

Engaging Children with the Outdoors Through Free-Choice Learning: An Examination of Discovery Packs at Royal Botanical Gardens



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Research Objectives:

- Evaluate the updated Discovery Pack Program
- Investigate free-choice learning in a botanical garden
- Determine the success of education in building connectedness with nature

Literature Review

- Key term definitions
- Education
- Sustainable behaviour change: the role of centers of free-choice learning
- Botanical Gardens
- Balancing education and connectedness with nature

As an increasing number of people move into urban centres in Canada (Statistics Canada, 2018), it is important to find *innovative ways* to maintain an understanding of the natural world, as well as an affinity towards it. This is where education can have an impact. Investigation of the Vancouver Science Centre over a time period of 10 years, found that the local use of the center increased the science literacy of the local community, and positively influenced public attitudes and behaviours towards science and technology (John H. Falk & Needham, 2011).

During a literature search, only two similar studies were found, one in China and one in the United States. Only the study in China involved a botanical garden. A review of grey literature uncovered that out of the 19 botanical gardens in Canada, 12 have educational mandates that mention Climate Change, sustainability, or something similar. The literature review identified the gap in the research between environmental education, free-choice learning, and botanical gardens, and provides a justification for why this thesis project is both important and timely.

Methods

The project partnership between RBG and Dalhousie University began in December 2020. The partnership involved collaboration to develop interview questions, and supported the ethics application through a formal partnership agreement. Study recruitment was done using convenience sampling, from a sample of staff, volunteer, and member families. Convenience sampling was selected because it is fast, cost efficient, and generates non-inferential data for preliminary research in identifying trends, issues and future directions for the Discovery Pack program. After the recruitment period, a total of 15 families agreed to participate and were interviewed. The breakdown of interviews included 2 staff families, 3 volunteer families, and 10 member families. The study took place at Royal Botanical Gardens in Burlington, Ontario, in Hendrie Park (primary location) and the Arboretum (alternate location). Hendrie Park is large garden with 12 different garden areas. The garden features a rose garden, vegetable garden, global garden, pond, and a small trail with a boardwalk. Interviews in this garden were conducted near the vegetable garden on a long bench under a pine tree.

The study method was a semi-structured interview, consisting of 13 questions asking about the children's learning and engagement experience using the Discovery Pack.

Quotations

"I'm happy because I can walk around. And if I see something, like if I saw a vegetable, I could write it down. And if I saw insects, I could write it down. And if I saw different leaves, I could write it down. Instead of just walking through it, and then just forgetting about all this." Parent: "I think the interactivity helps them remember. Yeah. As with most people. You're doing something you're interacting with it, you're more likely to remember it." (Family #11, child)

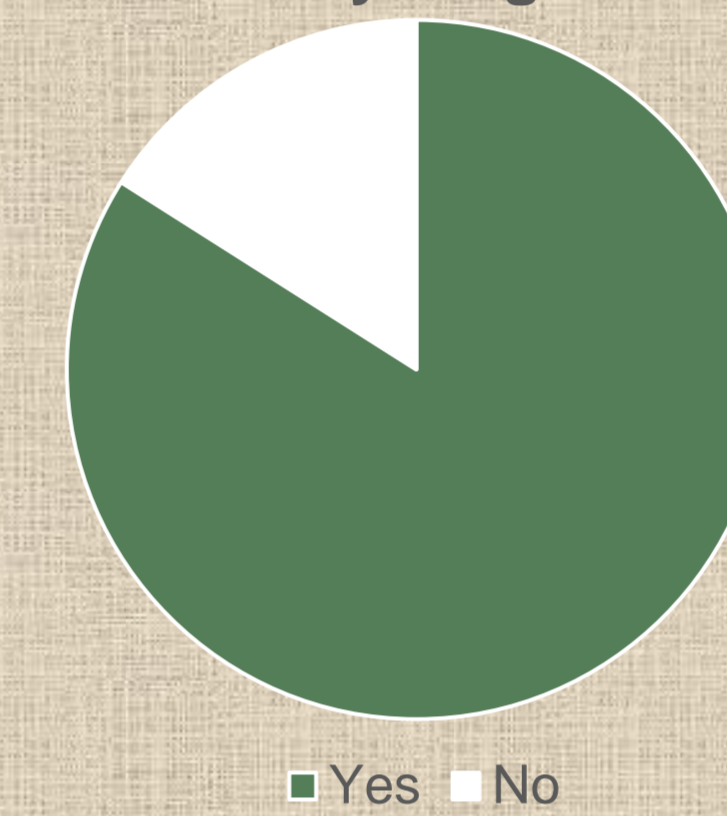
"Yeah, we usually come and go for a hike or walk and it's just we'll see some things or stop and look at the chipmunks running across. But this made us stop and listen and then look for things more closely. Because I think I'm sure we've seen bees here before but we saw more in a 10 minute period than we probably ever noticed here in dozens of visits, right? Yeah, so it made us slow down and appreciate it." (Family #13, parent).

Results

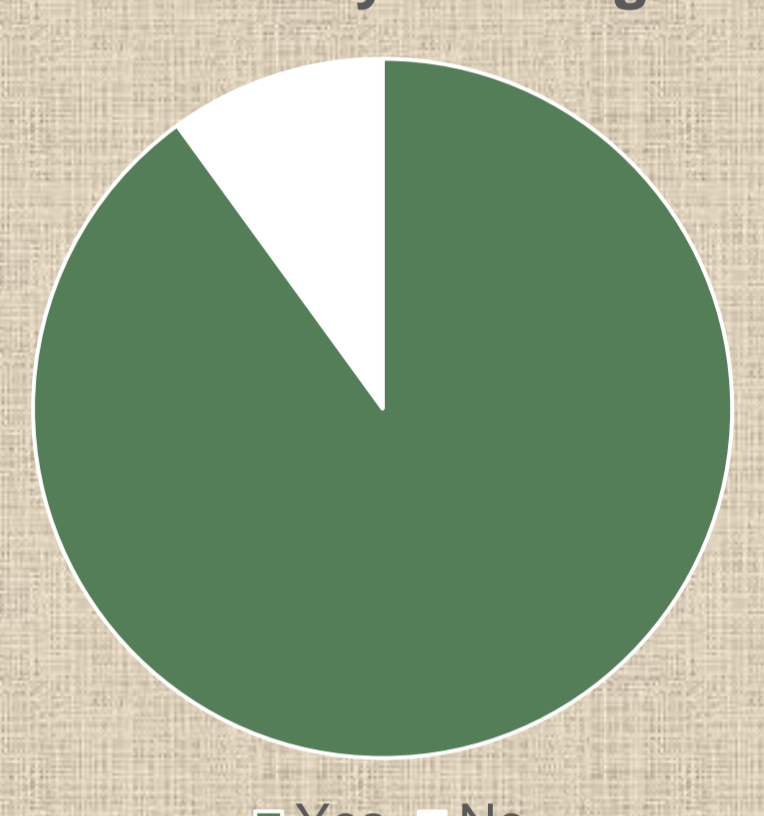
The results of the Discovery Pack study are presented as both quantitative and qualitative data. Quantitative data was collected to gain a generalized understanding of trends in both education and engagement with the Discovery Pack. Questions such as "Did you learn anything new using the Discovery Pack?" were intended to gauge whether children used the Discovery Packs for educational purposes, and questions such as "Would you come back to use the Discovery Pack again?" were intended to demonstrate a child's engagement with both the backpack and the garden. Some questions such as "Which part of the Discovery Pack did you spend the most time using?" or "How would you describe the Discovery Pack to your friend?" may present whether the child appreciated the Discovery Pack more for its educational purposes, for having fun, or for both.

Qualitative data was analyzed using quantitative coding. Parent themes of "education", "engagement", and "critiques or improvements" were chosen. Some child themes under education include "learned" or "identified", under engagement include "enjoyment (fun, cool)", or "sharing what they did", and under critiques or improvement are "too hard". Quotations are used to exemplify themes.

Average Response for "Did you learn anything new?"



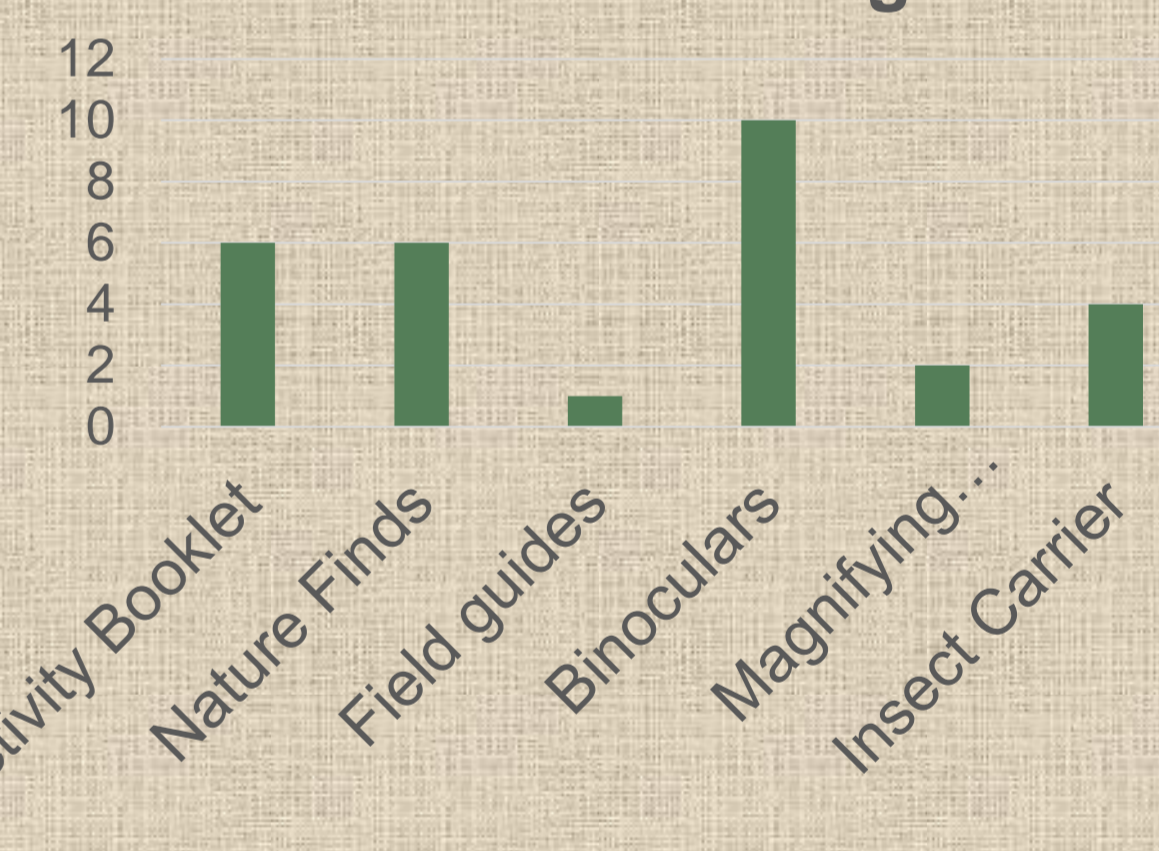
Average Response for "Would you use the Discovery Pack again?"



Q3. a. How would you rate the Activity Booklet as a tool for learning?



Q4. Which did you spend the most time using?



Figures 1, 3, 7, and 13.

Introduction

This research project can be framed within the scholarly field of free choice learning which can be understood as the engagement people have with education outside of the classroom, and of their own choice (Falk, 2005). Free-choice learning happens in places such as museums, science centers, or botanical gardens.

Expansion of research surrounding informal environmental education, nature-connectivity, and botanical gardens is the driving force behind this project. A partnership with Royal Botanical Gardens supports the implementation of project goals, while contributing to program development within the organization through the completion of a research summary report by the lead researcher. The research exists within the disciplines of environmental education, and nature-connectivity in peri-urban environments. Overall, this study aims to contribute to the multi-disciplinary goal of understanding how to improve opportunities for children to connect with the outdoors.



Conclusion

The results of quantitative and qualitative coding provided excellent insight on the benefit of free-choice learning to engaging children with the outdoors. The combination of education with fun activities in the outdoors was found to engage children while teaching them new and interesting things about the world around them. This was found in the literature to improve the relationship between children and the outdoors, and will ideally generate sustainable behaviour change. The results of the interviews will also be presented in a report to RBG, providing them with information for the improvement of a sure to be popular program.

References

- Falk, John H. (2005). Free-choice environmental learning: framing the discussion. *Environmental Education Research*, 11(3), 265–280. <https://doi.org/10.1080/13504620500081129>
- Falk, John H., & Needham, M. D. (2011). Measuring the impact of a science center on its community. *Journal of Research in Science Teaching*, 48(1), 1–12. <https://doi.org/10.1002/tea.20394>
- Statistics Canada (2018). *Canada goes urban*. <https://www150.statcan.gc.ca/n1/pub/11-630-x/11-630-x2015004-eng.htm>