Gyroid Climber – Challenge Activities
Geometry Playground
Formative Evaluation
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2010

THIS IS NOT A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- are conducted quickly, which may mean
  - small sample sizes
  - expedited analyses
  - brief reports

- look at an earlier version of the exhibit/program, which may mean
  - a focus on problems and solutions, rather than successes
  - a change in form or title of the final exhibit/program
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Background

The Gyroid is a climbing structure designed by and built for the Geometry Playground Exhibition. Visitors are exposed to an immersive climbing experience as they move through a minimal surface structure. The Gyroid offers visitors whole-body exploration and the opportunity for an aesthetic appreciation of geometry.
The initial site visit from the Geometry Playground summative researcher, Selinda Research Associates, suggested that the Gyroid visitor experience should more deeply engage caregivers, and that it was difficult to determine whether children were reasoning spatially. The Geometry Playground team decided to explore a variety of ways to enhance the spatial reasoning experience for children while getting adults to engage with their children (verbally or physically) at the structure. Our discussions centered around labels and activities, as well as placement of these elements. Through rapid changes and observations in the space, we fairly quickly settled on developing activities to try as visitors climbed and placing those activities directly onto the surface of the Gyroid. The development process and adult engagement findings are described below.

**STUDY ONE**

*Preliminary Gyroid Challenge Labels*
**Goals**

The goal of this evaluation is to:

- To start to learn how visitors use and interpret the new Gyroid challenge labels.
- To understand which activities are working best so that we can provide the strongest set of activities to the visitors.
- To gather enough data to be able to make recommendations to the team about which activities to continue to develop.

**Methods**

The Gyroid climber was installed in the sky-light area of the museum as an element of The Geometry Playground Exhibition. Visitors were cued on August 28 and 29, 2010. We piloted the activities with 3 children and then interviewed 12 kids about the four different challenge activities.

**Overview**

Prior to starting a more formal evaluation, we ran a small pilot to check the activities that we intended to study. We temporarily adhered four different activities to the surface of the Gyroid and a data collector asked 3 children to try out each activity. Each child was able to interpret their challenge in a meaningful way, so we kept all four challenges for further investigation and evaluation.

**Findings**

12 children were cued and asked to try the activities. Below are some select responses about why the kids did or did not like the activity. The activities are listed by ‘most liked’ to ‘least liked’.

**#1 Activity: “How many different ways can you find to the top”**

Kids’ favorite:
- “Every time I did it I found a new way. It was tricky and fun going backwards.”
• “It was fun because my friend on the other side met me at the same place!”
• “It was the hardest and funnest”

Elicited some good talk about strategy:
• “We went to the top and looked down for other tunnels. We tracked if we’d been there yet.”
• “I would turn one way and then the other way. I didn’t go up but I looked up to see if it was possible.”
• “Are there two ways? Because they’re separate.”

Confusing because:
• “It was hard to remember if I already found that one.”
• “Do you have to get in, find one (way), and get (back) out? Or just to the top?”

#2 Activity: “Watch a friend though the peepholes as you climb”

Also some good talk here:
• “I had to keep looking another way to find a new way to see (my friend).”
• “It was fun climbing and finding each other, like hide and seek.”

Confusing because:
• Nothing mentioned.

#3 Activity: “Start climbing with a friend on the other side of this wall”

Fun, but didn’t seem to generate as much thought:
• “It was fun climbing with my friend, she led me.”
• “It was fun going to the top.”
• “We were disobeying gravity!”

More confusing:
• “Do we have to stay together?”
• “Where do we start, on this side?”

#4 Activity: “Go in here. Can you end up on the other side of this wall?”

Challenging:
• “At first I thought I had to go out the other side, then I figured out you had to go around, down, and under.”
• “I thought I saw the path, but it was like an optical illusion and I couldn’t get there.”
• “The way you had to get to it, going that way is difficult.”
• “I couldn’t figure it out. But it was fun to try.”
More confusing:

- “Does it mean the whole wall? I thought it meant the structure, so I went out to the other side.”
- Several kids thought “the other side of this wall” meant the other side of the Gyroid.

Recommendations

Changes to consider:

- The kids were extremely excited by challenges, so we may want to enhance that piece through the parent label (e.g., might say something in the spirit of, “Challenges for your kids”) or presented in some other way.
- Consider an alternate way to talk about, “the other side of the wall,” or a revised way of phrasing the challenge to better show kids where to start and end.
- Consider another way to phrase, “Start climbing with a friend on the other side of the wall.” Most kids just interpreted this as “climb this at the same time as a friend.” (Not that the two should be on different sides.)

STUDY TWO

Two challenge activities were placed on the Gyroid. Both were black and white with a green challenge header. Half were placed higher up visible for adults and half placed lower for kids to easily read.
**Goals**

The goal of this evaluation is to:

- Continue to learn how visitors use and interpret the new Gyroid challenge labels.
- Collect data on challenge activity use via the “sweeps” method of data collection.
- To gather data such that recommendations can be made to the team about next steps.

**Overview**

Continuing to build on the work from study 1, the two most successful challenges remained and they were given some additional context. These activities were, "Find a friend through the peepholes. Can you get to their tunnel?" and "How many separate ways to the top?" Leveraging kids interest in challenges, a context setting word, “challenge” was added to the label to make it clear what the goal of the label was. In hopes of making the challenges more obvious and easier to read from the benches, a high-light color was added to the label. Two challenges we placed up high, so adults could read them while standing nearby or seated on a bench, and two challenges we placed down low, so perhaps the kids could read them while exploring the structure. A college-level explainer who had been observing and working with kids on the Gyroid listened and watched to see if these adjustments changed behavior in any way.

**Methods**

On Sunday 9/5/10 and Monday (Labor Day) 9/6/10 a data collector did a sweep of the Gyroid space every 15 minutes to tally the following behaviors:

- Kids or adults trying or saying a challenge.
  - "Find a friend through the peepholes. Can you get to their tunnel?"
  - "How many separate ways to the top?"
- Adults actively engaged (pointing, talking to kids, playing on Gyroid)
- Adults not engaged (sitting quietly, on phone)
Findings

9/5/10 (11:05am – 4:45pm)
29 times a visitor said or tried a challenge
48 adults actively engaged out of 141 present. About 35% actively engaged.

9/6/10 (10:20 – 3:30)
17 times a visitor said or tried a challenge
26 adults actively engaged out of 66 present. About 40% actively engaged.

Recommendations

Explainer Comments/Suggestions:

1. The placement of the activities is very important. Since the kids just dive right in, perhaps placing some challenges slightly inside the structure would work better.
2. Also, finding a spot where the challenges can be read, but not stepped directly upon might work best.
3. The challenge, “How many separate ways to the top” seemed very popular with kids. The, “Watch your friend…” challenge was harder to get a read on whether or not visitors were engaged in this activity.

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