Bird Games - an exploration into game experience design for children within the Central Energy Trust Wildbase Recovery Centre.

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Keywords

Serious games, experience design, Nature play, eco-play, environmental advocacy, game design, play practice. Location-based experience, education games.

ABSTRACT

This research examines the design of three tangible, digital and hybrid games for the Central Energy Trust Wildbase Recovery (CETWR) centre in Aotearoa, New Zealand. The games focus on educating children about the stewardship, health, rehabilitation and release of ill or injured native birds and encourage visitors to CETWR to actively engage in wildlife advocacy and the stewardship of New Zealand's native taonga[1].

Games within museums and experience spaces are powerful education tools that enable visitors to engage more closely with the content and put the visitor at the centre of engagement. Games are fun, and in museums, they scaffold serious and complex information in playful engagement that gives agency to the user (Richardson 2022). Games within museums are designed for broad audience participation, but children and young people comprise a significant part of this audience. Nofal explains, "They are motivated to learn when involved in meaningful activities and experiential processes" (2020, 3.3). Museum games need a short playtime and achievable rewards for participants to complete the learning and move to the next installation. Games must be a "play of experience." (Tekinbas and Zimmerman 2003), which extends into a whole sensory experience, touch, sound, movement and collaborative forms of participation that connect players in a shared experience. Experience games transcend media using tangible, digital and hybrid tools to create the game experience.

In 1998, Te Papa Tongarewa, the National Museum of New Zealand, installed tangible interactive games to encourage a younger audience to visit the museum. At the time, the "Time warp" ("1998-2002 Past Exhibitions | Te Papa," n.d.) was a revolutionary display; within it, the "Blast back" ride enabled visitors to fly on the back of a Harpagornis eagle[2], bringing visitors face to face with our native wildlife. At the time, these exhibits were groundbreaking. They set a precedent for including interactive and gamification within museums and education centres. Primarily, engaging visitors directly with content where they cannot interact with the source material is important. In New Zealand, 82% of all native birds are threatened or at risk of being threatened ("Extinction Threat to Indigenous Species | Stats NZ," n.d.). Threatened species have a greater chance of

Proceedings of DiGRA 2025

extinction ("Conservation Status of Plants and Animals," n.d.), so the general public have little opportunity to interact with native birds.

Wildlife advocacy through game design

Central Energy Trust Wildbase Recovery Centre is attached to the Wildbase Hospital, which the veterinary department of Massey University manages. Around 40% of patients will be on the Department of Conservation list of rare and endangered species, and some will have conditions too complicated to treat elsewhere. Wildbase Hospital veterinary wildlife specialists from Massey University are onsite to rehabilitate ill or injured birds before they return to the wild. Visitors can watch the vets in action and learn the story of each bird - its injuries, treatment, and recovery.

The three games—Diagnose Me, Be a Vet, and Track My Kiwi—were designed in consultation with Massey Vets and the Department of Conservation to provide an authentic and scientifically accurate experience of the process while also enabling playful engagement for the players.

- *Be a Vet* is a two-player tangible game similar to the board game "Operation." In this game, one player takes on the role of anaesthetist and the other the surgeon to save a Kererū with a broken coracoid bone.

- The *Diagnose Me* iPad game was built in Ren'py as a visual puzzle game. Players are presented with five very sick birds to diagnose. Using a variety of analytical tests, players build an understanding of veterinary diagnostics and equipment through sequential exploration and learn why each test is essential. The game uses clickable illustrations and animated loops to guide children.

- The *Track My Kiwi* game is a tangible RFID-activated treasure hunt in which children use a model of a telemetry tracker to find birds hidden within the education centre.

Figure 1: Be a Vet game (left), Diagnose Me game (middle) and Track my Kiwi game (right).

Designing environmental games that are to be played in physical space can be challenging, both in terms of player engagement, balancing the needs of both players and observers and the need for scientific accuracy within the gameplay. User interaction challenges also compound the design of games within physical spaces. Games must be robust and safe to use, made with durable materials, and easy fabrication upgrades that can be replaced to cope with the rigours of physical play. These considerations also include being able

to communicate design to future contractors and manufacturers who need to work to your specifications so that the games will last for years to come.

In the six months since the centre opened, 42,000 visitors passed through the Central Energy Trust Wildbase Recovery centre, roughly 250 people per day. Forty-five school groups booked a visit, equating to 2,119 young people learning vital conservation knowledge about our taonga, the unique natural world and the roles of the Vets who care for them. The Kererū Surgery game is the most popular game at Wildbase and, despite heavy wear and tear, has provided a consistent and motivating experience to young visitors.

CONCLUSION

The takeaway message for designing these games is that you must get the fundamental science right at the start, giving you a good platform of variables that can easily be adapted into game mechanics. The games needed to be simple, with quick replicable actions with one or two steps to learn and immediate feedback results; otherwise, children get bored and frustrated and start using the games in ways they were not designed for. The play needs to be fun and engaging, so you must be careful that the science does not overwhelm the game's play. There is room to develop further learning material around these games that asks children what they learnt from the experience and the next steps for learning. The designers were conscious not to overburden the games with seriousness. Children needed to find the games fun and engaging so that these positive memories would form a basis for understanding the roles of vets and conservationists in wildlife preservation.

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ENDNOTES

[1] Taonga is a term used by the indigenous people of New Zealand, the Māori to describe trreatures, or objects of significance and protection.

[2] This is an extinct species of eagle from New Zealand.