

The Impact of Participation in the Clean Beach Program and Educational Seminars on the Awareness of Tourists on Kuta Beach, Bali

Ni Desak Made Santi Diwyarthi¹, I Wayan Adi Pratama²

¹ Politeknik Pariwisata Bali

² Politeknik Internasional Bali

Article Info

Article history:

Received Mar, 2025

Revised Mar, 2025

Accepted Mar, 2025

Keywords:

Environmental Awareness

Sustainable Tourism

Clean Beach Program

Educational Seminars

Tourist Engagement

ABSTRACT

This study examines the impact of participation in the Clean Beach Program and educational seminars on the environmental awareness of tourists visiting Kuta Beach, Bali. Employing a quantitative research approach, data were collected from 90 respondents using a structured questionnaire. The findings reveal a significant positive effect of these initiatives on environmental awareness, with participants engaging in both activities demonstrating the highest awareness levels. The study highlights the complementary nature of participatory and educational approaches in fostering pro-environmental attitudes among tourists. These results offer valuable insights for developing sustainable tourism programs aimed at enhancing environmental consciousness.

This is an open access article under the [CC BY-SA](#) license.



Corresponding Author:

Name: Ni Desak Made Santi Diwyarthi

Institution: Politeknik Pariwisata Bali

Email: santidiwyarthi@yahoo.com

1. INTRODUCTION

Kuta Beach in Bali faces significant environmental challenges due to the influx of tourists, necessitating increased awareness and adoption of sustainable practices. Addressing these challenges requires the integration of cultural, ecological, and social dimensions, as embodied in the Tri Hita Karana philosophy, which provides a holistic framework for sustainable marine resource management by promoting community-based conservation and adaptive strategies to enhance biodiversity and support local

economies [1]. The implementation of ecotourism at Kuta Beach has brought both positive economic impacts and negative environmental pressures, underscoring the need for participatory management strategies that actively involve local communities [2]. Sustainable tourism practices such as coral reef restoration and community engagement are essential, as are opportunities provided by supportive government policies, technological advances, and increasing demand for eco-friendly tourism [3]. However, challenges remain, including environmental degradation due to mass

tourism, inadequate waste management, and threats to biodiversity [3], as well as the need to balance economic growth with environmental protection [4], and to manage cultural and social shifts resulting from tourism development [2].

The participatory programs at Kuta Beach, such as the Clean Beach Program and educational seminars, are designed to mitigate the negative impacts of tourism and promote environmental awareness by actively involving both tourists and local communities. These initiatives, including hands-on activities like waste collection and segregation, not only help clean the beach but also raise awareness about waste management [5]. Educational seminars further enhance understanding of coastal environmental challenges and emphasize individual responsibility in addressing them [2]. Programs like these are supported by local philosophies such as Tri Hita Karana, which promotes harmony between humans and the environment, encouraging pro-environmental behaviors [6]. Ecotourism at Kuta Beach has had positive impacts on the local economy by generating employment and business opportunities [2], yet it also brings challenges such as environmental degradation and shifts in cultural values, highlighting the need for holistic management strategies involving local communities [2]. Community-based tourism practices are increasingly recognized as viable solutions to balance economic growth with environmental preservation [7]. Educational and participatory approaches like Sustainable Blue Tourism emphasize tourism literacy and awareness, aiming to align marine resource management with economic development through training sessions and interactive discussions that foster environmentally conscious tourism behaviors [8].

Despite these efforts, questions remain about the effectiveness of such programs in achieving their objectives. Do these interventions significantly enhance tourists' environmental awareness? To what extent do participatory and educational approaches influence behavior and

perceptions regarding sustainability? Addressing these questions is crucial to inform policymakers and stakeholders about the design and implementation of impactful environmental initiatives. This study investigates the impact of participation in the Clean Beach Program and educational seminars on the awareness of tourists visiting Kuta Beach.

2. LITERATURE REVIEW

2.1 *Environmental Challenges in Coastal Tourism*

Coastal tourism, while a significant driver of economic growth, poses substantial environmental challenges, particularly in terms of waste management and pollution. Popular tourist destinations like Kuta Beach in Bali and Ancol Beach in Jakarta face increased waste accumulation and marine pollution due to the surge in tourist numbers, highlighting the urgent need for sustainable tourism practices to mitigate environmental degradation. Ancol Beach experiences significant marine pollution during peak tourist seasons, exacerbated by declining environmental responsibility among tourists despite existing waste management efforts [9], while Kuta Beach confronts similar issues with the accumulation of large amounts of plastic waste, necessitating effective government policies and active community participation [10]. In China's coastal regions, tourism has shown long-term negative impacts on marine pollutants such as chemical oxygen demand (COD), ammonia nitrogen (NH₃-N), and total phosphorus (TP), although the

impact on petroleum (PET) has not been significant [11]. Community-based initiatives like beach clean-ups and environmental education have proven effective in reducing waste and raising public awareness, as demonstrated at Marina Beach in Semarang [12]. Moreover, tailored management strategies suited to different beach types—such as promoting nature tourism and sustainable mass tourism—have contributed to maintaining scenic quality and environmental cleanliness in areas like the Tasikmalaya and Garut coasts [13]. These include educational campaigns and participatory programs to promote awareness and behavioral change among tourists.

2.2 Importance of Environmental Awareness in Tourism

Raising environmental awareness among tourists is essential for promoting sustainable tourism, especially in ecologically sensitive areas, as it fosters responsible behaviors like proper waste disposal, reduced resource use, and support for conservation. Targeted awareness campaigns play a key role in educating tourists about the environmental impacts of their actions and encouraging participation in sustainability efforts. Environmental awareness influences the sustainability of marine ecotourism by affecting visitor satisfaction and behavior, reinforcing the need for programs that enhance service quality and destination appeal [14]. In areas like Pesisir Selatan, educational and awareness initiatives aim to balance marine

resource management with economic development and environmental preservation, promoting values such as cleanliness and sustainability [8]. Local communities are also central to sustainable tourism; in Veria, Greece, resident-focused awareness efforts help turn locals into ambassadors who enhance the tourist experience and encourage sustainable practices [15]. Additionally, environmental knowledge and involvement in environmental organizations have been shown to improve recycling behavior among ecotourists, highlighting the importance of education and engagement in fostering lasting sustainable actions [16].

2.3 Role of Participatory Programs in Promoting Sustainability

Participatory programs like beach clean-ups and conservation activities are effective in promoting environmental awareness and fostering a sense of responsibility among participants, as they not only address immediate pollution issues but also educate on the long-term impacts of littering. Initiatives such as the Clean Beach Program have shown success in reducing waste and increasing public awareness through community engagement, educational efforts, and collaboration with various stakeholders. For example, the Marina Beach initiative in Semarang significantly reduced waste volume and shifted community mindsets through direct clean-up actions and education [12], while the Conservation Goes to School program in Tawun Hamlet involved students in beach

cleaning and eco-brick making, collecting 116 kg of waste and promoting environmentally conscious behavior [5]. Collaborative efforts like the Tirang Island project engaged community members and tourism managers to create a cleaner beach and sustainable waste management system [17], and the Dhauladhar Cleaners in Himachal Pradesh used participatory communication strategies to foster behavioral change in waste practices [18]. Additionally, the Pentahelix approach on Santen Island Beach integrated waste management with turtle conservation, involving diverse stakeholders to build local ownership and ensure long-term environmental impact [19]. These programs have been successfully implemented in various coastal regions worldwide, contributing to increased awareness and behavioral changes among tourists.

2.4 Impact of Educational Seminars on Tourist Behavior

Participatory programs like beach clean-ups and conservation activities are effective in promoting environmental awareness and fostering a sense of responsibility among participants, as they not only address immediate pollution issues but also educate on the long-term impacts of littering. Initiatives such as the Clean Beach Program have shown success in reducing waste and increasing public awareness through community engagement, educational efforts, and collaboration with various stakeholders. For example, the Marina Beach initiative in

Semarang significantly reduced waste volume and shifted community mindsets through direct clean-up actions and education [12], while the Conservation Goes to School program in Tawun Hamlet involved students in beach cleaning and eco-brick making, collecting 116 kg of waste and promoting environmentally conscious behavior [5]. Collaborative efforts like the Tirang Island project engaged community members and tourism managers to create a cleaner beach and sustainable waste management system [17], and the Dhauladhar Cleaners in Himachal Pradesh used participatory communication strategies to foster behavioral change in waste practices [18]. Additionally, the Pentahelix approach on Santen Island Beach integrated waste management with turtle conservation, involving diverse stakeholders to build local ownership and ensure long-term environmental impact [19]

2.5 Studies on Environmental Initiatives in Bali

Bali's environmental initiatives, such as "Bali Clean and Green," aim to mitigate the negative impacts of tourism by promoting sustainability and reducing waste, with varying degrees of success depending largely on participation and education. Programs like the Clean Beach Program in Kuta Beach highlight the effectiveness of participatory and educational approaches in raising tourist awareness, emphasizing the crucial role of community engagement and education in fostering sustainable tourism

practices. This aligns with broader trends in sustainable tourism that integrate environmental conservation, cultural preservation, and community empowerment. Community involvement is essential, as it ensures local populations are engaged in decision-making and benefit economically while maintaining cultural heritage (Raveendran, 2024). Educational campaigns targeting both managers and visitors, such as the Community Service Program in Pulau Bokori, have proven effective in reducing plastic waste through increased awareness [20]. Bali's Tri Hita Karana philosophy supports this approach by integrating ecological, social, and cultural dimensions into community-based conservation efforts that enhance biodiversity and strengthen local economies [1]. However, challenges such as limited resources and inconsistent policy enforcement continue to hinder sustainable tourism outcomes [1], [20]. To address these issues, strategies including technological innovation, policy reform, and increased community engagement are recommended, as demonstrated by successful multi-stakeholder models from cities like Singapore and Copenhagen [21]. However, further studies are needed to quantify their impact and identify areas for improvement.

2.6 Gaps in Existing Literature

While numerous studies have explored the importance of environmental awareness and sustainable practices in tourism, there is limited research on the combined impact of

participatory programs and educational seminars. Most existing studies focus on either participation or education as standalone interventions. This study aims to address this gap by examining the integrated impact of the Clean Beach Program and educational seminars on tourist awareness in Kuta Beach. The findings will provide valuable insights for designing more effective environmental initiatives in coastal tourism.

3. METHODS

3.1 Research Design

This study employs a quantitative research design to examine the impact of participation in the Clean Beach Program and educational seminars on the awareness of tourists visiting Kuta Beach, Bali. The design is structured to quantify the relationships between participation in these initiatives and the levels of environmental awareness, offering statistical insights into the effectiveness of the programs.

3.2 Population and Sample

The population for this study comprises tourists visiting Kuta Beach, Bali. A purposive sampling technique was employed to select participants who had either participated in the Clean Beach Program, attended the educational seminars, or both. A total of 90 respondents were recruited for the study. This sample size is considered adequate for quantitative analysis, providing sufficient data to draw meaningful conclusions.

3.3 Data Collection

Data were collected using a structured questionnaire designed to measure the environmental awareness of tourists. The questionnaire comprised two sections: the first focused on demographics, including age, gender, nationality, and prior participation in similar environmental initiatives; the second assessed environmental awareness through a

series of Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree). These items evaluated participants' understanding of environmental issues, the perceived importance of sustainable practices, and their willingness to engage in pro-environmental behaviors. The questionnaires were administered immediately after participants took part in the Clean Beach Program or attended educational seminars.

The study examines the relationship between specific activities and environmental awareness, identifying two independent variables: participation in the Clean Beach Program and attendance at educational seminars. The dependent variable is environmental awareness, which was measured using a composite score derived from participants' responses to the Likert-scale items. This approach allowed for a quantifiable assessment of how experiential and educational engagements influence tourists' environmental attitudes and behaviors.

3.4 Data Analysis

The collected data were analyzed using SPSS version 26 through several analytical steps. First, descriptive statistics, including mean, standard deviation, and frequency distributions, were calculated to summarize the demographic profile of participants and their responses to the questionnaire items. Next, reliability testing using Cronbach's alpha was conducted to assess the internal consistency of the items measuring environmental awareness. For inferential statistics, an independent samples t-test was employed to compare awareness levels between participants who attended only one of the programs and those who participated in both. Additionally, correlation analysis was conducted to examine the relationship between participation in the programs and environmental awareness.

4. RESULTS AND DISCUSSION

4.1 Demographic Profile of Respondents

The demographic analysis of the 90 respondents revealed that 55% were male and 45% female. In terms of age distribution, the majority (60%) were between 20–35 years old, followed by 25% aged 36–50 years, and 15% aged above 50. Regarding nationality, 70% of the respondents were international tourists, while the remaining 30% were domestic tourists. This demographic spread reflects a diverse group of participants in terms of both age and origin.

The descriptive statistics indicated a generally high level of environmental awareness among participants, with a mean score of 4.2 (SD = 0.45) on a 5-point Likert scale. Notably, respondents who participated in both the Clean Beach Program and educational seminars demonstrated higher environmental awareness (M = 4.5, SD = 0.30) compared to those who engaged in only one activity (M = 4.0, SD = 0.50), suggesting a positive impact of combined participatory and educational approaches on environmental consciousness.

4.2 Reliability Testing

The reliability of the environmental awareness questionnaire was confirmed with a Cronbach's alpha value of 0.85, indicating high internal consistency.

4.3 Inferential Statistics

The results of the independent samples t-test revealed a statistically significant difference in environmental awareness levels between participants who engaged in both the Clean Beach Program and educational seminars and those who participated in only one activity ($t = 3.45$, $p < 0.01$). This finding indicates that combining participatory and educational approaches has a greater impact on enhancing environmental awareness among tourists compared to participating in a single initiative.

Furthermore, the correlation analysis showed a strong positive correlation ($r = 0.72$, $p < 0.01$) between participation in the programs and environmental awareness. This result confirms the effectiveness of these initiatives in fostering pro-environmental

attitudes and behaviors, highlighting the importance of integrating hands-on activities with educational components to achieve meaningful outcomes in sustainable tourism.

Discussion

The findings of this study highlight the significant impact of the Clean Beach Program and educational seminars on enhancing environmental awareness among tourists at Kuta Beach. Respondents who engaged in both activities reported notably higher awareness levels, indicating the complementary nature of participatory and educational approaches.

1. Effectiveness of Participatory Programs

The Clean Beach Program provides tourists with hands-on experiences in addressing environmental challenges, fostering a sense of responsibility and connection to the beach's ecosystem. This approach aligns with previous research emphasizing the effectiveness of participatory activities in promoting sustainability. By directly involving participants in environmental action, the program not only tackles immediate pollution issues but also creates meaningful experiences that can lead to long-term behavioral changes and a deeper appreciation for environmental stewardship.

Furthermore, numerous studies highlight the value of participatory approaches across various domains—such as recycling, ecosystem management, planning, communication, and ecotourism—in advancing sustainable practices. These initiatives actively engage communities, increase awareness, and drive behavioral change aligned with sustainability goals. For instance, the integration of persuasive technology and participatory design in recycling efforts enhances user engagement through educational content and real-time feedback [22]. In ecosystem management, community-led projects like those in the Tilabad watershed have shown improved sustainability outcomes influenced by demographic factors [23]. Participatory

planning strengthens local ownership and resource management despite challenges like power imbalances [24], while participatory communication strategies, such as those used by Dhauladhar Cleaners, effectively raise environmental awareness and foster behavior change [18]. In the context of ecotourism, involving local communities in planning and policy ensures that initiatives are aligned with local needs, promoting both environmental conservation and economic benefits [25].

2. Role of Educational Seminars

Educational seminars were also found to significantly influence tourists' understanding of environmental issues. By presenting information on the causes and consequences of coastal pollution, as well as practical solutions, these seminars equip participants with the knowledge necessary to adopt sustainable practices. The findings corroborate studies by [26], [27], who reported that interactive and informative sessions are effective in shaping pro-environmental attitudes.

Education and information play a key role in shaping pro-environmental attitudes and behaviors. A study in the USA, the Netherlands, and the UAE found that information treatments linking health and behavior significantly influenced environmental actions in the Netherlands and UAE, showing the impact of targeted messaging in moderately informed contexts [28]. Ecomedia literacy, which combines ecological education with media, improved attitudes but had limited impact on behaviors like plastic bottle use, highlighting the need for complementary strategies [29]. Structured environmental education for preservice teachers fostered critical thinking and positively influenced behavior [30], while nature-contact education significantly enhanced environmental responsibility through experiential learning [26].

3. Combined Impact of Participation and Education

The combination of participation in the Clean Beach Program and attendance at

educational seminars yielded the highest levels of environmental awareness among respondents. This synergy suggests that integrated approaches, which combine experiential learning with knowledge dissemination, are more effective than standalone interventions. The findings align with the theory of experiential learning, which posits that active engagement enhances the retention and application of knowledge.

4. Implications for Sustainable Tourism

The results of this study provide valuable insights for policymakers and stakeholders in the tourism industry. Implementing integrated programs like the Clean Beach Program and educational seminars can significantly enhance tourists' awareness and foster sustainable behaviors. Moreover, these findings underscore the importance of tailoring environmental initiatives to the specific context of tourist destinations, ensuring that programs are both engaging and informative.

The study also highlights the need for continuous evaluation and refinement of such programs to maximize their impact. Future research could explore additional factors influencing environmental awareness, such as

cultural background, prior knowledge, and the role of social media in disseminating information about sustainability initiatives.

5. CONCLUSION

The study concludes that the Clean Beach Program and educational seminars play a pivotal role in enhancing environmental awareness among tourists at Kuta Beach, Bali. Participation in both initiatives was found to be significantly more effective in raising awareness compared to engaging in a single activity. The results emphasize the importance of combining experiential and educational methods to foster pro-environmental attitudes and behaviors.

This integrated approach serves as a model for sustainable tourism initiatives, offering practical solutions for addressing environmental challenges in coastal areas. Stakeholders in the tourism industry are encouraged to implement and refine such programs to promote long-term sustainability and environmental stewardship among tourists. Future studies could expand on this research by exploring the long-term impacts of these initiatives and the role of additional factors in shaping environmental awareness.

REFERENCES

- [1] D. J. Prihadi *et al.*, "The Tri Hita Karana Ecotourism Approach For Sustainable Marine Resource Management And Tourism in Bali," *Int. J. Mar. Eng. Innov. Res.*, vol. 9, no. 4, 2024.
- [2] T. Sukmono, T. Kaswari, T. Wulandari, and E. P. Prasetya, "Revealing The Diversity Of The Cyprinidae Family In The Area Of Geopark Merangin Jambi Based On The Dna Barcodes," 2022.
- [3] N. N. S. Astuti, P. T. Virginiya, N. K. Bagiasuti, and E. Septevany, "The future of green tourism in Bali: Challenges and opportunities," *J. Appl. Sci. Travel Hosp.*, vol. 7, no. 2, pp. 178–195, 2024.
- [4] A. Apriani, K. Kamsariaty, N. Sarinastiti, H. Yulastuti, and S. Sukmayadi, "Toward a greener future: Exploring sustainable practices in travel and tourism in Bali," *J. Sustain. Tour. Entrep.*, vol. 4, no. 3, pp. 241–252, 2023.
- [5] W. Wulandari *et al.*, "Aksi Lomba Beach Cleaning pada Program Conservation Goes to School di Dermaga Tawun, Sekotong Barat," *J. Gema Ngabdi*, vol. 6, no. 3, pp. 330–337, 2024.
- [6] I. P. S. Anggana, I. G. Mudana, N. N. Triyuni, and N. M. R. Sukmawati, "Tri Hita Karana as a form of pro-environmental behavior in Bindu Traditional Village," *Int. J. Green Tour. Res. Appl.*, vol. 4, no. 1, pp. 30–37, 2022.
- [7] R. Januar, "Implementation and challenges of sustainable tourism programs in Bali," *Bali Tour. J.*, vol. 8, no. 2, pp. 33–37, 2024.
- [8] R. Rendy *et al.*, "Penguatan Literasi Edukatif dan Spirit Sadar Wisata Berbasis 'Sustainable Blue Tourism' di Pulau Kelapan, Desa Kumbung-Bangka Selatan," *E-Dimas J. Pengabd. Kpd. Masy.*, vol. 15, no. 1, pp. 49–58, 2024.
- [9] P. Kusumawati, A. A. Rif'an, and E. Sugiarto, "Potensi Selokan Mataram: ulasan keadaan fisik dan kualitas airnya," *J. Pendidik. Geogr. Kajian, Teor. dan Prakt. dalam Bid. Pendidik. dan Ilmu Geogr.*, vol. 24, no. 2, pp. 108–118, 2019.
- [10] A. D. Lumbanraja, A. A. Musyafah, R. Saraswati, and T. L. Indreswari, "The effect of GPA IGR-4 on Indonesian government policy on marine litter," 2020.
- [11] X. Ji and X. Ding, "Analysis on the relationship between coastal tourism and marine pollution: an empirical analysis of China's 11 coastal regions," *Front. Mar. Sci.*, vol. 11, p. 1471467, 2024.

- [12] S. Assauri, M. Khussaniah, R. Janah, N. Latifah, R. M. Abiyi, and A. A. U. Hikmah, "AKSI BERSIH PANTAI TERHADAP PENGURANGAN SAMPAH DAN MENJAGA KEBERLANJUTAN LINGKUNGAN DI KAWASAN PANTAI MARINA SEMARANG: Beach Clean-up Action Towards Waste Reduction and Maintaining Environmental Sustainability in The Marina Beach Area, Semarang," *Al-Amal J. Pengabd. Masy.*, vol. 2, no. 2, pp. 61–66, 2024.
- [13] A. Taofiqurohman, A. V. Anggraeni, N. Z. Aghnia Gunawan, M. R. Ismail, and S. B. Annida, "Sustainable Tourism as the Management Option for Litter Problems in Tasik and Leuweung Sancang Garut Coastal Areas, Indonesia," *Egypt. J. Aquat. Biol. Fish.*, vol. 29, no. 1, 2025.
- [14] F. Chen, J. Liu, J. Wu, N. D. M. Sjafrie, P. Rahmadi, and R. Y. Putranto, "Measuring the relationship among stakeholders from value-satisfaction-demand in the development of ecotourism of Marine Park," *Mar. Policy*, vol. 129, p. 104519, 2021.
- [15] I. Valachis and N. Trihas, "Tourist Awareness in Tourism Development: Case Study of the City of Veria, Greece," in *Cases on Effective Destination Management*, IGI Global Scientific Publishing, 2025, pp. 57–82.
- [16] H. İ. Karakan and Ç. Ertaş, "The relationship between eco-tourists' organization membership, knowledge, and recycling behaviour," *Anatolia*, pp. 1–14, 2024.
- [17] M. Y. Pratama *et al.*, "REVITALIZATION OF BEACH TOURISM AREA THROUGH INTEGRATED WASTE CLEANUP MOVEMENT FOR ENVIRONMENTAL SUSTAINABILITY, CASE STUDY: TIRANG ISLAND," *Mimb. INTEGRITAS J. Pengabd.*, vol. 4, no. 1, pp. 235–245, 2024.
- [18] K. Kharwar, A. Katoch, A. Katoch, and T. Sharma, "Participatory communication for environmental conservation: A case study of 'Dhauladhar Cleaners' in Himachal Pradesh," *Int. J. Environ. Clim. Chang.*, vol. 14, no. 11, pp. 830–843, 2024.
- [19] J. D. E. Sari *et al.*, "Pentahelix Approach in Community Empowerment-Based Ecotourism: Turtle Conservation and Waste Management on Santen Island Beach, Banyuwangi," *Heal. Dyn.*, vol. 1, no. 12, pp. 460–469, 2024.
- [20] M. H. Djabbari, "Pengelolaan Pariwisata Berkelanjutan Melalui Kampanye Pengurangan Sampah Plastik di Objek Wisata Pulau Bokori Sulawesi Tenggara," *J. Abdimas Pariwisata*, vol. 6, no. 1, pp. 9–17, 2025.
- [21] W. N. A. T. Ismail, "CHALLENGES AND OPPORTUNITIES FOR IMPLEMENTING INNOVATIVE GREEN TOURISM PRACTICES: EVIDENCE FROM INDONESIA," *Plan. MALAYSIA*, vol. 22, 2024.
- [22] E. M. da Silva, D. Schneider, C. Miceli, and A. Correia, "Encouraging Sustainable Choices Through Socially Engaged Persuasive Recycling Initiatives: A Participatory Action Design Research Study," in *Informatics*, MDPI, 2025, p. 5.
- [23] S. Maghsoodi, S. K. Mahdavi, M. Shahraki, and M. Sharafatmandrad, "Participatory management and sustainable ecosystem management indicators," *Sci. Rep.*, vol. 14, no. 1, p. 31991, 2024.
- [24] J. Sebuya and A. Gichuki, "The Impact of Participatory Planning on Sustainable Development: A Literature Review," *J. Strateg. Manag.*, vol. 4, no. 4, pp. 1–9, 2024.
- [25] E. N. Tarino and E. P. Purnomo, "Efforts to Increase Community Participation in Supporting The Continuity of Ecotourism Development Policies," *TRJ Tour. Res. J.*, vol. 8, no. 2, pp. 262–283, 2024.
- [26] Y. Zhao, X. Liu, and X. Han, "Enhancing pro-environmental behavior through nature-contact environmental education: an empirical analysis based on randomized controlled experiment design," *Front. Environ. Sci.*, vol. 12, p. 1491780, 2024.
- [27] S. L. Wilson, Z. J. Khan, B. Lee, S. Krishnan, J. E. Fernández, and M. C. Yang, "Investigating Pro-Environmental Attitude for Designing Affective Eco-Feedback," in *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, American Society of Mechanical Engineers, 2024, p. V006T06A007.
- [28] K. P. Arin, J. M. Ortiz, and N. Sayour, "Odd Man Out: Cross-Country Experimental Evidence on the Efficacy of Information Treatments on Environmental Attitudes," *Nagham, Odd Man Out Cross-Country Exp. Evid. Effic. Inf. Treat. Environ. Attitudes*, 2024.
- [29] L. Lo Iacono, A. López, and E. P. Visintin, "Testing the Effectiveness of an Ecomedia Literacy Environmental Education Lesson," *Soc. Sci.*, vol. 13, no. 12, p. 645, 2024.
- [30] S. Bibi, A. Nousheen, and A. Siddiquah, "Effect of an environmental education course on prospective teachers' pro-environmental behavior: a study in education for sustainable development perspective," *Int. J. Sustain. High. Educ.*, 2025.