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Research Article

Museum-Based Environmental Communication: A Case Study of the D'Bone Collector Museum

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Abstract

This study analyzes the environmental concern campaign developed by the D'Bone Collector Museum in Davao City, Mindanao, Philippines, through its collections, storytelling, and exhibition design. The study employed a qualitative single-case study design. Data were collected through direct observation, interviews with the museum founder and repeat visitors, public discussion, and documentation, and were analyzed using Braun and Clarke's reflexive thematic analysis. The findings show that the museum's collections function as material evidence of the consequences of human behavior on animals and the environment. Its environmental communication is constructed through object authenticity, collection curation, narratives of animal death, guilt, empathy, moral reflection, hope, and calls to action. The central contribution of this study is the conceptualization of the museum as a permanent, collection-based, and experience-oriented environmental campaign, rather than a conventional campaign defined by a fixed implementation period. Environmental messages are continuously embedded in authentic specimens, exhibition spaces, storytelling, and guided visitor experiences, allowing the campaign to operate whenever visitors encounter and interpret the collections. The study therefore shows how museums can transform collections into ongoing environmental communication by combining material evidence, emotional engagement, moral reflection, and action orientation. However, the study addresses visitor concern and intention rather than verified long-term behavioral change.

Keywords: Museum-Based Campaign; Environmental Education; Museum Communication; Environmental Communication; Sustainable Development Goals.

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INTRODUCTION

Plastic waste pollution has become a serious environmental problem in Southeast Asia. The problem is related not only to the large volume of waste but also to limited waste collection services, open dumping, the use of single-use plastics, and leakage of waste from land into rivers and the sea. The Philippines' plastic pollution policy profile estimates that the country generates approximately 2.7 to 5.5 million metric tons of plastic waste each year, a portion of which pollutes the environment. The use of small single-use packaging, open dumping near waterways, and gaps in waste management exacerbate characteristics of this country's problems (Schachter & Karasik, 2022).

Indonesia also faces similar challenges. A World Bank study estimates that Indonesia generates approximately 7.8 million tons of plastic waste each year, with around 4.9 million tons not being adequately managed. Uncollected waste is one of the main sources of plastic pollution in rivers and marine environments. These data demonstrate that plastic pollution cannot be understood solely as a consequence of individual indifference. The waste problem is also related to production systems, consumption patterns, infrastructure availability, collection services, regulations, and the capacity of local governments (Bank, 2021).

Although information about pollution has become increasingly available, increased knowledge does not always automatically result in behavioral change. People may be concerned about the dangers of plastic to the environment but continue to use single-use plastics or dispose of waste improperly. The gap between knowledge, attitudes, intentions, and actions has long been discussed in studies of pro-environmental behavior (Kollmuss & Agyeman, 2002). The meta-analysis by Bamberg and Möser (2007) also demonstrates that environmental behavior is influenced by a combination of attitudes, moral norms, social norms, behavioral control, guilt, and intentions. Therefore, the communication of data alone is insufficient. Communication needs to connect knowledge with experience, emotions, social norms, the ability to act, and environmental support. Such communication requires spaces and media that enable audiences to encounter, interpret, and emotionally engage with environmental consequences. In this context, environmental communication plays a strategic role. Environmental communication is not limited to conveying scientific information about nature but also encompasses the process of constructing meaning concerning the relationship between humans and the environment. Through communication, waste can be represented as a cleanliness issue, a health threat, ecosystem damage, social injustice, a failure of governance, or a moral responsibility. The way an issue is framed will influence who is considered responsible and what actions are regarded as solutions.

Pezzullo and Cox (2021) explain that environmental communication has two main functions: pragmatic and constitutive. The pragmatic function refers to the use of communication to inform, educate, persuade, mobilize, or encourage action for the environment. The constitutive function refers to how communication shapes the way society understands nature, humans, and the relationship between them. These two functions are interconnected. One form of environmental communication practice is an environmental concern campaign. A campaign encouraging people to dispose of waste properly, for example, not only asks audiences to perform a particular action but also shapes the view that nature is a shared space that must be protected. A campaign is a planned and organized effort to influence the knowledge, attitudes, norms, or

behavior of audiences through a series of messages and communication channels (Rice & Atkin, 2013).

Campaigns usually have objectives, target groups, key messages, media strategies, implementation periods, and evaluations. However, environmental communication practices do not always take the form of temporary campaigns. Environmental messages can also become a permanent part of the identity, space, collections, and activities of an institution. Museums are among the institutions with the potential to undertake such practices. The museum definition adopted by the International Council of Museums on August 24, 2022, positions a museum as a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets, and exhibits tangible and intangible heritage. Museums are also expected to be open, accessible, and inclusive, to foster diversity and sustainability, to communicate ethically, and to involve communities in education, reflection, and knowledge sharing (International Council of Museums, 2022).

This definition demonstrates that museums are no longer positioned merely as places for storing artifacts. Museums are communicative documentary institutions and sources of learning that can engage with public issues. Collections can be used to connect the past with contemporary issues, present evidence of an event, evoke empathy, and help visitors consider the actions that need to be taken. In relation to environmental issues, museums can communicate climate change, biodiversity loss, extinction, wildlife hunting, pollution, or unsustainable patterns. Positions museums as institutions that can contribute to the Sustainable Development Goals (SDGs) through collections, education, research, partnerships, and public engagement (McGhie, 2019). In museum settings, this gap may be addressed by transforming environmental information into encounters with material evidence, emotionally charged narratives, and visible bodily consequences of environmental degradation. Meanwhile, Janes & Sandell (2019) use the concept of museum activism to explain the more active involvement of museums in addressing social, political, economic, and environmental issues. Museums may therefore reduce the distance between abstract environmental problems and personal experience by presenting material evidence of environmental harm. Through authentic objects, interpretive narratives, and emotionally engaging encounters, environmental consequences can become visible, tangible, and morally meaningful to visitors.

One museum that explicitly uses its collections to communicate an environmental concern message is the D'Bone Collector Museum in Davao City, Mindanao, the Philippines. The museum was founded and curated by Darrell Dean Blatchley, an American marine biologist and paleontologist. When it opened in 2012, the museum had fewer than 200 specimens. Based on information provided by the museum management and the research observation records, its collection subsequently grew to approximately 5,000 specimens stored or displayed in a three-story building. The differences in figures appearing in various publications can be explained by the distinction between the total number of specimens and the number of skeletons that have been assembled or displayed. One of the museum's collections is a 41-foot sperm whale skeleton. In accordance with the museum's vision, these bones are "ambassadors of the living," serving as a means of educating the public to protect animals (GMA News Online, 2014). The museum's orientation is evident in Blatchley's involvement in examining marine animals that died after ingesting waste. In March 2019, a Cuvier's beaked whale was found dead in Mabini, Davao Oriental. An examination discovered approximately 40 kg of plastic waste inside its body,

including rice sacks, plantation bags, and shopping bags. The case received widespread attention and became a concrete example of the impact of plastic waste on marine animals when the whale's skeleton was displayed in the museum exhibition together with the plastic waste that killed the animal (Time, 2019).

D'Bone Collector Museum's position as a space for environmental education and communication is also demonstrated by the public recognition it has received. In 2015, Blatchley received the Dato Bago Awards, the highest award presented by the Davao City Government to residents or figures considered to have made significant contributions. The museum's main mission is to prevent future generations from knowing endemic animals only through stories because they have become extinct. The museum even collaborates with the Bureau of Fisheries and Aquatic Resources, enabling it to function as a link between the community, animal rescue, specimen preservation, and conservation education (Rodriguez, 2015). In 2017, the museum was included among the top five in the Best Special Interest Museum category at the Philippine Tourism Industry Awards. Its management emphasized that the museum's development was directed toward increasing the concern and responsibility of Filipino society in protecting the environment (Capistrano, 2017).

D'Bone Collector Museum is primarily conceptualized as an environmental communication space, in which collections operate as campaign media and the visitor experience creates opportunities for education, emotional engagement, and moral reflection. The museum management positions the museum not only as a place for storing animal skeletons but also as an educational destination with a relatively broad public reach. In Davao tourism publications, the museum is also described as a space for learning about animal life and conservation through its osteological collections and fossils, as well as educational tours. The visitor experience is constructed not only through the appeal of the collection's uniqueness but also through interpretations of animal protection and the impact of human activities on the environment (Discover Davao, 2024). According to Gaia Discovery, Blatchley's educational and advocacy activities received first place in the regional UNESCO Plastic Initiative Award. The award was presented in the context of the museum's efforts to raise concern about the reduction, recycling, and management of plastic waste, as well as the prevention of waste from entering the marine environment (Tacio, 2019). This recognition demonstrates that D'Bone Collector Museum has moved beyond its conventional exhibition and educational functions to become an active site of environmental communication and advocacy, using its collections and conservation activities to raise public awareness of pollution and encourage greater responsibility toward wildlife and the environment. The theoretical value of this case lies not in its representativeness of museums in general, but in its capacity to reveal communication mechanisms through which environmental problems are translated into material, emotional, and moral experiences. These mechanisms may offer transferable insights for other museums and environmental campaign designers seeking to communicate complex environmental problems through objects, narratives, and visitor engagement.

Based on this background, the research questions are: (1) How can museum collections function as media for environmental campaigns? (2) How does the museum use emotions, particularly guilt, to build environmental concern? (3) How are emotionally charged messages balanced with hope, moral reflection, and calls to action? (4) Can the practices of D'Bone Collector Museum be described as an environmental campaign, considering that these activities

are not limited by a formally defined period, as is typically the case in conventional campaigns? This study aims to analyze the construction of environmental concern messages, the use of collections, emotional dramaturgy, the framing of responsibility, and the orientation toward environmentally conscious behavior. The study does not claim verified long-term behavioral change. Rather, it examines how museum communication may generate attention, emotional responses, environmental concern, expressed intention, and commitment toward environmentally responsible action. Theoretically, this study is situated within the field of environmental communication by employing the concept of campaigns.

LITERATURE REVIEW

Environmental communication examines the production, dissemination, and negotiation of meanings concerning the environment. The environment does not enter the public sphere as an entirely neutral fact. Scientific knowledge needs to be translated, selected, visualized, and situated within a particular narrative before it can be understood by audiences. Hansen (2019) explains that media and communication institutions play a role in determining which environmental issues receive attention, how their causes are explained, and what solutions are considered relevant. This perspective differs from the information-deficit model, which assumes that public indifference is primarily caused by a lack of knowledge. In the deficit model, the proposed solution is to provide more information. However, environmental decisions are not shaped by knowledge alone. Values, emotions, identity, experience, norms, trust in the communicator, ease of action, and structural conditions also determine public responses.

The pragmatic function of environmental communication is evident in action-oriented activities, such as waste-reduction campaigns, conservation advocacy, visitor education, and efforts to encourage policy change. Its constitutive function is evident in the formation of perspectives on nature. Moser (2010)emphasizes that environmental communication needs to consider objectives, audiences, communicators, message forms, channels, and social contexts. There is no single message that is automatically effective for all groups. A message that is powerful for one group may be irrelevant or generate resistance among another. Therefore, environmental communication needs to move from the delivery of general information toward a deeper understanding of audiences' values, identities, capabilities, and barriers.

Wakefield et al (2010) state that campaigns can produce change across broad populations, but their impacts are stronger when supported by policies, services, and environments that make it easier for audiences to perform the recommended behaviors. An appeal to sort waste, for example, is unlikely to be sustained if appropriate collection and processing facilities are unavailable. Corner and Randal (2011) caution that environmental problems cannot always be resolved through separate modifications of individual behavior. Climate change and pollution are connected to economic systems, policies, industries, technologies, and collective norms. Campaigns that merely state that individuals must take responsibility can obscure the roles of producers, governments, and management systems. Environmental problems are shared problems; therefore, an appropriate campaign should reach all stakeholders.

Environmental campaigns fundamentally operate through framing, namely the process of selecting, organizing, and emphasizing particular aspects of an issue to shape how audiences understand the problem, its causes, its victims, the values at stake, and the actions required (Nisbet,

2009). In environmental communication, an issue may be framed as a matter of cleanliness, health, conservation, morality, environmental justice, or structural responsibility. The framing process is carried out not only through verbal messages but also through nonverbal messages such as photographs, authentic objects, interpretive texts, spatial arrangements, colors, sounds, lighting, guided narratives, and the sequence of an exhibition. In museums, these media work together to connect objects with particular interpretations; for example, an animal skeleton displayed together with the plastic waste found inside its body frames pollution as a direct consequence of human consumption and waste disposal. Emotional appeals such as shock, fear, guilt, empathy, pride, hope, and amazement can further strengthen the frame by reducing psychological distance and encouraging reflection. However, negative emotions need to be balanced with knowledge, self-efficacy, realistic options for action, and hope to prevent denial, helplessness, or psychological reactance (O'Neill & Nicholson-Cole, 2009; Witte & Allen, 2000; Yan et al., 2024). Therefore, effective framing should guide audiences from recognizing environmental damage and understanding its causes toward believing that meaningful individual and collective action is both possible and necessary (Peng et al., 2023; Shipley & van Riper, 2022).

Hooper-Greenhill (2007) explains that museum learning does not occur solely through texts or curatorial explanations. Meaning is constructed through interactions among visitors, objects, spaces, prior experiences, and social contexts. Visitors are not passive recipients but interpret exhibitions based on their knowledge, identities, values, and interests. Collections do not have a single, entirely fixed meaning. The curatorial process determines which objects are selected, how they are classified, which objects they are placed alongside, and what stories accompany them. Cameron (2005) shows that science and history museums operate amid changing knowledge paradigms and public debates. Therefore, museums need to negotiate scientific authority with the need to create space for dialogue and diverse interpretations.

Sandell (1998) and Coffee (2008) show that museums can shape both social inclusion and exclusion through their narratives and institutional practices. Who is recognized, what values are legitimized, and which positions are considered correct are part of the museum's formative function. Consequently, museums that communicate environmental messages also need to consider the religious, cultural, and social-class diversity of visitors, as well as their capacity to act. In the context of conservation, direct experiences with animals and representations of nature can build emotional connections. Clayton et al (2009) show that conversations and experiences in zoos can influence visitors' concern for animals. Ballantyne & Packer (2005) emphasize that free-choice learning experiences can support environmental attitudes when they are relevant, reflective, and connected to possibilities for action. A subsequent study by Ballantyne et al (2011) shows that wildlife tourism experiences can produce both short- and long-term learning outcomes, but the results depend on the quality of interpretation and visitor engagement.

The review by (Schilbert & Scheersoi, 2023) demonstrates that conservation education programs in zoos and aquariums more often measure knowledge and attitudes than actual behavioral change. This finding serves as a methodological caution for museum studies. Positive responses, senses of amazement, or statements of intention cannot be automatically translated into sustained behavioral change. In this study, the museum is viewed as a communication system consisting of collections, exhibitions, narratives, curators, guides, sensory experiences, and visitor participation. Museums can serve as campaign media, but claims of success need to distinguish among attention, concern, knowledge, emotion, intention, and actual behavior.

In this study, the museum is conceptualized primarily as an environmental communication space in which collections function as campaign media, exhibitions organize interpretive and emotional experiences, and visitors are invited to engage in learning, moral reflection, and consideration of environmentally responsible action. Within this framework, authentic objects and curatorial narratives can make environmental problems more tangible, reduce psychological distance, and evoke emotional responses such as guilt and empathy. However, these responses are not treated as evidence of behavioral change. Rather, they are understood as part of a communication process that may contribute to environmental concern, hope, self-efficacy, intention, commitment, and action orientation. Accordingly, the conceptual framework of this study links environmental framing and object authenticity with emotional engagement, moral reflection, hope, self-efficacy, and visitor action orientation, while maintaining a clear distinction between communicative responses and verified long-term behavioral change.

METHODS

The research method is an essential part of a study because it explains how the research is conducted systematically in order to answer the research questions and achieve the objectives of the study. Through the research method, the researcher clarifies the approach used, the sources of data, the data collection techniques, the analytical procedures, and the steps taken to ensure that the research findings can be academically justified. Therefore, the method does not merely function as a technical procedure, but also serves as the foundation for ensuring that the data are relevant, the research process is well directed, and the findings have validity and a clear relationship with the problem being examined.

Type of Research

This study employed a qualitative approach with a single-case study design to obtain an in-depth and contextual understanding of environmental communication practices at D'Bone Collector Museum as a case with clearly defined boundaries in terms of location, actors, activities, and research period. A qualitative case study enables researchers to explore a bounded system comprehensively by drawing on various data sources, such as direct observation, interviews, public discussions, visual documentation, and digital communication (Creswell & Poth, 2018).

D'Bone Collector Museum was purposively selected as a distinctive and information-rich case because it integrates animal skeleton collections, environmental education, conservation activities, moral reflection, and environmental advocacy within a single museum setting. Its collections do not merely represent animals as scientific specimens, but are also used to communicate the consequences of pollution and other human activities. This makes the museum an exemplary case for examining how environmental problems can be translated into material evidence, interpretive narratives, emotional experiences, and messages of environmental responsibility.

The purpose of the single-case design is therefore not statistical representativeness, but analytical depth and transferability. According to Yin (2018), a single-case study is appropriate when the research focuses on a case that is unique, important, or capable of providing an in-depth understanding of a contemporary phenomenon whose boundaries cannot be clearly separated from its context. In this study, the case is expected to provide conceptual insights into communication

mechanisms that may also be relevant to other museums and environmental campaign contexts, while recognizing that their applicability depends on the characteristics of each setting. This approach was directed toward producing an analysis through the development of conceptual understanding based on the patterns, meanings, and relationships identified within the case under study (Stake, 1995; Yin, 2018)

Research Focus

The main focus of this study is to analyze how D'Bone Collector Museum functions as a medium for environmental campaigns through the use of collections, emotional storytelling, curatorial narratives, and exhibition design. Specifically, the study examines how the museum constructs messages of environmental concern, uses guilt to build awareness, balances emotional appeals with hope and calls to action, and frames responsibility for environmental problems. This study does not aim to measure changes in visitor behavior, but to understand the communication strategies used by the museum to promote environmental awareness and responsibility.

Data Sources

This study used both primary and secondary data. The primary data consisted of interview transcripts, field notes, photographs of the collections, and direct observations of the exhibition design, museum space, collection arrangement, and guide explanations. The secondary data were used to examine the context of the museum's establishment, the development of its collections, its educational mission, and various cases of animal deaths whose skeletons are displayed in the museum.

Field data collection was conducted at D'Bone Collector Museum, San Pedro Street, Davao City, Davao del Sur, Philippines, in 2024. The data were reconfirmed in May 2025 and July 2026 through Zoom meetings, Messenger, and WhatsApp. The first visit took place on April 20, 2024, and the second visit was conducted on April 26, 2024. Additional visitor interviews were also conducted on July 24, 2024.

Data Collection Techniques

Data collection in this study was conducted through interviews, observation, and documentation. These techniques were selected to obtain a comprehensive understanding of the museum's communication practices, particularly in relation to how environmental messages are constructed and conveyed through collections, storytelling, curatorial narratives, and exhibition design.

Interview

A semi-structured interview was conducted with the museum's founder and curator, Darrell Dean Blatchley, during the second visit on April 26, 2024. The interview explored the museum's functions, the possibility of the museum serving as a campaign medium, the use of collections in environmental education, exhibition design, storytelling practices, calls to action, and the use of spiritual messages. Follow-up confirmation was conducted in May 2025 and July 2026 through Zoom meetings, Messenger, and WhatsApp.

Interviews were also conducted with six museum visitors, consisting of two school students, two members of the general public employed in the private sector, and two university students. All informants provided their consent before the interviews. Five interviews were conducted in English, while one interview was conducted in Bahasa Indonesia. Interviews with museum visitors lasted approximately 30 minutes, while the interview with the museum director lasted approximately two hours.

The six repeat visitors were intended to provide reflective and information-rich accounts rather than to represent the broader population of museum visitors. The limited number of visitor participants is therefore acknowledged as a methodological limitation. Their responses were interpreted as qualitative evidence of visitor perceptions, emotional responses, and meaning-making, rather than as evidence of population-level effects or long-term behavioral change.

Observation

Observation was carried out during the museum visits on April 20 and April 26, 2024. The first visit focused on observing the museum space, types of collections, exhibition arrangement, guide explanations, and visual documentation. At the time of the observation, the museum occupied a three-story building with a floor area that, according to the museum management, reached approximately 700 m^2. The museum housed both local and imported specimens in the form of skeletons and taxidermy specimens. According to the museum management, the specimens were obtained through legal channels, including donations and collaboration with relevant institutions. Information regarding operating hours, the admission fee of 350 pesos, and guide services was recorded as the conditions at the time of the research, rather than as current information regarding the museum's operations

Documentation

Documentation was conducted through photographs of the museum collections, exhibition spaces, and visual elements supporting the museum's environmental messages. These materials were used to support the observation notes and to help examine how the museum presents animal skeletons, taxidermy specimens, exhibition narratives, and environmental education messages to visitors.

Informant Selection Techniques

The informants consisted of one key informant, namely the head of the museum, and six supporting informants, namely museum visitors. The head of the museum was contacted directly through Messenger, after which an appointment was made for an interview at the museum. In addition, the head of the museum was also invited to participate in a public discussion related to the research topic.

The six visitor informants were four visitors who were interviewed during the visits on April 20 and 26, 2024, while two visitors were interviewed on July 24, 2024. The visitor informants were selected purposively based on the criterion that they had visited D'Bone Collector Museum more than twice. Repeat visitors were considered appropriate informants because their prior experiences enabled them to compare visits, recall messages conveyed through the museum collections, and reflect more deeply on the meanings they had derived from the exhibitions. In addition, informants were included

only if they were willing to participate in an interview after completing their museum visit and agreed to be contacted for further clarification or data confirmation when necessary.

Research Instruments

In qualitative research, the researcher serves as the primary instrument in the process of data collection and interpretation. Creswell and Poth (2018) explain that qualitative researchers collect data themselves by interviewing participants, observing behavior, examining documents, and reviewing audiovisual materials. Similarly, Creswell and Poth (2018) emphasize that qualitative inquiry relies on the researcher's direct engagement with the research setting and participants, while using multiple sources of data to develop a rich understanding of the phenomenon being studied. Therefore, the instruments in this study were not limited to technical tools, but included the researcher's interpretive role, interview guidelines, observation guidelines, documentation protocols, and supporting devices.

The main instrument in this study was the researcher, who was directly involved in collecting, organizing, and interpreting the data. As the primary instrument, the researcher maintained reflexive awareness, followed the objectives of the study, remained faithful to the data, and conducted the research in accordance with the qualitative paradigm. To guide the data collection process, interview guidelines were used to explore the museum's functions, environmental messages, curatorial narratives, storytelling practices, and visitor responses. Observation guidelines were used to examine the museum space, collection arrangement, exhibition design, guide explanations, and the presentation of environmental messages. Documentation protocols were used to record and organize supporting materials, including photographs, field notes, institutional information, and other relevant documents.

Supporting instruments were also used to facilitate the research process. These included writing materials for field notes, audio-recording devices for interviews, a camera for visual documentation, a computer or laptop for organizing and analyzing data, and other relevant tools needed during fieldwork. These supporting instruments helped ensure that the data collection process was systematic, well documented, and aligned with the research focus.

Validity of Findings

The trustworthiness of the qualitative data in this study was ensured through credibility, transferability, dependability, and confirmability. These criteria are commonly used in qualitative research to assess the quality and rigor of research findings, particularly as an alternative to the concepts of validity and reliability in quantitative research (Lincoln & Guba, 1985; Nowell et al., 2017). In this study, credibility was strengthened through triangulation by comparing data obtained from interviews, observation, and documentation. Triangulation refers to the use of multiple data sources or methods to develop a more comprehensive understanding of the phenomenon being studied (Carter et al., 2014; Patton, 1999). Therefore, the statements from the key informant and supporting informants were compared with field observations, photographs, museum materials, and other relevant documents.

Transferability was supported by providing a detailed description of the research context, including the museum setting, informant characteristics, data collection process, and the specific conditions observed during the fieldwork. This allows readers to assess whether the findings may

be relevant or applicable to other museum or environmental communication contexts. Dependability was maintained by systematically documenting the research process, including interview procedures, observation notes, documentation records, and data analysis steps. Confirmability was strengthened by ensuring that the findings were grounded in the collected data rather than solely in the researcher's assumptions. Through these strategies, triangulation served not only as a technique for checking data consistency but also as a means to strengthen the credibility and accountability of the qualitative interpretation.

Credibility was strengthened through triangulation across multiple sources of evidence. Visitor interviews were compared with the founder/curator interview, direct observation of the museum and exhibition spaces, photographic documentation, museum materials, field notes, and relevant secondary sources. Rather than treating the six visitor interviews as stand-alone evidence, the interpretation considered areas of convergence, elaboration, and divergence across these different sources.

Data analysis

The data were analyzed using reflexive thematic analysis developed by Braun & Clarke (2021). This approach was selected because it enables researchers to identify and interpret patterns of meaning across various types of qualitative data, including interviews, public discussions, observations, visual documentation, and communication through Messenger and WhatsApp. The analysis was conducted through six phases: (1) familiarization with the entire dataset through transcription, repeated reading, and the preparation of analytical memos; (2) systematic coding of relevant sections of the data; (3) grouping codes into initial themes; (4) developing and reviewing themes against the coded extracts and the entire dataset; (5) classifying, defining, and naming the themes; and (6) writing the analytical narrative by connecting the themes, data extracts, observation findings, and theoretical framework. Coding was conducted both inductively and deductively. Inductive coding was used to identify meanings derived from the informants' experiences and observation findings, whereas deductive coding employed the concepts of environmental communication, museum communication, framing, emotional appeals, and psychological reactance. In this approach, themes were not viewed as passively emerging from the data but were developed through the researcher's active and reflexive engagement in interpreting patterns of meaning relevant to the research questions (Figure 1).

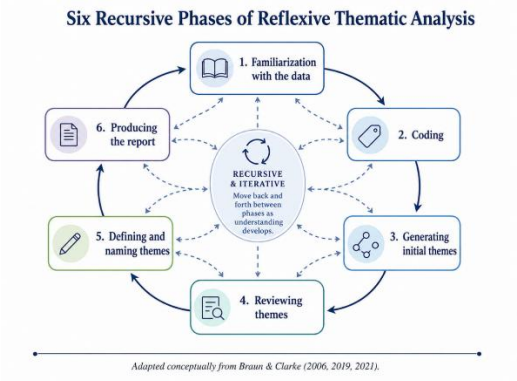


FIGURE 1. Stages of Data Analysis
(Adapted conceptually from Braun & Clarke, 2021 by Researchers)

To increase analytical transparency, Table 1 summarizes the relationship among the final themes, subthemes, principal data sources, and representative evidence. The table does not represent a mechanical derivation of themes from individual codes; rather, it illustrates how the themes were developed through reflexive interpretation across interviews, observations, photographic documentation, museum materials, and secondary sources.

Table 1. Summary of Themes, Subthemes, Data Sources, and Representative Evidence from the Reflexive Thematic Analysis (Sources: Researchers, 2026)

Theme	Subthemes	Main data sources	Representative evidence
Collections as Campaign Media	Authentic objects; material evidence; pollution consequences	Head of Museum and Curator interview; observation; photographs; secondary sources	Skeletons and associated materials were used to connect animal death with pollution and other human activities
Emotional Dramaturgy	Shock; guilt; empathy; concern	Visitor interviews; observation; Head of Museum and Curator interview	Visitors described emotional responses to animal remains and narratives of death, while exhibition sequencing intensified reflection on environmental consequences
Spiritual Framing	Moral responsibility; reflection; hope; call to action	Head of Museum and Curator interview; visitor interviews; exhibition narratives	Environmental messages were connected with moral responsibility, hope, and possibilities for responsible action
Sustainable Environmental Communication	Continuous communication; institutional mission; conservation advocacy	Head of Museum and Curator interview; museum materials; observation; secondary sources	Environmental messages were embedded in the museum's permanent collections, education, and conservation activities rather than limited to a temporary campaign period

RESULTS AND DISCUSSION

D'Bone Collector Museum developed from Darrell Dean Blatchley's interest in animal bones and anatomy into a documentary institution that uses its collections to communicate the relationship between humans and the environment. The museum not only displays skeletons as biological specimens but also presents stories about the animals' lives, causes of death, and the threats they faced. Blatchley is directly involved in collecting, cleaning, preserving, and assembling the skeletons; therefore, his credibility as a communicator is shaped by a combination of biological knowledge, field experience, preparation skills, and environmental activism. Blatchley stated that museums can illustrate what has happened, what is happening, and what might happen. Museums can also serve as places for reflection while encouraging action: "*They can be a place to reflect or at the same time a push to call to action*" (D. D. Blatchley, personal communication, April 26, 2024).

This perspective demonstrates two functions of environmental communication. Pragmatically, the museum seeks to raise concern and encourage environmentally responsible behavior. Constitutively, the museum shapes how visitors understand the relationship between

humans, animals, and nature. Pezzullo and Cox explain that environmental communication is used not only to generate action but also to construct social meanings concerning nature and human responsibility toward it (Pezzullo & Cox, 2021).

The educational practices at D'Bone Collector Museum have campaign characteristics because they involve a clearly defined problem, objectives for change, key messages, the use of several media, and calls to action. However, the museum does not conduct a temporary campaign with time limits, formal segmentation, and pre- and post-campaign evaluation, as is commonly found in public communication campaigns (Rice & Atkin, 2013). Instead, environmental messages are permanently embedded in the collections, guide narratives, spatial arrangements, documentation, and the museum's identity. Therefore, these practices are more appropriately described as museum-based environmental communication with the characteristics of an ongoing campaign. The campaign takes place whenever visitors enter the museum space, view the skeletons, hear stories about animal deaths, and connect everyday behavior with ecological consequences.

Based on the research questions, the discussion is organized into four interrelated sections. The first section, Collections as Campaign Media, examines how museum collections are transformed into media for communicating environmental concerns and supporting environmental campaigns (RQ1). The second, Emotional Dramaturgy, explores how the museum employs emotional narratives, particularly guilt, to build environmental concern and engagement (RQ2). The third, Spiritual Framing, examines how emotionally charged messages are balanced through spiritual and moral reflection, hope, and calls to action, thereby moving the communication beyond fear or guilt alone (RQ3). Finally, Sustainable Environmental Communication considers whether the practices of D'Bone Collector Museum can be understood as a sustained form of environmental campaign communication despite the absence of a formally defined campaign period, as typically found in conventional communication campaigns (RQ4).

Collections as Campaign Media

The principal strength of D'Bone Collector Museum's communication lies in the transformation of the collections' function from biological specimens into material witnesses. Unlike posters, videos, or mediated environmental messages, authentic animal remains carry a direct physical connection to the event being communicated. Their material presence transforms environmental harm from a represented issue into tangible evidence, thereby increasing immediacy, moral urgency, and the perceived reality of ecological consequences. The skeletons not only reveal anatomy but also carry traces of an animal's existence and death. In the museum context, objects do not convey meaning by themselves. Meaning is constructed through object selection, interpretive texts, layout, guide narratives, and the relationship between the collections and contemporary issues. Hooper-Greenhill (2007) emphasizes that museum learning is formed through interactions among objects, spaces, interpretation, and visitor experiences.

The strategy for constructing meaning can be observed in three collections with different narratives. First, the skeleton of a Cuvier's beaked whale that died in 2019 after ingesting approximately 40 kg of plastic waste demonstrates the cumulative impact of human consumption and waste disposal. The waste found inside the whale's body, including sacks, plantation bags, and shopping bags, was placed beneath its skeleton. This arrangement creates a direct visual relationship between waste as the cause and the animal's body as the victim. Second, the skeleton

of a dolphin found dead after choking on a plastic bag in Davao waters reinforces the dimension of ecological loss. When its body was dissected, it was discovered that the dolphin was pregnant. Information about the pregnancy transforms the death of one animal into the loss of two potential lives. This narrative means that pollution is understood not only as environmental damage in general but also as an event that ends the continuity of the next generation. When animals are presented as victims of pollution, the museum constructs a moral relationship between humans and nonhuman life. Waste is no longer understood merely as an object in the wrong place but as a symbol of consumption patterns, negligence, and the relationship between humans and ecosystems.

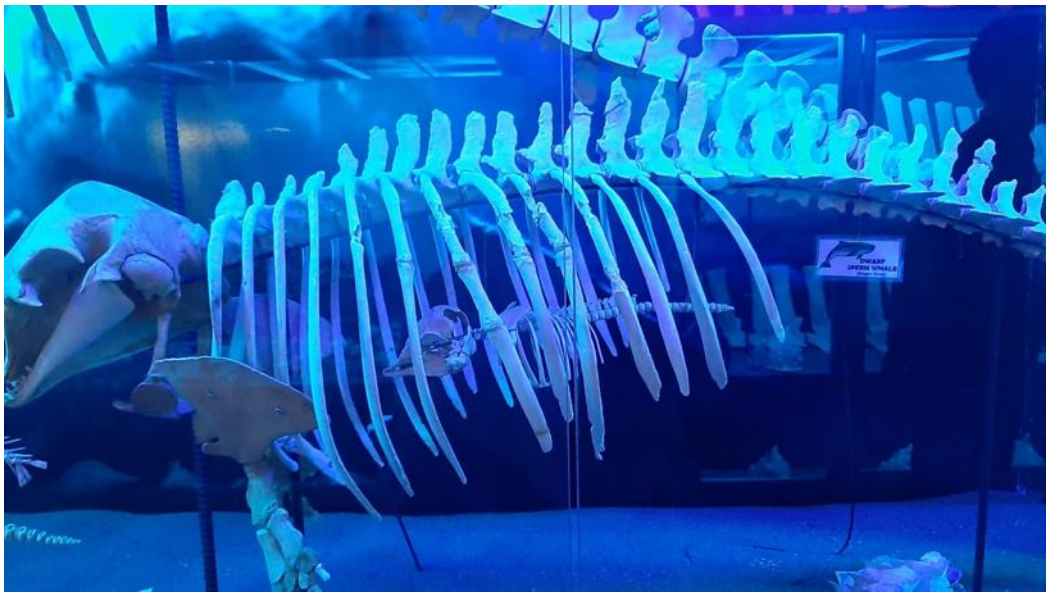


FIGURE 2. Osteological Collection: Dolphin That Choked on Plastic and the Calf in Its Womb (Source: Yudhawasthi, 2024)

The third example is the skeleton of a racehorse named Summer, which expands the museum's campaign from the issue of waste to the ethics of animal care. According to the museum management, Summer died from tetanus after the improper fitting of a horseshoe injured her leg, and the wound was not properly examined or treated. Her body was subsequently donated by the owner of the Davao Horse Club to become part of the museum's collection. Summer's story demonstrates that threats to animals arise not only from pollution but also from human negligence in fulfilling responsibilities of care. According to Blatchley (D. D. Blatchley, personal communication, April 26, 2024), every piece of waste in the exhibition may resemble an item that visitors have previously used and discarded. The message employs the logic of accumulation: one small action may appear insignificant, but millions of similar actions can cause extensive damage. The exhibition makes the weight of waste materially visible, so the relationship among consumption, disposal, and animal death is no longer abstract. The transformation of collections into campaign media occurs through three processes. First, the materialization of the problem, namely, presenting pollution and negligence through authentic animal bodies. Second, the narrativization of the collections through curatorial narratives or storytelling, namely, connecting the skeletons with stories about the lives and deaths of individual animals. Third, an action

orientation, namely, using these stories to direct visitors toward responsible waste behavior, animal protection, and responsible animal care. Thus, the collections are not merely exhibition content but also evidence, messages, and campaign media.

Emotional Dramaturgy

D'Bone Collector Museum uses emotion as an entry point for building attention and concern. Blatchley stated that the display was intended to "*strike guilt and emotions in the viewers' faces*" (D. D. Blatchley, personal communication, April 26, 2024). The exhibition storyline constructs emotional dramaturgy through several stages. The first is ecological shock, for example, when visitors see various animal skeletons, narratives of death, and the materials that caused the deaths. The second stage is affective recovery, when visitors are shown the beauty and diversity of animals in their habitats. The third stage is moral reflection, through the exhibition of a real human skeleton surrounded by clocks as symbols of the limited duration of human life. The storyline is important for bridging emotional transitions, rather than merely presenting destruction and generating helplessness. Frightening visual representations may attract attention, but they do not always produce engagement when audiences do not see hope or a pathway to action (O'Neill & Nicholson-Cole, 2009).

Guilt is the primary emotional appeal in the whale exhibition. Blatchley openly stated that the display was designed to "*strike guilt and emotions in the viewers' face*." The museum seeks to make visitors aware that their patterns of consumption and waste disposal may contribute to animal deaths. The meta-analysis by Peng et al (2023) shows that guilt can influence attitudes and intentions when audiences perceive a connection between their actions, the harm caused, and the possibility of remedying the situation. However, guilt-based messages that are too direct or intense may also generate rejection. Blatchley acknowledged that some visitors responded with anger: "*How dare you assume I did it?*" (D. D. Blatchley, personal communication, April 26, 2024). This reaction demonstrates psychological reactance, namely, resistance that occurs when individuals feel that their freedom is being restricted or their moral identity is being attacked. Visitors may recognize pollution as a problem but reject being positioned as its direct perpetrators. Another statement, "*if you are not part of the solution, then you are part of the problem*" (D. D. Blatchley, personal communication, April 26, 2024), reinforces moral urgency but also creates a binary framing that may narrow the space for dialogue. Emphasizing individual fault also risks overlooking structural factors. Society's dependence on plastic may be influenced by price, packaging design, collection services, policies, and the availability of alternatives.

Corner and Randal (2011) caution that strategies targeting only individual behavioral change are insufficient to build support for broader environmental change and may even obscure institutional responsibility. Therefore, museums need to connect visitor behavior with the responsibilities of all parties, including producers, governments, industries, and waste-management systems. Museums need to demonstrate that every individual has a role and also bears responsibility. Summer's story also shows that responsibility is not always structural. In direct relationships between humans and animals, individual negligence can cause suffering that could have been prevented. Therefore, museums need to distinguish between encouraging responsibility and assigning blame. The message "*we can prevent this from happening together*" is more dialogical than an accusation that visitors directly caused an animal's death.

Although he uses guilt, Blatchley offers a simple action: "*You don't have to stop a whaling ship to save one of these animals. Just by properly throwing away your garbage, you can save one*" (D. D. Blatchley, personal communication, April 26, 2024). This message builds self-efficacy because visitors are encouraged to perform an action that is easy to carry out, as well as response efficacy because proper waste disposal is linked to animal protection. The study by Yan et al (2024) shows that self-efficacy can reduce reactance to guilt-based messages about sustainable behavior. Furthermore, the construction of the museum's messages can be expanded into graduated actions, such as refusing unnecessary plastic, reducing plastic consumption, recycling, sorting waste, participating in environmental cleanups, supporting conservation organizations, and advocating for policy change. Graduated options allow visitors to move from individual behavior toward collective action. Taken together, the museum's emotional communication can be understood as a sequence moving from shock and guilt, toward empathy and moral reflection, and subsequently toward hope, self-efficacy, and action orientation

Spiritual Framing

The final section of the museum exhibition uses a human skeleton and clocks to connect conservation with the limits of time, death, the afterlife, and, within the museum's spiritual framing, the relationship between humans and God. Nature is presented as creation entrusted to humans, while the way people treat the environment is framed as a reflection of moral and spiritual responsibility. Framing helps communicators highlight particular causes, values, responsibilities, and solutions in understanding environmental issues (Nisbet, 2009). Spiritual framing was positively received by all visitor informants. They stated that stories of animal deaths caused by waste encouraged concern for environmental sustainability and a commitment to pay greater attention to waste. Several visitors also interpreted environmental protection as a way of valuing and caring for what they understood as God's creation (I1–I6, interviews, April 20, April 26, and July 24, 2024).

These findings indicate responses at the levels of knowledge, emotion, attitudes, and intentions. However, verbal commitments cannot be directly regarded as evidence of actual behavioral change. A more appropriate claim is that the museum promotes pro-environmental concern and intentions. Spiritual framing also needs to be positioned inclusively. While religious or spiritual narratives may be meaningful for some visitors, environmental care should also be supported by scientific, ethical, and conservation-based reasons that can engage visitors from different religious traditions as well as those with secular or non-religious perspectives. In this way, the museum does not impose a single moral or spiritual basis for environmental concern, but instead creates common ground around the value of life, ecological responsibility, and the need to protect living beings and ecosystems.

Guided tours are an important element because museum educators connect animal bodies with stories of death and choices for action. Interpersonal communication allows for questions, clarification, and message adjustment. However, the museum needs interpretive guidelines so that the narrative does not depend solely on the founder's personal style. Guides should also use reflective questions rather than merely delivering moral monologues, so that responsibility is constructed through dialogue. To ensure that the messages are conveyed effectively, Blatchley personally trains the educators. They are required not only to understand the entire narrative and collections but also to possess basic knowledge of flora and fauna, current conservation issues,

and the ability to persuade visitors to become agents of change (D. D. Blatchley, personal communication, April 26, 2024).



FIGURE 3. The D'Bone Collector Museum Education Team, Mindanao, the Philippines (Source: Yudhawasthi, 2024)

Sustainable Environmental Communication

D'Bone Collector Museum can be interpreted as a form of ongoing environmental campaign communication because its practices demonstrate six interrelated characteristics: a clearly defined environmental problem, persuasive intent, consistency of environmental messages, continuous audience engagement, the use of multiple communication media, and explicit calls to action. The practices of the D'Bone Collector Museum fulfill a number of elements of a communication campaign. The museum addresses clear problems, namely pollution, human negligence, and their impacts on animal life. The museum also aims to raise concern, build responsibility, and encourage action. Messages are conveyed through collections, spatial arrangements, texts, guide narratives, documentation, and direct interaction with visitors. However, these practices differ from conventional public communication campaigns, which generally have a specific period, audience segmentation, formal strategies, and evaluations conducted before and after the program (Rice & Atkin, 2013). The messages of D'Bone Collector Museum are not limited by the beginning and end of an activity. They are permanently embedded in the collections, guided tours, exhibition design, and the museum's identity. The museum's practices are more appropriately described as museum-based environmental communication with the characteristics of an ongoing campaign. The campaign takes place spatially, institutionally, and repeatedly. Each visitor enters the same space, sees the bodies of animals, listens to various stories about them, and is then directed to understand the suffering of animals and the environment caused by human actions or negligence.

The curatorial narratives or storytelling presented also demonstrate that the focus of the museum's campaign is broader than waste. The whale and dolphin communicate the impacts of pollution on marine life, while Summer communicates the ethics of animal care and welfare. The entire collection constructs an argument that environmental protection encompasses waste management, ecosystem conservation, animal welfare, and human moral responsibility. Guided

tours reinforce the campaign's characteristics because they allow guides to connect objects with visitors' experiences and choices for action. Guides are directed to conduct tours interactively and dialogically. They can pose questions to creatively guide visitors through various issues concerning the sources of waste, the distribution of responsibility, or actions that may be taken after the visit. D'Bone Collector Museum uses the authenticity of bodies, concrete causal relationships, emotional dramaturgy, loss, guilt, and moral reflection through natural collections transformed into media of conservation communication. Overall, D'Bone Collector Museum can be described as conducting an environmental campaign in the form of a permanent, collection-based, and experience-oriented institutional campaign. Its limitations lie in the risk of psychological reactance, the dominance of individual responsibility, spiritual framing that may not be universal, dependence on the founder, and the absence of long-term behavioral evaluation. Therefore, the success of the campaign conducted to date is more appropriately assessed at the levels of attention, concern, emotion, moral reflection, and visitor commitment, rather than verified behavioral change.

CONCLUSION

The findings of this study suggest that museum-based environmental communication is relevant to the educational and sustainability concerns reflected in the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 12 (Responsible Consumption and Production). As a non-formal learning space, the museum provides opportunities for visitors to engage with knowledge, values, and environmental concerns related to sustainability, which are consistent with the broader orientation of SDG Target 4.7. Through collections, curatorial narratives, storytelling, and exhibition design, the museum communicates the relationship between everyday human practices, animal life, and environmental conditions. However, this study does not assess the museum's direct contribution to SDG achievement or measure long-term behavioral outcomes.

Museums can also support SDG 12 by encouraging responsible consumption, proper waste management, and greater public responsibility for the environmental consequences of everyday behavior. Museum-based campaigns promoting environmental concern are constructed through a combination of material evidence, guilt, empathy, hope, and calls to action. Rather than being confined to a specific period, the campaign messages are continuously embedded in the visitor experience. Visitor responses indicate that museum exhibitions can foster environmental concern and strengthen visitors' commitment to acting more responsibly toward the environment. However, the use of guilt should be balanced with more dialogical messages, realistic options for action, and an emphasis on shared responsibility so that emotional engagement can be more effectively connected to environmental intention and action orientation, while long-term behavioral change remains a matter for further evaluation.

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