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River Cleaning as Environmental Education and ASEAN Academic Diplomacy: A Collaborative Community Engagement Practice between Tunas Pembangunan University, Surakarta and Sultan Idris Shah Polytechnic, Malaysia

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Abstract

Urban river management faces increasing challenges due to urbanization, domestic waste, and limited community participation. This study analyzes the Corporate Social Responsibility (CSR) River Cleaning program as a model of experiential environmental education and regional academic diplomacy within a collaboration between Universitas Tunas Pembangunan Surakarta and Sultan Idris Shah Polytechnic, Malaysia. A qualitative case study approach was employed using participatory observation, documentation, and participant reflections during activities conducted in Kali Anyar, Surakarta. Thematic analysis was applied to identify patterns of experiential learning, cross-cultural interaction, and institutional relationships. The findings reveal that the program provided concrete experiences that enabled students to connect technical concepts such as stormwater management and flood control with real urban river conditions. Field experiences also encouraged reflection on the relationship between community behavior, drainage systems, and environmental sustainability. Additionally, cross-national interactions fostered academic dialogue and expanded the role of academic visits into action-based collaborative engagement involving local communities. This study proposes a three-dimensional collaborative engagement model consisting of academic exchange, environmental action, and institutional diplomacy. The model demonstrates that community engagement can serve as an integrative platform for contextual learning, environmental action, and academic diplomacy in supporting sustainable development.

Keywords*: community participation, contextual learning, cross-cultural interaction, environmental sustainability, water resource management*

1. INTRODUCTION

River management in urban areas constitutes a significant challenge within the context of sustainable development. Rapid urbanization intensifies pressure on water bodies through surface runoff, domestic waste disposal, and uncontrolled sedimentation (UNEP, 2016). Urban rivers often serve multiple functions—as drainage channels, social spaces, and informal waste disposal sites—thereby contributing to water quality degradation and ecosystem disruption (Paul & Meyer, 2001). This phenomenon indicates that river-related issues are not merely technical in nature, but are also closely associated with social behavior and environmental governance.

River management approaches have traditionally been dominated by top-down models that emphasize infrastructure development and formal regulation. While such approaches are essential for technical aspects—such as embankment construction, river normalization, and drainage systems—they frequently lack active community participation (Pahl-Wostl, 2009). Numerous studies have shown that environmental policies that exclude local stakeholders tend to encounter implementation challenges and suffer from a low sense of social ownership (Reed, 2008). Therefore, river management requires a participatory approach that integrates both technical and social dimensions.

Community-based approaches are increasingly recognized as effective strategies for enhancing ecological awareness and long-term sustainability. Public participation not only improves policy effectiveness but also strengthens the legitimacy and social acceptance of

environmental programs (Reed, 2008). In this context, collective actions such as river cleaning can be positioned as socio-ecological interventions that promote behavioral change while simultaneously improving the physical condition of the environment. Consequently, the involvement of higher education institutions in such initiatives holds strategic relevance.

Higher education institutions carry a normative mandate through the Tridharma, encompassing education, research, and community service. Community engagement should not merely be understood as a social activity, but as a platform for transforming academic knowledge into context-specific solutions for society. In the field of environmental education, action-based or experiential learning approaches have been proven to be more effective in fostering deeper understanding compared to conventional lecture-based methods (Dillon & Wals, 2013; Kolb, 1984). Experiential learning emphasizes a cyclical process consisting of concrete experience, reflection, conceptualization, and reapplication.

In the context of civil and environmental engineering education, the integration of theory and practice is crucial. Concepts such as stormwater management and flood control should not only be understood as hydrological calculations but also as components of broader socio-ecological systems (Fletcher et al., 2015). Learning approaches that connect students directly with real river conditions enable a more comprehensive internalization of sustainability concepts. Thus, river cleaning activities can be interpreted as a form of contextual pedagogy that links technical knowledge with social responsibility.

Action-based environmental education also contributes to the development of ecological citizenship. Educational experiences that involve direct field engagement encourage students to develop ecological empathy and awareness of the impacts of human behavior on the environment (Dillon & Wals, 2013). Therefore, community service activities in the form of river cleaning not only generate physical improvements in river conditions but also foster transformations in attitudes and sustainability-oriented perspectives.

The internationalization of higher education has evolved from mere student mobility into a broader institutional strategy, including cross-border academic collaboration (Knight, 2004). In the Southeast Asian context, regional integration through ASEAN has further promoted educational cooperation as part of knowledge-based community development. Academic visits and faculty-student exchanges can be understood as instruments of educational diplomacy that foster long-term inter-institutional relationships.

The concept of soft power, as introduced by Nye (2004), explains that an actor's influence is not solely derived from economic or military strength, but also from cultural and educational appeal. Within this framework, cross-border academic collaboration can serve as a form of informal diplomacy that strengthens trust and regional networks. Community engagement within joint programs expands the scope of interaction from the institutional level to the societal level.

Collaborative community service activities across countries introduce a new dimension to academic diplomacy. Programs that involve joint social actions not only facilitate the exchange of ideas but also integrate practices and values. Cross-cultural interactions within the context of environmental action enable the exchange of perspectives on sustainability and environmental governance. Therefore, river cleaning activities within the framework of academic visits should not be viewed merely as corporate social responsibility (CSR) initiatives, but as a medium of institutional engagement that reinforces regional integration.

2. METHOD

The international collaborative community engagement model presented in this article is conceptualized as an integration of academic exchange, environmental action, and institutional diplomacy. Cross-national collaboration structures in higher education are often

analyzed through a partnership-based engagement framework, which emphasizes equality of roles and mutual benefit exchange (Alfianda & Suparno, 2025). Field-based collaborative activities serve as a platform where academic interests intersect with the needs of local communities within a shared interactive space.

Hybrid academic engagement, which combines online and offline activities, expands access to participation while strengthening program continuity. This model enables theoretical learning to take place prior to field engagement, thereby equipping participants with a conceptual foundation before they are involved in environmental action. Such integration establishes a continuum between academic discourse and social practice.

International collaborative community service positions local communities as strategic partners in the learning process. The community-based engagement approach underscores the importance of involving local stakeholders in the design and implementation of activities (Reed, 2008). In the context of river cleaning, the involvement of local stakeholders enriches cross-cultural experiences and broadens the scope of institutional relationships. This model integrates ecological experience, academic interaction, and diplomatic relations within a unified framework of engagement. A total of 40 participants were involved in the program, consisting of 30 students and 10 lecturers from the collaborating institutions.

3. RESULT AND DISCUSSION

Implementation of the River Cleaning Program

The implementation of the river cleaning activity in Kali Anyar commenced with a technical coordination phase involving lecturers, students, and local stakeholders. The activity began with a briefing on occupational safety, the allocation of cleaning zones, and the identification of river characteristics at previously mapped points. Participants were divided into cross-institutional groups to ensure collaborative interaction from the initial stage of the activity.

Task distribution was carried out based on technical requirements in the field. Some participants were assigned to collect solid waste from the riverbanks, while others focused on sorting waste according to material categories such as plastics, household packaging, and organic materials. Coordination was conducted dynamically under the guidance of the local team, who possessed a comprehensive understanding of river flow conditions and potential risks at specific points. This working structure fostered a collaborative pattern grounded in active participation from all team members.

During the activity, several technical challenges were identified, including slippery riverbank conditions caused by sedimentation and the accumulation of waste in low-flow areas. Participants adapted their cleaning strategies accordingly through spatial role allocation and the use of simple available tools. These challenges provided direct experiential insight into the complexity of river management in urban settings.

The physical outcomes of the activity were reflected in visible environmental improvements at the cleaning sites. Riverbank areas that were previously covered with accumulated domestic waste became more open, and water flow in certain sections appeared smoother following the removal of obstructive materials. Activity documentation recorded the collection of substantial volumes of waste, which were subsequently handed over to relevant authorities for further processing.

River Cleaning as Experiential Learning

Observations during the activity demonstrated the integration of previously acquired civil engineering concepts with field realities. Students who had participated in academic sessions on stormwater management and flood control were able to relate their field observations to flow disruptions caused by waste accumulation. Spontaneous discussions

emerged as participants observed how lightweight materials, such as plastics, became trapped in riverbank vegetation and contributed to reduced water discharge.

Participants' conceptual transformation was evident in reflections shared during the debriefing session. Several students identified the relationship between drainage system design and the behavior of communities living near the river. Direct interaction with actual river conditions fostered a broader perspective that urban water management is inherently linked to technical, social, and spatial dimensions.

Reflections on river management further evolved through cross-institutional discussions throughout the activity. Students compared river management approaches in Indonesia and Malaysia based on their respective experiences. This exchange of perspectives demonstrated how concrete field experiences stimulated broader conceptual elaboration on the sustainability of urban water systems.

River Cleaning as a Practice of Academic Diplomacy

Cross-cultural interactions were intensively established throughout the field activities. Teams were formed without separation based on institutional origin, enabling direct communication within a shared working context. Informal discussions regarding river management practices and environmental policies in each country emerged alongside the cleaning activities.

Institutional coordination was reflected in the involvement of lecturers from both institutions in facilitating field discussions. Their role extended beyond technical supervision to bridging academic dialogue with social practice. These interactions created a collaborative space that integrated academic perspectives with community-based experiences.

Figure 1. River cleaning activities in Surakarta. Left: River cleaning activity. Right: Riverbank greening.

The implementation of the river cleaning activity represents a concrete realization of the cooperation framework established in the Implementation Arrangement. The field activities illustrate how institutional agreements are translated into collaborative practices grounded in social action. This activity fostered interpersonal relationships that developed through shared experiences within a community setting.

The strengthening of regional academic relationships was evident in the continuation of communication dynamics following the completion of the activity. Discussions regarding potential research collaborations and follow-up programs emerged during the reflection sessions. Interactions during the river cleaning activity contributed to the formation of relational networks that extended beyond formal academic presentation settings.

Integration of Environmental Education and Academic Diplomacy

The results of the activity indicate that educational and diplomatic dimensions operated simultaneously within a single practical setting. The experience of river cleaning

served both as a medium for technical learning and as a platform for cross-cultural interaction. This activity integrated civil engineering theory, environmental action, and institutional relationships within a unified sequence of activities.

Field observations revealed that academic discussions continued alongside the physical activities. Participants related river conditions to concepts such as urban runoff, sedimentation, and surface water management. These interactions extended beyond knowledge transfer, evolving into reflective dialogues on the role of higher education institutions in addressing sustainability issues.

The involvement of local stakeholders expanded the scope of collaboration into a relationship between educational institutions and the community. The structure of the activity established a model of community engagement that integrates academic exchange, environmental action, and institutional engagement within a cross-national collaborative platform.

The three-dimensional collaborative engagement model—comprising academic exchange, environmental action, and institutional diplomacy—offers a replicable configuration for other higher education institutions. This structure provides a framework that enables the integration of theoretical learning with environmental action in the context of international collaboration. The model demonstrates that community engagement activities can be strategically designed as part of broader international collaboration initiatives.

4. CONCLUSION

The river cleaning program conducted under the UTP–PSIS collaboration demonstrates the role of experiential-based environmental education within higher education community engagement. Field activities provided concrete learning experiences that enabled the integration of civil engineering concepts with urban socio-ecological dynamics, while also fostering participants' understanding of urban water management as a system shaped by both technical and behavioral factors. Furthermore, the program represents a form of regional academic diplomacy, as cross-cultural interactions within community settings facilitated the development of both interpersonal and institutional relationships. This activity expanded the scope of academic visits from formal knowledge exchange into action-oriented social engagement involving students, academics, and local stakeholders. The integration of experiential environmental education and academic soft diplomacy results in a three-dimensional collaborative engagement model consisting of academic exchange, environmental action, and institutional diplomacy. This model offers a conceptual framework for developing international collaborative community service programs aligned with sustainable development objectives.

To strengthen the long-term impact of this initiative, policy recommendations should emphasize the institutionalization of collaborative environmental programs within university strategic plans, the establishment of sustained partnerships with local governments and community organizations, and the integration of experiential environmental activities into the formal curriculum. In addition, future program development should focus on measurable impact assessment, continuous stakeholder engagement, and the creation of joint research and community service platforms to ensure sustainability and scalability beyond short-term academic visits.

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