Idealogy Journal Vol. 11 No. 1, 2026, pp 123-131
DOI: https://doi.org/10.24191/idealogy.v11i1.831
Section: Original Article

Analysing the Motion Graphic Principles Used in Microplastics Pollution Awareness Video

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Received: 30 June 2025; Accepted: 3 July 2025; Published: 1 April 2026

ABSTRACT

Public awareness of microplastic pollution in Malaysia remains low despite increasing scientific attention to its environmental and health impacts. Traditional live-action formats dominate local awareness efforts, underutilising the potential of motion graphics to enhance communication. This study aims to examine how motion graphic principles can improve the effectiveness of microplastic pollution awareness videos in engaging and educating audiences. Using Ge Song's (2016) framework of four motion graphic principles (logic, transformation, transition, and music), this study used a qualitative content analysis of seven selected awareness videos that primarily utilise motion graphics. Each video was evaluated on sub-elements such as message clarity, visual transformation, narrative flow, and emotional resonance using a structured 5-point Likert scale. Findings reveal that the logic principle was consistently applied across all videos, ensuring clear message delivery and well-structured narratives. Transformation and transition principles were moderately well utilized, particularly in videos targeting younger audiences or produced with higher-quality animation. Music, however, showed the most inconsistency, with several videos lacking emotional depth or relying on minimal sound design. In conclusion, while motion graphics demonstrate strong potential for simplifying complex information and increasing audience engagement, their application in Malaysian microplastic awareness videos remains uneven. This study suggests that a more balanced and integrated use of all four motion graphic principles could significantly enhance the impact of future environmental campaigns, bridging the gap between scientific information and public understanding.

Keywords: *Motion Graphic Principles, Microplastic pollution, Microplastic awareness video*

1 INTRODUCTION

The advent of digital communication has transformed the manner of communicating information. Motion graphics, which utilize animation, illustration, and type-based narrative, become powerful tools to convey complex ideas and capture people's attention. In Malaysia, motion graphics are increasingly being utilized in advertisements and music, reflecting the growing importance they are accorded in the creative sphere. For instance, a study of Malaysian sparkling drink commercials established that the employment of digital paint and motion graphics considerably enhanced brand recall and audience engagement (Zaifa Kamaruzaman et al., 2023).

In addition to its use in commerce, motion graphics also have potential in sustainability and environmental education. Zhao et al., (2024) demonstrated how creatively crafted visual media are. For instance, interactive animation can bridge the gap between public understanding and scientific knowledge through emotional connection and transparency. Yet in Malaysia, environmental

campaigns remain largely dependent on live-action formats, instead of leveraging the potential for more intimacy provided by motion graphics (Zaifa Kamaruzaman et al., 2023; Khairulah et al., 2023). This study bridges that gap by studying microplastic pollution awareness videos, grounded on Ge Song's (2016) principles of motion graphic design: logic, transformation, transition, and music. This research evaluates the efficacy of such principles in enhancing public engagement and ecological literacy toward the overall discussion of effective visual communication in Malaysia's sustainability efforts.

1.1 Research Objective

The objective of this research was to analyse the usage of motion graphic principles in selected microplastic pollution awareness videos.

1.2 Problem Statement

Motion graphics are widely recognized for their ability to simplify complex information and enhance viewer engagement. However, their specific application in microplastic pollution awareness campaigns remains under-researched. Mahaliyana and Nugawela (2024) emphasize the significant gap between scientific research on microplastics and public awareness, highlighting the need for effective science communication strategies to bridge this divide.

In Malaysia, this issue is further worsened by the limited number of microplastic awareness videos, with most publicly available content originating from international sources (Praveena, 2024). In Malaysia, environmental awareness campaigns like microplastic pollution awareness mostly use live- action footage, with limited usage of motion graphics or animated elements. This underutilisation of motion graphics suggests a missed opportunity to enhance the effectiveness of environmental communication.

Motion graphics have the potential to simplify complex information and foster deeper emotional and cognitive connections with audiences. As highlighted by Mahaliyana and Nugawela (2024), there is a significant gap between scientific research on microplastics and public awareness, emphasizing the need for effective science communication strategies to bridge this divide. Furthermore, studies show that public understanding and attitudes toward plastic pollution in Malaysia still require strengthening, indicating a need for more engaging and educational content (Chin, Mahanta, & Nath, 2023).

2 LITERATURE REVIEW

This literature review highlights the increasing importance of motion graphics in digital communication, particularly for simplifying complex information through engaging visual storytelling. Motion graphics have been successfully applied in education, health communication, and marketing. However, their use in environmental awareness campaigns, especially within the Malaysian context remains limited. Despite growing concern over microplastic pollution, public awareness in Malaysia is still low. Most existing educational content often relies on international sources. Local awareness campaigns mostly use live-action formats, underutilising the potential of animated content to resonate emotionally and cognitively with audiences. To address this gap, this study adopts Ge Song’s (2016) four motion graphic principles (logic, transformation, transition, and music) as a framework to evaluate the effectiveness of microplastic awareness videos. These principles offer a valuable design guide for enhancing clarity, narrative flow, and emotional engagement in motion graphic-based environmental communication.

2.1 Motion Graphics in Digital Communication

Motion graphics have become a widely used tool in digital communication, especially for

presenting complex information in a simple, engaging, and memorable way. Their ability to combine text, visuals, animation, and sound allows content creators to create powerful messages that attract attention and improve people's understanding. This approach has proven effective across many fields, including education, marketing, and health communication (Pereira, Figueiredo, & Silva, 2020; Ares, Barros, & Montero, 2021). With the increasing consumption of visual content online, motion graphics are now core to many awareness campaigns aimed at reaching audiences more effectively through visual storytelling (Scherer, Flemming, & Nowak, 2019).

2.2 Microplastic Pollution Awareness and the Malaysian Context

Microplastic pollution is tiny plastic particles that result from waste breakdown. It has become a major environmental issue, especially in countries with high plastic use and poor waste management systems like Malaysia (Jambeck et al., 2015). Although scientific research on the risks of microplastics is growing, public awareness remains low. Chee, Toh, and Ng (2021) report that many Malaysians have a limited understanding of how microplastics affect the environment and health. Mahaliyana and Nugawela (2024) emphasize a clear gap between research and public knowledge, calling for stronger communication strategies. Praveena (2024) adds that awareness videos produced in Malaysia are limited in number and often depend on content created by international sources. This highlights the urgent need for more localized, engaging educational content to improve microplastic literacy in the Malaysian public.

2.3 Motion Graphics in Environmental Awareness Campaigns

Motion graphics have strong potential for public communication, but their use in environmental campaigns especially in Malaysia is still limited. Most local awareness videos are live-action, with very few using animation or motion graphic techniques. This underuse of motion graphics represents a missed opportunity to present environmental messages in a way that resonates emotionally and cognitively with audiences (Yasa, Wibawa, & Pramayasa, 2024). Chin, Mahanta, and Nath (2023) found that public attitudes and behaviors toward plastic pollution in Malaysia are still weak, suggesting a need for better-designed educational content. Integrating motion graphics into awareness campaigns could enhance engagement and improve message retention, especially among youth who are more responsive to digital and visual formats.

2.4 Motion Graphic Principles by Ge Song

To assess the quality and effectiveness of motion graphics in awareness videos, this study adopts Ge Song’s (2016) four key motion graphic principles: logic, transformation, transition, and music. These principles serve as design guidelines to ensure the video flows smoothly, delivers a clear message, and creates an emotional impact. Logic refers to the structure and clarity of the narrative. Transformation describes how visual elements change to support the message. "Transition" refers to how scenes or elements shift; and "music" adds mood and emotional depth. When applied well, these principles improve viewer understanding and retention (Bock, Iyer, & Kendall, 2020; Song, 2016). However, few studies have explored how these principles are used in microplastic pollution awareness videos, making this an important area of research.

3 RESEARCH DESIGN

This study employed a qualitative research approach, utilising content analysis to examine the usage of motion graphic principles in selected microplastic pollution awareness videos. Content analysis is a systematic research method for making replicable and valid inferences from texts or other meaningful materials within their contexts (Krippendorff, 2013). It enables researchers to analyse the presence, meanings, and relationships of certain words, themes, or concepts within qualitative data. A sample of seven awareness videos focusing on microplastic pollution was

selected for the analysis. The selection criteria emphasised videos that primarily employed motion graphics as their medium of communication. The analysis was guided by the Motion Graphic Principles framework developed by Song (2016), which encompasses four key principles: logic, transformation, transition, and music. These principles provide a structured method to assess the effectiveness and design of motion graphics in creating awareness about microplastic pollution.

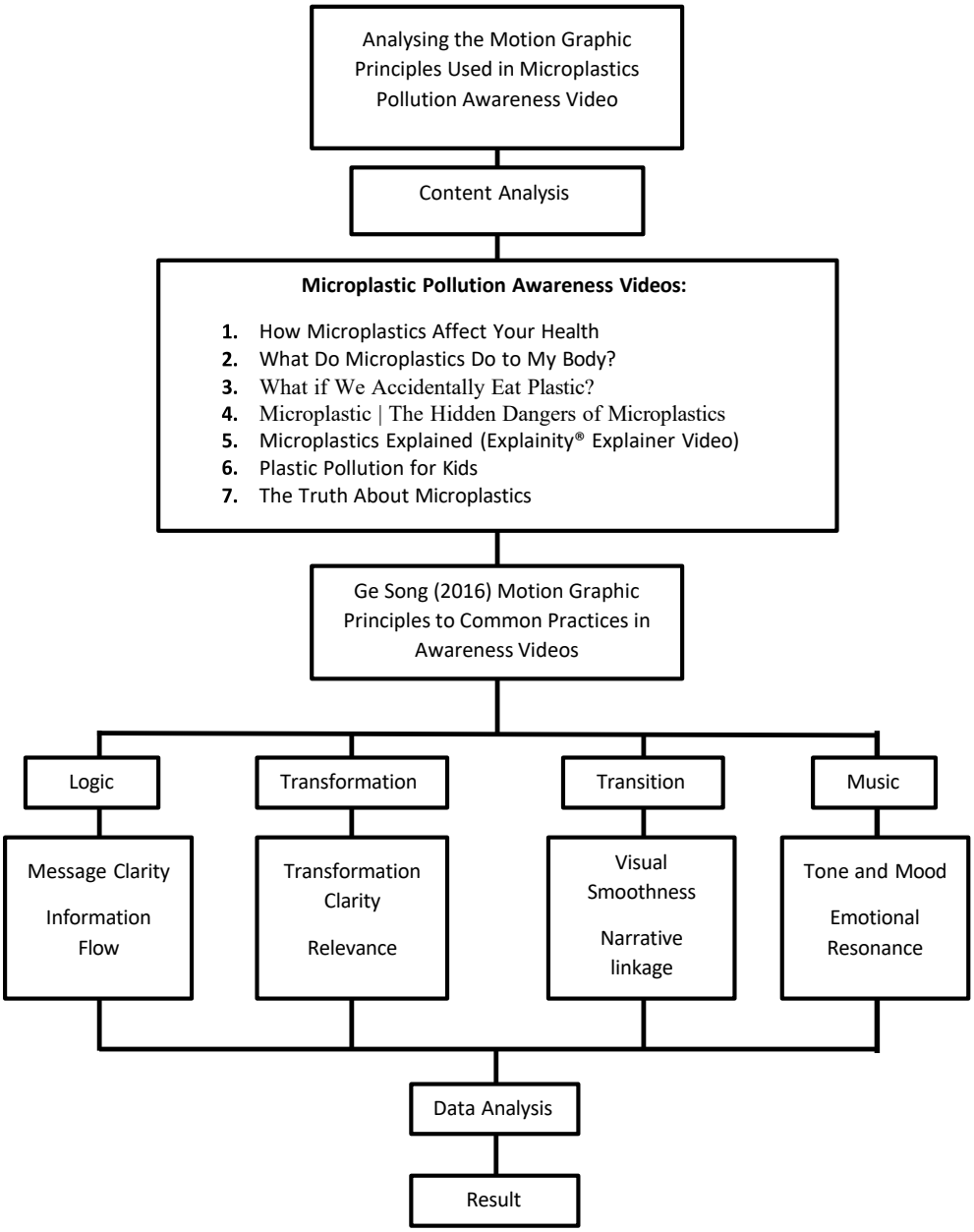
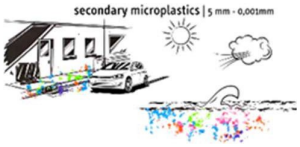


Figure 1 Ge Song's (2016) four key motion graphic principles, adopted for this study

4 SELECTION OF MICROPLASTIC POLLUTION AWARENESS VIDEO

Table 1 Selection Sample of Microplastic Pollution Awareness Video

	Title	Publisher	Platform / Date Published	Code	Justification
1.	How Microplastics Affect Your Health 	UN Environment Programme	Posted on YouTube November 15th 2019	MPAV1	Appears to use strong animation and infographic element
2.	What Do Microplastics Do to My Body? 	National Geographic	Posted on YouTube March 21st 2025	MPAV2	Produced by a reputable source with high production quality
3.	What if We Accidentally Eat Plastic? 	Dr. Binocs Show	Posted on YouTube July 9th 2024	MPAV3	Child-friendly educational format
4.	Microplastic | The Hidden Dangers of Microplastics 	The Planet Voice	Posted on YouTube June 7th 2024	MPAV4	Uses animated visual storytelling with voiceover
5.	Microplastics Explained (Explainity® Explainer Video) 	Explainity channel	Posted on YouTube March 18h 2019	MPAV5	Known for structured, whiteboard-style animations
6.	Plastic Pollution for Kids 	Errington House	Posted on YouTube Sept 20th 2023	Mpav6	Includes microplastics within broader pollution context
7.	The Truth About Microplastics 	CIIT College of Arts and Technology Philippines	Posted on YouTube Dec 22th 2021	MPAV7	Short animated video with infographic style

5 DATA ANALYSIS

A 5-point Likert scale (Likert, 1932) was used to evaluate the use of motion graphic principles in selected microplastic pollution awareness videos. Each sub-element such as message clarity or emotional resonance was rated from 1 (weak) to 5 (strong), with 3 indicating a moderate presence. A rating of 1 indicated a very poor application, where the element was either absent or highly ineffective in supporting the intended message. A score of 2 reflected a poor implementation, with minimal clarity or impact. A rating of 3 represented a fair application, suggesting moderate use with average coherence and effectiveness. A score of 4 denoted a good application, where the element was clearly presented and contributed meaningfully to the video's communication goals. Finally, a rating of 5 signified an excellent application, indicating a highly effective, impactful, and well-integrated use of the motion graphic principle that significantly enhanced audience engagement and message delivery. This method allowed for consistent, structured assessment of visual and auditory design elements for all videos.

Table 2 Analysis of motion graphic principles in Microplastic Pollution Awareness Video

	Microplastic Pollution Awareness Videos (Code)	Logic		Transformation		Transition		Music	
		Message Clarity (MC)	Information Flow (IF)	Transformation Clarity (TC)	Relevance (R)	Visual Smoothness (VS)	Narrative Linkage (NL)	Tone & Mood (TM)	Emotional Resonance (ER)
1	MPAV 1	5/5	5/5	4/5	4/5	5/5	5/5	4/5	3/5
2	MPAV 2	5/5	5/5	4/5	5/5.	5/5	5/5	4/5	3/5
3	MPAV 3	5/5.	5/5	4/5	5/5	5/5	5/5	4/5	3/5
4	MPAV 4	5/5	5/5	4/5	5/5	5/5	5/5	4/5	3/5
5	MPAV 5	5/5	5/5	3/5	4/5	3/5	3/5	2/5	2/2
6	MPAV 6	5/5	5/5	4/5	4/5	5/5	5/5	4/5	3/5
7	MPAV 7	5/5	5/5	4/5	5/5	5/5	5/5	4/5	4/5

6 RESULTS

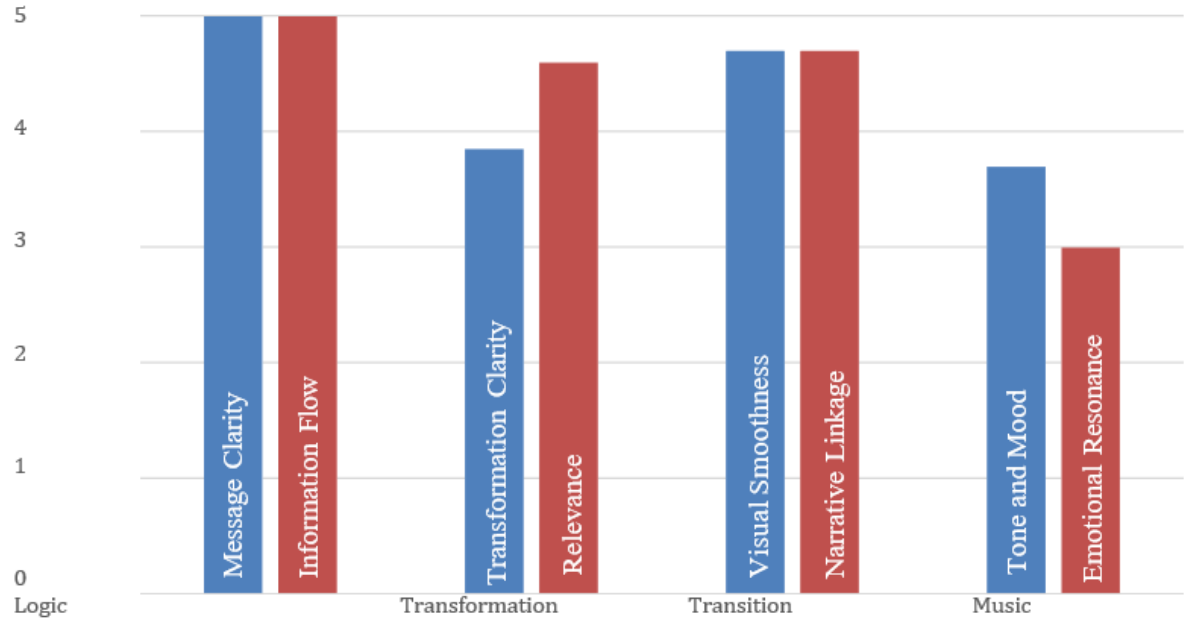


Figure 2 Result of analysis of motion graphic principles in Microplastic Pollution Awareness Video

7 FINDINGS

The analysis of all seven selected microplastic pollution awareness videos revealed a consistent application of the Logic principle, particularly in the areas of message clarity and information flow. All videos demonstrated a strong ability to convey complex environmental

topics in a clear and accessible manner. Videos such as “How Microplastics Affect Your Health” and “The Truth About Microplastics” were especially effective in maintaining a focused narrative and organizing content in a logical sequence. On the Likert scale, the Logic principle was rated 5 (Very Good), reflecting its consistent strength across all samples.

In contrast, the application of Transformation varied more significantly across the samples. Videos targeting younger audiences, such as “What if We Accidentally Eat Plastic?” and “Plastic Pollution for Kids”, employed transformation effectively through character-driven storytelling and object-based animations, which enhanced visual engagement and content retention. However, videos like “Microplastics Explained” relied heavily on static whiteboard illustrations and minimal visual transitions, limiting the dynamic visual appeal. Therefore, the Transformation principle received a rating of 3 (Moderate), indicating an average level of application with noticeable room for improvement.

The Transition principle was generally well executed, with most videos incorporating smooth scene progressions and maintaining narrative coherence between segments. Strong examples include “National Geographic’s What Do Microplastics Do to My Body?” and “The Truth About Microplastics”, which demonstrated proficient use of editing techniques to maintain fluidity.

Nevertheless, simpler formats such as “Microplastics Explained” and “Plastic Pollution for Kids” delivered only basic transitions, lacking the sophistication observed in more polished productions. Thus, the Transition principle was assigned a rating of 4 (Good).

Lastly, Music emerged as the most unevenly applied principle. Child-oriented and advocacy-focused videos, including The Dr Binocs Show and The Planet Voice, used background scores effectively to set an appropriate emotional tone either playful or urgent. In contrast, more technical or minimalist videos, such as “Microplastics Explained”, either underutilized music or failed to leverage it for emotional impact. Even in more balanced productions like “The Truth About Microplastics”, music remained largely functional rather than emotionally compelling. Consequently, the Music principle was rated 2 (Poor), reflecting its limited and inconsistent contribution across the dataset.

In summary, the findings highlight a strong baseline in logical structure (rated 5), moderate execution of transitions (rated 4), uneven visual transformation (rated 3), and underdeveloped use of music (rated 2). Addressing these disparities could enhance both the persuasive power and educational impact of motion graphic videos, particularly in emerging awareness contexts like Malaysia, where such formats are still evolving.

8 CONCLUSION

This study concludes that while motion graphics are widely recognised for their potential to simplify complex topics and enhance viewer engagement, their application in microplastic pollution awareness videos remains uneven. The analysis of seven selected videos revealed that the principle of logic was consistently and effectively applied, enabling clear message delivery and structured information flow. However, the remaining principles which are transformation, transition, and music were applied with varying effectiveness. Transformation and transition were more successfully implemented in videos with higher production quality or those targeting younger audiences, while music was often underutilized, limiting emotional resonance. This supports the claim that motion graphics, though underused in Malaysian environmental communication, offer significant untapped potential. By adopting a more balanced approach that integrates all four motion graphic principles, future awareness campaigns can become more engaging, emotionally impactful, and educationally effective, helping to bridge the gap between scientific knowledge and public understanding of microplastic pollution.

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ACKNOWLEDGEMENT

The authors would like to thank all those who contributed in this research.

FUNDING

This research is self-funded.

AUTHOR CONTRIBUTIONS

All authors played equal contributions towards the production of this paper.

CONFLICT OF INTEREST

There is no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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