

Uniting cultures and promoting sustainable education: Batik diplomacy for Indonesian students in Taiwan to Support the SDGs

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Abstract. This study focuses on how batik diplomacy, as an ethnoscience approach, impacts Indonesian students' knowledge, cultural appreciation, sustainable engagement, and cultural identity in Taiwan. The research used a mixed-method design, combining quantitative and qualitative methodologies to ensure thorough analysis. Data was gathered through a survey completed by 35 Indonesian students in Taiwan for quantitative analysis and through individual interviews with five selected participants for qualitative insights. The findings reveal that participation in the program significantly increased knowledge of batik, improved appreciation for Indonesian culture, and fostered sustainable engagement. The interviews showed that students felt a heightened sense of pride in their culture and became more active in preserving traditional plant species. The study demonstrates that integrating batik diplomacy with ethnoscience-based education supports sustainable development and helps Indonesian students in Taiwan work towards achieving the Sustainable Development Goals (SDGs).

1. Introduction

The United Nations Agenda 2030 (Sustainable et al. - SDG) recognizes the value of culture as a foundation for achieving sustainable development. However, cultural empowerment is necessary for this goal. Globalization has brought to light the significance of cultural diplomacy in enhancing soft power and connecting global relationships with local values [1]. Indonesia, known for its diverse cultural heritage, particularly its iconic batik art, has great potential for cultural diplomacy. Batik, recognized by UNESCO as an intangible cultural treasure, represents the national identity and is an essential tool for sustainable education [2]. In the face of globalization, promoting batik through cultural diplomacy can contribute to achieving SDGs, especially in education and cultural conservation.

However, an effort must be made to incorporate the local culture, particularly batik, into the formal education of Indonesian students studying abroad, specifically in Taiwan. These students must acquire knowledge and appreciation of their culture, which could potentially lead them to overlook their own identity, resulting in decreased involvement in Sustainable

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Development Goals (SDGs), particularly Goal 4 - Quality Education and Goal 11 - Cultural Preservation [3, 4]. Alternatively, students may feel disconnected from the culture and disengage from sustainable campus activities. This issue is exacerbated by the lack of educational programs that integrate cultural and sustainable elements to provide a comprehensive understanding of the importance of conserving cultural heritage from an international perspective. Focusing solely on academic education may result in overlooking the connection between sustainability and cultural values. Therefore, local cultures like batik should be incorporated into daily learning in the curriculum and educational programs.

Ethnoscience



Fig. 1. Ethnoscience in Batik Diplomacy

Previous publications have explored the role of cultural diplomacy in promoting sustainable education. For example, a study by Rahmawati et al. [5] emphasized the importance of integrating local culture into educational curricula to enhance students' cultural awareness and appreciation. The literature suggests that incorporating culture into formal education can provide a broader understanding of the reasons for preserving global history. Similarly, according to Zheng et al. [6], cultural exchange programs can help promote intercultural understanding and contribute to achieving Sustainable Development Goals (SDGs). Additionally, Pavluković et al. [7] found that culture-based activities like workshops and festivals can enhance students' respect for local culture and support contextual learning. These findings suggest that educators should incorporate culture into physical activities and interactive tasks to engage learners and deepen their experience of cultural values effectively.

Furthermore, collaboration between educational institutions and cultural communities can facilitate cultural and diplomatic processes, contributing to educational sustainability [8].

Only a few studies have explored the use of batik in cultural diplomacy within international continuing education. This research aims to address this gap by examining the potential of batik diplomacy to create sustainable educational opportunities for Indonesian students in Taiwan. The study seeks to contribute to academic scholarship and offer insights into cultural-centred educational programs. The research aims to understand how batik diplomacy can effectively facilitate connections and define the potential achievements of Indonesian students studying in Taiwan. It introduces a fresh perspective on utilizing batik as a soft power tool to promote Indonesian culture, sustainable education, and the advancement of the Sustainable Development Goals (SDGs). Furthermore, the study will explore how culture-centered activities, such as batik workshops, impact students' comprehension and involvement in sustainability initiatives.

This study highlights the importance of concepts such as ethnoscience. Education can reintroduce a natural and intuitive understanding of the world based on traditional or ethnoscience – viewing science through a specific culture's media and written history. Students can learn the scientific aspects of batik-making through an ethnoscience approach, such as dye chemistry using natural materials and fabric processing techniques. This enables a deeper understanding of how culture and scientific knowledge interact. Additionally, this approach helps students appreciate the role of science in their cultural heritage, which can boost their motivation to learn.

This study is expected to have a significant contribution to achieving the Sustainable Development Goals (SDGs) through culture and education. Therefore, its findings are relevant for informing scholarly discussions on improving education policy designs in countries like Taiwan and many other countries concerned with equity and sustainable development. Indeed, the use of cultural diplomacy and ethnoscience paradigms to connect culture and sustainable education underscores the importance of this study.

2. Research Methods

This study uses a mixed methods design that combines quantitative and qualitative approaches [9]. The article presents a comprehensive overview of how the batik diplomacy program impacts Indonesian students in Taiwan, focusing on their knowledge, cultural appreciation, engagement in sustainable activities, and sense of identity. The study contains four themes within each domain. Data was collected through questionnaires from a diverse group of participants, and in-depth interviews were conducted further to explore the experiences and views of the participants. In total, 35 Indonesian students from various universities in Taiwan were involved in the study. The participants were selected based on purposive sampling to ensure their backgrounds and experiences were closely related to the research topic. The respondents were part of the batik diplomacy program organized by Indonesian students in Taiwan, which included batik-making workshops, classes on the history of Indonesian batik design, and discussions on sustainability and ethnoscience.

This study gathered information about the audience's knowledge, cultural appreciation, sustainable activities, and understanding of ethnoscience using a five-question closed-ended questionnaire. Participants answered these questions before and after participating in intercession programs. Their level of agreement with the statements was measured on a 5-point Likert scale. This study also conducted in-depth interviews with five randomly selected participants to understand their experiences, beliefs, and sentiments in the batik diplomacy program. To analyse the quantitative data, this study used descriptive statistics to measure changes in knowledge, cultural appreciation, sustained engagement, and ethnoscience understanding. It compared the mean scores before and after the program was implemented.

The qualitative data from the interviews was also thematically analyzed to identify central themes. This study then analyzed the combined data set to gain a holistic understanding of the impact of the batik diplomacy program on Indonesian students in Taiwan. Finally, we related our results to findings from previous studies.

3. Results and Discussion

This study investigates the significance of batik diplomacy among Indonesian students in Taiwan and how it may influence their future involvement and pursuit of higher education. The research used a mixed methods approach, combining questionnaires and interviews with program participants. 35 Indonesian students in Taiwan completed the questionnaire, which included six items related to their knowledge of batik, cultural appreciation, and participation in sustainable activities associated with the concept of ethnoscience. Here are the results:

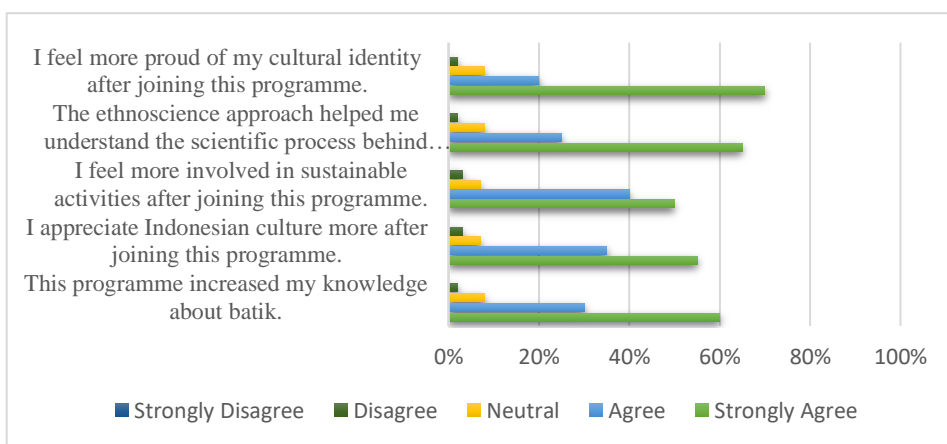


Fig. 2. Participants' Response to Questionnaires

Besides the questionnaire, five participants underwent in-depth interviews to amplify the experiences and perceptions of the program by its recipients. Here, we highlight some parts of the interviews:

Table 1. Interview data

Theme	Participant Quote
Knowledge Enhance	"I had very little knowledge of how to make batik before I started the programme. Only then did I grasp how intricate and fascinating the process was."
Culture Appreciation	"This program has left me understanding just how important it is for us to protect our society. It reinforced the pride of Indonesia's cultural heritage."
Active participation in sustainability	"After I joined this program, I am reminded to be more responsible for my action towards sustainability and try to find the resources that support SDGs."
Ethnoscience understanding	"The ethnoscience approach taught in this programme helped me see the relationship between culture and science in an interesting and simple form."
Connection to Cultural Identity	"I feel more connected as an Indonesian, even though I reside in a foreign country."

This study focuses on Indonesian Batik students' knowledge and cultural appreciation in Taiwan. It also explores their involvement in sustainable activities, aiming to understand the

ethnoscience concepts of the selected groups. According to a survey of 35 students which are 30 Indonesians and 5 Taiwanese, 90% felt that the program increased their awareness of batik. This finding aligns with previous research conducted by others. Additionally, it is consistent with the research of Kurpis and Hunter [10], which demonstrated the enhancement of cultural knowledge and awareness among students through cultural education.

Up to 90% of participants also said they valued Indonesian culture more after the program. This supports the study by Eichler [11], which has long taught that participating in cultural programs can raise awareness and help people take pride in their cultural heritage. This increased cultural appreciation is crucial for preserving culture while living in the diaspora. Additionally, 90% of the respondents indicated they had become more involved in sustainability-related activities through participation [12]. Furthermore, this educational program can promote participation in activities that contribute to the Sustainable Development Goals (SDGs). As global environmental problems are becoming more severe, this sustainability consciousness is significant.

Positive feedback was received regarding the ethnoscience method's use in this program. Ninety per cent of the participants agreed that it helped them learn the scientific process of batik making. Puspita et al. [13] also reported similar findings, suggesting that ethnoscience could be a powerful tool for teaching scientific concepts with cultural context, making it easier for students to understand. The interview data showed that students felt more incredible pride in their cultural identity after participating in the batik diplomacy program. This aligns with research by Xiao et al. [14], which demonstrates that cultural activities can strengthen national identity and boost pride in heritage. An increased sense of pride and national identity is essential in today's globalized world, where outside influences are strong. Furthermore, the findings suggest that using batik as a cultural diplomacy approach can create an innovative model for ongoing education.

A study by [5] found that when education integrates culture and sustainability, it cultivates a more conscious generation of their environment and cultural heritage. These findings contribute valuable empirical insights into the intersection of language and education, which is crucial for achieving Sustainable Development Goals (SDGs). This study also demonstrates that ethnoscience can enhance students' understanding of scientific concepts and their connection to culture. This aligns with a study by [13], which showed that ethnoscience can help students engage with scientifically relevant, locally significant, and globally important content. While a scientific explanation may not fully capture what learners see or experience, it can provide a basis for understanding the rich cultural heritage developed over centuries. Furthermore, this study highlights that cultural diplomacy utilizing batik can promote stronger international relations in the context of globalization. Cultural diplomacy can improve understanding and foster better relations between nations. For example, introducing batik in Taiwan has encouraged lifelong learning and strengthened cultural ties between Indonesia and Taiwan.

The Batik diplomacy program emphasizes that cultural education can improve student engagement in addressing sustainable issues. Research by [15] suggests that education incorporating globalization and cultural preservation can increase the concern and involvement of future citizens in environmental conservation. These findings demonstrate that a cultural diplomacy approach through batik can enhance students' sustainability awareness. This study contributes to the existing academic literature on cultural diplomacy and sustainability education with its findings, expanding on previous research. Therefore, by integrating batik aesthetics and ethnoscience into education, we can make innovative and effective strides towards achieving Sustainable Development Goals [17]. This approach brings a fresh perspective to the table.

Regardless of its validity, using batik as a tool for cultural diplomacy can engage Indonesian students studying abroad in pursuing a better education, reinforcing their roles,

and establishing reliable routes toward achieving the United Nations' sustainable development goals. The program aims to enhance cultural awareness and appreciation, bolster a sense of identity, and promote involvement in sustainability-related issues.

4. Conclusion

The program was found to have a positive impact after analyzing 35 student surveys and conducting in-depth interviews with five participants. Ninety per cent of the participants believed the program to be effective, and it used the ethnoscience approach to enhance their understanding of scientific process skills related to craftsmanship. Additionally, respondents reported feeling more incredible pride in their Indonesian heritage and more connected to their local culture despite living far away. This research contributes to achieving the Sustainable Development Goals (SDGs), specifically SDG 4: Quality Education and SDG 11: Sustainable Cities & Communities. The program aims to educate people about other cultures and foster appreciation for local traditions, promoting inclusive education. Moreover, besides increasing student involvement in sustainable activities, the program supports global efforts to create more sustainable and eco-friendly communities.

However, this study has certain limitations. These include the relatively small sample size and the potential for a restricted context effect. This may make it challenging to generalize this result for students from backgrounds other than those in Indonesia seeking further information. Furthermore, without complete analysis, our evaluation primarily focused on knowledge and attitude instead of behaviour change. Future research should expand the pool of Indonesian students to include those from other countries. However, it is also important to consider whether these results hold across Indonesia. Long-term studies are essential to determine if these programs have a lasting effect. Future research should also investigate behaviour changes resulting from increased cultural knowledge, appreciation, and engagement in sustainable activities. This would enable the continuous development and enhancement of cultural diplomacy programs further to support the attainment of the Sustainable Development Goals.

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