A PLAYFUL RELATIONSHIP BETWEEN CHILDREN AND INSECTS: FOSTERING NATURE CONNECTION THROUGH INTERACTION DESIGN.

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P/REFERENCES OF DESIGN
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CONVERGING BODIES OF KNOWLEDGE

Research Background

- The human-nature connection are gradually weaking
- Nature education is essential in child development
- Beetle could be a gateway to foster kids nature connection

Research Main Focus

How can we reconnect children with nature through interaction design, using beetle science popularization as an example?

Abstract

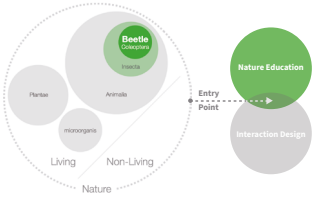
Being called to spend more and more time interacting with or through screens and devices, has a major impact on the relationship between humans and nature - which is gradually diminishing - especially for children. Nature connectedness and nature-deficit disorders are widely studied, and there is a growing need to reinforce the nature connection in children. The role of interaction design to foster nature connections presents several opportunities. In this research, we identify game design as a pivotal opportunity for nature-children interaction; through games dynamic, natural science education can be integrated with a direct interaction format, and allow forms of experiential learning. Mixed-methods approach in the user research process helps a comprehensive understanding of the user base and informs the development of the prototypes. The final outcome is "Playful Beetle", a game that entices kids to explore the world of beetles in an engaging and playful manner, provides children with knowledge about beetles, and meets their observe, learn, interact, and experience needs with these creatures. The outcome fills the gap in the current nature education field and also offers valuable cases for future researchers.

Why Choose Beetle?

Insects play vital role in the ecosystem, and they fill our lives all the time, recognizing and understanding them is an important way to foster nature connection among childrens.

Children have very limited knowledge about insects. Some even hold negative perceptions such as fear and aversion. In fact, **most of what we know about insects comes from beetles.**

The characteristics and knowledge of beetles are unique, which could **help children stimulate their curiosity** and encourage them to take an active role in learning about insects and nature.



Target Users

6-12 Years Old Children

The stage when logical thinking matures and can understand and explain natural phenomena.

User Research Methods

Questionnaire + **Interview** + **Design Workshop** = **Playful Beetle**

Questionnaire
Questionaire with kids to gather baseline data on children's affinity for nature and attitudes towards insects.

Interview
Interviews with stakeholder such as teachers and parents to collect deeper insights and suggestions.

Design Workshop
Organzie a design workshop to involve children in understanding, exploring, and co-creating beetle-themed games.

Playful Beetle
A beetle themed nature education game, design and inspired base on collected data.

Playful Beetle

A beetle-themed nature eduction game, provides children with knowledge about beetles, meets their observe, learn, interact and experience needs.

How to Play

1 Beetle figures

Four beetle figures of different species for free play such as close handling and observation.

2 Beetle cards

Three different types comprise a total of 90 cards. Filled with beetle knowledge, which could be read independently or used with the toy figures together to support board game mode play.

3 Board game mode

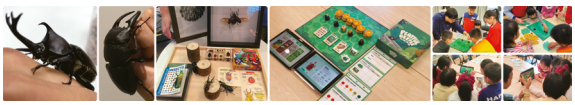
2-4 players. Start as larvae, evolve with dice, move on the map, draft cards, and collect tokens from cards. The player with the most tokens wins. The initial concept came from kids' ideas in earlier workshops and was redesigned to align with educational goals.

4 Digital mode

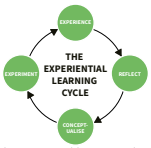
Based on a tablet. Supported by NFC(Near-field communication), reads corresponding data once placing beetle figures. Players can interact with beetles in the digital environment, observing, feeding, and recording. Additionally, the digital mode offers an entertaining guide and encyclopedia, helping kids to learn about beetles in a fun and easy way.

Prototype

Action Research Fieldworks



Theoretical Framework



The experiential learning cycle is defined as "the process of creating knowledge through transformation of experience." It emphasizes a learner-centered method, promoting active participation, exploration, and reflection in practice to foster knowledge acquisition, personal development, and emotional growth.

Results

The prototype has been validated by a usability test, which positively shapes children's feelings and understanding towards beetles and nature and has a positive effect on promoting children's nature connection.

Anticipated Impact

This research fills the gap in beetle-related educational products in the current nature education field and also offers valuable interaction design cases for future nature educators, insect educators, interaction designers, and game designers.

References

Moghadam, D. M., Singh, H. J., & Yahya, W. R. W. (2015). A brief discussion on human nature relationship. *International Journal of Humanities and Social Science*, 5(6), 90-93.

Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin books. http://dx.doi.org/10.2307/44452148

Weeks, F. J., & Oseto, C. Y. (2018). Interest in insects: The role of entomology in environmental education. *Insects*, 9(1), 26. https://doi.org/10.3390/insects9010026

Webber, S., Kelly, R. M., Wadley, G., & Smith, W. (2023, April). Engaging with Nature through Technology: A Scoping Review of HCI Research. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-18). http://dx.doi.org/10.1145/3544548.3581534

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.

P/REFERENCES OF DESIGN

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