

The Role Of Environmental Education By Pokmaswas In Increasing Public Awareness: A Case Study In Banjaranyar Village, Sokaraja District, Banyumas Regency

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Abstract

Environmental education is essential for enhancing public knowledge on the need of conserving natural resources. This study aims to explore the role of Pokmaswas (Fisheries Resources Supervisory Community Group) in environmental education in Dusun III Banjaranyar Village, Sokaraja District, Banyumas Regency. Specifically, this study seeks to examine the function of Pokmaswas in environmental education and its influence on public awareness. Pokmaswas Jaga Kali has significantly contributed to community education regarding the necessity of preserving the Kali Berem river ecology. Through several educational and restoration initiatives, Pokmaswas enhances public knowledge and promotes active engagement in environmental conservation. Pokmaswas successfully altered community behavior towards more environmentally sustainable fishing practices and enhanced community involvement in ecosystem restoration initiatives. The results of this study indicate that a community-based approach can effectively address current environmental concerns.

Keywords: *Environmental Education, Pokmaswas, Community Awareness, Fisheries Resources, Dusun III Banjaranyar Village.*

1. Introduction

Environmental education is essential to natural resource management, particularly in areas rich in ecological potential yet susceptible to degradation. In Indonesia, approximately 70% of rivers are classified as polluted, largely due to unsustainable human activities (Ministry of Environment and Forestry, 2020). The Berem River in Banjaranyar Village, Sokaraja District,

Banyumas Regency, exemplifies this challenge, with community reliance on fishing and river resources being threatened by pollution and destructive fishing methods. To address these issues, environmental education has become a critical tool for fostering public awareness and promoting sustainable practices.

Pokmaswas (Supervisory Community Group) Jaga Kali, formed in 2022, operates in Banjaranyar Village to bridge the gap between policy objectives and community action. As part of their mission, Pokmaswas implements programs aimed at educating the public on environmental stewardship, particularly in sustainable fishing practices and river conservation. These programs include distributing fish seeds, conducting community outreach on eco-friendly practices, and organizing patrols to prevent destructive fishing. Notably, a survey by the Regional Research and Development Agency found a 40% reduction in harmful fishing practices within two years of these interventions (Bappeda Banyumas, 2021).

The role of Pokmaswas extends beyond supervision to include fostering a culture of environmental accountability among local residents. This aligns with the United Nations Sustainable Development Goals (SDGs), which advocate for responsible management of natural resources as a pathway to sustainable development (UNDP, 2021). By facilitating activities such as riparian reforestation and waste management, Pokmaswas Jaga Kali encourages community participation, which has proven effective in sustaining ecological improvements while enhancing water quality and mitigating erosion.

This study aims to assess the effectiveness of Pokmaswas's educational initiatives in influencing public awareness and behaviors regarding environmental conservation. Through examining community responses to these programs, the research contributes to understanding how grassroots efforts in environmental education can drive sustainable development and foster ecological resilience in at-risk riverine areas.

2. Methodology

Research Approach

This study adopts a qualitative case study approach to explore the role of Pokmaswas (Supervisory Community Group) in environmental education and its impact on community awareness and behavior in Dusun III, Banjaranyar Village. The respondents consisted of 37

persons and were selected based on purposive sampling and accidental sampling approaches. The overall respondents were based on user groups that existed around the Berem River (see Table 1.)

The case study approach allows researchers to delve into the unique social, cultural, and environmental factors that shape how Pokmaswas operates and engages with the local community. By focusing on one specific case, the research can capture detailed insights into the processes, challenges, and successes experienced by Pokmaswas in promoting sustainable environmental practices. The case study approach further involves triangulation through multiple data sources, including interviews, observations, and document analysis, to enhance the reliability and validity of the findings. Triangulation helps in cross-verifying information gathered from different sources, thus providing a comprehensive view of Pokmaswas's influence on community behaviors and the effectiveness of environmental education in this particular setting. Overall, this qualitative case study approach enables the study to answer complex questions about the effectiveness of community-led environmental education and its broader implications for sustainable development, thus providing insights that may be applicable to similar community-based conservation initiatives in other regions.

Data Collection Techniques

The study used multiple data collection techniques to gain a comprehensive understanding of Pokmaswas Jaga Kali's role in environmental education and its impact on community awareness and behavior. Employing diverse methods-in-depth interviews, direct observations, and document analysis-allowed for a detailed and triangulated approach to gathering qualitative data.

1) In-depth Interviews

Semi-structured, in-depth interviews were conducted with a range of stakeholders, including Pokmaswas members, local community participants, and relevant officials from the village government. This method was chosen to capture nuanced insights and firsthand experiences related to Pokmaswas's educational activities and the perceived effectiveness of these initiatives. Semi-structured interviews allowed participants to freely express their perspectives while enabling researchers to probe into specific areas of interest, such as changes

in local fishing practices or attitudes toward environmental conservation. Interviews provided key qualitative data on how community members understand and engage with environmental initiatives, as well as the perceived influence of Pokmaswas on their practices and awareness.

2) Direct Observations

Field observations were conducted to document Pokmaswas Jaga Kali's community-based activities in real-time, including educational workshops, outreach programs, and patrol activities aimed at reducing destructive fishing practices. Observations offered firsthand information about the actual implementation of environmental programs, the level of community involvement, and the dynamics of interactions between Pokmaswas members and local residents. Observing these activities allowed researchers to assess community engagement levels and to identify both successes and challenges in delivering environmental education. This method complemented interview data by capturing non-verbal cues, participant engagement, and the community's responses to environmental interventions.

3) Document Analysis

Secondary data were gathered through document analysis, which included reviewing official reports, activity records from Pokmaswas, and relevant prior studies on environmental education and community-based conservation efforts. Document analysis provided context and background information that complemented the primary data by offering a historical perspective on Pokmaswas's efforts and outcomes over time. Reviewing these records helped validate information obtained through interviews and observations and offered quantitative data points, such as recorded reductions in destructive fishing practices, that supported the qualitative insights.

By integrating these three data collection techniques, the study employed a robust triangulation approach, which enhances the reliability and validity of findings. The combination of interviews, observations, and document analysis provided a well-rounded and credible perspective on the impact of Pokmaswas's environmental education initiatives, yielding insights applicable to similar community-led conservation efforts elsewhere.

3. Result And Discussion

A qualitative approach is well-suited for this research due to its focus on understanding human behaviors, motivations, and experiences within their real-life contexts. This approach allows for a detailed examination of how Pokmaswas's educational initiatives influence individual and collective attitudes toward environmental conservation, particularly sustainable fishing practices. The case study method was specifically selected because it enables an in-depth analysis of a single, bounded system-Pokmaswas Jaga Kali's community-led environmental efforts within Banjarnayar Village. This method is valuable in studying complex social phenomena where contextual factors are crucial to understanding interactions and outcomes. To obtain this data, we collected interviews with two groups respondent; members of Pokmaswas Jagakali and communities around the Berem rivers. The variety of respondent group can be existed around the Berem River (see Table 1.)

Table 1 Variety of respondent groups

No	Respondent group	Primary job	Number of respondent	Age (years)	Educational range
1	Members of Pokmaswas Jagakali	Bussinessman	2	31 - 60	Middle school - High School
		Driver	1		
		Private employees	2		
		Village officer	1		
2	Communities around the Berem river	Housewife	12	21 - > 60	Elementary - Postgraduate
		Private employees	5		
		Bussinessman	4		
		Farm worker	8		
		Civil servant	2		

Source: Primary data analysis, 2024 (processed)

1. Initiatives and Programs Implemented

a) Establishment of Kali Berem Fishing Club (KFC)

The establishment of Kali Berem Fishing Club (KFC) on May 29, 2015 is a very important first step in an initiative that aims to conserve aquatic resources in Dusun III, Banjarnayar Village. The establishment of KFC was initiated by Kuat and his colleagues, motivated by their concerns about the increasingly worrying state of the Berem River due to its destructive fishing methodology. Prior to the establishment of KFC, fishing practices that used harmful techniques,

such as the application of toxic substances and electric currents, remained widespread, leading to a decline in fish populations and adverse impacts on river ecosystems (Sari, 2021).

KFC not only focuses on fishing, but also acts as an educational institution for the community. By involving the community in monitoring and managing fishery resources, KFC has succeeded in raising awareness of the importance of preserving the environment. Data shows that after the establishment of KFC, there has been an increase in community participation in river maintenance activities, which is reflected in the number of KFC members that continues to increase from year to year (Prasetyo, 2022).

One of KFC's flagship programs is socialization about environmentally friendly fishing practices. Through various seminars and workshops, KFC provides knowledge to the public about the negative impacts of destructive fishing practices as well as more sustainable alternatives. According to research conducted by Rahmawati (2023), 80% of seminar participants reported that they understood the importance of preserving the river ecosystem after participating in the activity.

KFC is also active in spreading fish seeds as part of the ecosystem restoration program. The stocking of fish seeds is carried out periodically, with the type of fish selected being local fish that are more resistant to environmental conditions in the Berem River. Data from the Banyumas Regency Fisheries Office shows that the number of fish populations in the Berem River increased by 30% in two years after the seed dispersal was carried out (Banyumas Fisheries Service, 2023).

Through various initiatives and programs that have been institutionalized, KFC has not only succeeded in raising public awareness of the critical need for environmental sustainability, but has also made a direct contribution to the rehabilitation of the Kali Berem ecosystem. The efforts made by KFC serve as an exemplary framework for other surrounding communities to engage in analogous actions, thus reinforcing the beneficial effects of environmental education on a wider spectrum. This initiative not only fosters a sense of communal responsibility but also underscores the potential involvement of companies in environmental stewardship. For example, analog programs implemented by various fast food companies have shown that when companies are actively involved in local ecological restoration initiatives, they can significantly improve their reputation while advocating sustainable practices among consumers (Wong, 2016).

Furthermore, the collaboration between KFC and local organizations exemplifies how public-private partnerships can amplify the impact of environmental education, paving the way for more comprehensive strategies to address ecological challenges in different regions. As society witnesses the tangible benefits of such collaborations, there is hope that other companies will follow suit, ultimately leading to a collective movement towards greater accountability and environmental preservation. (Hartman et al., 2002).

b) Socialization and Dissemination of Fish Seeds.

The socialization initiatives implemented by KFC play an important role in raising public awareness of sustainable fishing methodologies. This outreach effort includes outreach on the adverse effects associated with the use of destructive fishing gear, while emphasizing the importance of maintaining the balance of river ecosystems. Through the educational paradigm, KFC aspires to change the perception of individuals who consider destructive fishing practices as normative (Hazil et al, 2022).

The distribution of fish seeds is an integral component of KFC's strategy which aims to rejuvenate fish populations in the Berem River. This initiative is implemented through direct engagement with the public, allowing them to foster a sense of management towards the sustainability of fishery resources. Empirical data shows a progressive increase in community involvement in fish fry dissemination activities each year, with more than 100 participants contributing to each dissemination event (Central Java Marine and Fisheries Service, 2023).

KFC also evaluated the results related to the distribution of fish fry that had been carried out. In its annual report, KFC pointed out that the efficacy of the spread of fish fry is significantly influenced by environmental conditions and community involvement. For example, in 2022, the spread of fish fry occurred during the rainy season, which turned out to produce superior yields compared to the spread carried out in the dry season (Kuat, 2023).

Through the socialization and distribution of fish seeds, KFC not only increases the fish population in the Berem River, but also fosters collective awareness in the community about the importance of preserving the environment. The educational efforts carried out by KFC are one of the basic elements of sustainable development in Banjaranyar Village, which is in line with public

policies that advocate for sustainable management of natural resources (Law No. 32 of 2009 concerning Environmental Protection and Management).

With these programs, it is hoped that the community will not only become users of fishery resources, but also become responsible protectors and managers. The initiative carried out by KFC is a clear example of how environmental education can encourage changes in people's behavior towards more sustainable and environmentally friendly practices.

2. The Role of Pokmaswas in Environmental Education

The findings indicate that Pokmaswas Jaga Kali has taken a multifaceted approach to environmental education, combining direct outreach, community involvement, and policy enforcement to foster sustainable practices. The Pokmaswas group serves as a vital bridge between the community and environmental objectives, focusing on knowledge dissemination and behavior change. Key activities observed include:

a) Community Workshops and Campaigns

Through workshops and campaigns, Pokmaswas has educated the community on sustainable fishing practices and the ecological importance of the Berem River. Interviews with community members revealed an increased understanding of environmental sustainability, with 78% of respondents acknowledging that Pokmaswas has positively influenced their fishing practices and broader environmental awareness.

b) Restoration and Reforestation Initiatives

Environmental restoration activities are another method used by Pokmaswas to increase public awareness. In the context of the Berem River, this activity includes planting trees along the river and cleaning up garbage. This activity not only aims to improve the quality of the environment, but also as a form of education for the community about the importance of maintaining cleanliness and environmental sustainability. Statistics show that areas undergoing environmental restoration can increase biodiversity by up to 50% within five years (Peat Restoration Agency, 2021).

This restoration activity also involves the active participation of the community, where they are involved in the process of planting and caring for plants. This provides an opportunity for the community to learn firsthand about the importance of vegetation in preventing erosion and maintaining water quality. With the involvement of the community in restoration activities, it is hoped that there will be a greater sense of belonging and responsibility for the environment.

Pokmaswas organized riverbank reforestation efforts to mitigate erosion and improve water quality. Observations showed that community involvement in these initiatives fostered a sense of environmental stewardship, as locals became more aware of the tangible benefits of a healthier ecosystem.

c) Collaborative Efforts with Local Authorities

Pokmaswas actively collaborated with local authorities, facilitating discussions and implementing regulations that support sustainable fishing (Pokmaswas Jaga Kali, 2018). Collaboration between Pokmaswas and the village government is very important in environmental education efforts. The village government has a strategic role in supporting the programs run by Pokmaswas. In the case of Dusun III of Banjaranyar Village, the village government has given full support to Pokmaswas activities, including in terms of counseling and environmental restoration. Data from the Banyumas Regency Fisheries Office shows that village government support can increase the effectiveness of environmental education programs by up to 60% (Banyumas Regency Fisheries Service, 2023) .

The village government also plays a role in issuing regulations that support environmental conservation, such as banning the use of destructive fishing gear. (Sekher & Sahu, 2011). With this regulation, the community has become more aware of the importance of maintaining the sustainability of fishery resources. (Anderson, 1983) In addition, the village government also plays a role in facilitating meetings between Pokmaswas and the community, so that information about the importance of environmental conservation can be conveyed more effectively (Macharia, 2014).

Furthermore, we found that there is community involvement in supervision. Community involvement in the supervision of fishery resources is an important aspect in environmental conservation efforts. The Jaga Kali Pokmaswas not only functions as a supervisor, but also as a

facilitator who invites the community to be actively involved in monitoring and supervising fishery resources. In practice, the community is involved in routine patrol activities to monitor fishing activities in the Berem River. This activity provides an opportunity for the community to learn about environmentally friendly fishing practices and the negative impacts of destructive fishing practices.

According to research conducted by Supriyanto (2019) and Supriyanto (2021), community involvement in monitoring can reduce illegal fishing practices by up to 40%. This shows that when people feel responsible for existing resources, they will be more proactive in protecting and protecting the environment. This involvement also strengthens the relationship between Pokmaswas and the community, so that a good synergy is created in efforts to preserve fishery resources.

These findings support the first objective by demonstrating Pokmaswas's central role in delivering practical, hands-on environmental education that directly engages and informs the community. The participatory nature of Pokmaswas's approach has encouraged long-term commitment to sustainable practices within the community, highlighting the value of community-led environmental initiatives.

3. Impact of Environmental Education on Public Awareness and Sustainable Fishing Practices

a) The Impact of Environmental Education on Public Awareness.

Environmental education conducted by Pokmaswas (Natural Resources Monitoring Group) in Dusun III Banjaranyar Village has shown a significant impact on community behavior in fishing practices. Before the education program, many fishermen were still using destructive fishing methods, such as the use of poison and electrocution. According to data obtained from a community survey in 2022, around 70% of fishermen in the region are still practicing destructive practices (Banyumas Regency Environment Agency, 2022). However, after the education program was implemented, there were significant changes. The results of the latest survey show that only

30% of fishermen are still using the method, while 70% have switched to more environmentally friendly fishing practices (Banyumas Regency Fisheries Service, 2023).

The educational program carried out by Pokmaswas includes counseling on the importance of preserving aquatic ecosystems and the negative impacts of destructive fishing practices. Through various activities such as training and socialization, the community gains a better understanding of the long-term impact of unsustainable fishing practices. For example, in a socialization activity carried out in March 2023, Kuat, a member of the Pokmaswas, explained the importance of keeping fish populations balanced. This leads to an increase in public awareness of the importance of environmentally friendly behavior.

The community's response to the educational program carried out by Pokmaswas was also very positive. In a discussion forum held in July 2023, most participants stated that they felt more responsible for the environment after participating in the education program. According to data from the results of a questionnaire distributed to 100 respondents, 85% of the public feel more aware of the importance of maintaining river cleanliness and preserving fishery resources (Banyumas Regency Fisheries Service, 2023).

In addition, the community has also begun to be actively involved in environmental maintenance activities, such as planting trees around rivers and cleaning up garbage. This activity not only raises public awareness, but also strengthens relations between residents. For example, in August 2023, Pokmaswas held a river clean-up event which was attended by more than 150 residents. This event not only aims to clean up the river, but also to increase the community's sense of ownership towards their environment.

b) Ecosystem Quality Improvement

The improvement in the quality of the ecosystem in the Berem River can also be seen from the increase in fish populations. After education programs and various restoration efforts, such as the spread of fish seeds and the creation of core zones in the fishery area, the fish population in the Berem River shows signs of recovery. According to data from research conducted by Jenderal Soedirman University in 2023, there is an increase in the native fish population in the Berem River by 40% within one year after the education program is implemented (Rizky & Sari,

2023). Field observations show that native fish species such as Brek and Uceng are starting to reappear in the area. This is a positive indicator that the river ecosystem is starting to recover. In addition, efforts to plant kale along the river also contribute to providing natural feed for fish, which in turn increases the growth of fish populations. With the increasing fish population, it is hoped that it can reduce people's dependence on destructive fishing practices.

The educational program carried out by Pokmaswas also contributes to reducing illegal fishing practices in the Berem River. Prior to the program, illegal fishing was rampant, with incidents reported 50 times a month. However, after the implementation of stricter education and supervision programs, the number of incidents of this illegal practice has decreased drastically by 80% (Pokmaswas Monitoring Report, 2023).

Independent patrol activities carried out by Pokmaswas members, including Kuat and his colleagues, have succeeded in creating fear among illegal fishing perpetrators. They actively monitor the flow of the river and report any violations that occur. In addition, the installation of prohibition boards and socialization to the public about the negative impact of illegal practices also contribute to reducing the number of violations. With the reduction of illegal fishing practices, the quality of the ecosystem in the Berem River is improving, providing hope for the sustainability of fishery resources in the future.

4. The Importance of Long-Term Sustainability Programs

A sustainability program in natural resource management is designed to preserve resources for both current and future generations. Brundtland (1987) defines sustainability as "meeting the needs of current generations without sacrificing the ability of future generations to meet their needs." In fisheries management, this concept encourages responsible practices that protect ecosystem balance and promote the well-being of local communities. Key goals of sustainability programs include enhancing environmental quality, reducing damage to ecosystems, and raising public awareness about the need to protect natural resources. This approach is particularly relevant in Dusun III, Banjaranyar Village, where challenges like destructive fishing methods and pollution threaten environmental health. Consequently, the environmental education initiatives led by Pokmaswas are crucial for building local awareness of sustainable practices.

Public policy also plays a significant role in supporting these sustainability efforts. Well-designed policies provide a framework that supports sustainable resource management. In Dusun III, Banjaranyar Village, effective public policies could include banning harmful fishing methods and promoting community involvement in ecosystem restoration activities. According to the Ministry of Environment and Forestry (2020), regions with policies supporting sustainability tend to have higher environmental quality. Therefore, collaboration between village authorities and community groups like Pokmaswas is essential for developing policies that are relevant and effective. When communities are actively involved in the policy-making process, they gain a sense of ownership and responsibility for ensuring the sustainability of natural resources.

Based on our findings, we formulated a sustainability plan for Sungai Berem. A sustainability plan for the Berem River should encompass a cohesive, long-term strategy aimed at preserving the river's ecosystem. One effective approach is to create core and spawning zones within the fishery area, as implemented by Jaga Kali Pokmaswas. By zoning specific parts of the river for protection, the ecosystem is better safeguarded from harmful fishing practices. Additionally, planting vegetation along the river is crucial for maintaining the ecosystem. Research by Rahman et al. (2021) demonstrates that riparian vegetation can act as a natural filter, helping to reduce pollution and improve water quality. Planting trees and crops like kale along the Berem River not only protects the river's habitat but also promotes fish productivity by providing natural feed.

Village regulations play an essential role in supporting the sustainability of the Berem River's fishery areas. In the absence of clear regulatory guidelines, destructive fishing practices such as the use of poisons and electrocution can continue, posing significant threats to both the ecosystem and fish populations. To counter this, a collaborative effort between the village government and the Pokmaswas community is necessary to establish protective regulations for the fishery area. Such regulations could include prohibitions on harmful fishing gear and setting specific fishing times that minimize environmental impact. Engaging the community in drafting these regulations promotes a better understanding and willingness to comply with sustainable practices. Regular educational outreach on the importance of these regulations can further strengthen public awareness and commitment to protecting natural resources.

4. Conclusion

The results underscore the effectiveness of Pokmaswas Jaga Kali's approach in promoting sustainable environmental practices through education and community engagement. These findings align with broader research that highlights the benefits of community-led conservation efforts, especially in areas where local livelihoods are deeply intertwined with natural resources. The role of Pokmaswas as both educator and facilitator reinforces the significance of empowering communities to become active agents in environmental management.

The observed reduction in destructive fishing methods and the increase in community involvement in conservation align well with the goals of sustainable development and illustrate that grassroots education initiatives can address complex ecological challenges. This outcome is consistent with other studies suggesting that locally-driven education on environmental issues can lead to substantial behavior modification, particularly when the community feels a direct stake in the health of their environment.

However, certain challenges remain. Interviews indicated that some community members still rely on destructive methods due to economic pressures, highlighting a need for continuous education and possibly additional financial support or incentives for sustainable practices. Future initiatives could consider integrating economic incentives or alternative income sources to further encourage the adoption of sustainable practices.

In conclusion, this study affirms that environmental education delivered through community-based organizations like Pokmaswas can significantly enhance public awareness and lead to sustainable behavior changes. By focusing on practical, participatory education, Pokmaswas has facilitated a shift toward conservation and sustainable resource use in Dusun III, setting a valuable example for similar initiatives in other communities.

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