural preservation, and environmental sustainability), serves as both a local economic catalyst and a model for future community-based development projects.

METHOD

Design Study

The Community Service Program in Kampung Emas Sayegan adopted a Participatory Action Research (PAR) design to combine social intervention for capacity building with iterative, context-specific knowledge generation.[15] This approach ensured active participation of community members in all stages, from needs identification and planning to training, mentoring, and sustainability, aligning with local conditions and resources.[6] The ecoprint hijab-making training originated from requests by local housewives and

women's groups seeking practical skills for home-based business opportunities. PAR was chosen to leverage available materials, community assets, and collaborative learning, fostering both technical skills and creative innovation in producing distinctive ecoprint products.[16,17] Training was complemented with digital marketing modules to enhance participants' ability to market their creations effectively. Beyond skill development, the program promoted environmental awareness, cultural identity preservation, and sustainable economic empowerment.[18]

Respondents

The program was implemented in Kampung Emas Sayegan (Dusun Krapyak IX, Sleman Regency, Yogyakarta). Activities began with needs identification in May 2025; the main training and mentoring sessions were conducted in the months that followed as part of the same project cycle.

The research participants were women from Kampung Emas Sayegan who were involved in organized women's activities and actively participated in Family Welfare Empowerment (PKK) groups or other community-level development and income-generating initiatives. They were selected through purposive sampling based on referrals from the local education coordinator and consideration of inclusion and exclusion criteria (see table 1), taking into account their willingness, interests, and participation in the purposive sampling framework. This approach is consistent with the principles of Participatory Action Research (PAR), which strives for involvement in the process for the sake of empowerment and engagement.[19,20]

Table 1. Respondent Selection Criteria

Criteria	Description
Inclusion	Female Resident of Kampung Emas Sayegan Member or active participant of a local community/women's group (*PKK*) or recommended by the local education coordinator Aged ≥ 18 years Willing to attend the full training and mentoring program Willing to participate in all assessments
Exclusion	Inability or unwillingness to attend training sessions Medical condition that precludes safe participation in hands-on activities Known allergy or sensitivity to plant materials or pre-treatment reagents Withdrawal from the program before completion

The sample size of 25 was chosen to make the study manageable and ensure interactive mentorship group processes, which required a minimum of 13 participants according to a paired-design power analysis with $\alpha = 0,05$, power = 0,80, and a large effect size ($d = 0,8$).[21] Respondent characteristics by category are presented in table 2.

Table 2. Demographics of Ecoprint Hijab Training Respondents in Kampung Emas Sayegan (N=25)

Category	Sub-category	Amount (%)
Age	20 - 29 years	8 (32)
	30 - 39 years	10 (40)
	40 - 49 years	5 (20)
	≥ 50 years	2 (8)
Gander	Female	96,0 %
	Male	4,0 %
Education levels	Elementary School	4 (16)
	Junior High School	10 (40)
	Senior High School/Vocational School	8 (32)
	Diploma/S1	3 (12)
Employment Status	Housewife	15 (60)
	Entrepreneur/Small Business	3 (12)
	Farmer	7 (28)

The selected method considers the iterative cycles of reflection, planning, action, and evaluation.[22,23] Through participant engagement as co-researchers, the project advanced their ownership of the process, increased local empowerment, and facilitated the co-creation of knowledge.[20,24] This type of collaborative framework brings forth social change by integrating community mobilization and skill-building, making it particularly useful in the context of sustainable economic empowerment in rural regions.[25]

Collection Data

Table 3. Evaluation of the Implementation of Training and Mentoring for Ecoprint Patterned Hijab Products

Evaluation aspects	Indicators	Description
Cognitive Test	Definition of ecoprint and basic principles Types of natural materials and their characteristics Steps of STEAM techniques Basic elements of branding strategy Digital marketing media Stages of pre-treatment and fabric fixation The potential of ecoprint hijab as a creative economy	Pretest and posttest Multiple Choice 5 Questions (Score 50) Essay questions 2 questions (Score 50)
Product evaluation	Neatness of motif Precision of leaf print Composition/color combination The uniqueness of design Meaningfulness of motif Proportion of motif to shape and size Accuracy of using STEAM technique Finishing quality Accuracy of pre-treatment process Independence in product manufacturing	Assessment includes the mentoring process and product (scale 1-5).
Training and monitoring evaluation	Clarity of material Suitability of material Ability to deliver material Interesting delivery method Completeness of materials and supporting media Clarity of practical instructions Improvement of skills Increased self-confidence	Participants' perceptions of the presenters during training and mentoring as well as skills and beliefs (Scale 1-5).

Multiple instruments were used to capture the cognitive, technical, and perceptual outcomes of the training program, facilitating analysis of practical, technical, and cognitive outcomes. Knowledge assessment was conducted using a comprehensive multiple-choice and short-essay test, which was scored out of 100 points, as demonstrated in Table 2. Improvement in knowledge was assessed using the Normalized Gain Score (NGS) formula Hake[26] defined as g = (post − pre) /(100 − pre) with thresholds of 0,3 (low), 0,3–0,7 (moderate), and above 0,7 (high) as defined in the range of g. During the mentoring sessions, the trainees' technical level was assessed through a rubric-based evaluation, which described pre-treatment accuracy, application of STEAM techniques, finishing autonomy, and diagnostic independence, scoring from 1 to 5 and totaling 50 points. The final hijab products were assessed using a quality rubric that measured motif neatness, leaf print precision, color composition, uniqueness, proportionality, and meaningfulness, with averages ranging from 1 to 5. Participants' ratings of overall satisfaction were assessed, along with their evaluations of clarity, relevance, delivery, perceived skill enhancement, and self-confidence, all within a range of 1–5.

Analysis Data

The analysis in this study was systematic in assessing cognitive development, product quality, and the outcomes of training sessions. The first step in the analysis was gathering data from the cognitive assessment (pre-test and post-test), product evaluation rubrics, and training/midterm mentoring evaluation forms from all participants. Preliminary calculations of participant demographic and descriptive information, including test and product quality assessment scores and satisfaction ratings, were summarized with means, percentages, and standard deviations. Knowledge gain was determined for each participant using the Normalized Gain Score (NGS) formula, g = (post-pre)/(100 − pre), and was classified as low (g < 0,3), moderate (0,3 < g < 0,7), or high (g > 0,7).

In product evaluation, the mean scores of each quality indicator (motif neatness, proportion, colour composition, uniqueness, and meaningfulness) were calculated to determine the evaluation's strengths and weaknesses. The training and mentoring evaluation scores obtained from the 1 to 5 Likert scale were analyzed for the theoretical and practical components dealing with the assessment of (1) clarity, (2) relevance, (3) delivery effectiveness, (4) completeness of supporting media, (5) perceived skill enhancement, and (6) self-confidence, where scores of > 4,20 indicated good and > 4,30 very good. These analysis components worked together to determine the comprehensive impact of the program on participant competence, skill set enhancement, and sustainability.

RESULTS

Implementation Stages of the Community Service Program

The activity began with a survey to analyze community needs based on the local potential of Kampung Emas Sayegan. This stage involved a team of lecturers, students, and the coordinator of the local education program. The methods employed included discussions, question-and-answer sessions, and brief note-taking. The community service coordinator provided a historical overview of why Dusun Krapyak was selected as one of the Kampung Emas Sayegan affiliated with Universitas Negeri Yogyakarta in 2024. Most residents in the area are housewives and farmers, with the highest level of education being primary school. These conditions

have contributed to the challenges in enhancing community empowerment, resulting in low motivation for economic self-reliance.

Figure 1. Partner Needs Analysis Survey in Kampung Emas Sayegan

The survey's outcome led to the formulation of a community service program focused on the production of hijabs with eco-print patterns (figure 1). This initiative was designed as an introductory phase to familiarize participants with the potential of eco-print and the basic stages of simple product creation. The goal was to increase understanding and awareness of how natural resources can be utilized for products with economic value.

Following the survey, the results were followed up with a coordination meeting between the community service (PkM) team and the students. The PkM team prepared administrative documents and materials to implement the training and mentoring program. To ensure the successful production of hijabs with ecoprint patterns, the lecturers and students conducted preliminary experiments to determine suitable formulations and various treatment techniques. This process was also aimed at developing clear work instructions tailored to the products that would be created by the training participants, as well as to inform the development of appropriate learning materials.

The PkM team divided responsibilities for administrative preparation and inspecting supporting equipment. The administrative tasks included preparing participant invitation letters, equipment loan forms, the event rundown, certificates, memoranda of understanding (MoUs) or implementation agreements, job sheets, instructional materials, and training evaluation forms. Subsequently, the team conducted an in-depth review of hijab production techniques and conducted experimental trials. This activity was intended to identify the level of difficulty of the production process to ensure that the expected outcomes could be achieved when implemented during the training. It also served as a reference for creating realistic and applicable job sheets and learning materials. The results of the fabric pre-treatment and experimental trials conducted prior to the implementation of the program are presented in figure 2.

Figure 2. Trial or Experiment of Making Hijab with Ecoprint Motif

The pre-treatment process for the fabric involved three main steps: scouring, mordanting, and fixation. In the scouring process, a

solution of TRO and soda ash was prepared at a 1:1 ratio and dissolved in water. The fabric was then soaked and rinsed three times. For the mordanting process, alum and acetic acid were used at a 1:1 ratio, dissolved in hot water, and then diluted with regular water. The fabric was soaked for 10–15 minutes before being air-dried. The fixation process was conducted using a mixture of limewater and ferrous sulfate (Tunjung) at a 1:1 ratio, which was also dissolved in water.

Training and Mentoring Activities for Ecoprint Hijab Production

The training activity was conducted using a combination of theoretical and practical approaches. The material was delivered in two main sessions: the first focused on identifying and outlining the step-by-step process of producing ecoprint-patterned hijabs (figure 3). In contrast, the second addressed digital marketing strategies. In the first session, participants were introduced to the concept of ecoprint, types of fashion products derived from ecoprint, the advantages and disadvantages of the technique, types of natural materials that can be used, required tools and equipment, the STEAM (steam) technique, characteristics of raw materials, and the step-by-step production process using the blanket method.

Figure 3. Presentation of Ecoprint Material for Hijab Products and Digital Marketing

The second session covered branding strategies designed to win market competition. This material covered the importance of branding in the global market, brand adaptation to local cultures, maintaining branding consistency across different countries, digital and social media marketing, creativity in global branding campaigns, and evaluating the performance of branding in the global market. Interactive methods such as discussions and question-and-answer sessions were employed to engage participants. Additionally, participants actively involved in the discussions received prepared rewards as a form of appreciation.

At the beginning of the session, the community service team prepared all materials required for the mentoring activities (figure 4). The group-based ecoprinting steps included: (1) First Fabric – Soak the pre-treated fabric in a natural dye solution for approximately one hour for optimal color absorption. (2) Second Fabric – Soak and wring out another piece of fabric in a ferrous sulfate (Tunjung) solution; this fabric will serve as the top layer. (3) Motif Arrangement – Lay the first fabric on a flat plastic-covered surface and arrange the leaves on top of it according to the participant's desired design. (4) Layering and Pressing – Place the second fabric on top of the arranged leaves and press it firmly to lock the leaf pattern. Moreover, (5) Rolling and Binding – Use a cylindrical tool such as a hose to roll the layered fabrics tightly, then secure the roll firmly by tying it along its entire length.

Figure 4. Process of Preparing Materials and Arranging Leaf Motifs

Each rolled fabric product was labeled with the participant or group's name to avoid mix-ups between participants. The next step was the STEAM process, which was carried out for 70 to 90 minutes (figure 5). The steaming process required careful control of low heat and evenly distributed temperature. This was essential to ensure the optimal performance of the leaf motifs on the fabric. After the steaming time, the rolls were carefully unwrapped to inspect the resulting ecoprint patterns.

https://doi.org/10.56294/cid2025161

The next step was drying, which lasted 10 to 15 minutes in a shaded area (figure 6). To achieve optimal results in post-treatment care, the fabric was rinsed with shampoo after 5 to 7 days. This step helped remove any remaining leaf residues and improved the durability of the motif on the fabric.

Overall, the activity provided valuable benefits and new experiences for the participants. They expressed satisfaction with the products they created. The process allowed them to observe how different leaf characteristics and fabric treatments produced distinct motif outcomes when combined with various techniques. This activity introduced a potential new routine that could be further developed to create other ecoprint-based products and to foster the community's confidence in marketing their creations. The community service team conducted regular monitoring and motivation to ensure that the skills acquired would be sustained through continued product development.

Figure 5. STEAM Process and Leaf Pattern Result Inspection

Figure 6. Final Result of Ecoprint Patterned Hijab Product

Evaluation of Community Service Program Achievement

Implementing the training on ecoprint hijab production and digital marketing strategies showed significant results. Participants' understanding increased by improving their initial comprehension (pre-test) and their final understanding after receiving the material (post-test), as shown in figure 7. The highest improvement in understanding was observed in digital marketing media, which increased by 48,0 points. This was followed by an improvement of 46,8 points in the topics of natural material types, their characteristics, and STEAM technique steps.

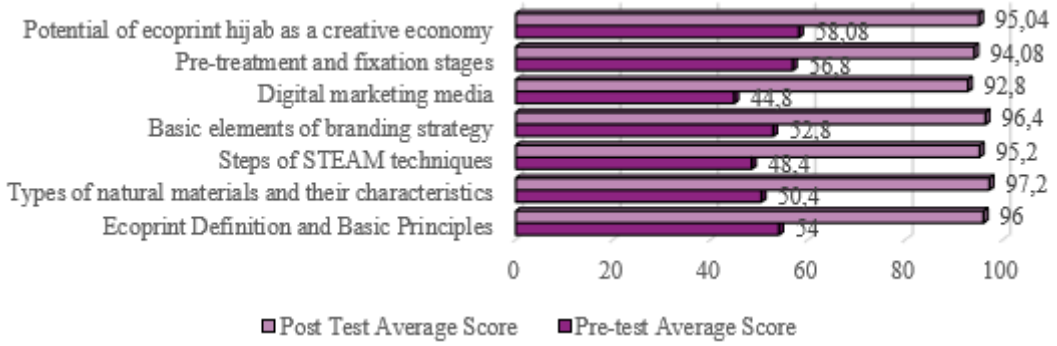

Figure 7. Evaluation Results on Pretest and Posttest

There was also a 43,6-point increase in understanding of branding elements and strategies, a 42,0-point increase in the definition and basic principles of ecoprint, a 37,28-point increase in pre-treatment and fixation steps, and a 36,96-point increase in

understanding the potential of ecoprint hijabs as a form of creative economy (figure 8). These results confirm that the theoretical training on ecoprint was well-received and effectively understood by participants. Despite having no experience with ecoprint, they demonstrated improvements in their responses compared to earlier assessments. This indicates that the training materials delivered were engaging and easy to comprehend.

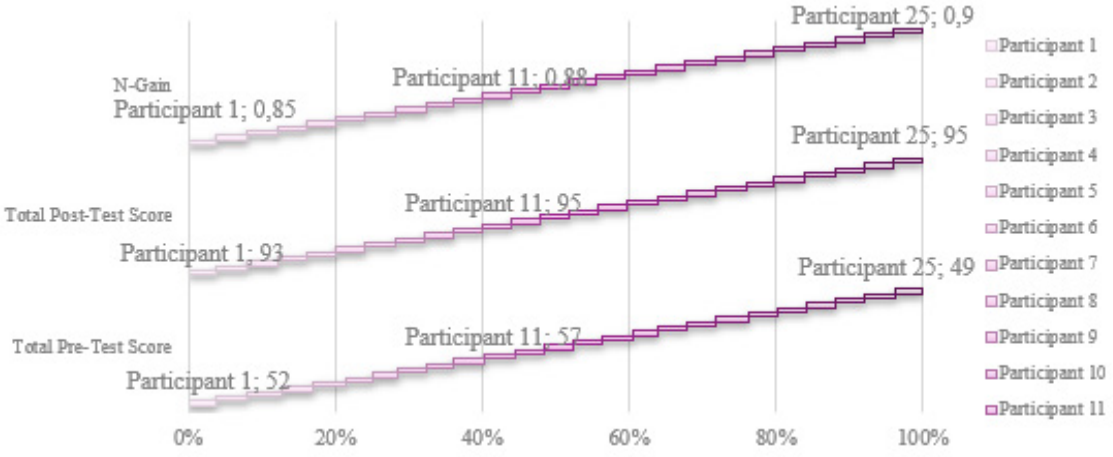

Figure 8. Normalized Gain Score Results

Furthermore, the overall average pre-test score of the training participants was 53,76 (figure 9). A significant improvement was observed, as reflected in the post-test average score of 95,04 out of 25 participants. The Normalized Gain Score (NGS) for each participant ranged from 0,81 to 0,98, with an average of 0,89, which falls into the high category (NGS > 0,7) in figure 9. The participants successfully addressed all assessment items.

During the training and mentoring process for producing ecoprint-patterned hijabs, all participants were evaluated based on their activeness and the quality of their final products. This evaluation aimed to assess participants' behavior, innovation, and creativity. The performance evaluation results are presented in Figure 10. All assessment indicators exceeded a score of 4,00, indicating that participant performance fell within the good category.

Regarding the production process, the finishing quality received an average score of 4,31; independence in product creation was scored at 4,29; and both accuracy of the pre-treatment process and application of the STEAM technique were rated at 4,28. For the final hijab products with ecoprint motifs, the proportion of motif to size and shape achieved a score of 4,38; leaf print precision was scored at 4,34; colour composition and blending at 4,31; motif neatness at 4,28; design uniqueness at 4,26; and motif meaningfulness at 4,24 (figure 10). Overall, participants could follow the instructions the trainers and mentors provided effectively. This was also supported by the fact that all participants were given equal opportunities for communication and clarification at every stage of the process.

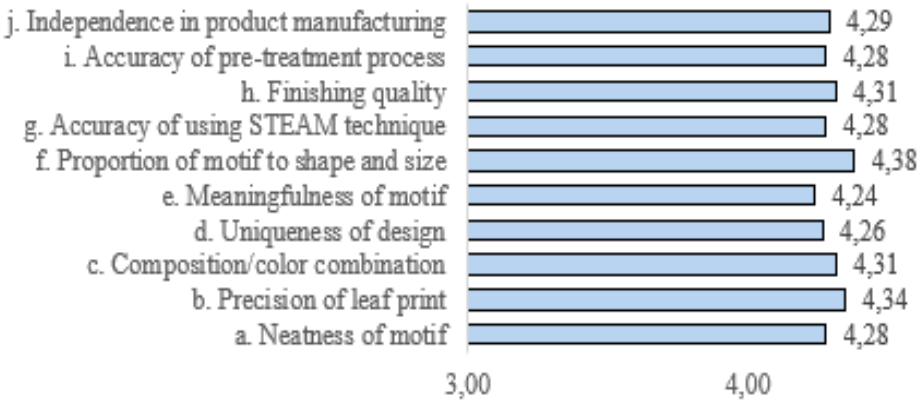

Figure 9. Hijab Product Manufacturing Performance Assessment

At the end of the session, participants evaluated the training and mentoring process. Six aspects of the facilitators were assessed, and two aspects reflected participants' personal experiences during the training. These aspects included clarity of practical instructions, which received a score of 4,21; clarity of content and engaging delivery methods, 4,26; completeness of materials and supporting media, 4,27; facilitators' ability to deliver content, 4,30; and relevance of the materials, 4,37. Participants also reported that the materials contributed to a perceived improvement in skills, scoring 4,18, and an increase in self-confidence, scoring 4,38 (figure 10). These results indicate that the implementation of the training and mentoring program was well-received by all participants.

https://doi.org/10.56294/cid2025161

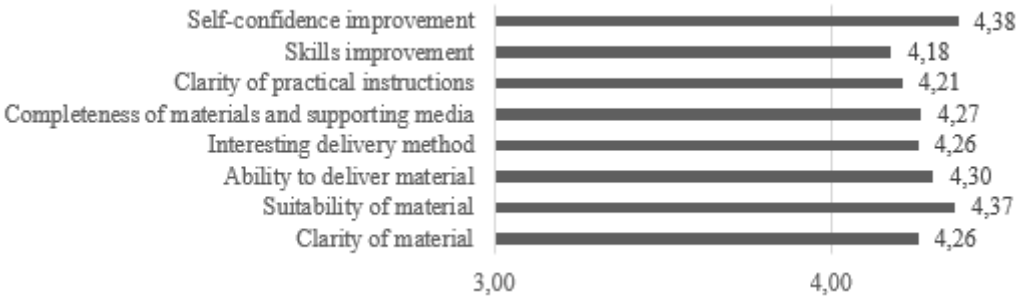

Figure 10. Evaluation of the Implementation of Hijab Product Training and Mentoring

DISCUSSION

The success of the Community Service Program is a collective responsibility shared by the entire team, with each member playing a synergistic role. Local partners were crucial in providing initial information about community conditions and identifying relevant training needs.[27] The success of the ecoprint hijab production training program in Kampung Emas Sayegan was mainly due to the active involvement of these local partners, who contributed to the design of training activities well-aligned with the needs and context of the local community. Most residents of Kampung Emas Sayegan belong to lower-middle-income groups and are predominantly Muslim. These conditions necessitate training programs that are simple, easy to implement, and have high economic potential. Hijab products were selected as the focus of the training because they are commonly used among Muslim women in Indonesia.[28,29]

The ecoprint hijab training was chosen because it uses natural materials such as fabric and local leaves, which are easy to find and low in cost. The ecoprint technique does not contradict Islamic values, making it highly acceptable to the local community.[30] The resulting products have added value due to their uniqueness and limited-edition nature—each hijab has a distinct pattern, depending on the types of leaves, pigment colors, and treatment methods used.[31] The uniqueness of ecoprint motifs gives each product artistic value and a sense of exclusivity. This increases market appeal, as consumers value products with distinctive characteristics. The variation in leaf shapes, natural pigment colors, and non-standardized printing processes produce unique products that enhance their commercial value.[32,33] The training was also widely accepted because it aligned with the religious and cultural norms of the local community, which supports its potential for broader and more sustainable adoption.

Participants' active engagement during theoretical and practical sessions demonstrated high enthusiasm for the materials presented. They asked questions and engaged in discussions about new concepts they had learned. This activity deepened their understanding and boosted their confidence in applying the ecoprint technique.[34,35] Providing rewards to active participants proved to be an effective motivational strategy. This reward system encouraged participation and strengthened intrinsic motivation to continue learning and developing skills.[36] Participants actively coordinated with facilitators during the mentoring sessions, especially in confirming each process step. This approach strengthened conceptual and procedural understanding and fostered a sense of confidence and security in performing the hands-on work. The mentoring-based approach aligns with constructivist theory, which emphasizes the importance of social interaction in the learning process.[37]

The ecoprint hijab products created during the training provided meaningful experiences for the participants. They expressed satisfaction with their creations, which could be used for personal purposes while holding commercial value. However, to achieve higher quality, participants must continue to refine their production skills by exploring various techniques and methods. Each MSME or product developer in the ecoprint sector has a different production approach, such as varying the timing of the fixation process—either before or after motif placement. These variations result in unique motif outcomes and product characteristics. This highlights the importance of continuously exploring production techniques to foster product differentiation and enhance market competitiveness.[38]

The community of Kampung Emas should continue developing their ecoprint production skills through advanced training and the exploration of creative ideas. In addition to improving their technical ability, they are encouraged to experiment with diverse product types that have higher economic value. This will help expand market options and improve community welfare. Overall, the initial experience creating hijab products effectively increased participants' intention, interest, and motivation to further develop ecoprint techniques. Through women's groups or housewives' associations, the training fostered motivation and helped preserve the acquired skills. Based on the evaluation of knowledge and performance during the training and mentoring sessions, the community demonstrated the ability to independently develop ecoprint products. Therefore, follow-up empowerment programs focusing on developing other ecoprint-based products are recommended for future implementation.

CONCLUSIONS

The Community Service activity under the Mbangun Deso scheme in Kampung Emas Sayegan was successfully carried out. The local community, especially women and housewives, demonstrated the ability to produce unique and high-quality hijab products featuring ecoprint motifs. Their independence and practical competence in producing hijabs and related items were reflected in their final understanding score of 95,04 and a performance score of 4,29 out of 5,0. These results indicate that the program was well-aligned with the community's needs and was supported by active participation. The production of ecoprint hijabs was an engaging

and motivating activity for participants. Although the mentoring component was limited, particularly in digital marketing techniques and exploring other product types, the community showed potential to continue developing their skills independently. This includes maintaining their capabilities and building the confidence needed to promote and market their products in the future.

FINANCING

No financing.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Nur Kholifah, Triyanto, Resi Sepsilia Elvera.
Data curation: Resi Sepsilia Elvera.
Formal analysis: Triyanto.
Research: Nur Kholifah, Triyanto, Desnanda Putri Sagita.
Methodology: Resi Sepsilia Elvera.
Project management: Triyanto, Fitria Oktariani.
Resources: Resi Sepsilia Elvera.
Software: Resi Sepsilia Elvera, Desnanda Putri Sagita.
Supervision: Triyanto, Fitria Oktariani, Desnanda Putri.
Validation: Nur Kholifah, Resi Sepsilia Elvera.
Display: Resi Sepsilia Elvera.
Drafting - original draft: Nur Kholifah, Triyanto.
Writing - proofreading and editing: Nur Kholifah, Resi Sepsilia Elvera, Triyanto, Fitria Oktariani, Desnanda Putri Sagita.

BIBLIOGRAPHIC REFERENCES

1. Pervez MN, Yeo WS, Shafiq F, Jilani MM, Sarwar Z, Riza M, et al. Sustainable fashion: Design of the experiment assisted machine learning for the environmental-friendly resin finishing of cotton fabric. Heliyon. 2023 Jan 1;9(1):1–10. https://doi.org/10.1016/j.heliyon.2023.e12883

2. Ray S, Nayak L. Marketing Sustainable Fashion: Trends and Future Directions. Sustainability. 2023;15(7):1–28. https://doi.org/10.3390/su15076202

3. Syafril EPE, Agel HH. Eco-print Batik: Eco-Friendly Products of Green Business based on Indigenous Knowledge in Bantul. London J Soc Sci. 2024;(7):1–12. https://doi.org/10.31039/ljss.2024.7.165

4. Hur E, Cassidy T. Perceptions and Attitudes Towards Sustainable Fashion Design: Challenges and Opportunities for Implementing Sustainability in Fashion. Int J Fash Des Technol Educ. 2019;12(2):208–17. https://doi.org/10.1080/17543266.2019.1572789

5. Bureekhampun S, Maneepun C. Eco-Friendly and Community Sustainable Textile Fabric Dyeing Methods From Thai Buffalo Manure: From Pasture to Fashion Designer. Sage Open. 2021;11(4). https://doi.org/10.1177/21582440211058201

6. Satria VH, Baihaqy A, Zuhroh NF, Laily N, Yahya Y. Pounding Nature Into Profit With Sustainable Techniques for Crafting High-Value Eco-Print Products. South Asian J Soc Stud Econ. 2024;21(6):111–20. https://doi.org/10.9734/sajsse/2024/v21i6836

7. Triyanto T, Kholifah N, Rosalina T, As'ad I, Avianti W, Nurtanto M, et al. Augmented reality smart batik (AR-SaBa) application for helping batik marketing. Multidiscip Sci J. 2025;7(12):e2025613. https://doi.org/https://doi.org/10.31893/multiscience.2025613

8. Trisnowati H, Ismail D, Padmawati RS, Utarini A. Developing a Framework for Youth Empowerment to Prevent Smoking Behavior in a Rural Setting: Study Protocol for a Participatory Action Research. Health Educ. 2020;121(1):30–47. https://doi.org/10.1108/he-06-2020-0045

9. Kholifah N, Sudira P, Pardjono P, Sofyan H, Utami B. The Transformation of Batik in the 4.0 Industry Revolution: A Case Study in the Clothing Sector. TEM J. 2023;12(1):140–6. https://doi.org/10.18421/TEM121-19

10. Hidayati DA, Kartika T, Muhassin M. Empowerment Strategy of Village Community Based on Freshwater Aquaculture. Sosiohumaniora. 2021;23(2):141. https://doi.org/10.24198/sosiohumaniora.v23i2.31719

11. Toyibah R, Devy HS, Mubarok MS, Rohayana AD, Muhtarom A, Tamamudin, et al. Community Empowerment Based on

Local Potentials Through the Creation of "Cassava Nugget" Products in Dukuh Binangun, Werdi Village, Paninggaran District. Int J Community Serv. 2021;1(1):17–27. https://doi.org/10.51601/ijcs.v1i1.7

12. Kusnanto K, Runturambi AJS, Rofii MS. Community Empowerment and Innovation as a Strategic Business Resilience Effort for Batik and Weaving Business Actors. J Law Sustain Dev. 2024;12(2):e2136. https://doi.org/10.55908/sdgs.v12i2.2136

13. Dewi YN, Munawwaroh K, Mardoni Z, Rossa R, Sadjiran S, Suryana F. Increasing Village Potential Through Small Medium Micro Business Development and Family Empowerment. Community Dev J. 2022;6(1):1–8. https://doi.org/10.33086/cdj.v6i1.2800

14. Kholifah N, Majid NWA, Subakti H, Putri GE, Suyitno, Zuhri MT. Contribution of Local Product Purchase Policy to Improvement of the 21st Century Learning. WSEAS Trans Syst. 2023;22(March):231–41. https://doi.org/10.37394/23202.2023.22.24

15. Thomas Elizabethmary, Benjamin-Thomas Tanya Elizabeth, Sithambaram Abirame, Shankar Janki, Chen Shu-Ping. Participatory Action Research Among People With Serious Mental Illness: A Scoping Review. Qual Health Res. 2023 Nov 6;34(1–2):3–19. https://doi.org/10.1177/10497323231208111

16. Bano S, Farid N, Ashfaq A, Mas'udah S. Uplifting the Socio-Economic Empowerment of Women Through Handicraft Industry. Masy Kebud Dan Polit. 2021;34(4):367. https://doi.org/10.20473/mkp.v34i42021.367-379

17. Kholifah N, Triyanto T, Sudira P, Pardjono P, Sofyan H. The Concept of Transformation Capability for MSMEs Batik Craftsmen in Indonesia. WSEAS Trans Bus Econ. 2024;21:554–64. https://doi.org/10.37394/23207.2024.21.46

18. Zver MM, Vukasović T. Consumers' Attitude Towards Eco Friendly Textile Products. Tekstilec. 2021;64(2):159–71. https://doi.org/10.14502/tekstilec2021.64.159-171

19. Healy K. Participatory action research and social work: A critical appraisal. Int Soc Work. 2001;44(1):93–105. https://doi.org/10.1177/002087280104400108

20. Bennett M. A Review of the Literature on the Benefits and Drawbacks of Participatory Action Research1. First Peoples Child Fam Rev. 2020;14(1):109–22. https://doi.org/10.7202/1071290ar

21. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Adm Policy Ment Heal Ment Heal Serv Res. 2015;42(5):533–44. https://doi.org/10.1007/s10488-013-0528-y

22. Dudgeon P, Carlin E, Derry K, Alexi J, Mitchell M, Agung-Igusti RP. Evaluating a social and emotional well-being model of service piloted in Aboriginal Community Controlled Health Services in Western Australia: an Aboriginal Participatory Action Research approach. BMJ Open. 2023;13(10):e075260. https://doi.org/10.1136/bmjopen-2023-075260

23. Turcotte S, Shea C, Raymond É, Ansaldo AI, Bier N, Grenier S, et al. Codesign and Implementation of a Toolkit Supporting Community Organizations' Intergenerational Practice: A Participatory Action Research Project. Can J Action Res. 2023;23(1):93–115. https://doi.org/10.33524/cjar.v23i1.613

24. Oladeinde O, Mabetha D, Twine R, Hove J, Van Der Merwe M, Byass P, et al. Building cooperative learning to address alcohol and other drug abuse in Mpumalanga, South Africa: a participatory action research process. Glob Health Action. 2020;13(1):1726722. https://doi.org/10.1080/16549716.2020.1726722

25. Wallerstein N, Duran B. Community-based participatory research contributions to intervention research: The intersection of science and practice to improve health equity. Am J Public Health. 2010;100(SUPPL. 1):S40–6. https://doi.org/10.2105/AJPH.2009.184036

26. Hake RR. Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. Am J Phys. 1998;66(1):64–74. https://doi.org/10.1119/1.18809

27. Minkler M. Community-based research partnerships: Challenges and opportunities. J Urban Heal. 2005;82(2):ii3–12. https://doi.org/10.1093/jurban/jti034

28. Shin J, Lew YK, Seo M. Constructing Muslim womanhood in Indonesia: Hijab and the governmentality of religious organizations. Asian J Soc Sci. 2024;52(3):136–44. https://doi.org/https://doi.org/10.1016/j.ajss.2024.07.001

29. Hassan SH, Harun H. Factors influencing fashion consciousness in hijab fashion consumption among hijabistas. J Islam Mark. 2016 Jan 1;7(4):476–94. https://doi.org/10.1108/JIMA-10-2014-0064

30. Indarti N, Anggadwita G, Purnomo RA, Tomlins R. Breaking Barriers! Social Entrepreneurship in Empowering People with Disabilities. J Soc Entrep. 2024;1–35. https://doi.org/10.1080/19420676.2024.2353059

31. Lathifah UN. Strategi Usaha Mikro Kecil dan Menengah Ecoprint Sekar Langit Bajong dalam Memberdayakan Perekonomian Masyarakat Melalui Basis Ekonomi Kreatif. 2023.

32. Abdin M, Saleh MN, Sakr H, El-Bana M, Kamel RM, El-kholy MM, et al. Production of novel bio-transfer films composed from polyvinyl alcohol/sodium caseinate enhanced with bonded anthocyanins from poinsettia for minced meat preservation in double sheet system. J Food Meas Charact. 2024;18(8):6956–72. https://doi.org/10.1007/s11694-024-02706-4

33. Utama A, Mustikasari A, Hariningsih E, Kholifah N. Examining the Effectiveness of Marketing Mix Components on Market Acceptance towards Natural Dye Products in Indonesia. In: IOP Conference Series: Earth and Environmental Science. 2024. https://doi.org/10.1088/1755-1315/1324/1/012082

34. Roesch-Marsh A, Emma M, Lara A, and Stewart S. The Natural Dye Garden: Growth and Recovery from Sexual Violence Through Gardening and Craft. Practice. 2025 Mar 15;37(2):101–15. https://doi.org/10.1080/09503153.2024.2435836

35. Irdalisa I, Zulherman Z, Elvianasti M, Widodo SA, Hanum E. Effectiveness of Project-Based Learning on STEAM-Based student'sworksheetanalysisWithEcoprintTechnique.IntJEducMethodol.2024;10(1):123–35.https://doi.org/10.12973/ijem.10.1.923

36. Jiménez-Valverde G, Fabre-Mitjans N, Heras-Paniagua C, Guimerà-Ballesta G. Tailoring Gamification in a Science Course to Enhance Intrinsic Motivation in Preservice Primary Teachers. Vol. 15, Education Sciences. 2025. https://doi.org/10.3390/educsci15030300

37. Aldabbas H, Pinnington A, Lahrech A, Blaique L. Extrinsic rewards for employee creativity? The role of perceived organisational support, work engagement and intrinsic motivation. Int J Innov Sci. 2025 Jan 1;17(2):237–60. https://doi.org/10.1108/IJIS-08-2022-0165

38. Olubiyi TO. Improving Customer Experience Through Differentiation Capability: The Rise of Competition Among Africa's Consumer Goods Companies. Pap . 2024 Sep 25;40(5b SE-Articles):230–40. https://doi.org/10.59953/paperasia.v40i5b.233