



Jungle Trails

Formative and Remedial Evaluation Report

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Introduction

This is an evaluation study of a new installation of seven interactives in the Jungle Trails exhibition area of the Cincinnati Zoo and Botanical Garden. The formative evaluation is framed by the overall evaluation question: Does the Jungle Trails area facilitate learning through family interactions? To address this question, three broad sub-questions will guide the study:

1. With what interactives did family groups choose to engage and why did they choose to engage?
2. In what ways do participants engage with the interactives and why?
3. What might enhance the interpretations in ways that would increase family engagement and desired interactions?

The purpose is to look for ways to increase program outcome effectiveness, identify possible messages and activities that resonate across participants, and inform ongoing internal efforts for enhancing intergenerational learning.

Methods

This is a formative evaluation of a series of interactives designed to engage intergenerational participants in learning about the exhibit. The overarching evaluation question will be addressed by using three broad sub-questions to guide the study:

1. With what interactives did family groups choose to engage and why did they choose to engage?
2. In what ways do participants engage with the interactives and why?
3. What might enhance the interpretations in ways that would increase family engagement and desired interactions?

Data included observation of public activity, interviews to clarify intentions in interactions, and interviews to determine overall engagement and sense-making of the interactive experiences. This study was conducted under The Ohio State University Institutional Review Board #2013E0321.

Sample

The sample is a convenience sample of adults with children who are present in the Jungle Trails exhibit area on July 12 and 13, 2013. Each exhibit component (7) was intended to include 20 completed observations with short interviews. When the protocol shifted to observation only, the n became the number observed within the established time frames. The total numbers of completed observations of interactions were:

32	Swing like a Gibbon
13	Primates Work together
4	Bonobos Drum to Keep in Touch ¹
22	Orangutans Find Fruit by Memory
36	Big Brains at Work
35	Thumbs Up for Thumbs
3	Balance like a Lemur ¹

¹ For Bonobos Drum and Balance like a Lemur, there were limited initial observations followed by interviews. However, both sites recorded over 30 groups engage with the interactive, but not as discreet units. The findings are based on both types of observations.

The overall experience measure included 40 completed interviews.

At each of the interactives, an evaluator stood in an unobtrusive spot to observe people entering the area. As an individual/group approached the interactive element, the observer began using an observation guide, taking primarily open-ended notes on the interaction, and recorded time of engagement and composition of the group. In the original protocol, there was to be an interview following the interaction, but the first several observations and interviews revealed that a more narrative capture of the interaction revealed more useful information than did the interview. Or for many of the more intensely used interactives, there was a blurring among group boundaries. A narrative approach allowed for more critical consideration of *how* the interactive was used. Additionally, the narrative approach provided a framework for examining entry and exit processes, intergroup interaction, and a far larger number of observations. Therefore, the interviews were abandoned.

For the overall experience interview, two evaluators were positioned at each of the two entry/exit points of the Jungle Trails. Using continual ask, focal sampling, an evaluator approached the first group that crossed an imaginary line. The adult approached was asked to engage in a short interview. If the individual agreed, the interview was conducted using a card sort and a short interview.

Measurement / Instrumentation

There were three components to the evaluation:

1. Observation of interaction
 - Ø *Who interacts and how?*
2. Card sort on Jungle Trails
 - Ø *What is the visibility of each of the elements?*
3. Interview on overall experience of Jungle Trails intergenerational engagement
 - Ø *How do individuals and families interact with the elements?*
 - Ø *What potential problems are there with any of the interactives?*
 - Ø *How do visitors make sense of the Jungle Trails interactives?*

The observation guide was primarily open ended notes on the engagement and interactions around the engagement. The notes were then analyzed using a coding structure based on front-end observations of family interaction behaviors.

The interactive engagement interview immediately followed the observation and asked the individual three questions followed by an opportunity to add additional comments.

Results

The first component of the evaluation was initially to be observations followed by interviews at each of the interactives. After an hour, this approach was abandoned for several reasons: at some of the interactives, groups merged and it was difficult to identify a group and track them through; at some interactives the interaction was very abbreviated and the interview did not make sense; interviews were not revealing information that would not be captured during exit interviews. Rather than the interviews, a more constant flow observation was used. Discreet engagements were noted as were ways in which groups interwove.

Primates Work Together

It was very difficult to observe this interactive since it is more of a scavenger hunt type of activity, with statues hidden along the trail. Evaluators spent time near each of the statues and noted if and when guests acknowledged them.

- Some of the statues were noticed more often than others.
 - The snake statue inside the Africa building seemed to be the most noticed (and led to family discussion around whether it was real or not).
 - A few noticed the millipede and durian fruit statues.
 - No one seemed to notice the gecko or bats during our observations.
 - The leaf insect and cockroaches were not observed as there were no animals in the exhibits near them.
- Only one group said anything to indicate that they were seeking out the statues as instructed by the sign during observations.

Swing like a Gibbon

This interactive is built on the classic “monkey bars” activity, modified to use hand grips rather than bars and with two heights of the grips. The sign is on the trail a few yards in front of the interactive itself. This particular interactive was used by multiple groups at a time. When filled with children, fewer adults would engage except for helping the smallest children.

The observations reveal:

- High visibility of interactive itself
- Few people stopped to read the sign beyond the title.
- It was a huge hit with children; there was a constant flow of children and youth hanging on bars.
- Small children often require adults to lift them up to the bars and to move across them
- Fairly successful at getting both kids and adults to engage. More men than women tried the activity.
- Adults took lots of pictures of children hanging from bars.
- People got the message that this is like how primates swing (although they often said monkeys, not gibbons).
- Multiple guests commented that it was fun.

Orangutans Find Fruit by Memory

A memory game board, this interactive had 20 tiles. One side of each tile is a picture of one of ten fruits and the other side is wood. The tiles spin. Signage for instructions are attached to the right side of the interactive (the direction from which people tend to enter) with information about nutrition and food sources for orangutans on the left of the interactive.

The observations reveal:

- Roughly 50% of guests noticed and interacted with this interactive. Fewer did so when the animals on exhibit were visible and calling loudly.
- Of those who engaged with the interactive, only a few groups completed the entire matching game. It takes a good 3-5 minutes to complete all the matches.
- Most often, one or two people from the group would turn a couple of tiles over, perhaps making a match or two, and then move on.
- It engaged both children and adults, sometimes together and other times as individuals.
- Most guests who engaged with it recognized it as a matching game right away.

[Balance like a Lemur](#)

This interactive includes a sign on the trail to the right as people approach the interactive. As the path curves to the left, the interactive serves as a “bridge” across the space. The interactive consists of two ropes strung horizontally across the span with assist ropes hanging like vines from above.

The observations reveal:

- High visibility of interactive itself
- Few people stopped to read the sign beyond the title.
- It was a huge hit with children. There was a constant flow of children crossing the ropes, up to 5 at a time on each rope. They even waited in line for a turn and several went back to do it again.
- The interactive allows for multiple groups to engage concurrently.
- Few adults tried the activity. They watched their children do it or helped younger children who couldn't do it on their own.
- Adults took lots of pictures of children on ropes.
- The message appears to be getting through. One comment from parent to child, “You just loved balancing like a lemur, didn't you?”

[Thumbs Up for Thumbs](#)

This particular exhibit component includes a sign introducing the concept of opposable thumbs and encouraging visitors to collectively attempt to tie shoes (or strap Velcro) without using thumbs. There are two shoes at differing heights with laces for tying and one shoe at a low height with a Velcro strap.

The observations reveal:

- High visibility
- There was lots of collaborative engagement of both kids and adults.
- Younger children go right to the shoes while adults notice the sign and tell them they can't use their thumbs.

- There was a lot of coaching and encouragement as well as competition observed. People enjoyed catching others “cheating” or making a mistake – “you used your thumbs!”
- The message appears to be getting through as there were many comments made during the exchange that opposable thumbs are a great primate adaptation. People are surprised at how hard it is to tie shoes without thumbs. They are talking about it.

Bonobos Drum to Keep in Touch

This experience includes a sign oriented toward the west (traffic is coming from the east and south) and an extension to a fabricated tree. The extension is a hollow “root” that is meant to be drummed.

The observations reveal:

- Few guests seemed to notice this interactive.
- Of those who did notice it, few interacted with it beyond reading the sign and banging on it a couple of times before moving on.
- The low visibility could be due to the natural look of the interactive and how well it blends into the landscape.
- The sign location may also contribute as it cannot be seen by guests walking along the trail until they turn a corner and look to the side.

Big Brains at Work

At the end of the path in the overhang of one of the buildings, the sign for this interactive is on the wall directly facing the path. In front of the sign is a fabricated table maze. On top of the maze is a plexiglass cover. There are five holes on each side of the maze with sticks attached that can fit through the holes to push a rock. The goal is to collectively move the rock through the maze using the different sticks.

The observations reveal:

- High visibility
- While some adults stood back and watched or just commented while children played with it, overall the interactive was successful at engaging both children and adults working together as a team.
- Multiple groups interacted with the maze together; there was a continuous flow of people engaging and disengaging with the experience.
- There were a lot of supportive, coaching and cheerleading comments like “good job” and giving instructions from both adults and kids.
- It sparked conversation. One comment heard was “we are primates”.
- The message that we can work together as a team like other primates do gets through. One guest commented that “this is the same thing they ask the gorillas to do”.
- We heard people comment that it was fun and awesome.

- Few people seemed to read the large interpretive sign on wall behind it. More just read the instructions on the maze itself.
- Plexiglas top was significantly scratched in a few days.
- Fiberglass rods began fraying from friction of rubbing on edges of holes. They were replaced with wooden dowel rods, one of which broke after three days. A second dowel was shoved in backwards and the stick and wires became stuck.

Visibility of the elements

Using a card sort, individuals sorted first by those interactives they recalled seeing as they moved through Jungle Trails. Because this is formative, there was no intention for generalizability. Therefore, numbers are not used except as illustrative of relationships and percentages are used to estimate proportions of those visitors who responded.

Table 1: Visibility

<i>Primates Work Together</i>	Most visitors did <i>not</i> recall	Of those who remembered seeing some element (usually snake) only 3 of these 8 intentionally engaged in the activity
<i>Swing like a Gibbon</i>	All visitors reported seeing the exhibit	Over half those interviewed at least one in the group participated
<i>Orangutans Find Fruit by Memory</i>	Most visitors recalled seeing the installation, though around a third did not notice it	Almost twice as many people saw the interactive as engaged in the interactive
<i>Balance like a Lemur</i>	All visitors recalled seeing	A strong majority of those responding had at least one person in their family engage
<i>Thumbs Up for Thumbs</i>	Only a few individuals did <i>not</i> see	There were almost equal proportions between those who engaged, and those who saw but did not engage
<i>Bonobos Drum to Keep in Touch</i>	Slightly over half the individuals recalled seeing the installation	Fewer than half of those who saw the “drum” engaged with it
<i>Big Brains at Work</i>	Only a few of those interviewed did <i>not</i> see this installation	Of those who saw the interactive, about 1/3 reported engagement

How do individuals and families interact with the elements?

Participants were asked to explain how they engaged with each of the elements. For most, those who engaged with the elements participated in the intended manner. At most elements, children directly engaged, and adults engaged in more peripheral, but important, ways. For example, two of the elements were “picture ops” as several visitors reported

doing so (and were observed doing so) at Balance like a Lemur and Swing like a Gibbon. At the same two elements, adults often aided younger children engage and/or accomplish the challenge; holding hands of children as they walked across the rope, lifting children to the handgrips, and helping children move across the “gibbon bars.” At Thumbs up for Thumbs, a larger proportion of adults engaged with the children, which was also noted in the above discussion of observations. For some family groups, the entire group engaged in “Big Brains at Work.” Other adults reported their role for this interactive as being a coordinator, or as directing the activity.

For four elements (Swing, Balance, Thumbs, and Big Brains), several adults reported that they would have engaged with the activity under other conditions. One dominant alternative condition was to have far less crowdedness. The other dominant condition offered was that if there had been another adult or less “stuff” to hold, they would have engaged. It was also noted that there was an emerging trend around men engaging in the Swing and Balance than women, though it was not an a priori question and there were too many extraneous constraints to read too much into this without additional data.

For other elements, there were different challenges. The Bonobos Drum was, for most users, a quick interactive, although a few did say they were “trying to make a rhythm” or “make a rhythm like a bonobo” or “memory—tribes talk to each other.” Primates Work Together was problematic in that only a few saw the sign and then looked for things. Rather, as the layout exists, individuals would see things and react to them, but not see them in context of a larger structure.

What potential problems are there with any of the interactives?

Overall, visitors expressed delight and satisfaction with the Jungle Trails experience. “Just having stuff to do works” and “having different things to do” as a “whole family experience” were typical comments. Some individuals expressed satisfaction with interaction because “adults have to help children” and “adults educate children.” Some felt there was a need to “work cooperatively together” or that family members were required to “help each other.”

Individuals felt the interactives were “attention getting” and that they “love interactive stuff.” One person noted that “more stuff at the zoo like that would be great.” Several noted that the interactives were “fun” and that through them they “learned new stuff.” One person reported the “kids did” and when asked, laughed and said “and I did.”

There were, however, some issues that were identified across the visitors. One emergent trend in potential problems was that of age/stage sizing. For some visitors, Swing like a Gibbon was “hard to jump on” or “hard to get on” because it was “too short” or “too tall” and some felt there needed to be “one more size.” One person suggested “steps for Swing like a Gibbon” would make the experience “younger child oriented.” Common statements included such things as “some kids are too little” and “not able to—that’s a problem.” There were a few (many fewer) who commented that Balance like a Lemur was also difficult for small children. Most with very young children who did engage reported the

adult serving as a tool for assisting the little children across. A few reported a challenge of some older youth bouncing on the ropes making the interactive dangerous for smaller children.

A second emergent trend was that of crowdedness. There were several visitors who wanted to engage with Swing, Balance, Thumbs, and/or Big Brains, but were unable to do so due to crowdedness. One person stressed that they were “impatient waiting for the maze to open” while others finished up. A few individuals acknowledged that coming at a different time would likely have addressed that concern. Some desired additional mazes (Big Brains) or shoes (Thumbs) to reduce crowdedness.

A few individuals noted that some of the interactives and signs were not highly visible.

There were also some unanticipated positive outcomes from the interactives. One interesting opportunity was revealed in a few interviews where there were special needs or autistic children in the family. One person noted they were “excited to have this opportunity. They can try so many different things and see what they can do. They make up with determination for what they can’t do.” Another said their “autistic son was intrigued and did well”. It might be worth intentionally exploring the use of these interactives around the topic/issue of special needs visitors.

Others felt that the interactives “helped the flow of the whole trail” and that there was “more to see so it was less crowded at each place.”

One young visitor argued that more “strategy” activities (on the lines of the maze) would be valuable because “inadvertently, families like that.” This idea was supported by another group where an adult noted the “maze was challenging enough to pull the whole group in.”

How do visitors make sense of the Jungle Trails interactives?

There were three broad categories of responses to how people made sense of the interactives along Jungle Trails. All three are aligned with the intended outcomes.

The first, and most common response, was around **being like an animal**. There were many ways in which this sentiment was expressed. “Try to relate to how animals interact,” “how animals go about their day,” and “how [animals] survive and work together” illustrate this response. These comments all reflected the animal comparison as the intention of the engagement as in “what it’s like to be an animal” and “getting into the world of primates.”

Closely related was the meaning of **doing things/family interaction** as an intended meaning. Some examples of comments would include “family interaction” and “family time together” or “working together in packs/herds.” Some felt that children “do enjoy the interactives” and that it is “neat to have them do stuff.” A focus solely on the doing is reflected by the individual who saw the purpose as being to “present a physical challenge

and to think outside the box.” A few also focused on the “spirit of harmony” or “team building” that emerged through many of the interactives.

The third theme was an explicit integration of doing into awareness. One younger visitor felt the purpose was to “pay attention to our surroundings and learn from animals” and another felt that the experience “slows you down—stops you to learn.” Some noted the broadness of the messages by saying you “learn through activity and get the quick point” or “activity to increase learning through fun” and that it’s “better than getting nothing—because kids won’t just stop to read signs.” Comments in this theme often referred to “how similar yet different the animals are from us” or “how animals do things” and “how we are different.”

Conclusions and Recommendations

Conclusions

Three overarching questions drove this evaluation:

1. With what interactives did family groups choose to engage and why did they choose to engage?
2. In what ways do participants engage with the interactives and why?
3. What might enhance the interpretations in ways that would increase family engagement and desired interactions?

With what interactives did family groups choose to engage and why did they choose to engage?

Overall, the interactives work together as an experience. Clearly, some of the interactives appeal more broadly and some of the activities are more engaging, but overall, there is a good mix of means of engagement. Bonobos Drum and Primates Work Together clearly did not engage appropriately, but all the other elements encouraged engagement.

In what ways do participants engage with the interactives and why?

There were three approaches to engagement with the interactives: the most dominant was that children would engage and adults would watch, support, or take pictures. The second was for individuals (either adult or child) to engage by themselves, sometimes with a comment to one or more in their group, but often engage individually and then disengage. The third approach was for one individual to engage (either child or adult) by themselves or draw attention to an interactive, and then encourage others to engage with them.

The first and third approaches are both intergenerational engagement, although not necessarily around the interactive. However, regardless of the interaction, adults were able to interpret the

meaning of each interactive quickly. And across the interactives, the overall meaning of the activities along Jungle Trails was internalized.

What might enhance the interpretations in ways that would increase family engagement and desired interactions?

The remedial aspect of the evaluation revealed minor adaptations for most of the interactives. These are presented under the recommendations below.

Recommendations

An important component of this evaluation was to integrate the remedial study with the formative. The formative conclusions, above, reveal the experience holds together and visitors make meaning from the collection of interactives. The remedial revealed some possible changes that might improve components of the experience. These recommendations follow:

Primates Work Together

- Most guests walk past the sign without looking at it, suggesting it should be moved to more optimal viewing.
- Add additional signs along the trail in the vicinity of each statue that nudges guests to look for them. Each has the same illustration as on main sign with words – Can you find me?
- Move ID sign over to side where bat statues are to make them more noticeable.

Swing like a Gibbon

- Add signs that encourage family engagement onto the actual interactive.
- Add interpretive signage at the end of the bars.

Orangutans Find Fruit by Memory

- Visibility is not likely to improve with the area available. Even though guests may not complete the board, they still get the message from just making a few matches. Sometimes it engages the family as a group and sometimes individuals prefer to do it on their own.

Balance like a Lemur

- Add signs that encourage family engagement onto the actual interactive.
- Add interpretive signage at the end of the course to spark discussion following the activity.

Bonobos Drum to Keep in Touch

- Make the interactive stand out and grab guests' attention. One idea is to paint an image of a drum and/or hands on the buttress root itself where we want guests to hit it. Around the image, the directions can be painted in a bright color:

Communicate with your troop by taking turns beating out a rhythm and mimicking it.

- Rotate the direction of the main sign 90 degrees so that it can be seen by guests walking down the main path before having to turn the corner. Another option would be to add a teaser sign with an arrow that guests can see from the direction in which they are coming.

Thumbs up for Thumbs

- In the future, perhaps add more pedestals so more than three people can try it at a time.

Big Brains at Work

- The spotlights are too harsh. Tone them down and use softer more diffuse lighting.
- Replace the Plexiglas top with safety glass to reduce scratching.
- Solve the stick problem. Test out different materials, smooth out the inside edges of holes, and add a hilt that prevents people from putting the stick in the wrong way.