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Promoting environmental cleanliness through motion graphic public service announcements in urban communities of Bogor Indonesia

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ABSTRACT

This research investigates the role of motion graphic public service announcements in enhancing public awareness and encouraging environmental cleanliness behaviors in the urban area of Bogor, Indonesia. Responding to the need for engaging and accessible media formats in environmental campaigns, the study applies a full-cycle approach encompassing PSA design, animation production, and audience evaluation. The animated video was produced using Adobe Illustrator and Adobe After Effects and narrates a transformation scenario where a polluted park becomes a clean and green community space through collective action. To assess the effectiveness of the PSA, a pilot study involving 25 respondents was conducted using a structured questionnaire. The results indicate that most respondents viewed the animation positively, with 76 to 84 percent agreeing that the video was engaging, clear, visually appealing, and successful in conveying the importance of environmental responsibility. The findings are interpreted through the lens of the Elaboration Likelihood Model and Social Cognitive Theory, both of which help explain how visual storytelling can influence attitude formation and behavior change. The study concludes that motion graphic animation serves as an effective medium for civic messaging, particularly in digitally literate urban populations. It offers practical implications for local governments and nonprofit organizations aiming to foster sustainable environmental behavior through creative digital media.

Keywords: Public Service Announcement, Motion Graphic Animation, Environmental Behavior, Urban Communication, Bogor Indonesia.

1. INTRODUCTION

In the contemporary era, information and communication have become indispensable to human life. Communication technologies are not merely tools for interaction but have evolved into a foundational element of modern social, cultural, and economic structures. Mass communication platforms—such as television, radio, newspapers, and magazines—serve as dominant channels through which information is disseminated to the public. These platforms operate with the fundamental objective of conveying messages designed for the broader masses, whether in the form of storytelling, news, or advertisements. The influence of mass communication is particularly evident in the ways it shapes public perception, encourages behavioral change, and fosters civic awareness (McQuail, 2010; Luhmann, 2000). Among the various components of mass communication, advertising holds a prominent place due to its dual function as both an economic and social instrument. Advertising plays a central role in promoting goods and services while also serving as a mechanism for public persuasion and education. Classically, advertising is understood to fulfill three primary objectives: to inform, to persuade, and to remind (Kotler & Keller, 2016). While commercial advertisements focus on market-driven goals, another important but often overlooked category is the public service advertisement (PSA), which aims to communicate messages of societal benefit. Unlike commercial advertising, PSAs are intended to influence public attitudes and behaviors toward social issues, often with no profit motive involved (Atkin & Rice, 2013).

Public service advertisements have become vital tools for shaping public awareness and encouraging pro-social behavior, especially in the context of environmental issues. Environmental hygiene, particularly in urban areas of developing countries like Indonesia, remains a pressing concern. Cities such as Bogor struggle with persistent environmental challenges including waste accumulation, pollution, and the risk of flooding. These issues are not merely logistical but are deeply rooted in human behavior and societal norms. Consequently, campaigns that encourage environmental responsibility must adopt innovative communication strategies to engage the public effectively. PSAs play a strategic role in this context by educating people about their roles and responsibilities in maintaining environmental cleanliness (Mei et al., 2016). Environmental cleanliness is not only a matter of aesthetics or urban planning; it is intrinsically linked to public health and sustainable development. According to the World Health Organization (WHO), environmental risks—such as poor sanitation, inadequate waste management, and polluted water and air—contribute to more than 12 million deaths annually, many of which could be prevented through public awareness and better behavior (WHO, 2022). Therefore, public education campaigns that communicate the importance of environmental hygiene are not simply informative; they are life-saving.

In Indonesia, where community-based practices and communal living are culturally embedded, the success of environmental cleanliness initiatives depends largely on public participation. However, encouraging participation requires more than mere instruction. It involves changing attitudes, behaviors, and even deep-rooted cultural practices. Traditional PSAs in Indonesia, often delivered through static images or conventional television slots, may no longer be adequate to capture the attention of a digitally literate population, particularly among youth demographics who are increasingly drawn to dynamic and visually compelling media formats. To this end, animated motion graphic videos offer a promising alternative. Motion graphic animation, as a form of digital storytelling, has emerged as a powerful medium for public communication. It combines visual imagery, typography, sound, and narrative structure to produce engaging and informative content. Unlike live-action formats, motion graphics can simplify complex ideas into accessible and entertaining forms, making them particularly effective for educational campaigns (Landa, 2010). In the case of public service messaging, motion graphics can bridge the gap between traditional values and modern communication preferences by delivering persuasive messages in a format that resonates with contemporary audiences.

The cognitive and emotional appeal of motion graphics has been supported by recent studies in media psychology. Visual information is processed 60,000 times faster in the brain than text, and motion-based visuals are more likely to evoke emotional responses that drive action (Lazard & Atkinson, 2015). Moreover, the animation format allows for symbolic representation and exaggeration, which can increase message memorability and behavioral impact. When used in PSAs focused on environmental cleanliness,

motion graphics can illustrate the consequences of pollution, demonstrate proper waste disposal techniques, and project positive environmental futures, all within a short, visually engaging clip. The integration of animation into public service campaigns also aligns with the growing trend toward digital civic engagement. With the proliferation of smartphones, social media platforms, and video-sharing sites such as YouTube and TikTok, digital PSAs have the potential to reach broader and more diverse audiences than traditional media ever could. A 2023 report by We Are Social and Hootsuite indicated that over 170 million Indonesians are active internet users, with a significant majority consuming video content daily. This shift underscores the necessity of adapting PSA strategies to the digital ecosystem in which today's public discourse takes place (DataReportal, 2023).

Given this context, the present initiative explores the development of an animated motion graphic-based Public Service Announcement (PSA) on environmental cleanliness targeted at urban communities in Bogor, Indonesia. This creative approach is rooted in the hypothesis that well-designed visual content can increase public awareness and foster behavioral change regarding waste management and environmental stewardship. By leveraging digital animation, the PSA aims to convey not only the risks associated with environmental neglect but also the practical steps individuals can take to maintain cleanliness in their neighborhoods. Furthermore, this initiative is grounded in social learning theory and the elaboration likelihood model (ELM), both of which emphasize the importance of message design in shaping behavior. Social learning theory, pioneered by Bandura (1986), posits that individuals learn behaviors through observation and imitation, especially when modeled by relatable characters in media. Meanwhile, ELM suggests that message effectiveness depends on the audience's level of involvement and the attractiveness of the communication route—central (argument-based) or peripheral (emotion-based). Motion graphics, by combining logical reasoning with aesthetic and emotional appeal, can cater to both routes, thus increasing message acceptance and retention (Petty & Cacioppo, 1986).

It is also important to consider the cultural dimension of PSA design. Indonesia is a diverse country with multifaceted cultural norms and values, and any public communication must be sensitive to local contexts. The design of the motion graphic video will incorporate local idioms, symbols, and references familiar to residents of Bogor, thereby enhancing relatability and cultural resonance. This localization strategy ensures that the message does not come across as foreign or didactic but is instead perceived as a communal call to action.

2. THEORETICAL BACKGROUND

The field of communication studies has increasingly recognized the value and transformative power of media messages aimed at societal betterment. Among the various forms of media communication, public service announcements (PSAs) occupy a unique position as non-commercial, message-driven content that seeks to promote behavioral and attitudinal change for the benefit of the community. In parallel, advancements in digital visualization, particularly through motion graphic animation, have redefined how these messages are delivered and consumed, especially among visually literate and tech-savvy audiences. This section reviews two key components central to this study: the concept and function of Public Service Announcements (PSAs), and the integration of motion graphic animation as a contemporary tool for message amplification.

2.1. Public Service Announcements (PSAs)

Public Service Announcements are defined as media messages created and disseminated to inform or educate the public about issues of collective importance. They aim to raise awareness, inspire action, or change public attitudes and behaviors regarding topics such as health, environment, education, and social responsibility (Atkin & Rice, 2013). Unlike commercial advertisements, which are primarily intended to drive sales, PSAs function within the public interest framework, often sponsored by governmental bodies, non-profit organizations, or advocacy groups. The core mission of a PSA is therefore not to generate profit, but to generate awareness and engagement around an issue that affects societal well-being. Historically, the emergence of PSAs can be traced to the early 20th century, with formal recognition in the

United States during World War II. The establishment of the Advertising Council (originally known as The War Advertising Council) in 1942 marked a pivotal point in the institutionalization of public service campaigns. The Council was instrumental in launching a wide range of campaigns that targeted social issues such as war bonds, public health, and national unity during wartime. Following the war, its focus shifted toward domestic concerns including drug abuse prevention, road safety, and educational reform (Rogers & Storey, 1987). These efforts helped establish the legitimacy and efficacy of PSAs as a staple of mass media intervention.

In the Indonesian context, however, the landscape for PSAs has been considerably less institutionalized. Unlike countries with centralized public communication bodies, Indonesia lacks a national agency dedicated to the systematic development and dissemination of PSAs. Instead, the production of PSAs often falls to advertising agencies collaborating independently with media outlets or government departments on a case-by-case basis. This decentralized model presents certain challenges, particularly in terms of consistency, sustainability, and quality control (Barus, 2012). As a result, public service campaigns in Indonesia tend to be sporadic and underfunded, and often lack a cohesive narrative or long-term strategy. Another challenge specific to the Indonesian context is the imposition of advertising taxes on PSAs, despite their non-commercial nature. While media providers may donate airtime or space for broadcasting these messages, the associated regulatory and financial burdens can deter frequent deployment. Consequently, there exists a pressing need for innovative, low-cost, and high-impact methods of delivering public service messages—one of which is through the digital medium of motion graphic animation.

2.2. Motion Graphic Animation

Motion graphic animation, or simply *motion graphics*, refers to a type of digital animation that combines graphic design, text, audio, and movement to convey information dynamically. Unlike traditional animation, which typically focuses on character and plot-driven storytelling, motion graphics are often used to explain complex concepts, present data, or highlight key messages in a visually engaging way (Manovich, 2002). This makes motion graphics particularly suited for public service messaging, where the aim is to distill and disseminate information effectively within short time frames. The roots of motion graphics can be found in early 20th-century film experiments, but it wasn't until the advent of television and digital editing software that motion graphics gained mainstream popularity. In Indonesia, the term *bumper*—used to describe short visual segments between television programs—is often associated with motion graphics. The influence of global media brands, especially MTV during the 1990s, played a significant role in shaping the aesthetic and technique of motion graphics among Indonesian media practitioners. MTV's stylistic bumpers, characterized by high-paced visuals, bold typography, and rhythmic transitions, served as both inspiration and proof of concept for motion-based storytelling (Curtis, 2003).

From a technical perspective, motion graphics involve the sequential arrangement of static images or graphic elements that are animated using software such as Adobe After Effects, Blender, or Cinema 4D. The human brain is capable of perceiving a rapid series of still images as continuous movement, a principle known as the *persistence of vision*. Motion graphics take advantage of this cognitive trait to create the illusion of motion and to simulate dynamic processes. This capacity makes them ideal for demonstrating cause-effect relationships, procedural instructions, or abstract ideas—functions that are essential in the realm of public education and behavioral influence (Lupton & Phillips, 2015). The use of motion graphics in public communication also reflects broader trends in media consumption. As audiences increasingly favor short, mobile-friendly, and visually stimulating content, motion graphics offer a versatile solution that meets these preferences. They are shareable on social media platforms, adaptable to various screen sizes, and effective in capturing attention within the first few seconds—an attribute crucial in a media environment marked by information overload (Peters, 2015). Particularly among younger audiences, who are digital natives and visual learners, motion graphics have shown to increase engagement, comprehension, and recall (Mayer, 2009).

Beyond their aesthetic appeal, motion graphics serve pedagogical purposes as well. Cognitive load theory suggests that well-designed visuals reduce extraneous cognitive burden, thereby enhancing the

assimilation of new information (Sweller et al., 2011). Motion graphics can guide viewers through a narrative arc, emphasize key points, and even induce emotional responses—thus leveraging both rational and affective pathways to influence behavior. For public service announcements, these characteristics are especially valuable, as they allow for a more immersive and persuasive communication style. In terms of cultural relevance, motion graphics offer a flexible canvas for incorporating local symbolism, language, and context-specific scenarios. This adaptability is particularly important in multicultural nations such as Indonesia, where communication strategies must navigate a rich tapestry of ethnicities, religions, and regional identities. By embedding culturally resonant elements into animated PSAs, message designers can enhance the relatability and acceptance of the campaign. In practice, this might involve using familiar visual metaphors, traditional motifs, or region-specific issues such as urban waste management or flood prevention in the case of Bogor.

The motion graphic animation also offers cost advantages. Compared to live-action video production, which requires physical sets, actors, and logistics, motion graphics can be created entirely within digital environments. This makes them a more accessible tool for non-profit organizations, educators, and local governments working with limited budgets. Furthermore, digital animation allows for rapid iteration and translation, enabling the same core message to be repurposed for different audiences with relative ease.

2.3. Synthesis and Relevance to the Study

The synthesis of public service messaging and motion graphic animation provides a fertile ground for innovation in public communication. PSAs have long been established as a mechanism for social change, yet their effectiveness depends significantly on the format and medium through which they are delivered. Traditional PSAs—though still important—must evolve in design and delivery to maintain relevance in a rapidly digitizing society. Motion graphic animation emerges as a viable and powerful complement to this evolution, offering the capacity to translate complex, abstract, or otherwise overlooked issues into accessible and compelling media content. In the context of environmental cleanliness campaigns in urban Indonesia, the convergence of PSA objectives with motion graphic techniques offers strategic advantages. This approach not only enhances message delivery and comprehension but also aligns with the behavioral patterns and media preferences of the target population. By combining cognitive science, visual design, and cultural sensitivity, motion graphic PSAs represent a next-generation solution to age-old societal challenges.

3. METHODOLOGY

This study adopts a quantitative descriptive approach to investigate audience perceptions toward public service announcements (PSAs) on environmental cleanliness, delivered through motion graphic animation. The primary tool of data collection is the questionnaire, which is designed to capture respondents' attitudes, understandings, and responses toward the presented content. In line with the principles of social science research, the use of questionnaires allows for the systematic acquisition of standardized data from a defined population sample, enabling reliable quantitative analysis (Creswell & Creswell, 2018). According to Walgito (2010), a questionnaire is a structured list of questions intended to be answered by selected individuals—either directly or through guardians, depending on the context. It is widely used in behavioral and communication research to gather data related to opinions, attitudes, behaviors, and perceptions. The rationale for using this instrument lies in its practicality and efficiency. Respondents can complete the questionnaire at their own pace, and the structured format ensures that data collected can be compared and statistically analyzed with consistency. The questionnaire format also mitigates interviewer bias and allows for the anonymity of respondents, which can increase the honesty and reliability of the responses.

The questionnaire employed in this study comprises both positively and negatively phrased items, a strategy used to reduce response bias and to test the consistency of the participant's viewpoint across different phrasings. This balanced approach ensures a more accurate representation of the respondent's true perception. Moreover, the response options for most items are predetermined using a Likert scale,

which provides ordinal data that can be used to gauge the intensity of respondent agreement or disagreement toward various statements. The construction of the questionnaire includes two main types of questions: closed-ended and open-ended formats. Closed-ended questions require respondents to select from predefined options, typically in the form of multiple-choice answers or scaled responses. This type of question format is particularly useful for quantitative analysis because it standardizes responses and simplifies data coding and interpretation. In the context of this study, closed-ended questions help to quantify specific dimensions such as message clarity, emotional impact, comprehension of environmental messages, and aesthetic appeal of the animation.

Open-ended questions, on the other hand, allow respondents to express their views in their own words. This format is used in a limited but strategic way to capture deeper insights, emotional reactions, or unexpected interpretations that may not be evident in fixed-response formats. These qualitative responses can enrich the quantitative data and provide valuable context for understanding how different individuals cognitively and emotionally process the PSA content. For instance, open-ended items may invite comments on which parts of the animation were most memorable or how the respondent personally relates to the environmental cleanliness message. The design of the questionnaire is guided by principles of clarity, neutrality, and logical flow. Each section of the questionnaire is introduced with a brief explanation to help orient the respondent, and the order of questions is arranged to move from general impressions to more specific evaluations. Neutral wording is emphasized to avoid leading the respondent toward a particular answer. Moreover, a pilot test was conducted with a small sample prior to the full deployment of the instrument to ensure the reliability and validity of the items. Feedback from this pre-test helped identify ambiguous wording, response fatigue, and layout issues, which were then revised to improve clarity and engagement.

In terms of distribution, the questionnaire was administered online to reach a broader and more diverse respondent pool, particularly among digital media users who represent the core target demographic for motion graphic-based PSAs. Online distribution also aligns with the digital nature of the content being evaluated, ensuring that the respondents are familiar with the technological medium in question. Participation was voluntary, and informed consent was obtained from all participants prior to beginning the questionnaire. Ethical considerations were rigorously observed throughout the data collection process, in accordance with institutional research guidelines. This methodological framework ensures that the data collected is both reliable and relevant for assessing the communicative effectiveness of the animated PSA on environmental cleanliness. By combining structured quantitative analysis with opportunities for qualitative input, the study aims to present a nuanced understanding of how animated PSAs are perceived and how they can influence public awareness and behavior concerning urban environmental issues.

4. RESULT AND DISCUSSION

Before This section presents the comprehensive process, production phases, and evaluative outcomes of the animated public service announcement (PSA) video project designed to promote environmental cleanliness. It covers the production workflow, advertisement design, animation implementation, and the results of audience testing through structured questionnaires. The results are discussed to assess the PSA's effectiveness in conveying environmental messages and influencing viewer attitudes.

4.1. Workflow of Advertisement Production

The production of a public service advertisement requires a structured workflow to ensure that each stage is carried out systematically and contributes coherently to the final outcome. The workflow for this project began with the data collection phase, which involved field observations and informal interviews to understand public perceptions and the environmental conditions in the urban areas of Bogor, Indonesia. This preliminary research provided the empirical grounding and contextual sensitivity needed for the message formulation. Following this, the advertisement planning stage was initiated. During this phase, the researchers outlined the objectives of the PSA, the core message to be communicated, and the

appropriate tone and visual approach. The planning also included decisions regarding visual style, target demographics, and platform suitability.

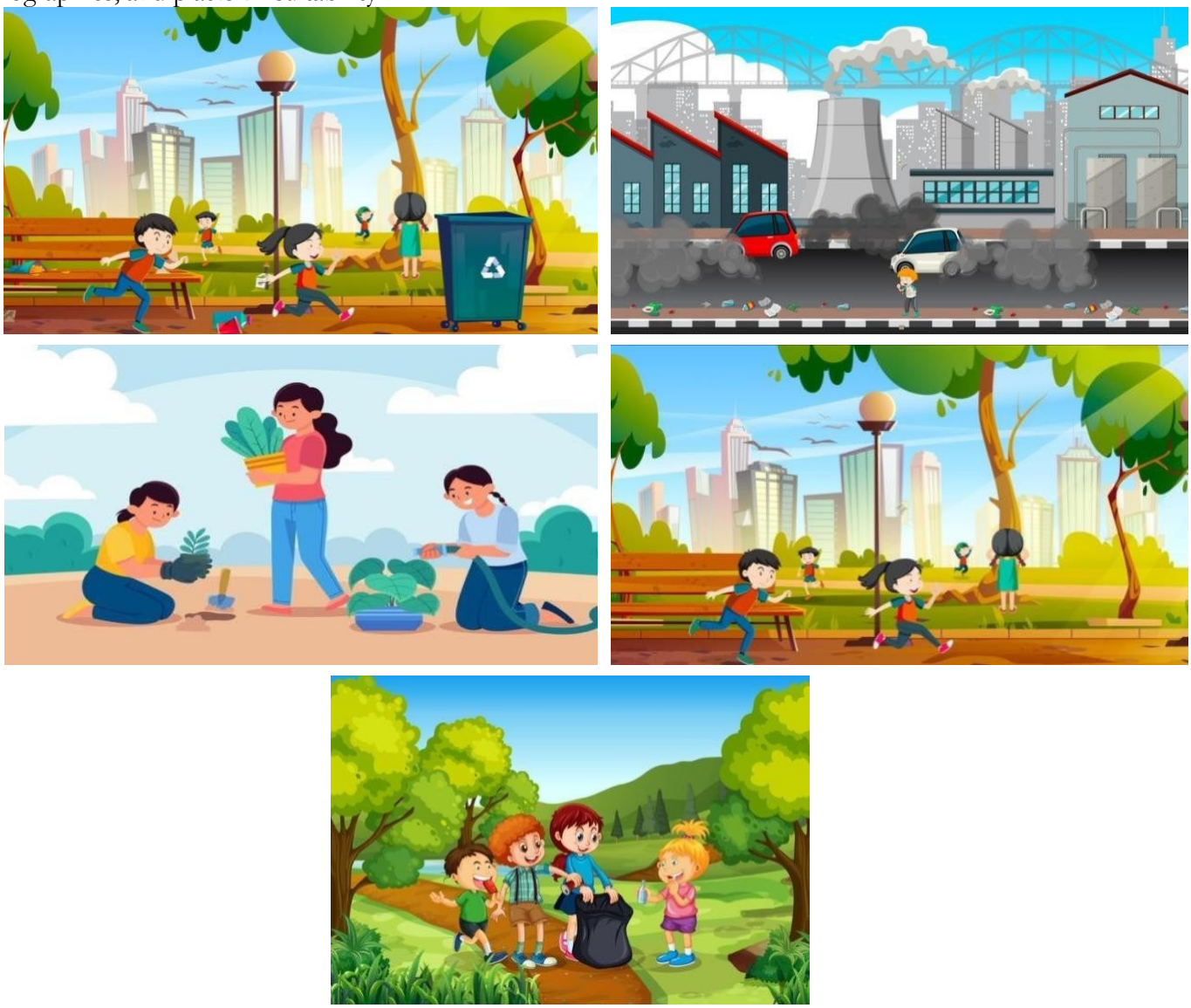

Figure 1. Scenes

In Figure 1, the production process itself was executed through several sub-stages, beginning with the creation of visual assets and characters using Adobe Illustrator. The process entailed translating storyboard ideas into digital graphic components, such as backgrounds, characters, and environmental objects. Subsequently, the animated sequences were constructed using Adobe After Effects, where elements were integrated and animated to simulate real-life motion and transitions. Sound elements were produced in parallel. Narration was recorded after the animation was assembled to ensure precise timing and synchronization. Adobe Audition was used for audio recording and refinement, with a quality microphone setup employed to reduce background noise and enhance clarity. Background music and narration were later synchronized during the video editing process. The final stage involved post-production editing and rendering. During editing, the animated components, voice-over, and background music were meticulously arranged, ensuring fluid transitions and coherence between audio and visual elements. The rendering phase converted the project into a shareable digital format, producing an MP4 file ready for dissemination through social and digital platforms.

4.2. Design and Development of the Advertisement

The creative phase of the project began with idea generation and the conceptualization of the PSA's storyline. Drawing on existing public service advertisements and health promotion materials, the research team developed a storyline centered on a transformation narrative: from a polluted, neglected public park to a clean and community-supported environment. This narrative progression was chosen for its strong symbolic association with behavioral change and civic responsibility. The storyboard was constructed to reflect this progression visually and narratively. Each scene was meticulously illustrated, incorporating cinematographic cues such as camera angles, transitions, sound effects, and character expressions. The storyboard served as the visual script, aligning the technical production with the narrative flow.

The animation process involved importing Illustrator-created visuals into Adobe After Effects, where scenes were composed and animated. Particular attention was given to the movement of characters and the dynamic representation of environmental transformation. For example, trash disappearing as community members clean up the park, and trees growing as part of a symbolic regeneration process. Audio narration was recorded after visual development to ensure precise alignment. The voice-over complemented the visual transitions and helped reinforce the PSA's messaging. A consistent background track was added to enhance emotional resonance and maintain viewer engagement throughout the duration of the video.

4.3. Advertisement Description and Scene Breakdown

The final animation comprises a sequence of scenes designed to convey a clear and emotionally resonant message. The introduction scene displays the title, immediately informing viewers of the content and its relevance. The first main scene shows children playing in a dirty, trash-filled park, establishing the problem context. This is followed by a second scene where a child coughs due to pollution—intensifying the emotional appeal. Subsequent scenes illustrate community mobilization, with adults cleaning the park and planting trees. Children are later shown playing joyfully in a transformed, green environment. The penultimate scene features a child inviting others to maintain cleanliness, signifying a shift in agency and awareness. The advertisement concludes with the appearance of a community or local government logo and a closing celebration scene, symbolizing collective success.

4.4. Implementation and Testing of the Advertisement

To assess the effectiveness of the animated PSA, an evaluative study was conducted involving 25 respondents from the Bogor community. Participants were shown the completed video and then asked to complete a structured questionnaire assessing various dimensions of the advertisement. The questionnaire included 15 items—10 positively framed and 5 negatively framed—designed to capture perceptions of clarity, appeal, motivation, and relevance.

Table 1. Audience Responses to Motion Graphic PSA on Environmental Cleanliness (n = 25)

No	Questionnaire Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Positive Response (%)
1	Is the video engaging and easy to follow?	40	36	16	4	4	76
2	Does the video deliver the message about the importance of cleanliness?	44	36	16	8	0	76
3	Do the visuals and animation capture your attention?	36	40	16	8	0	76
4	Is the narration easy to understand?	48	36	12	4	0	84
5	Does the background music support the message?	32	40	20	8	0	72
6	Do you feel encouraged to keep the environment clean after watching?	44	36	12	8	0	80
7	Will you invite family and friends to maintain cleanliness?	40	36	16	8	0	76
8	Is the video relevant to your environmental situation?	32	48	12	4	4	80
9	Is the video duration sufficient to convey its message?	36	44	16	4	0	80
10	Would you recommend this video to others?	40	36	16	8	0	76
11	Do you find the video boring?	4	8	20	36	32	68* (negative reversed)

12	Is the message in the video unclear?	0	12	20	36	32	68* (negative reversed)
13	Are the visuals and animation unattractive?	0	8	24	36	32	68* (negative reversed)
14	Is the background music distracting?	0	4	24	44	28	72* (negative reversed)
15	Are you unaffected by the video's message on cleanliness?	4	8	12	48	28	76* (negative reversed)

Results in Table 1 show a strong positive reception. For instance, 76% of respondents agreed that the video was engaging and easy to follow. An identical percentage also affirmed that the PSA successfully conveyed the importance of environmental cleanliness. Similarly, 76% agreed that the visuals and animations captured their attention, and 84% stated that the narration was clear and comprehensible. Notably, 80% of respondents indicated that the video motivated them to maintain environmental cleanliness, and an equal percentage felt encouraged to involve their friends and family. Moreover, 80% affirmed the video's relevance to their everyday environment, suggesting high contextual resonance.

Negative perception metrics were minimal. Only 12% felt the PSA lacked clarity, while 8% found it dull. On the contrary, 68% explicitly disagreed with the notion that the video was boring, and 72% stated that the background music supported rather than distracted from the message. The inclusion of negatively framed questions helped validate the consistency of the results. A majority disagreed with statements suggesting the PSA was unconvincing or visually unappealing. These findings support the hypothesis that motion graphic-based public service messages can effectively communicate civic values and promote behavioral change, especially when aligned with culturally relevant narratives and visually engaging formats.

4.5. Discussion

The implementation and evaluation of a motion graphic-based Public Service Announcement (PSA) on environmental cleanliness in Bogor yielded significant insights into the effectiveness of visual communication strategies in fostering civic awareness and behavior change. The results demonstrate that well-structured, visually appealing, and culturally relevant animated content can significantly impact audience engagement, comprehension, and willingness to take action. This discussion elaborates on these findings by placing them within the framework of communication theory, media psychology, and environmental education, while also addressing their implications for future public information strategies. The use of motion graphics in this PSA is grounded in several key theoretical principles, most notably the Elaboration Likelihood Model (ELM) proposed by Petty and Cacioppo (1986). According to this model, individuals process persuasive messages through two routes: the central route, which involves critical thinking and logical analysis, and the peripheral route, which relies on superficial cues such as aesthetic appeal, emotional resonance, or the credibility of the source. In the case of this PSA, both routes were strategically activated. The central route was engaged through a clear and logically sequenced storyline that depicted a problem (environmental degradation), a response (community cleaning effort), and an outcome (restored environment). This logical progression was accompanied by narrative voiceovers and visual transitions that reinforced the informational content. Simultaneously, the peripheral route was triggered through the use of attractive visuals, relatable characters, emotional scenes (e.g., a child coughing due to pollution), and pleasant background music. These elements worked in tandem to ensure that the message was not only received but also internalized.

Another pertinent framework is Bandura's Social Cognitive Theory (1986), which emphasizes the role of observational learning and modeling in behavior adoption. In the PSA, viewers were presented with a model of desired behavior—community members actively cleaning and maintaining their environment. This visual demonstration, reinforced by narration, allowed the audience to witness the social acceptability, feasibility, and positive outcomes of pro-environmental behavior. As Bandura suggests, when individuals observe others performing a behavior that leads to desirable results, they are more likely to replicate that behavior themselves, particularly when they identify with the models. The final scenes of the PSA, which depict collective celebration and improved communal spaces, serve as a form of vicarious reinforcement, illustrating the tangible benefits of civic engagement. The high levels of agreement in the questionnaire

responses—ranging from message clarity, emotional impact, visual appeal, to behavioral influence—confirm the effectiveness of the motion graphic format. In particular, the finding that 80% of respondents felt compelled to maintain environmental cleanliness after viewing the PSA underscores the format's potential to transcend mere awareness and motivate action. This is consistent with recent literature which argues that visual storytelling, particularly through animated content, increases not only message recall but also emotional engagement and behavioral intention (Mayer, 2009; Lazard & Atkinson, 2015).

The choice to employ motion graphics rather than traditional video formats is also validated by the preferences of contemporary audiences, particularly younger demographics. As Indonesia continues to experience rapid digitalization, especially among its urban youth population, communication strategies must evolve to reflect shifting media consumption patterns. A 2023 report by We Are Social revealed that video content is the most consumed form of digital media in Indonesia, with platforms such as YouTube, Instagram, and TikTok being primary sources of information and entertainment. In this context, the motion graphic PSA aligns with prevailing content preferences, making it more likely to be watched, shared, and discussed. Furthermore, the positive reception of the PSA's narrative and aesthetic design highlights the importance of cultural contextualization in public communication. The characters, settings, and issues depicted in the animation were tailored to reflect the lived experiences of Bogor's urban residents. This cultural proximity enhances message relatability and credibility—key factors that influence how audiences evaluate and respond to media messages (Hall, 1997). The depiction of local environments, familiar communal activities (such as cleaning campaigns), and collective celebration reinforced a sense of ownership and local identity, which in turn fostered deeper emotional investment in the message.

It is also notable that the inclusion of negatively framed questions in the questionnaire provided a necessary counterbalance to potential response biases. For instance, items such as "Do you find the video boring?" or "Is the message unclear?" yielded overwhelmingly negative responses (i.e., most respondents disagreed), suggesting that the positive ratings for other questions were not merely the result of social desirability bias. This methodological rigor enhances the reliability of the findings and strengthens the case for motion graphic PSAs as a viable public communication strategy. However, several challenges and limitations should be acknowledged. First, the sample size of 25 respondents, while sufficient for a pilot evaluation, may not provide a statistically generalizable picture of audience responses across broader demographics. Future studies should aim for a more diverse and larger sample, incorporating age, gender, education level, and digital media literacy as variables of analysis. Second, the study does not account for the long-term impact of the PSA—whether the observed changes in perception and motivation translate into sustained behavioral change over time. Longitudinal studies or follow-up surveys could help determine the durability of the PSA's influence.

Third, the study was conducted in a controlled environment, where respondents watched the PSA under the guidance of researchers. In real-world settings, exposure to such videos may be fragmented or interrupted, potentially reducing their impact. This raises questions about optimal distribution channels, message frequency, and the role of supplementary materials (e.g., infographics, posters, school activities) in reinforcing the PSA's core message. Integrating these components into a multi-platform environmental communication campaign could enhance reach and reinforce learning. The discussion also opens avenues for further research in comparative media effectiveness. How does a motion graphic PSA perform compared to a live-action video, infographic poster, or social media meme in influencing environmental behavior? Does the inclusion of local dialects, celebrity endorsements, or interactivity (e.g., quizzes, challenges) enhance message retention and participation? Exploring these questions through experimental design would enrich both academic knowledge and practical implementation.

5. CONCLUSIONS

The findings support the integration of digital media literacy and creative content production into public health and environmental education programs. Local governments, NGOs, and community groups could benefit from training modules that teach basic animation and storytelling skills, enabling grassroots production of PSAs tailored to local issues. Moreover, partnerships with local artists, youth creators, and

influencers could foster co-creation models that make environmental messages more authentic, participatory, and scalable. This study contributes empirical evidence to the growing body of literature that advocates for the use of animated motion graphics in public communication. It demonstrates that when strategically designed and culturally contextualized, such media can significantly enhance public awareness, emotional engagement, and pro-social behavior. As urban centers in Indonesia and elsewhere grapple with environmental challenges, media innovations like animated PSAs offer not just an aesthetic alternative, but a strategic necessity.

Ethical approval

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

Informed consent statement

All participants were informed of the purpose of the study, and informed consent was obtained prior to data collection. Participation was voluntary, and all responses were kept confidential and used solely for academic research purposes.

Authors' contributions

Conceptualization, D.R.N. and A.H.P.; methodology, D.R.N., A.H.P., and C.N.A.; validation, A.H.P. and C.N.A.; formal analysis, D.R.N., A.H.P., and C.N.A.; resources, D.R.N.; writing original draft preparation, D.R.N. and A.H.P.; writing review and editing, M.S. and K

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data presented in this study are available on request from the corresponding author due to privacy reasons.

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Notes on Contributors

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Dandi Rajki Nurpadilah is an undergraduate student in the Multimedia Engineering Technology Study Program at Boash Digital Polytechnic of Indonesia. His academic interests include digital media design, motion graphics, and the application of augmented reality for public communication. He has participated in several multimedia-based social campaigns and academic research focused on civic engagement through creative digital content. Dandi is also actively involved in the development of augmented reality applications that aim to promote local culture and environmental awareness.

Amir Hamzah Pohan

Amir Hamzah Pohan is a lecturer with twenty years of experience working alongside executive teams in research. He specializes in AI technology and is responsible for educating students on the use of advanced systems and applications, including AI software, mass communication procedures, and organizational tools. Amir Pohan is a strong presence in the workplace, known for his positive attitude and tireless energy, which he uses to motivate others to work hard and succeed. He is inspired daily by his wife and their

daughter. In his free time, Amir Pohan enjoys hiking, crocheting, and playing video games with his grandson.

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