



## National Living Laboratory 2014-15 Cohort Stipend Final Report

### University of Oregon Team Duckling and Science Factory

#### Who Are We?

The Science Factory is a hands-on science museum for children and families located in Eugene, Oregon. Founded in 1961, the museum's mission is to engage children, excite their curiosity, and inspire them toward a lifelong love of learning about science, technology, and humanity. We serve more than 30,000 visitors each year with exhibitions and programs. Participation in Living Lab allows us to bring current science directly to visitors and to engage kids in novel activities presented by real scientists from the university that is part of their community.

Team Duckling refers to a group of researchers at the University of Oregon. We study various aspects related to infants', children's, and teenagers' development, exploring topics such as language, cognitive, perceptual, and social development, learning, creativity, emotional development, music, friendships, and decision-making.

Our partnership began in Fall 2013, when Dr. Dare Baldwin, faculty leader of Team Duckling, approached the Science Factory with the idea of a partnership. The first stage involved Team Duckling researchers facilitating Science Factory activities at "Tot Discovery Days," monthly special events for preschoolers and their caretakers. While working with museum visitors, Team Duckling members could recruit them for studies taking place at the University at a later date. With the invitation to join Living Laboratory, we expanded on this partnership in order to bring active studies to the museum floor.

So far, studies have taken place at one monthly preschool day and at two additional special event days, one of which was created as a celebration of the Living Lab partnership. We will welcome researchers on additional days whenever possible. We do not have a fixed space for Living Lab on the museum floor. Our exhibition space is very small (2500 sq ft) but flexible, so that we can often create space for researchers among the exhibits. We also have two flexible small classroom spaces (300 sq ft each) just off the main floor that can be made available to researchers if the museum floor is not suitable. Wherever Team Duckling is stationed, a banner produced by the museum with stipend funding marks the presence of the researchers (Photo 1).

#### Goals of the NLL Stipend Award

Our goals for the stipend award were to offer expanded mutual professional development and welcome active studies to the museum floor with a kickoff event that would publicize the partnership to visitors and the public. Science Factory staff members have attended three brown-bag lunch meetings of Team Duckling researchers to learn about the types of studies being conducted and to give researchers the chance to present their work to a lay audience. Team Duckling members (including professors, graduate students, and undergrad research assistants) have

## Team Duckling at the University of Oregon

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Photo 1. A Team Duckling researcher greets visitors as they enter the museum (left) and begin the process of creating a "passport." While waiting for completion of consent and passport preparation, visitors could examine animal brain specimens and/or color a brain hat.



attended two-hour training sessions that introduce the museum mission and offer best practices for facilitating informal science activities with visitors. Brown bags and training sessions were held several times from November 2014 to February 2015, and the “Living Lab Day” kickoff event was held on Saturday, March 7 after joint planning and publicity in Science Factory publications and local newspapers.

On Team Duckling’s side, an extensive review process -- across a number of months -- was undertaken with the University of Oregon’s internal review board in order to achieve approval of on-site research activities with children and families. Among other things, this involved educating Office of Research Compliance staff with the goals and benefits of the museum-scientist partnership, as well as with issues of visitor engagement and consent unique to this kind of partnership.

### **Enhancing the Visitor Experience**

Even before the formal kickoff of our expanded partnership, Team Duckling’s presence at the museum has had a positive impact on the visitor experience during monthly Tot Discovery Days. Thanks to the reliable presence of Team Duckling volunteers and their effectiveness in facilitating activities, the museum has been able to expand the number of facilitated activities offered at each event.

For the March 7th event, Team Duckling developed a “passport”, which was handed out to each child visitor at the museum entrance and personalized with a name and photograph (Photo 1). The goals of the passport were to guide visitors’ exploration of activities and to facilitate research participation. Each activity was listed in the passport with space for children to record what they learned and to receive a stamp of completion. Each passport included a “passport number”, which was used as a participant ID number, allowing the active study researchers to later match up the participants at their table with the consent forms collected at the entrance. The passport was useful to the researchers as a tracking tool and to museum staff as an easy way to refer the visitors to all of the activities taking place during the day. Based on the success of the passport at the March 7 event, the Science Factory plans to use this model for other special event days to enhance the visitor experience and ensure they get the most out of their visit.

As of May 1, there have been approximately 50 visitor participants in research studies and 440 educational opportunities for the children and families who visited the museum.

### **Mutual Professional Development**

To date, more than 30 Team Duckling members have participated as part of the expanded Team Duckling partnership through training sessions, data collection, and facilitation of



Photo 2. Both visitors and research assistants enjoyed the supplemental activities included as part of Living Lab Day. More than 20 researchers at all levels helped to facilitate activities at the Science Factory on Saturday, March 7.

*“We are so pleased to be able to expand our programming for our youngest guests where they can engage with scientists whether or not their parents choose to be part of the research process. It’s been mutually beneficial – the best kind of collaboration!” – Carolyn Rebbert, Science Factory Executive Director*



## Team Duckling at the University of Oregon

activities (Photo 2). In addition, five Science Factory staff members (nearly half the staff) have attended Team Duckling meetings and learned about ongoing research at the University of Oregon.

### Research Happenings at Our Site

We have hosted three active studies from Team Duckling researchers. The first study investigates whether children exhibit preferences for fractals of different dimensionality. Of interest is whether children display a preference for mid-range fractal dimensionality similar to that observed in adults. Children view a series of fractal images in pairs and choose the one they prefer. As an additional activity, children may draw and color their own fractal triangles to take home. Jason Wallin is the primary investigator.

The second study examines how children process goal-directed action (like reaching straight for a ball or reaching over a barrier for a ball) in comparison to action that lacks a clear goal (like reaching up and over when there is no barrier). Of particular interest in this research is the development of a new methodology for probing children's processing of typical and atypical goal-oriented activities. Children view a series of still-frame images that depict a sequence of events; they advance through these images one-by-one at their own pace. The duration of their attention to particular slides provides an index of the way they are processing the unfolding activity. Jessica Kosie is the primary investigator.

Finally, the third study explores the nature of children's favorite songs, with an eye to gaining better understanding of what children's early musical experiences are like. Both children and parents are surveyed to ask what the child's favorite song is, how often he/she listens to and/or sings it, and why it is his/her favorite song. Jenny Mendoza is the primary investigator.

### Outcomes and Future Goals

Following the March 7 kickoff event, data collection for active research studies has occurred regularly. As additional studies are developed, we expect to establish a regular schedule of study hours at the museum, both on Tot Discovery Days and on other days throughout the year. Including the researchers on "regular" museum days will enhance the visitor experience by adding an educational presence on the floor that we are not always able to provide using regular staff or volunteers.

Although we have yet to implement the Research Toys element of the Living Lab model, we will be adding them to the visitor experience, particularly on data collection days

as supplemental activities to occupy waiting visitors. We are also exploring the possibility of expanding the "research toy" concept to include a wider variety of pre-study and post-study activities. For example, during the March 7 special event, a researcher created an activity table using components of a proposed future study (Photo 3). She engaged children in the activity, using the informal results to fine-tune the parameters of the proposed study, which will then continue through the normal channels of approval prior to data collection. We hope that expanding options for researchers to use the museum for such pre-study inquiries will bring more researchers into the partnership.



Photo 3. A Team Duckling researcher works with visitors on a non-study activity.

