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Interactive Storytelling as a Systems Thinking Tool for Conservation Education in Sri Lanka

JAYAWEERA M.P.K.H.[1]* **and LIYANAGE U.P.P.**[2]
[1,2] *Department of Integrated Design, Faculty of Architecture, University of Moratuwa, Moratuwa, Sri Lanka*
[1]*kalanijayaweera53@gmail.com* [2]*prasanna@uom.lk*

***Abstract* —** Sri Lanka is one of the world's biodiversity hotspots, yet its ecosystems face escalating threats due to habitat loss, deforestation, and human–wildlife conflict (Gunawardene, Wijesundara, & Weerakkody, 2023). Traditional conservation education methods in the Global South often rely on information-driven or compliance-oriented campaigns that rarely engage youth in meaningful behavioural change (Fernando, Kumara, & Jayathilake, 2020). Recognising the importance of youth as future decision-makers, this project explores how interactive storytelling can serve as a systems thinking tool to promote conservation awareness among Sri Lankan youth aged 15–30. Drawing on Fritjof Capra's "web of life" perspective (1996), which emphasises interdependence and feedback within living systems, the research investigates how narrative choices and visible ecological consequences can help young audiences understand the interconnected nature of ecosystems and their role within them. The project situates itself at the intersection of communication design, systems thinking, and conservation education, offering an innovative model for transforming complex ecological concepts into emotionally resonant, playable experiences.

The main aim of this study is to translate systems concepts—such as interdependence, feedback, and trade-offs—into an interactive narrative format that fosters awareness and learning through player engagement. This approach is grounded in existing literature that identifies choice-based narratives as powerful vehicles for education and empathy (Gee, 2007; Mateas & Stern, 2005). Interactive storytelling allows participants to act as co-authors within simulated environments, experiencing the consequences of their actions in real time. Within conservation contexts, this format can highlight the delicate balance between human activity and ecological stability. Localising this experience to Sri Lanka was essential, as cultural familiarity enhances emotional resonance and behavioural intent (Bandara, Perera, & Gunasekara, 2021). Thus, the project aimed not only to engage youth cognitively but also to evoke empathy toward non-human life and promote reflective understanding of ecological interdependence.

Methodologically, the project followed a design-led research process informed by iterative prototyping and user feedback. The design inquiry progressed through three prototype stages—paper, clickable, and

*Contact: Phone +94-714729067
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refined—each testing how effectively players could perceive ecological feedback following their in-game decisions. The final interactive story featured four main decision nodes with two primary outcomes each, resulting in approximately fifteen narrative screens. Every decision generated immediate visual or textual feedback, such as colour shifts in habitats, biodiversity indicators, or changes in human–wildlife conflict data, followed by reflection prompts encouraging players to consider wider system effects. A compact evaluation study was conducted with sixteen Sri Lankan youth aged 19–24, using pre- and post-surveys alongside focus group discussions. The research assessed gains in conservation understanding, emotional engagement, and systems-awareness indicators. Through these iterative cycles, the design evolved to better communicate ecological cause-and-effect relationships in a manner relatable to the Sri Lankan context.

The analysis revealed significant improvements in participants' conservation knowledge, approximately a 25% increase between pre- and post-survey scores—and higher engagement ratings across all participants. Qualitative findings indicated three recurring patterns in player responses: empathy toward both human and non-human characters, recognition of interdependence, and understanding of trade-offs between short-term human gains and long-term ecological health. Participants frequently articulated how visible feedback deepened their systems awareness, with statements such as "one choice can disturb the whole system." These insights demonstrate that when ecological feedback is made visible and emotionally grounded in local context, players are more likely to internalise conservation values. The results were distilled into three guiding principles for future design practice by make feedback visible,stage consequential tradeoffs, and localise emotion. Together, these principles provide a framework for designing interactive conservation media that connect cognitive learning with emotional and ethical understanding.

This study contributes to design research and practice by positioning interactive storytelling as a systems-thinking tool that bridges education, communication design, and environmental conservation. It demonstrates how feedback-based narrative structures can translate abstract ecological concepts into concrete, emotionally engaging learning experiences. The findings suggest that interactive media can serve as an accessible platform for conservation education, particularly among youth populations who are already digitally literate. Moreover, this approach can inform future integration of interactive storytelling within design education, NGOs, and community-based conservation programs in Sri Lanka. The research underscores the importance of culturally contextualised narratives that encourage reflective agency and promote sustainable attitudes toward nature. Future work may extend this framework to explore long-term behavioural outcomes, scalability across other conservation topics, and comparisons with linear educational media.

Keywords: *Interactive Storytelling; Systems Thinking; Conservation Education*

**Contact: Phone +94-714729067*
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Table 1

Integration matrix. Selected participants illustrating the relationship between learning gains and emergent themes

Participant	Change in Knowledge	Change in Engagement	Dominant Theme(s)	Illustrative Quote
P03	+2	+1.0	Interdependence	"One choice can disturb the whole system."
P07	+3	+1.1	Empathy to Action	"When the forest died in the story, I wanted to help for real."
P12	+1	+0.5	Trade-off Reasoning	"Income helps people now, but future losses are bigger."

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