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Youth Engagement Strategies in Citarum River Cleanup Campaigns via Instagram: A Mixed-method Content Analysis

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Abstract
This study explores how Instagram is utilized as a strategic communication tool to campaign for environmental engagement, specifically in promoting river cleanup initiatives among youth audiences. By employing a quantitative content analysis of eleven Instagram posts related to river cleanup efforts conducted between December 2024 and June 2025, we examine audience interaction metrics such as views, reach, likes, and engagement across different age groups. The findings highlight that the 18–34 age demographic is the most responsive to environmental messaging on social media, accounting for over 70% of total engagement. Posts featuring direct community involvement, promotional content, and educational messaging were identified as key content pillars driving

higher interaction rates. These pillars demonstrate the importance of message framing in digital environmental advocacy. The study affirms Instagram's potential as an effective platform for fostering eco-conscious behavior and youth participation through visual storytelling and targeted communication strategies.

***Keywords**: Social Media Communication, Environmental Campaign, River Cleanup, Instagram Engagement, Youth Participation*

1. Introduction

Indonesia ranks among the highest internet-using populations in Southeast Asia, with over 220 million users as of early 2025, and a penetration rate exceeding 77% (Prasetiyo et al., 2024). Among these, Instagram is especially popular with users aged 17–45 (Hariyani et al., 2025), and has increasingly shifted from a personal photo-sharing app to a platform for branding, advocacy, and digital storytelling (Pratiwi & Farizal, 2024). This evolution has opened new possibilities for using Instagram to raise awareness and mobilize civic action (Herawati & Tandyonomanu, 2025) including pressing environmental concerns in the education and public service sectors (Noer Fatanti et al., 2025).

In this context, environmental campaigns such as river cleanup initiatives have increasingly embraced Instagram as a medium to engage the public, especially youth, in participatory advocacy (Haldborg Jørgensen et al., 2023). River cleanup has emerged as a critical environmental (Rizky Ilhami et al., 2024) and civic issues in Indonesia, where rapid urbanization (Manea et al., 2024) and industrial runoff (Lukman et al., 2025) have severely polluted major rivers such as the Citarum (Juliandar et al., 2023), Ciliwung (Maesti et al., 2022), and Brantas (Basuki et al., 2024; Firmansyah et al., 2021). These waterways are essential to community life, supporting agriculture, providing water for daily use, and sustaining biodiversity, yet are now burdened with solid waste, plastic pollution, and untreated sewage (Fridayani, 2020).

A range of local and national initiatives has emerged, led by NGOs, universities, community groups, and even corporate actors. Campaigns often include manual cleanups (Puspita & Izzatusholekha, 2023), waste education (Haniva et al., 2024), and youth volunteerism (Thor & Karlsudd, 2020), blending environmental action with community engagement. This study situates itself within this broader socio-environmental context, acknowledging river cleanup not only as an ecological imperative but also as a form of participatory environmental citizenship. As Indonesia intensifies its environmental governance efforts, understanding how digital media supports grassroots participation in river

restoration becomes increasingly vital for shaping effective and inclusive policy communication (Bloomfield & Manktelow, 2021; Vrain et al., 2022).

River cleanup campaigns are especially well-suited for platforms like Instagram, as they provide visually compelling and emotionally resonant content (Einsle et al., 2024). The dramatic contrast of polluted versus clean riverbanks, images of youth and community groups in action, and symbolic acts like trash collection or eco-pledges offer powerful storytelling opportunities (Lauwrensia & Ariestya, 2022; Yuliarti et al., 2021). These visuals appeal to Instagram's user preferences for short, shareable, and impactful content. Moreover, hashtags such as #rivercleanup, #sampahplastik, or #citarumlestari help categorize and amplify posts across environmental and activist circles. For younger audiences, particularly those aged 18–34, river cleanup content is relatable. It reflects shared concerns about climate change, sustainability, and civic responsibility. When campaigns feature community involvement, local faces, and real impact, they become more than information—they become movements (Agustina, 2020). This type of storytelling not only raises awareness but also encourages digital audiences to transition from passive viewers to active environmental participants (Kristanto et al., 2021), making Instagram a powerful space for grassroots eco-advocacy (Chikowore, 2023).

This study addresses a key gap in environmental communication research: while social media platforms are widely recognized as tools for advocacy, there remains limited empirical understanding of how specific Instagram content strategies influence youth engagement in environmental campaigns, particularly those focused on river cleanup efforts. Existing literature has predominantly centered on environmental education or offline participation models, with few studies systematically examining how digital content typologies align with audience interaction metrics to assess campaign effectiveness. The study also identifies general content pillars such as educational, promotional, and community involvement. These content pillars may influence engagement patterns.

The novelty of this research lies in its integration of Instagram's platform analytics with a content pillar framework, categorizing posts into educational, promotional, and community involvement themes, environmentally. This dual approach allows for a nuanced, data-driven evaluation of how message framing impacts user engagement, thereby advancing current models of digital environmental advocacy. Unlike previous studies that often focused on environmental education (Lucrezi & Digun-Aweto, 2020) or offline participation (Puspita & Izzatusholekha,

2023), this research offers an integrated view of how Instagram functions as both a marketing tool and a social communication medium for sustainability.

The study poses the central research question of how Instagram campaigns can bridge the gap between environmental awareness and youth action in river cleanup initiatives. In addressing this question, the paper is organized into three main sections. The Method section outlines the quantitative content analysis design, data collection procedures, and thematic classification approach. The Results and Discussion section presents empirical findings on content visibility, engagement patterns, demographic responses, and platform performance. Finally, the Conclusion highlights key insights and their implications for designing effective environmental campaigns on social media.

By analyzing real-world Instagram campaign data and user interaction trends, this study provides practical, evidence-based recommendations for NGOs, student-led movements, and public sector institutions aiming to mobilize youth participation. It positions Instagram not only as a communication tool but also as a participatory medium capable of fostering civic action and amplifying environmental narratives in Indonesia's digital landscape.

The findings from this study offer practical value for organizations actively involved in river cleanup efforts, whether through direct field work or environmental communication. By identifying which content pillars, such as community involvement or promotional storytelling, generate the most engagement on Instagram, this research provides actionable insights for improving outreach strategies. These insights are especially critical for nonprofits, student groups, and local government units that often rely on volunteer participation and community trust. Applying targeted content strategies informed by audience behavior and platform preferences can help these groups attract attention, recruit volunteers, and maintain momentum in long-term river restoration projects. Moreover, the demographic insights highlighting youth as the dominant engaged group can inform future audience segmentation and message framing. In this way, the study contributes to a broader framework of environmental communication and civic media, where digital platforms are not only used for broadcasting but also for coordinating collective action and sustaining environmental change.

2. Method

This study employs a quantitative-descriptive research design with embedded qualitative components to explore how Instagram is used to

promote environmental engagement through river cleanup campaigns. The analysis integrates numerical performance metrics with interpretive content analysis to assess how various content strategies affect audience interaction patterns. Descriptive statistical analysis was conducted using Microsoft Excel for organizing and computing descriptive data, while qualitative coding followed a deductive framework to interpret message framing and thematic emphasis (Sugiyono, 2013).

2.1. Research Design and Context

This research focuses on Instagram-based environmental campaigns conducted between December 2024 and June 2025, a period during which various stakeholders ranging from students and community groups to corporate and institutional partners actively promoted river cleanup efforts through social media.

The research procedure began by identifying relevant public Instagram accounts through environmental hashtags and network snowballing techniques. Once identified, all posts related to environmental campaigns published during the study period were compiled. Inclusion and exclusion criteria were then applied to narrow the dataset to posts explicitly centered on river cleanup activities. Following this selection, post-level analytics data were collected using Instagram Insights. Finally, the analysis was conducted using a mixed-method approach, combining quantitative evaluation of engagement metrics with qualitative content analysis of both visual and textual messaging.

A total of 103 Instagram posts were purposively selected from publicly accessible accounts that consistently engaged in or supported environmental initiatives. The Research focuses on 11 posts that explicitly focus on river cleanup activity. Another important factor was data visibility, meaning the posts needed to have accessible and complete performance metrics such as views, reach, and demographic insights.

Posts were included in the analysis if they were published between December 2024 and June 2025, explicitly related to river cleanup activities such as community actions, environmental education, or advocacy focused on river waste, and contained complete Instagram Insights data, including reach, views, interactions, and audience demographics. Additionally, only posts from public accounts actively involved in or promoting environmental causes were considered. Conversely, posts were excluded if they lacked access to full analytics data, addressed general environmental themes without a clear focus on river cleanup, consisted of reposted content without original engagement metrics, or originated from private or restricted accounts inaccessible to the researcher.

2.2. Data Collection

Data for this study were collected from Instagram's native analytics (Insights) linked to each campaign post. The dataset includes key metadata such as post titles and publication dates, along with quantitative performance metrics including views, reach, likes, and post interactions. Additionally, the dataset provides demographic segmentation by age group, following Instagram's standard categories (e.g., 18–24, 25–34, 35–44, etc.), allowing for a more detailed understanding of audience engagement patterns. All data were obtained with permission from the campaign coordinators to ensure ethical data usage. The collected information was organized into structured tables to support systematic analysis, enabling the research to compare audience response across content types, timeframes, and demographic variables within the scope of environmental communication.

2.3. Content Pillar Categorization

To understand the strategic communication focus of each Instagram post, a content pillar analysis was applied. Content pillars function as thematic frameworks that guide the planning and structuring of social media content, ensuring message consistency, audience relevance, and alignment with campaign goals (Rebecca & Revinzky, 2024). In this study, each of the 11 posts was categorized according to its dominant communication intent. Three primary content pillars were used as classification criteria: (1) Educational Messaging, which included posts that provided environmental facts, data, or awareness messages; (2) Community Involvement, highlighting volunteer activities, student participation, or community-driven initiatives; and (3) Promotional Content, which featured branded collaborations, event announcements, or marketing-oriented messages. The classification process was conducted through interpretive analysis, involving close examination of captions, visual presentation, and hashtag usage to determine each post's strategic emphasis (Wibowo & Junaedi, 2023). This qualitative layer added depth to the quantitative metrics by contextualizing the content strategy behind each post. By mapping posts against these pillars, the study aimed to assess how different communication strategies influence engagement and visibility, and to identify which content types are most effective for mobilizing public awareness and participation in environmental initiatives, particularly within youth-dominated social media spaces like Instagram.

2.4. Data Analysis

The collected Instagram metrics were analyzed using descriptive statistics in Excel to identify trends in user engagement, content performance, and audience demographics. While age group data were included in the dataset, no assumptions were made beforehand about which demographic would be most active; this emerged as part of the analysis process. Quantitative data were compiled to highlight overall engagement per post, patterns of response across content pillars, and age-wise interaction patterns. This integrated approach enabled the study to map not only what content performs well, but why certain formats and framings resonate more with aged-category audiences.

Figure 1. Research Flow

3. Results and Discussion

3.1. From Scroll to Action: Community Involvement Boosts Reach

Instagram content showcasing active community participation consistently achieved the highest levels of reach and engagement. The visibility of Instagram content, reflected in view counts, serves as a key indicator of how effectively environmental messages reach the public in digital campaigns (Sayekti, 2025). Posts featuring volunteers cleaning rivers, real-time interviews, and emotionally resonant short-form videos proved most effective in driving user interaction. In particular, Reels emerged as a dominant content type, with six of the seven top-performing posts falling under this format.

Table 1. Content Pillar and Data of Viewership

Content	Date	View	Interaction	Type	Content Pillar
ARS River Cleanup	3-Dec-24	723	29	Carousel	Educational Messaging
KKN River Cleanup 1	18-Jan-25	461	17	Reels	Community Involvement

KKN River Cleanup 2	21-Jan-25	753	23	Reels	Community Involvement
Report Cleanup	1-Feb-25	396	24	Post	Educational Messaging
Promosi River Cleanup hybrid	24-Apr-25	2821	78	Post	Promotional Content
Hybrid River Cleanup Komunitas Cika-cika	28-Apr-25	1133	55	Reels	Community Involvement
Bewara	3-May-25	2485	25	Reels	Community Involvement
SatuBumi bersama Haleon	27-May-25	705	18	Reels	Community Involvement
Report Cleanup	1-Jun-25	533	17	Post	Educational Messaging
ARS River Cleanup	5-Jun-25	2399	63	Reels	Community Involvement
Hari Lingkungan Hidup Sedunia	14-Jun-25	533	18	Reels	Community Involvement

Among the various post formats analyzed, Instagram Reels stood out as the most effective vehicle for amplifying campaign messages. Notably, six of the top seven posts were Reels, underscoring their compatibility with Instagram's algorithm and audience expectations. For example, the ARS University River Cleanup post achieved 2,399 views, while Hybrid River Cleanup Komunitas Cika-cika garnered 1,133 views, both of which significantly outperformed static content. These Reels shared common traits: short duration (≤30 seconds), action-driven visuals, and strategic hashtag use, which are key elements that enhance discoverability and shareability on visual-first platforms like Instagram (Rogers, 2021; Utari et al., 2025).

Crucially, participatory content was found to resonate across gender demographics, offering an inclusive narrative that appealed to both male and female users (Table 2). The Bewara campaign Reel, for instance, reached 2,138 users with a nearly equal gender split (1,087 male; 1,067 female), suggesting that community-driven messaging transcends gender lines. This finding aligns with the notion that collective action and localized storytelling can foster shared environmental responsibility and social cohesion (Funk, 2024). Gender-balanced engagement also indicates the potential for such content to serve as a neutral platform that engages diverse segments of youth audiences.

Taken together, the findings illustrate that community-centered Reels are not just high-performing in digital metrics, but also carry the potential

to inspire offline involvement. By showcasing relatable actions and inclusive participation, these posts likely contribute to shifting perceptions from passive awareness to active contribution. This supports the conceptual framework that digital platforms can act as bridges to environmental participation, especially when content is visually engaging, socially grounded, and emotionally resonant (Almashaleh et al., 2025; Orzan, 2025). Therefore, integrating community visibility into digital storytelling emerges as a key strategy for environmental campaigns targeting youth.

3.2. Knowledge Isn't Always Clickable: Educational Posts Underperform

While environmental education remains a critical pillar of sustainability campaigns, this study found that educational Instagram posts consistently underperformed in reach and engagement. Posts delivering scientific information or cleanup reports, such as "Report Cleanup" with 396 and 533 views, struggled to attract youth audiences. These findings reflect a broader platform-content mismatch, where image-centric platforms like Instagram prioritize visually rich, emotionally resonant storytelling over didactic or text-heavy presentations (Król & Zdonek, 2023). Despite the inherent value of this content, its format appeared to disengage users accustomed to fast-paced, entertainment-driven browsing.

All three lowest-performing posts in the dataset fell under the Educational Messaging pillar, with view counts of 396, 533, and 723, respectively. These posts typically used static images, dense captions, and a formal tone, which may have limited their appeal to a broader demographic. Interestingly, the data indicated a male-skewed engagement for these posts, suggesting that they lacked the universal resonance seen in participatory or action-driven content. The affective and social dimensions of environmental discourse are more likely to motivate public engagement than purely informational approaches (Knutsson, 2018).

The results emphasize the need to reframe environmental education into visually compelling, digestible content that aligns with Instagram's media logic. Instead of relying on static infographics or long captions, campaigns might consider integrating key educational messages into Reels, stories, or carousel posts that blend motion, narrative, and accessibility. Visual storytelling allows users to emotionally connect with content, thereby increasing the likelihood of engagement (Dyer et al., 2014) and information retention (Ida et al., 2024; Wolniewicz, 2019). Without such adaptation, educational posts risk becoming invisible in the scroll, regardless of their factual depth or importance.

3.3. Youth as Digital Green Agents: Dominance of 18–34 Age Group

The analysis revealed a clear dominance of young users aged 18–34 in driving engagement with Instagram-based environmental campaigns. This demographic accounted for 72.6% of the total reach, with 25–34-year-olds averaging 41.3% per post and 18–24-year-olds contributing 31.3%. Posts such as "ARS River Cleanup", which reached 891 users aged 18–24, and "Bewara", with 1,261 users aged 25–34, illustrate this pattern. These findings reinforce Instagram's role as a youth-oriented platform, where younger audiences actively seek and respond to content that reflects their values and encourages community involvement (Buwono et al., 2025; Puiu & Udriștioiu, 2023).

Conversely, engagement from older demographics was consistently limited. Users aged 45 and above accounted for only 14.8% of total reach, indicating a generational divide in the digital uptake of environmental campaigns. This may be attributed to platform usage trends, as older adults are less represented on Instagram and tend to favor more traditional communication channels. The Digital environmental participation is shaped by social and technological access, with youth often at the forefront of platform-native activism due to their digital fluency and social media embeddedness (López-García et al., 2025).

Given their dominant presence and engagement levels, the 18–34 age group should be the strategic focal point for future digital environmental initiatives. Their responsiveness suggests not only a generational alignment with climate consciousness but also a preference for fast, emotive, and interactive content formats. Youth engagement in digital activism thrives when campaigns are personalized, visually compelling, and socially meaningful (Ida et al., 2024; Orzan, 2025). Therefore, to effectively mobilize action, environmental messaging must continue to be tailored to the communication habits and values of this digital-native generation.

Table 2. Data of Reach and Demography

Content	Reach	Male	Female	18-24	25-34	35-44	45-54	55+
ARS River Cleanup	341	192	151	61	129	104	30	19
KKN River Cleanup 1	271	122	149	94	105	40	21	11
KKN River Cleanup 2	395	224	154	121	165	66	14	12
Report Cleanup	175	99	75	50	67	41	10	6
Promosi River Cleanup hybrid	1666	830	846	482	665	299	166	64

Content	Reach	Male	Female	18-24	25-34	35-44	45-54	55+
Hybrid River Cleanup Komunitas Cika-cika	775	400	378	131	255	193	139	60
Bewara	2138	1087	1067	426	1261	320	63	84
SatuBumi bersama Haleon	415	190	222	107	153	70	58	24
Report Cleanup	403	252	156	160	156	48	28	16
ARS River Cleanup	1565	889	701	891	532	92	30	45
Hari Lingkungan Hidup Sedunia	409	238	170	93	195	68	28	24

3.4. Framing Environmental Engagement in the Age of Instagram: Lessons from River Cleanup Campaigns

The findings of this study align closely with dialogic communication theory, which emphasizes interactivity, reciprocity, and resonance in mediated communication (Atnan & Imran, 2025). The high engagement levels observed in Reels featuring community involvement underscore the role of two-way symmetrical communication in fostering participatory environmental discourse on Instagram. Rather than serving merely as a top-down broadcasting tool, the platform operates as a co-creative space where emotionally compelling, visually dynamic content invites dialogue and shared civic action. This reflects a shift in environmental messaging from information transmission to interactive storytelling, positioning social media users, especially youth, as not just audiences but active agents in shaping sustainability narratives.

The results of this study confirm prior findings that text-heavy educational content underperforms on visual-first platforms like Instagram (Einsle et al., 2024; Marcella-Hood, 2023), while also supporting that visual storytelling and the presence of community figures increase perceived credibility and engagement (Hapsari & Yoma Bagus Pamungkas, 2024). However, educational posts featuring infographics did not yield higher engagement, suggesting that aesthetic execution and emotional resonance may outweigh the mere presence of visual data (Noer Fatanti et al., 2025). This study contributes to filling a notable gap in the literature by offering empirical insights into content framing strategies within the context of river cleanup campaigns in Indonesia—an area previously underrepresented in environmental communication research. Furthermore, by highlighting the dominant role of youth as digital environmental agents, the study extends existing frameworks of digital

activism into a non-Western context, offering a localized perspective on participatory sustainability communication.

However, in contrast to these findings, several studies have demonstrated that educational content can perform effectively on digital platforms when strategically framed. For instance, infographics paired with narrative storytelling on Facebook significantly improved environmental message retention (Noer Fatanti et al., 2025). Similarly, Putri & Siregar (2022) observed higher engagement with carousel-style Instagram posts when educational content was visually interactive and localized (Shukla & Bohara, 2025; Yu et al., 2025). These contrasting results highlight that format and platform affordances play a crucial role in educational content performance. While our findings suggest underperformance of educational posts, it may be that the static and text-heavy format used here was mismatched with Instagram's visual culture. This opens up important questions for future research on how to optimize educational messaging for platform-specific dynamics.

This study addresses the central research question by demonstrating that strategic message framing, both in content format and thematic focus, is crucial to transforming environmental awareness into youth digital participation. The findings reveal that community-centered short-form videos (Reels) significantly outperform other formats, effectively engaging users aged 18–34, who dominate the platform's interaction metrics. In contrast, traditional educational posts require reframing to align with Instagram's visual and interactive norms. These insights suggest that Instagram campaigns can bridge the awareness-action gap by tailoring content to the media habits and emotional sensibilities of younger audiences, thus enabling more effective mobilization in river cleanup initiatives.

This study contributes to platform-specific communication theory by illustrating how Instagram's algorithmic affordances—such as Reels, hashtags, and geotags—directly influence user engagement, particularly in the context of environmental activism. It extends the scope of digital activism theory into Southeast Asian settings, providing empirical grounding for how localized civic participation unfolds on global platforms. Practically, the findings suggest that NGOs and student-led initiatives should prioritize 15–30 second Reels showcasing real volunteer action, supported by peer testimonials and strategic metadata to enhance authenticity and shareability. Methodologically, the study demonstrates the value of integrating content pillar analysis with platform analytics, and proposes future research directions such as audience sentiment analysis and comment mining to deepen understanding of engagement dynamics.

While the findings offer valuable insights, several limitations must be acknowledged. The study's sample size of 11 Instagram posts positions the results as exploratory rather than conclusive, and the platform-specific focus limits broader generalizability across other social media environments. Additionally, the emphasis on youth engagement suggests that the outcomes may not translate directly to older demographics or to environmental issues beyond river cleanups. Reflexively, the researchers remained aware of Instagram's commercial infrastructure, including algorithmic opacity and potential influence from paid promotions, which may have affected the visibility and reach of certain posts, thus introducing possible bias in the analysis.

Future research should aim to replicate this study across platforms such as TikTok and YouTube Shorts, where short-form video similarly dominates, to test the consistency of engagement patterns in different algorithmic environments. There is also potential to extend the analytical framework to other environmental themes, such as climate change or biodiversity, to assess its broader applicability. Methodologically, incorporating tools like eye-tracking or clickstream analysis could offer deeper insights into how users interact with visual content and where attention is directed. Finally, a longitudinal approach could examine whether digital engagement, particularly with Instagram Reels, translates into sustained offline participation, such as attending river cleanups or joining environmental initiatives.

4. Conclusion

This study demonstrates the strategic potential of Instagram as a communication platform for fostering environmental engagement among youth, particularly within the context of river cleanup campaigns. The results show that content pillars focused on community involvement and promotional narratives, especially when delivered through Reels, generated significantly higher engagement compared to static, informational posts. These findings directly answer the research question, confirming that strategic message framing and format selection strongly influence youth participation in digital environmental advocacy. In particular, the study reveals that users aged 18–34 accounted for over 70% of total engagement, establishing this demographic as the most responsive to sustainability-related content.

Beyond reaffirming platform dynamics, the study provides actionable insights for campaign practitioners. Environmental NGOs, student organizations, and government institutions can enhance outreach by producing short-form video content featuring community participation,

testimonial narratives, and emotionally resonant visuals. These strategies are especially effective when tailored to digital-native behaviors and preferences. Furthermore, integrating hashtags, geo-tagging, and user mentions can amplify visibility across user networks. These recommendations serve as a practical guide for designing campaigns that not only raise awareness but also mobilize civic participation.

The study's limitations, particularly its reliance on a small dataset and a single platform, highlight broader methodological gaps in environmental communication research. These gaps reflect a need for multi-platform comparative studies and in-depth audience analysis. Future research should explore the influence of influencer partnerships, the emotional and cultural resonance of storytelling formats, and the role of interactive features (e.g., polls, comments, user-generated content) in fostering sustained engagement. Additionally, qualitative investigations into audience sentiment could enrich current findings and uncover motivational drivers behind youth participation.

Overall, this study contributes to the emerging field of digital civic engagement by combining platform analytics with thematic content analysis. It offers a replicable framework for evaluating the effectiveness of social media campaigns and supports evidence-based strategies for inclusive environmental governance. In Indonesia's evolving digital landscape, where youth voices are increasingly influential, these insights can inform communication practices that bridge environmental knowledge and participatory action.

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