Journal of Dedication in Community (JoDiC)
Vol. 02, Issue. 02, Page. 8 – 16
ISSN: 3026-0760

Batik Jumputan goes to Taiwan: Utilizing natural dyes to preserve local wisdom

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Article Info:
Received 9 November 2024
Revised: 10 December 2024
Accepted: 20 December 2024
Published: 28 December 2024

Keywords:
Batik Jumputan
Local wisdom
Taiwan
Community Service
NCU

ABSTRACT

This community service aims to introduce the local wisdom of Indonesia, especially typical Indonesian plants that can be used as natural dyes. The object of this activity is Indonesian students who study and live in Taiwan. In addition to introducing local wisdom, the community service team also intends to increase interest in learning science through training in making natural dyes. This workshop activity involves Indonesian students in Taiwan, which has a positive impact. Namely, they can deepen their knowledge and understanding of Indonesian culture by exploring local Indonesian plants, natural dye-making techniques, and batik Jumputan-making techniques. This activity begins with preparations, including making natural dyes from turmeric, Suji leaves, and Secang wood. After using natural dyes in yellow, red, and green, the team tried making batik Jumputan using previous natural dyes. From the preparations that have been made, the team has succeeded in making natural dyes of yellow, red, and green. It has succeeded in making a video tutorial on making batik Jumputan with natural dyes. The batik Jumputan material was brought as training material on July 5, 2024, at NCU, Taoyuan, Taiwan, with participants from PPI Taiwan members and native Taiwanese students. The training participants were enthusiastic about the activities carried out, as evidenced by the positive response to this activity.

INTRODUCTION

Indonesia is a country rich in flora and fauna. The diversity of Indonesian flora is often only seen in its beauty, but its utilization still needs to be improved. Typical Indonesian plants such as turmeric, butterfly pea flowers, and mangosteen are often used as cooking spices, herbal medicine, or medicinal drink ingredients. However, the benefits of these plants are not limited to consumption; turmeric and butterfly pea flowers are sources of natural dyes, both for food and textile dyes. With the development of the textile industry, the need for textile dyes has also increased. However, synthetic dyes have been shown to increase pollution in global waters due to their non-biodegradable nature (Varghese et al., 2023) (Rathi et al., 2023). There are several solutions to this problem, including using photocatalysts to degrade synthetic dyes and using natural dyes that are easily degraded by nature. In this community service activity, we offer the second solution: promoting the use of natural dyes derived from typical Indonesian plants. Natural coloring is one of Indonesia's cultural heritages that is increasingly relevant in the modern era, especially in environmental conservation and cultural heritage. Batik Jumputan, one form of batik known for its tie-dye technique, has the potential to be further developed with the use of natural dyes. These natural dyes are environmentally friendly and have unique colors and patterns. Unlike synthetic dyes, natural dyes are obtained from various natural sources, such as plants, leaves, fruits, and tree bark, which do not pollute the environment. Natural dyes derived from typical Indonesian plants have been widely used for coloring textiles and batik, including indigo vera leaves, jackfruit wood extract (Rosyida et al., 2013), mango leaves, and mahogany leaves (Alamsyah et al., 2020). In this community service activity, the team explored natural dyes derived from turmeric,

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Secang wood, and Suji leaves as dyes for batik Jumputan. The benefit of this community service activity is that it improves the participants' skills through training, and it can also introduce the benefits of typical Indonesian plants as local wisdom on the world stage.

Taiwan is one of the countries that have a higher education system that supports international students in studying various fields, from language, history, agriculture, and engineering to business. Many students from other countries enjoy studying in Taiwan, including students from Indonesia. Affordable higher education costs plus many scholarships offered from Taiwanese universities, especially for Masters and Doctoral levels, are a unique attraction for students from other countries. In addition to being a destination country for study, Taiwan is also one of the third destination countries for job seekers from Indonesia after Malaysia and Saudi Arabia, which causes many immigrants from Indonesia. According to Taiwan's statistics agency, there are around 250,000 Indonesians currently living in Indonesia. This makes Taiwan the right place to introduce local Indonesian wisdom and foster a love for Indonesian culture.

One of the Indonesian student organizations in Taiwan is the Indonesian Student Association (PPI) Taiwan, which has a vision as a proactive, inspiring, close, and authoritative collaboration medium (Pandawa) for students and the Indonesian community. Activities initiated by PPI Taiwan include seminars, sports, and Indonesian Cultural Day, which showcases Indonesian dance and culture. These activities aim to strengthen relations between Indonesian students in Taiwan and introduce Indonesian culture in Taiwan. In addition to routine activities carried out by Indonesian students and workers, the Physics community service team offers other activities that can cure longing for Indonesia and introduce Indonesian culture to the world. The activity initiated by the community service team from the Physics Department in collaboration with PPI Taiwan is training in making tie-dye batik using natural dyes.

METHOD

Community service activities are carried out in several stages (Figure 1), namely starting with initial coordination with PPI Taiwan to determine the schedule and targets of the activity. The next step is the preparation of activities, which include making dyes from natural materials, namely yellow from Turmeric extract, red from Secang wood, and green from Suji leaves. After the dyes are ready, a trial of making Jumputan batik is carried out using natural dyes and simple materials, such as ping pong balls and rubber, to form batik patterns. The next stage is the implementation of community service activities, which were carried out at the National Central University (NCU) campus in Taoyuan City, Taiwan, on Friday, July 5th, 2024. This activity was attended by students from Indonesia who were studying in Taiwan and several native Taiwanese students who were interested in this cross-cultural activity. After the activity took place, the training participants were given a satisfaction questionnaire to capture the impressions and expectations of the participants regarding this activity. The final stage of this activity is the evaluation of the activity in the form of an analysis of the results of the training participant satisfaction questionnaire.

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Figure 1. Stages of Community Service Implementation

IMPLEMENTATION

Before the community service activity, the Physics team conducted a trial of making natural batik dyes from turmeric rhizomes, Suji leaves, and Secang wood. To make yellow dyes from turmeric, the turmeric is peeled and washed until clean. After that, the turmeric is grated, the juice is squeezed out, and the orange turmeric juice is obtained (Figure 2). From 5 (five) pieces of turmeric, approximately 50 ml of turmeric juice will be obtained, which can be used as a yellow dye. They squeeze turmeric juice by inserting grated turmeric into a filter cloth to obtain more juice.

Figure 2. Natural dye from turmeric rhizome

Figure 3. Natural dye from Suji leave

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Figure 4. Natural dye from Secang wood

Other dyes are green dye from Suji leaves and red dye from Secang wood. First, the pandan leaves are washed until clean, then cut into small pieces and blended with the addition of sufficient water. The results of the blender are then filtered with a cloth filter, and the green pandan leaf extract is obtained (Figure 3). From 250 grams of pandan leaves, 200 ml of green dye will be obtained. Getting red dye from Secang wood is easy: shaved Secang wood is given sufficient water and boiled until boiling. The boiled water from the Secang wood skin is red and ready to be used as a natural dye (Figure 4).

The next step in preparing for community service is making a sample of jumputan batik using natural dyes. The natural dyes made have been proven to be used as jumputan batik dyes. The best color is yellow from turmeric. While the red color of Secang wood is not very visible, this can be caused by the water used to boil second being too much or the soaking time needing longer. The green color of the Suji leaves looks thick; the coloring with Suji leaf water is simply layered using a brush, and the green color immediately sticks to the fabric (**Figure 5**).

Figure 5. Results of trials of Jumputan batik using natural dyes

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RESULT AND DISCUSSION

The workshop started at 13:00 Taiwan time, starting with an initial narrative related to Indonesian batik; the activity then continued with the main event, namely a workshop on making tie-dye batik using natural dyes. The workshop participants included Indonesian students studying at NCU and several students from Taiwan who were interested in joining this event. During the workshop, the participants were enthusiastic about trying to make tie-dye batik themselves (Figure 6). In addition, the participants also asked many questions about the process of making natural dyes and asked if other materials could be used to make natural dyes. After the participants finished making Jumputan batik while waiting for the batik to dry, the participants were asked to fill out a questionnaire related to today's workshop event. There are 20 statements given for the participant questionnaire are as follows (Table 1). The 20 statements are divided into 3 categories, namely statements related to the implementation of activities, statements related to the benefits of activities, and statements related to the results obtained by participants. Questionnaire response analysis using a Likert scale, where participants assess their level of agreement with a particular statement (Boone, 2012).

Figure 6. PPI Taiwan's Jumputan batik making workshop

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Tabel 1. The questionnaire statements

No	Statements
1	Information about this activity was well communicated before the activity took place.
2	The venue and facilities used during the activity are adequate.
3	The facilitators and speakers in this activity are competent.
4	The duration of this activity is suitable for the needs of the participants.
5	The presentation of the material during this activity is easy to understand.
6	The material provided during this activity is relevant to the theme.
7	The training and workshops held during this activity are beneficial.
8	This activity helps me understand the techniques of making batik with natural dyes.
9	This activity increases my knowledge about batik as a cultural identity of Indonesia.
10	This activity provides a deeper understanding of the history and philosophy of batik.
11	This activity enriches my knowledge of Indonesian culture.
12	I feel proud to wear batik after participating in this activity.
13	I feel that this activity strengthens the relationships among Indonesian students in Taiwan.
14	I feel motivated to promote batik after this activity.
15	I feel that this activity teaches the cultural values of Indonesia well.
16	I feel that I gained valuable new experiences from this activity.
17	I am interested in participating in similar activities in the future.
18	I recommend this activity to my friends.
19	I feel that this activity provides a positive contribution to the Indonesian student community in Taiwan.
20	I feel that this activity has achieved its intended goals.

The questionnaire results found that the participants' responses to this workshop were generally very positive. Most participants agreed with the statements, and only a few responded neutrally. In the statement related to the implementation of the workshop (Figure 7), all participants agreed with the statement given. The highest strongly agreed opinion was obtained in statements number 2, 6, and 7. The participants strongly agreed that this activity had adequate facilities, the explanation of this activity was very easy to understand, and they felt that this activity provided benefits to them. Besides that, participants felt that the time of the workshop was suitable for them and the facilitators in this workshop were very competent.

The benefits felt by participants in this activity are given in statements 8 to 11 (Figure 8). The responses "Strongly Agree" (orange) and "Agree" (green) dominate throughout the statements, indicating the tendency of respondents to agree or strongly agree with these statements. Statements 8, 9, and 10 have a more excellent "Strongly agree" response than "Agree," which are 66.1%, 55.6%' and 66.7%, respectively. While in statement 11, there is a balanced response between "Strongly Agree" and "Agree." In statement 10, a significant percentage of "Neutral" (purple) is 11.1%. This indicates that some respondents are neutral or do not firmly believe the statement. The statement ”This activity provides a deeper understanding of the history and philosophy of batik” received a neutral response, which means that not all respondents gained experience or a deep understanding of Jumputan Batik.

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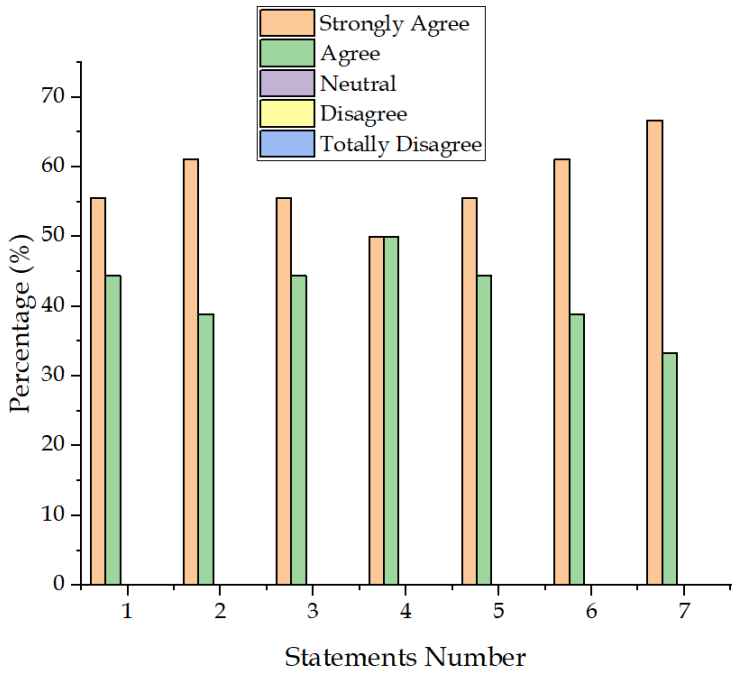

Figure 7. Participants' opinions on statements related to the community service's implementation

The participants' feelings after this workshop activity were measured by their responses to statements 12 to 20 (Figure 9). It can be seen that statements number 12 to 17 have a more significant "Strongly Agree" response than the "Agree" response, so it can be said that the majority of respondents to these statements. for statement number 18, the "Agree" response is greater than the "Strongly Agree" response, which states that participants do not have strong feelings towards the statement. Statements 16 and 20 have a "Neutral" response of 5.6%; it can be said that the statements are more moderate or not as strong as other statements. Of all the statements, no negative responses were received in the form of disagree or totally disagree. All responses received were very positive.

For the three statements that received a neutral response, namely regarding participants' understanding of Jumputan batik, valuable new experiences for participants, and the achievement of the objectives of this activity, the Physics community service team will make better preparations for the next activity. With this excellent response, this activity can be carried out again in another place with better preparation.

In general, the response obtained from this activity was excellent. The participants were very enthusiastic about making Jumputan batik from natural materials. They asked many questions regarding natural materials that can be used as dyes besides turmeric, Suji leaves, and Secang wood. In this activity of making Jumputan batik, participants were free to create batik patterns and colors. This is based on several community service results that have been carried out previously, which show that activity can increase the creativity of participants (Purnaningrum, 2019). In addition to increasing the creativity of participants, this activity can also introduce and preserve native Indonesian culture (Nurvidia, et al, 2024).

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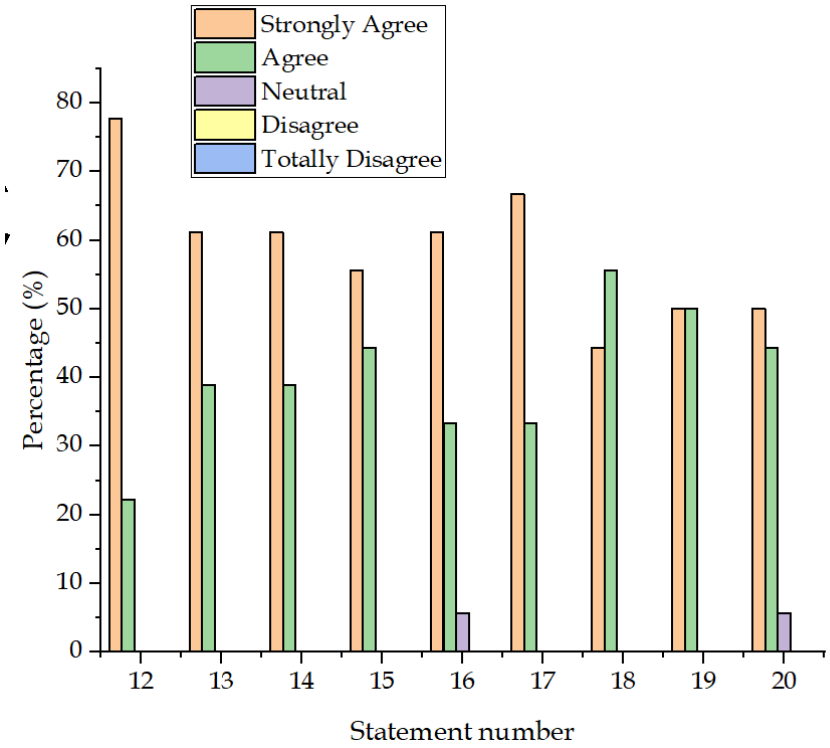

Figure 9. Participants' opinions on statements related to the result obtained

CONCLUSION

In this community service activity, the Physics team successfully introduced Jumputan batik with natural dyes to Indonesian students in Taiwan. The participants gave a very positive response to the Jumputan batik-making workshop with natural dyes. This activity has been proven to increase participants' creativity while preserving Indonesian culture in Taiwan. This activity can be carried out elsewhere to spread the public's understanding of Jumputan batik and increase love for Indonesian culture.

ACKNOWLEDGMENT

The author would like to thank the Faculty of Mathematics and Natural Sciences, Unesa, for the funding that has been received so that this community service activity can run well.

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