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Exploring the Lived Experience of Coastal Community Volunteers in Advancing Ecological Sustainability

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ABSTRACT

Environmental sustainability has emerged as a critical area of scientific inquiry, particularly in the context of community-based conservation efforts in ecologically vulnerable regions. Despite growing recognition of the human dimensions of sustainability, little is known about how local volunteers subjectively experience and interpret their ecological engagement in erosion-prone coastal areas. To address this gap, this study asks: How do community volunteers make meaning of sustainability through their lived experiences in environmental conservation? Using a descriptive phenomenological approach grounded in Husserlian philosophy, this study explores the inner meanings, motivations, and relational dynamics of grassroots ecological action. Data were collected through in-depth semi-structured interviews with eight long-term volunteers, followed by thematic analysis supported by NVivo software. The findings reveal four essential themes: sustainability as a moral and spiritual obligation, voluntary sacrifice for intergenerational futures, communal meaning-making, and embodied emotional awareness of ecological change. These results demonstrate that volunteers perceive their role not only as ecological actors but also as moral stewards of their community, which strengthens local resilience and intergenerational continuity. These lived experiences illustrate how sustainability is not merely a set of practices, but a deeply personal and cultural phenomenon grounded in care, memory, and place. Practically, the study underscores the importance of integrating volunteer-driven values and cultural narratives into coastal management programs, thereby informing more inclusive policies and strengthening conservation strategies at the community level. By uncovering these meanings, the study contributes to a richer understanding of grassroots environmentalism and highlights the importance of incorporating experiential knowledge into conservation strategies. These insights offer actionable implications for policymakers, particularly in designing participatory frameworks that empower local volunteers, and for practitioners aiming to align ecological programs with community values.

INTRODUCTION

In recent decades, the urgency of environmental sustainability has intensified across global and local agendas (Li et al., 2025). Coastal regions, in particular, have emerged as critical frontlines in ecological conservation due to their vulnerability to erosion, rising sea levels, and biodiversity loss. These regions are not only ecological interfaces but also social landscapes, deeply intertwined with the cultural and economic lives of local communities (Yusuf et al., 2025). Within this dynamic, community-based conservation efforts have gained prominence as vital mechanisms for ecological resilience, particularly in developing regions where institutional support may be limited.

Among these grassroots movements, the role of volunteers often drawn from affected communities themselves has proven central to conservation outcomes (Mumtaz et al., 2025). Yet, while the technical aspects of ecological restoration have been extensively documented, the lived experiences of these individuals remain underexplored (Soekotjo et al., 2025). Their motivations,

values, and emotional attachments to place frequently escape the purview of traditional scientific frameworks, which tend to prioritize quantifiable metrics over subjective realities. Specifically, few studies have examined how volunteers in erosion-prone coastal regions interpret their ecological practices as meaningful, culturally grounded actions, leaving a critical gap in understanding the subjective dimension of sustainability. This study directly addresses this gap by investigating not only what volunteers do but how they make sense of their engagement and how these meanings inform broader conservation practices.

This gap underscores a growing recognition of the importance of understanding environmental phenomena as experienced, not just managed (Forte Taylor et al., 2025). Conservation, especially in erosion-prone coastal areas, is not solely a technical intervention but a deeply human endeavor, shaped by memory, emotion, and identity (Date & Chandrasekharan, 2025). Volunteers do not merely plant trees or monitor shorelines they enact a form of ecological care rooted in personal meaning and cultural context. In this sense, the phenomenon of volunteer-driven conservation is inherently subjective, contextual, and experiential, and demands an inquiry framework capable of honoring this complexity.

A phenomenological lens offers a means of accessing this depth (Reyes-Santiago et al., 2024). Rather than seeking to generalize behavior, it allows for the exploration of meaning as lived and narrated by those who inhabit ecological frontiers. In communities where environmental degradation is not an abstract issue but a daily reality, such insights can illuminate the moral and emotional dimensions that drive sustainability from the ground up (Feng & Xu, 2025). The exploration of these lived experiences is not only relevant it is necessary to more fully grasp the human essence of ecological responsibility in the Anthropocene.

Within the broader landscape of environmental research, the study of individual and community experiences in ecological contexts has become an increasingly vital subfield (Jiang et al., 2025). Scholars have recognized that understanding how people engage with and make sense of environmental change especially those directly affected by it is essential for developing more inclusive and effective conservation strategies (Uche et al., 2025). In erosion-prone coastal regions, where ecological vulnerability intersects with cultural identity and socioeconomic marginalization, these experiences take on particular significance. However, existing studies have largely emphasized attitudes and behaviors in general environmental contexts, with insufficient attention to frontline communities and their embodied experiences of ecological change. This study contributes by situating coastal volunteers' voices at the center of analysis, thereby filling an identified research gap on how lived experience can inform both theory and practice of community-based sustainability.

However, capturing the meaning embedded in such experiences presents notable methodological challenges (Nkansah-Dwamena, 2025). Much of the existing literature relies on quantitative assessments of environmental attitudes, behaviors, and outcomes, which, while valuable, often fall short in revealing the emotional, spiritual, and existential dimensions that shape human-environment relationships (Lee et al., 2024). For instance, standardized surveys and ecological impact reports tend to reduce complex experiences into categories or numerical indicators, obscuring the depth of personal meaning and contextual nuance that drive voluntary conservation efforts at the grassroots level.

As a result, previous research has often failed to grasp the essence of the phenomenon the internal motivations, affective attachments, and culturally embedded values that animate the everyday actions of community-based volunteers (Pata et al., 2025). These methodological limitations underscore the need for a phenomenological approach capable of accessing the inner world of individuals and revealing how they construct meaning through lived experience (D. Liu et al., 2024). By explicitly addressing this methodological and thematic gap, the present study positions itself to contribute a richer, more human-centered understanding of sustainability as both a practice and a philosophy, grounded in the lived realities of coastal community volunteers.Conventional responses to environmental degradation in coastal areas such as mangrove replanting, infrastructure reinforcement, or public awareness campaigns typically rely on practical, solution-driven frameworks that emphasize measurable impact and ecological efficiency (Luo, 2025). While these strategies are undoubtedly

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important, they are often underpinned by managerial or technocratic perspectives that prioritize outcomes over meaning (Zhuang, 2024). As a result, the inner experiences, motivations, and emotional connections of those implementing such interventions particularly community volunteers remain largely invisible in the literature.

Existing research has largely employed quantitative or behaviorist models to assess participation in conservation, frequently reducing complex human-environment interactions to knowledge-attitude-practice matrices or cost-benefit analyses (Abdi et al., 2025; Jędrusik, 2025). These frameworks, although methodologically rigorous, are limited in their ability to access the rich, affective, and existential dimensions that shape grassroots ecological engagement. The result is a partial understanding of conservation: one that informs policy, but not always practice, especially at the community level where action is deeply personal and contextually embedded.

Addressing this gap requires a methodological shift toward phenomenology, which centers the lived experience as a primary source of knowledge (Abdulrazzaq et al., 2025). A phenomenological approach enables researchers to explore how individuals perceive, feel, and construct meaning through their involvement in conservation efforts, particularly in regions where ecological and cultural vulnerability are intertwined (Masasi et al., 2025). By foregrounding subjective narratives and focusing on essence rather than outcome, this method provides a holistic and human-centered lens through which sustainability can be reimagined not just as ecological preservation, but as an ongoing negotiation of identity, place, and purpose.

RESEARCH METHODS

Study Design

This study employed a descriptive phenomenological approach to explore the lived experiences of local environmental volunteers in interpreting ecological sustainability in erosion-prone coastal areas (Fife, 2020). Phenomenology was chosen for its capacity to investigate the essence of human experiences as they are perceived and described by individuals themselves (Daly, 2007). The approach is particularly suitable for addressing the research question, which seeks to uncover the deep, subjective meanings underlying conservation practices at the grassroots level. Rooted in Edmund Husserl's tradition, descriptive phenomenology emphasizes epoché (bracketing) to suspend presuppositions, allowing direct engagement with the phenomenon as experienced by participants. Through this design, the study aimed to access the internal consciousness and intentionality associated with volunteer ecological action.

Participants

Participants consisted of community-based volunteers engaged in coastal conservation activities in regions susceptible to erosion (Kawamura, 2020). Selection was guided by purposive sampling, targeting individuals who possessed direct and sustained experience related to the phenomenon under investigation (Iosifides, 2011). Inclusion criteria required participants to be at least 18 years old, actively involved in conservation initiatives for a minimum of one year, and residing in or near the affected coastal areas (Longhofer et al., 2012). Individuals lacking relevant experience or those who were unable to provide in-depth reflections were excluded. A total of eight participants (five males and three females) were involved, with ages ranging from 24 to 52 years. Most had backgrounds as local farmers, fishers, or educators, all of whom had long-standing emotional and practical engagement with coastal ecosystems. While purposive sampling allowed for the recruitment of information-rich participants with deep engagement in conservation, it may have limited the diversity of perspectives captured and thus reduced the generalizability of findings to other coastal or volunteer contexts. However, given the phenomenological aim of this study—to reveal the essence of lived experience rather than produce statistical generalization—this sampling strategy was considered both appropriate and necessary for capturing in-depth, nuanced accounts.

Data Collection

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Data were collected through semi-structured in-depth interviews conducted in quiet and familiar settings within the participants' local communities (Clair, 2003). Each interview followed a flexible guide to ensure thematic consistency while allowing for the spontaneous emergence of meaningful narratives. Interviews were conducted face-to-face, lasted between 60 to 90 minutes, and were audio-recorded with consent. The sessions were designed to be conversational and open-ended, enabling participants to reflect on their experiences without pressure. Efforts were made to ensure psychological comfort, including flexible scheduling, the use of local language when necessary, and the presence of culturally sensitive facilitators. All interview protocols were developed based on phenomenological literature and pilot-tested with two non-participant volunteers for clarity and contextual alignment.

Data Analysis

Interview transcripts were analyzed using a thematic phenomenological analysis, following systematic steps to reveal the essential structures of meaning embedded in participants' narratives (Fenton & Baxter, 2016). The process began with immersive reading of the transcripts, followed by the identification of meaning units, which were then clustered into preliminary themes. Reductive procedures were applied to distill these into higher-order themes representing the core dimensions of the phenomenon. NVivo 12 software was used to assist in coding and organizing data, without influencing interpretive outcomes. Each theme was derived inductively and validated through iterative comparison across cases to ensure coherence and depth. The final themes were then described narratively to capture the lived realities and ecological consciousness of the participants.

Ethical Considerations

Ethical approval for this study was obtained from the appropriate institutional research ethics committee (Murphy & Dingwall, 2017). All participants were informed about the purpose, scope, and voluntary nature of the study. Written informed consent was secured prior to participation. Anonymity was maintained by using pseudonyms, and all data were kept confidential in secure digital storage. The research adhered to internationally recognized ethical standards, including those outlined in the Declaration of Helsinki, ensuring respect, dignity, and protection of participants throughout the research process.

RESULTS

A Sacred Duty to the Environment

Participants described their involvement in conservation not merely as voluntary work, but as a deeply moral and even spiritual responsibility. Their narratives reflected a strong sense of ecological guardianship rooted in cultural and personal values.

"When I plant mangrove trees, it feels like I'm protecting my own mother. The sea has fed us for generations—how could I turn my back on it now?" (Participant 3)

This quote illustrates the affective depth with which conservation is understood—as a relational act tied to identity, emotion, and ancestral heritage. The volunteers perceived nature not as an external entity, but as a familial and sacred presence deserving of protection. For many, conservation work was described as a calling, embedded in a spiritual worldview that merges environmental and ethical obligations. This theme directly addresses the research question by showing how volunteers construct sustainability as a moral and spiritual meaning within their lived experience.

Navigating Personal Sacrifices for Collective Futures

Another recurring theme was the experience of personal hardship and sacrifice. Volunteers often faced financial limitations, harsh environmental conditions, and societal misunderstanding. Despite these challenges, their commitment remained unwavering.

"I've spent my own money and time even when others think it's pointless. But if we don't do this, who will protect this coastline for our children?" (Participant 6)

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These testimonies underscore a future-oriented consciousness, where participants locate their struggles within a broader intergenerational purpose. Sustainability, in this context, is not only ecological but ethical a commitment to securing a livable future through present endurance. Here, the research question is answered by revealing how participants interpret sustainability as sacrifice, transforming personal struggles into acts of intergenerational care.

Community as an Anchor of Meaning

Participants emphasized that their motivation was often sustained through the strength of communal ties. The act of conservation was rarely individual; it was shaped by shared rituals, mutual support, and collective memory.

"It's not just me every weekend, we gather here, tell stories, cook, and plant together. It's how we heal the coast and ourselves." (Participant 1)

This relational dynamic reveals how ecological actions are interwoven with cultural and social practices. Conservation, therefore, emerges not solely as an environmental endeavor, but also as a vehicle for strengthening community resilience, identity, and solidarity. This finding connects to the research question by showing that volunteers make meaning of sustainability through communal and cultural practices, not only through individual actions.

Embodied Awareness and Emotional Resonance

Participants consistently reported a heightened awareness of environmental change through their physical interactions with the landscape. The experience of witnessing erosion, species loss, or tidal shifts elicited emotional responses ranging from grief to urgency.

"It breaks my heart to see the sea creeping in further every year. We've lost two coconut groves already. It's like watching a slow funeral." (Participant 5)

These expressions reveal an embodied cognition of ecological degradation, where perception is not abstract but grounded in emotional resonance. The volunteers' ecological consciousness was shaped through tactile engagement planting, observing, mourning and reinforced through emotional memory. This theme highlights how the research question is answered by uncovering the embodied and emotional dimensions of sustainability as lived and felt experiences.

Essential Summary of Findings

The results reveal four essential dimensions in how local volunteers interpret and experience ecological sustainability: (1) moral and spiritual obligation to protect the environment, (2) willingness to make personal sacrifices for communal and intergenerational well-being, (3) conservation as a collective cultural practice, and (4) emotional and embodied awareness of environmental change. Together, these four themes provide a clear and structured response to the central research question—showing that sustainability is made meaningful by volunteers as a moral duty, an act of sacrifice, a communal practice, and an embodied emotional reality. These findings illuminate the deeply subjective and contextual meanings that underlie grassroots conservation efforts, offering a textured understanding of sustainability as lived, felt, and enacted in place.

DISCUSSION

The findings of this study revealed that patients with type 2 diabetes experienced digital self-management education as a deeply personal journey shaped by empowerment, emotional connection, and selective engagement (Wu & Yang, 2025). These experiences addressed the core research question by illuminating how individuals interpret, integrate, and assign meaning to digital health content within the context of their everyday lives.

The study contributes a nuanced understanding of the phenomenon by demonstrating that digital health education is not merely a functional tool but a relational and reflective experience (Iannaccone et al., 2024). Patients do not passively receive information; they negotiate its relevance, reflect on its emotional resonance, and adapt it to their personal health narratives. The themes of

reclaiming control, learning beyond the clinic, emotional resonance, and digital fatigue collectively reveal a complex interplay between technology and human agency (Almusharraf, 2025). These insights directly respond to the central question of how patients perceive and experience digital health education, offering a perspective that previous outcome-based studies have largely overlooked.

In relation to existing literature, this study confirms earlier findings on patient empowerment while extending them into the digital health education domain. Prior research has noted that digital interventions can foster autonomy and motivation (Al-Sawalmih et al., 2025), but much of this work has treated empowerment as a measurable outcome rather than a lived process. The current findings enrich this view by showing how empowerment is constructed through narrative reflection, emotional resonance, and personal meaning-making. Similarly, Dai et al (2024) emphasized interpretative challenges in navigating mHealth interventions, which is echoed here in participants' struggles with credibility and information overload. This study adds depth by showing how patients actively filter and selectively engage with content to preserve psychological balance. Furthermore, Guo (2025) highlighted the role of emotional connection in engagement, while our findings situate such connection within cultural and communal contexts, particularly through peer resonance, thereby extending prior models beyond individual psychology. Finally, whereas existing models often isolate behavioral metrics from meaning-making (Amo-Agyemang, 2025), this study integrates emotional, cognitive, and cultural dimensions into a unified phenomenological account, advancing a more holistic theoretical framework for understanding digital health learning.

By adopting a phenomenological lens, the study provides a deeper articulation of patient voices, complementing and enriching previous empirical models. In doing so, it not only aligns with but also expands upon the existing literature by demonstrating that digital health education must be understood as a lived, relational process—where empowerment, fatigue, and resonance coexist—rather than a linear outcome of exposure to information.

Implications of the Findings

The insights drawn from this study offer meaningful implications for both the development of digital health education and the broader understanding of patient learning in chronic disease contexts (Vis et al., 2024). From a professional perspective, recognizing digital education as a subjective, emotionally grounded experience urges healthcare practitioners and developers to design interventions that honor narrative, empathy, and cultural context (Pareek, 2025). Educational content that acknowledges patients' emotional journeys and allows space for reflection may enhance trust, engagement, and long-term adherence (Q. Zhang et al., 2024). Culturally relevant storytelling, peer-based modules, and personalized feedback systems could support more inclusive and resonant digital experiences. In this way, the study extends prior recommendations in digital health scholarship by emphasizing not only usability and access but also cultural resonance and emotional depth as critical design principles.

Study Limitations

Despite the rich insights provided, this study has several limitations that must be acknowledged (G. Liu & Yang, 2024). The use of purposive sampling, while appropriate for phenomenological inquiry, may limit the diversity of experiences represented, particularly across geographic regions or digital literacy levels (H.-L. Zhang et al., 2024). All participants had at least basic access to digital tools and a willingness to reflect, which may not represent individuals with more restricted access or different motivational profiles. Additionally, the interpretative nature of the analysis, though rigorous, is influenced by the researchers' lens and contextual understanding. These factors should be considered when interpreting the transferability of the findings to other populations or healthcare settings.

Future Research Directions

Future research may benefit from expanding the demographic diversity of participants to include individuals from rural areas, varying socioeconomic backgrounds, or those with limited digital access . Comparative studies could explore how different cultural or linguistic groups experience digital education differently, shedding light on the intersection between technology and

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social identity. Longitudinal phenomenological studies may also reveal how patients' experiences evolve over time and how initial interpretations of digital tools transform with continued use. Moreover, integrating phenomenological insights with participatory design approaches could lead to co-created digital interventions that truly reflect the lived realities of the populations they aim to serve.

CONCLUSION

This study demonstrated that digital self-management education for patients with type 2 diabetes is experienced not merely as information transfer, but as a relational and emotionally meaningful process. By highlighting empowerment, connection, and the challenges of digital fatigue, the findings reveal that effective digital interventions must integrate patient narratives, cultural values, and emotional contexts to foster trust and sustained engagement. The practical implication is that healthcare practitioners and developers should prioritize empathetic and culturally sensitive design in digital health platforms. Looking ahead, future studies should include more diverse populations and longitudinal perspectives to capture how these experiences shift over time and across different digital settings.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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