**The Evergreen State College**

**Graduate Program on the Environment**

### Thesis Prospectus



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| **Name** | Anastatia Zita | **ID Number** | A00426731 |
| **Mailing Address** | 404 Legion Way SE STE 206 |
|  | Olympia, WA |
| **Telephone** | (732) 829-1079 |
| **E-mail** | anastatia.z@evergreen.edu |

**STUDENT AGREEMENT:**

**SIGNATURE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE**12/23/2012

**FACULTY READER APPROVAL:**

**SIGNATURE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**MES DIRECTOR APPROVAL:**

**SIGNATURE:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Provide the working title of your thesis[[1]](#endnote-1).

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| **Measuring Interaction in STEAM Exhibits at the Hands On Children’s Museum** |

1. In 250 words or less, summarize the key background information needed to understand your research problem and question.

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| The Hands On Children’s Museum was founded in 1987 as a “provider of hands-on science and art education in Southwest Washington” (“About Us”, 2021). It moved onto the State’s Capitol Campus in Olympia, WA in 1998. The museum finally moved to its current and largest location in 2014. Despite its many different locations the museum’s mission has stayed the same. “The Hands On Children’s Museum stimulates curiosity, creativity and learning through fun, interactive exhibits and programs for children, families and school groups” (“About Us, 2021). Among the list of what they envision the museum to represent they aspire to be the “premier provider of hands-on science and art education for young children in the community” (“About Us”, 2021). At the Hands On Children’s Museum we have many different interactive science, technology, engineering, arts, and mathematics (STEAM) exhibits that are available to the public. The goal is to have the children interact and explore the exhibits in order to learn and have fun. For this research I will be looking into three particular exhibits: the Naturalist Cabin, the Science Table and the Children’s Garden. |

1. State your research question(s).

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| How are the children coming into the Hands On Children’s Museum interacting and learning from the different STEM exhibits? |

1. Situate your research problem within the relevant literature. What is the theoretical and/or practical framework of your research problem?

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|  According to Mayfield (2005), although there are many different definitions of what a ‘children’s museum’ is, the idea that it is not a “traditional ‘hands-off, don’t touch’ museum” (Mayfield, 2005, p. 181) seems to be the overall consensus. Mayfield defines children’s museums as “user friendly, interactive, hands-on, attractive, non-threatening and stimulating places designed and developed for children” (Mayfield, 2005, p.181). The types of hands on learning that is offered at children’s museums is what makes this type of learning unique and special. Unlike traditional schooling, where learning can become ridged and creatively stifling, hands on museums allow the child to explore freely and express their own unique way of learning and problem solving. “Researchers and educationists have reported a strong correlation between not only hands-on activities but also science-based presentations or museum exhibits and positive attitudes in students” (Rix & McSorley, 1999). Hands on experiences have the ability to utilize multiple different senses (sight, touch, smell, auditory and occasionally taste) which create longer lasting memories. When applied to education and learning, hands on experiences create lasting knowledge that children are able to retain and even utilize to further their learning. Experiential learning like museum exhibits and science-based presentations also create a fun and different learning experience for children that can get a child excited and interested in learning more about a certain topic and/or field of study.   |

1. Explain the significance of this research problem. Why is this research important? What are the potential contributions of your work? How might your work advance scholarship?

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| My research would be able to contribute to environmental education research in young students through museums as well as exploratory/experiential learning by measuring the interactions within the exhibits and the different kinds of exploratory play. It would also be able to give other science/hands on museums ideas on how to improve their science/environmental exhibits to aid in student learning. To do this, I will also be determining which exhibits and what aspects of the exhibits are more inclined to have the children play at a level three on the Exploratory Behavior Scale.“Another challenge for children’s museums is the need to document what it is they do and the effects. There is relatively little research on children’s museums and much of what is available is market research and user demographics. Some research has been done in children’s museums on ‘holding power’ (i.e. essentially the time a person spends at an exhibit). For example, a study at the Children’s Museum in Boston found that children spent 5-10 minutes at an exhibit or activity in a children’s museum compared with 10-30 seconds for adults at a traditional museum exhibit (Cleaver, 1992) and children spend considerably more time at interactive exhibits (Speaker, 2001).” (Mayfield, 2004). In this example, a child spending more time at interactive exhibits can translate to a number of different things. The exhibit could be more visual stimulating or since it is interactive, it could simply be more fun to play in. Studies like this do not take into account what children are learning through their play and experiences, simply that they enjoy being in a certain room longer than others. My research would measure the type of interaction the child has with the exhibit and the different forms of exploratory behavior. This is why my research would be beneficial to this kind of study into hands on children’s museums.  |

1. Summarize your study design[[2]](#endnote-2). If applicable, identify the key variables in your study. What is their relationship to each other? For example, which variables are you considering as independent (explanatory) and dependent (response)?

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| In my study design I would be observing the children who come to the museum and interact with three STEAM exhibits in the Hands On Children’s Museum (1. Naturalist Cabin, 2. Science Table, 3. Children’s Garden). I plan to do this for an hour twice a week for three months. I would be watching for how different students interact with the same three exhibits based on age and whether they are in the presence of a parental/guardian aid. The independent variables would be the child’s age and whether or not a parent/guardian is aiding them/encouraging them to interact with one of the exhibits. The dependent variable would be how the child scores on the Exploratory Behavioral Scale. The Exploratory Behavioral Scale is a scale made up of three levels to rate a child’s behavior in museum exhibits. The scale goes as follows: Passive contact – A child walks, stands, sits or leans on something and may hold or transport an object. However, the child does not manipulate the object in an active and attentive manner.Active manipulation – A child manipulates an object in an active and attentive manner, This implies that the child pays attention to his or her action(s) and the outcome(s) of the action(s)Exploratory behavior – A child manipulates an object in an active and attentive manner (as Active manipulation). In addition, the child applies repetition and variation to his or her actions. “Repetition” implies that the child repeats an action (several times). “Variation” implies that the child performs different actions with one object or performs the same action with different objects. Actions that clearly differ in degree are also considered different actions.(Van Schijndel, Franse, Raijmakers, 2010) |

1. Describe the data that will be the foundation of your thesis. Will you use existing data, or gather new data (or both)? Describe the process of acquiring or collecting data[[3]](#endnote-3).

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| I would be using both existing data and gathering new data. I plan on collecting data from the children at the museum as well as gathering relevant research papers that are similar to my research.My boss is giving me access to the analysis of preexisting exhibits and how they calculated what the children are learning. |

1. Summarize your methods of data analysis. If applicable, discuss specific techniques that you will use to understand the relationships between variables (e.g., interview coding, cost-benefit analysis, specific statistical analyses, spatial analysis) and the steps and tools (e.g., lab equipment, software) that you will take to complete your analyses.

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| I plan to observe children in the Hands On Children’s Museum as they interact with the various STEM exhibits. I will be using the EBS (Exploratory Behavior Scale(Van Schijndel, Franse, & Raijmakers, 2010).)) in order to collect qualitative data on my observations. I plan to analyze whether there is significant statistical data on whether or not the exhibits are at the third level of the EBS scale. |

1. Address the ethical issues[[4]](#endnote-4) raised by your thesis work. Include issues such as risks to anyone involved in the research, as well as specific people or groups that might benefit from or be harmed by your thesis work, perhaps depending on your results. List any specific reviews you must complete first (e.g., Human Subjects Review or Animal Use Protocol Form).

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| While observing the children playing in the museum I would be wearing my work uniform and nametag so that the parents and children would feel more at ease with my presence and I would also be open to answering any question parents might have about my research. I would also need to complete a Human Subjects Review. |

1. List specific research permits[[5]](#endnote-5) or permissions you need to obtain before you begin collecting data (e.g. landowner permissions, agency permits).

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| I would need permission from my boss at the Hands On Children’s Museum. |

1. Reflect on how your positionality as a researcher could affect your results and how you will account for this in the research process[[6]](#endnote-6).

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| As an environmental educator and an employee of the Hands On Children’s Museum I would expect the outcome of this program to be successful and that the students would be enjoying themselves while also connecting and learning about nature which could affect how I interpret results. Along with being an employee of the Hands On Children’s Museum, the children playing in the exhibit might feel a bit more shy or even uncomfortable when playing in the exhibit if I am around since I could be seen as an authority figure or like a teacher to the children. This might affect the way they choose to interact and play within the exhibits. |

1. Provide at least a rough estimate of the costs associated with conducting your research.  Provide details about each budget item so that the breakdown of the final cost is clear.

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| I would be conducting this research with no cost to me. |

1. Provide a detailed working outline of your thesis.
2. Intro
3. Literature Review and background
	1. Children’s museums and how they differ from other museums
	2. Value of experiential learning
	3. The EBS method
4. Methods
	1. Using the EBS method alongside my observations in the museum
5. Discussion
	1. Findings from research
	2. How this information can be useful
	3. Other possible question can be added to this research
6. Conclusion
7. Provide a specific work plan and a timeline for each of the major tasks in the work plan. Be as realistic as you can, even though you will probably need to alter this schedule as you complete the tasks. Remember that faculty readers take time to return your drafts and that the final polishing and formatting of your thesis for binding will take longer than you ever imagined.

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| November 2021: Talk with thesis reader about prospectus and collecting dataDecember 2021: Continue to collect data and write literature reviewJanuary – February 2022: Complete drafts of main sections of thesis [lit review, methods, results, discussion]March 2022: Send drafts to reader. Complete revisions to the drafts.April 2022: Complete draft of entire thesis and send to reader.May 2022: Thesis presentations, final draft complete and send to thesis reader for approvalJun 2022: Final thesis sent to MES Director for approval |

1. Who, beyond your MES faculty reader, will support your thesis? Indicate support both within and outside of Evergreen. Be specific about who they are and in what capacity they will support your thesis. If you are working with an outside agency or expert, be specific about their expectations for your data analysis or publication of results.

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| My coworkers and boss at the Hands On Children’s Museum. They would be helping me by supporting me and allowing me access to observe the children in the museum |

1. List the 3-5 most important references you have used to identify the specific questions and context of your topic, help with issues of research design and analysis, and/or provide a basis for interpretation. For each annotated reference, explain how your project specifically connects to the source by extending, challenging, or responding to the conclusions, methods, or implications. For any other sources cited in this document provide a complete bibliographic citation.

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| *About Us*. Hands on Children's Museum. (2021, June 24). Retrieved December 23, 2021, from https://www.hocm.org/about-us/ Andre, L., Durksen, T., & Volman, M. L. (2017). Museums as avenues of learning for children: A decade of research. *Learning Environments Research*, *20*(1), 47–76. https://doi.org/10.1007/s10984-016-9222-9Çil, E., Maccario, N., & Yanmaz, D. (2016). Design, implementation and evaluation of innovative science teaching strategies for non-formal learning in a natural history museum. *Research in Science & Technological Education*, *34*(3), 325–341. https://doi-org.evergreen.idm.oclc.org/10.1080/02635143.2016.1222360Dunkley, R. A. (2016) Learning at eco-attractions: Exploring the bifurcation of nature and culture through experiential environmental education, The Journal of Environmental Education, 47:3, 213-221, DOI: 10.1080/00958964.2016.1164113This talks about the benefit of eco-attractions as a way for children to explore and become interested in nature.Henderson, T. Z., & Atencio, D. J. (2007). Integration of Play, Learning, and Experience: What Museums Afford Young Visitors. *Early Childhood Education Journal*, *35*(3), 245–251. https://doi.org/10.1007/s10643-007-0208-1Mayfield \*, M. I. (2005). Children’s museums: Purposes, practices and play? *Early Child Development and Care*, *175*(2), 179–192. <https://doi.org/10.1080/0300443042000230348>Gives a little background and history on children’s museumParis, S. G. (Ed.). (2002). Objects of Learning, Objects of Talk: Changing Minds in Museums. In *Perspectives on Object-Centered Learning in Museums* (0 ed., pp. 38–53). Routledge. https://doi.org/10.4324/9781410604132-10Van Schijndel, T. J. P., Franse, R. K., & Raijmakers, M. E. J. (2010). The Exploratory Behavior Scale: Assessing young visitors’ hands-on behavior in science museums: Exploratory Behavior Scale. *Science Education*, *94*(5), 794–809. https://doi.org/10.1002/sce.20394 |

1. You are not locked into this title; its purpose is to help you identify the main point or topic of your thesis at an early stage. [↑](#endnote-ref-1)
2. You might discuss selection of case studies, sampling methods, experimental design, and/or specific hypotheses you will test. You should also address any specialized knowledge or skills that are necessary to complete the research. [↑](#endnote-ref-2)
3. If you are planning to use existing data, explain the specific source, contact information, arrangement with collaborating agencies, and expectations about use of data and final products of your research. If you are planning to gather new data, describe specific methods, time, place, and equipment that will be required. [↑](#endnote-ref-3)
4. If you’re not sure where to start, consult a ‘Code of Ethics’ or other similar document from an academic society in an applicable field of study. [↑](#endnote-ref-4)
5. If you are collecting ANY samples or data, even observational data, on public lands (city, county, state and/or federal) it is your responsibility to find out the permit requirements BEFORE you collect data. Conducting research with tribal members/on tribal lands will have different and additional requirements. [↑](#endnote-ref-5)
6. Your *positionality as a researcher* refers to the fact that one’s “…beliefs, values systems, and moral stances are as fundamentally present and inseparable from the research process as [one]’s physical, virtual, or metaphorical presence when facilitating, participating and/or leading the research project…” (The Weingarten Blog 2017). [↑](#endnote-ref-6)