

The Development and Evaluation of a One Welfare Augmented Reality Game for Use in Hawke's Bay Early Learning Centres

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ABSTRACT

Pet animals can help teach children compassion and empathy and enrich their learning about nature, ecology and relationships. Having pet animals in early learning centres (ELCs) is common but there are a lack of studies assessing the impact of human-animal interactions in this setting on the welfare and wellbeing of animals, children and staff. The adoption of the One Welfare concept will effectively address the connections between science and policy for positive human, animal and environmental wellbeing outcomes. In Aotearoa New Zealand, there is no compulsory animal welfare training requirement for ELCs staff to ensure that the animals in their care live a good quality of life. Such training would also help provide the best learning opportunities for children as well as minimise any health and safety risks for children, staff and animals alike.



OBJECTIVES

The project aims to use ELCs within Hawke's Bay as a regional model to:

- Ascertain the attitudes, awareness and understanding regarding responsible pet guardianship (Kaitiaki) of both staff and children.
- Develop a augmented reality (AR) game that promotes One Welfare.
- Evaluate the One Welfare Game's effectiveness at improving:
 - The quality of life for animals in the ELCs setting.
 - ELCs staff and children's knowledge about animal health and welfare needs.
 - Beliefs, attitudes, and behaviour towards animal health and welfare among ELCs staff and children.
 - Positive human-animal interactions.

An overview of the project is given in Figure 1.



Figure 1: The development model of animal welfare game for use in early learning centres (ELCs) in Aotearoa New Zealand

MATERIAL AND METHODS

The AR game is being developed in collaboration with computing, early childhood teaching, and animal behaviour and welfare experts¹. The current design phase (Figure 2) has resulted in a prototype game, which can be downloaded and played via touchscreen devices, is currently being appraised by the collaborating experts along with ELCs representatives. All of the content and feedback provided within the game is based on current scientific research. A rabbit was chosen as the animal in the prototype game as it is a common ELC pet. All rabbit images were checked by animal behaviour experts to ensure they accurately reflected the emotional and behavioural states they were representing in the game. Pre- and post-intervention data about attitudes, awareness and understanding regarding responsible pet guardianship (Kaitiaki) of both ELCs staff and children will be used to evaluate the games effectiveness.

AR Animal Welfare Game

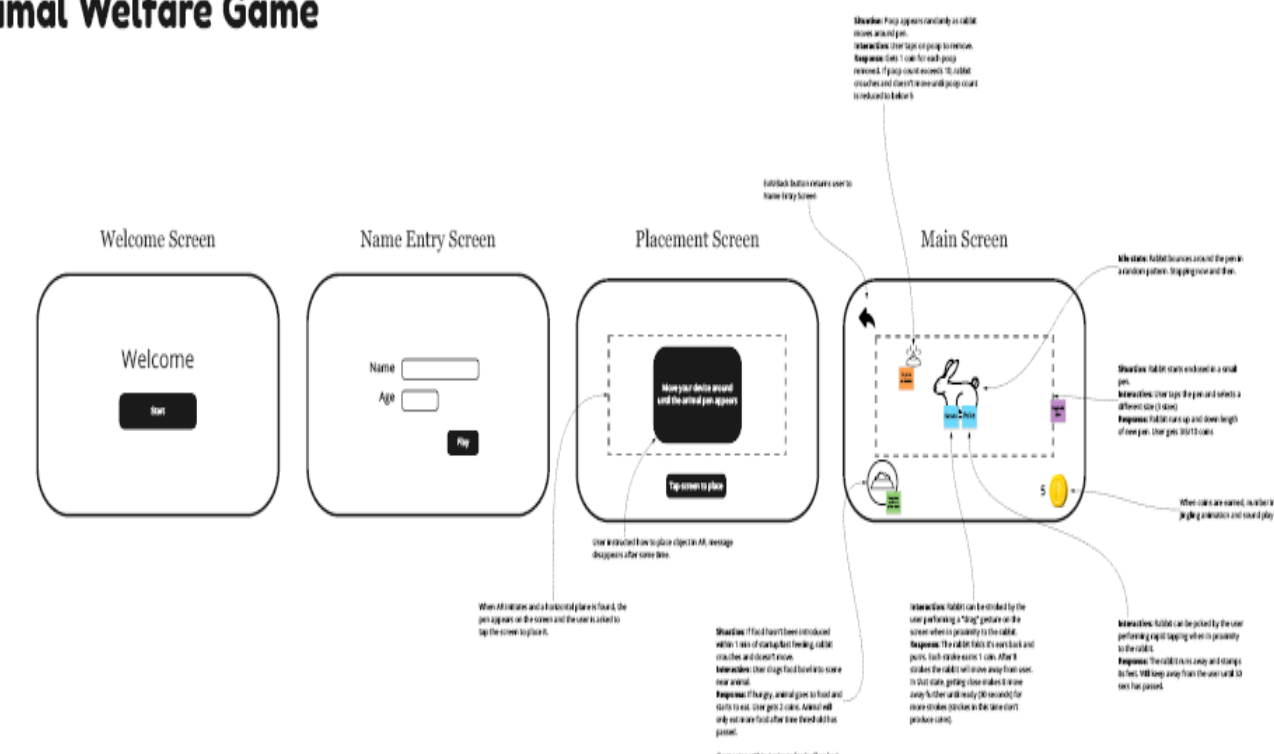


Figure 2: An example of a design overview for the prototype game

RESULTS & DISCUSSION

The initial proof of concept (prototype) application was developed based on the prototype model as shown in Figure 2 for a touch screen device. The prototype focuses on the interactions between a rabbit and child (Figures 3 & 4). A number of user experience (UX) design principles were followed to increase the readability and enhance interactivity. Usability goals such as (learnability, efficiency, effectiveness, memorability, and safety) were highly communicated throughout the development phase to ensure the prototype was fit for purpose. There will be several more iterations based on ELCs feedback before the game is finalised for a national roll out. While most of the feedback received to date has been positive, some of the ELCs were resistant to the usage of screen-based technology in their centre. Before implementation various the technology acceptance models will be reviewed². These models will help to address concerns regarding the use of technology in ELCs.

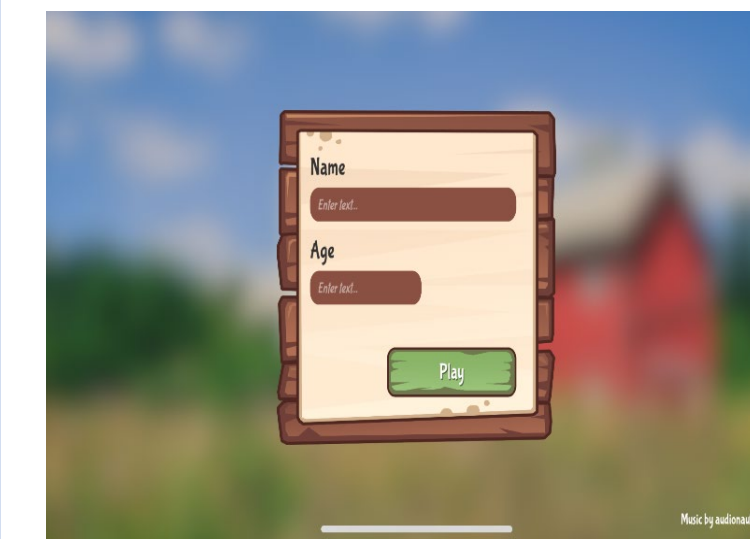


Figure 3: Startup screen

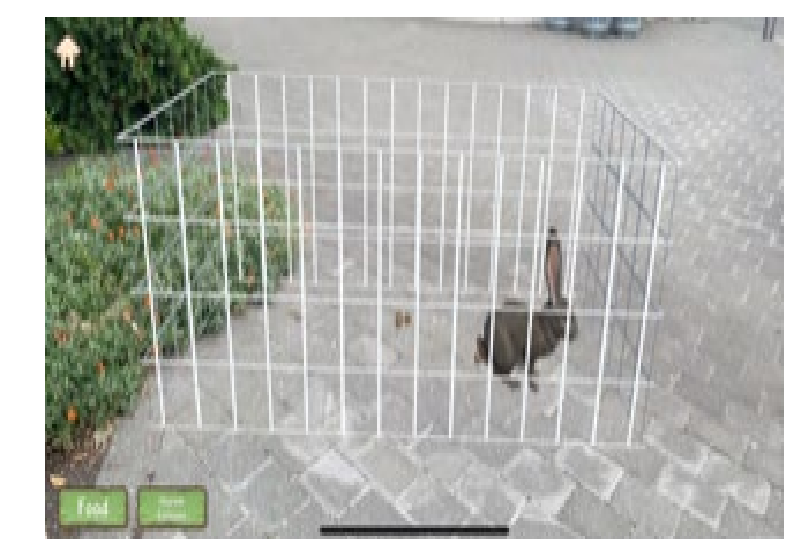


Figure 4: Virtual interaction screen

CONCLUSION

The development of an animal welfare game for use in ELCs requires a multifaceted approach to ensure that the game is user-friendly and also achieves the desired outcomes. The latter requires educators to be accepting of the technology and recognise its benefits so that its use is implemented within ELCs nationally.

REFERENCES

- ¹ Application made by Reactar Limited, Auckland 0932, New Zealand
- ² Hamed Taherdoost, A review of technology acceptance and adoption models and theories, Procedia Manufacturing, Volume 22, 2018, Pages 960-967, ISSN 2351-9789, <https://doi.org/10.1016/j.promfg.2018.03.137>.