Contents lists available at openscie.com
E-ISSN: 2829-4521
Indonesian Journal of Community Services Cel
DOI: 10.70110/ijcsc.v5i2.152
Journal homepage: https://ijcomcel.org

Training on the Utilization of Water-Soluble Stickers as a Textile Decoration Technique for Students of SMA Plus Putra Melati in Jonggol, Bogor Regency

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ARTICLE INFO

Article History:
Received 08 August 2026
Revised 11 October 2026
Accepted 15 October 2026
Published 17 October 2026

Keywords:
Fashion products,
Skills,
Textile design,
Thread embroidery,
Water-soluble sticker.

ABSTRACT

Background: This training activity was conducted to increase students' practical experience and skills, which they can use to develop their creativity in textile decoration in an easier and more structured way. In addition, SMA Plus Putra Melati, located in Jonggol, Bogor Regency, is an educational institution committed to developing students' competencies not only in academic aspects but also in strengthening life skills.
Aims: The activity was a training on the utilization of water-soluble stickers, an environmentally friendly medium that can help create decorative patterns for textile decoration. It was conducted with 10 students from SMA Plus Putra Melati on June 18.
Methods: The implementation methods comprised educational outreach, demonstration, and hands-on practice. Ten students from SMA Plus Putra Melati were actively involved in every stage of the activity, so that participants would be able to understand and practice what was taught in the training.
Result: Improvements in knowledge and skills were observed for the decoration technique, which is more innovative and easier to apply because it uses an environmentally friendly medium.

To cite this article: Arrsyi, E. N., Maulida, E., & Dewi, F. N. (2026). Training on the Utilization of Water-Soluble Stickers as a Textile Decoration Technique for Students of SMA Plus Putra Melati in Jonggol, Bogor Regency. *Indonesian Journal of Community Services Cel*, *5*(2), 128–134.

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1. Introduction

The development of the global fashion industry has contributed significantly to the growth of the creative economy. However, this development has also been accompanied by rising consumption of textiles and fashion products, which has increased textile waste. The phenomenon of fast fashion drives

high levels of clothing consumption and, consequently, ever-larger volumes of textile waste. This waste originates both from the production process (pre-consumer waste) and from products that consumers have already used (post-consumer waste). This condition poses a serious challenge because textile waste is a contributor to environmental pollution that is difficult to degrade if it is not properly managed (Zakiyah *et al.*, 2023). With respect to waste, the fashion industry makes a considerable contribution, because the waste generated stems from the high levels of fashion production and consumption among the public. Raising awareness of product quality and sustainability in the fashion industry is one step that can be taken to reduce the rate of consumption and the potential accumulation of fashion waste (Sayyida & Wardaya, 2022). With growing attention to sustainable development, the concept of sustainable fashion has emerged as an approach that emphasizes efficient use of resources, waste reduction, the use of environmentally friendly materials, and the application of circular economy principles. In the context of fashion design education, introducing the concept of sustainability at an early stage is important so that students become aware of the environmental impact of the textile industry while also being able to produce more responsible product innovations.

One approach to supporting sustainability in fashion is to extend the use of products by increasing their value and developing their forms. Sustainable fashion can be implemented by recycling existing garments into different forms or styles so that the products look new and remain usable (Endrayana & Retnasari, 2021). Adding aesthetic value to a fashion product can help extend its useful life and utilization, and one way of doing so is to add decorative designs to the textile.

One innovation that has developed in the field of textile decoration is the use of water-soluble stickers or water-soluble film. This material serves as a temporary, water-soluble medium that enables the formation of new textile structures through embroidery, free motion embroidery, or fabric surface manipulation (Nurrohmah & Wahyuningsih, 2024). This technique offers broad opportunities to produce unique textures, motifs, and visual effects without generating excessive material waste (Zakiyah *et al.*, 2023). Several studies indicate that water-soluble techniques can enhance the aesthetic value of fashion products while supporting the use of textile waste as an alternative material with added value. Thus, in practice, the water-soluble sticker has potential as a textile decoration technique that facilitates the development of creativity, skills, and the aesthetic value of products. Introducing students to techniques and materials such as water-soluble stickers, and giving them practice with them, is important as a way of providing hands-on experience in exploring textile decoration techniques while improving their ability to produce creative products with added value.

Preliminary observations by the community service team at SMA Plus Putra Melati in Singasari Village, Jonggol District, Bogor Regency, showed that skills learning at the school still faced several constraints. The variety of practical materials remained limited to conventional techniques, while modern textile decoration technology had not been widely introduced to students. In addition, learning had not yet fully integrated sustainability issues, material innovation, and the development of creative products with economic value. As a result, students had not yet gained learning experiences aligned with developments in the fashion industry and the needs of the world of work.

This program is also part of the university's implementation of its service to the community through a participatory approach involving lecturers, university students, teachers, and school students. Thus, community service activities can provide sustainable benefits and support the achievement of the Sustainable Development Goals (SDGs), particularly quality education, innovation, responsible consumption and production, and partnerships for the goals.

2. Methods

The community service activity (PkM) was carried out by Esty Nurbaity Arrsyi, Ernita Maulida, and Fauzia Nurrahma Dewi from the Fashion Design Study Program, Faculty of Engineering, Universitas Negeri Jakarta (UNJ). The activity was conducted on June 18, 2026, at SMA Plus Putra Melati, Singasari

Village, Jonggol District, Bogor Regency. The participants were 10 students (4 male and 6 female) from the same class. The school is an educational institution committed to developing students' competencies not only in academic aspects but also in strengthening life skills through the skills subject, which is part of the school's local content. The training program on the utilization of water-soluble stickers as a textile decoration technique based on innovation and sustainability was chosen so that students would gain an alternative, more innovative learning material and hands-on experience in applying a modern textile decoration technique that is easy to apply with simple equipment.

The community service program was implemented using a participatory approach that centers on the partners, namely the students of SMA Plus Putra Melati. This approach was chosen to give students room not only to receive material theoretically but also to be actively involved in the learning process, practice, discussion, and evaluation of the activity outcomes, and to support students' self-confidence (Nardo *et al.*, 2026). A similar approach, which combines education with hands-on practice, has been shown to increase participants' engagement in the learning process (Oktavia *et al.*, 2026).

The methods used included educational outreach, demonstration, hands-on training, mentoring, and evaluation. This combination of methods was expected to improve participants' knowledge, skills, and creativity in applying textile decoration techniques using water-soluble stickers as an innovation that supports the concept of sustainable fashion.

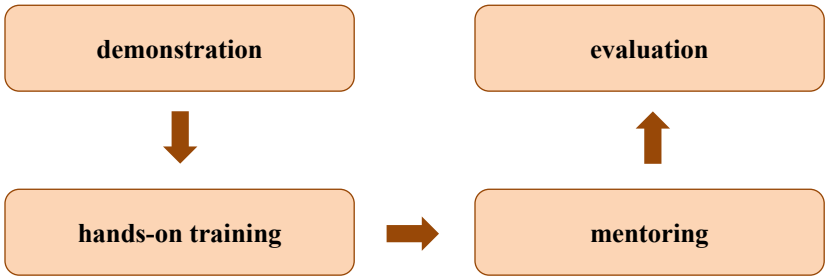

Figure 1. Stages of the community service activity.

The activity was evaluated using descriptive percentages based on a form completed by the students who took part in the training. The evaluation consisted of questions rated on a scale of 1–5, where 1 indicates strongly disagree and 5 indicates very good/strongly agree. The questions related to the training activity that had been delivered and practiced by the students at the community service site.

Through this training, students gained hands-on experience in applying a modern textile decoration technique that is easy to apply with simple equipment. In addition to improving technical skills, the activity also instills the values of creativity, environmental awareness, and an entrepreneurial spirit. Thus, the community service activity not only provides a transfer of knowledge and skills but also strengthens the school's capacity to develop learning that is adaptive to developments in the creative industry, and it supports the achievement of the Sustainable Development Goals (SDGs), particularly responsible consumption and production. In this activity, the water-soluble sticker served as an auxiliary medium that makes it easier, especially for beginners, to transfer and maintain the shape of the embroidery, so that the results are more consistent, without leaving chemical residue on the materials used because the water-soluble sticker dissolves in water. In addition to improving technical skills, the activity also encouraged students' creativity in developing motifs and decorative designs on products with aesthetic and functional value.

3. Results and Discussion

3.1 Results of the Activity Implementation

The results of the activity comprised three aspects. The first was improvement in knowledge of innovation-based textile decoration and sustainable fashion. The results show that participants gained new understanding of the concept of sustainable fashion, circular economy principles, the characteristics and functions of water-soluble stickers, and opportunities for developing innovation-based textile decoration. The second aspect was training and practice in using water-soluble stickers. The results show that participants were able to attach water-soluble stickers correctly, create decorative motifs according to their designs, carry out the process of dissolving the medium, and complete textile decoration products well. The third aspect was the development of creative products based on innovation and sustainability. This aspect yielded several supporting outputs, namely a training module on the use of water-soluble stickers, practice-based learning media, and documentation of the activity and sample textile decoration products.

The activity evaluation used descriptive percentages based on a form completed by 4 of the 10 students who took part in the activity, and it showed an average result of 77.5%. The aspects that received relatively high ratings were ease of understanding the material, ease of following the practical instructions, ability to use water-soluble stickers, and improvement in embroidery skills. The evaluation results show a positive response, indicating that the material delivered helped participants understand the content and develop skills in textile decoration practice.

Table 1. Overall Percentage

Theme	Frequency	Percentage (%)
Score 5 (Strongly Agree)	26	40.63
Score 4 (Agreed)	24	37.50
Score 3 (Sufficient)	4	6.25
Score 2 (Disagree)	0	0
Score 1 (Strongly Disagree)	10	15.63
Total	64	100

3.2 Application of Technological Products and Innovation

The application of technological products and innovation in this activity consisted of hard technology. The hard technology applied was the water-soluble sticker, an innovative medium in textile decoration techniques. A water-soluble sticker is a water-soluble polymer sheet that serves as a temporary medium in forming textile motifs through free motion embroidery or decorative stitching techniques. After the motif arrangement is completed, the medium is dissolved in water, leaving only the thread structure that forms the decorative motif. The study by Zakiyah *et al.* (2023) shows that the water-soluble embroidery technique can transform textile waste into new value-added products through a waste-to-product approach. Meanwhile, Nurrohmah and Wahyuningsih (2024) explain that the use of the water-soluble sticker technique produces good-quality garment decoration in terms of form, structural strength, and aesthetics.



Figure 2. *water soluble sticker* (a) before contact with water and (b) after contact with water.

3.3 Increase in Students' Empowerment Level

The increase in students' empowerment was reflected in their ability to design decorative motifs and operate the water-soluble sticker application technique. Students were able to apply the material, carry out the embroidery process through to finishing, and produce decorative textile products independently. In addition, participants showed increased awareness of the importance of using materials efficiently and of managing textile waste as part of sustainable fashion practice. This is consistent with Kirkpatrick's training evaluation model, which treats improvement in knowledge and skills as one indicator of learning success (Kirkpatrick & Kirkpatrick, 2006).

In general, the indicators of increased student empowerment include improved knowledge of innovation-based textile decoration, improved technical skills in using water-soluble stickers, increased creativity in producing textile designs, and greater awareness of the concept of sustainability in fashion and textiles. Learning through direct practice gave students opportunities to explore ideas and actively produce work. This training can also improve participants' creativity and productive skills (Wahjusaputri *et al.*, 2022). Research on the development of project-based textile learning shows that project-based learning can be used to develop students' creativity through the process of designing and making textile products, including textile decoration (Nurhijrah & Israwati, 2025).



Figure 3. Implementation of the activity with participants.

Overall, the application of technology and innovation through this community service activity not only improved participants' competencies but also built a culture of innovation, creativity, and sustainability in the school environment. The technological product introduced can continue to be developed as part of skills learning and entrepreneurial activities, so that the program's benefits can be sustained after the community service activity ends. Sustainable fashion–based learning that refers to zero-waste in fashion design learning, as applied in this activity, can help raise students' awareness of using materials more efficiently to reduce textile waste (Gam & Banning, 2020). This sustainable fashion–based community service activity, which refers to zero-waste in fashion, can strengthen

awareness of the problem of textile waste and encourage the emergence of sustainable innovation (Putri *et al.*, 2024). Sustainable fashion–based learning can also support students' entrepreneurial skills, especially when supported by curriculum integration and good program management (Putri *et al.*, 2024).

4. Conclusions

The community service activity conducted at SMA Plus Putra Melati, in the form of training on the utilization of water-soluble stickers for textile decoration techniques, can help improve knowledge and skills in the decoration technique taught, which is more innovative and easier to apply. The evaluation results showed positive responses from participants, with an overall rating percentage of 77.5%, particularly for ease of understanding the material, following the practical instructions, using water-soluble stickers, and improvement in embroidery skills. Thus, the use of water-soluble stickers can be an alternative technique for learning textile decoration that supports the development of students' creativity, productive skills, and awareness of sustainable fashion principles.

For the advancement of science, the results of this activity can serve as a basis for further research on the effectiveness of applying textile decoration technology in improving students' creativity, vocational skills, and entrepreneurial readiness. Such research is expected to enrich academic studies in fashion design education, textile technology, and community service.

5. Acknowledgment and Funding Information

The authors extend their sincere gratitude to SMA Plus Putra Melati. This community service project was independently funded.

6. Conflict of Interest Declaration

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

7. Author Contribution Statement

All authors contributed equally to the conduct community service project, data analysis, and writing and preparation of this article.

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