

Wired Plant (v.1): Formative Evaluation

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THIS IS **NOT** A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

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

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

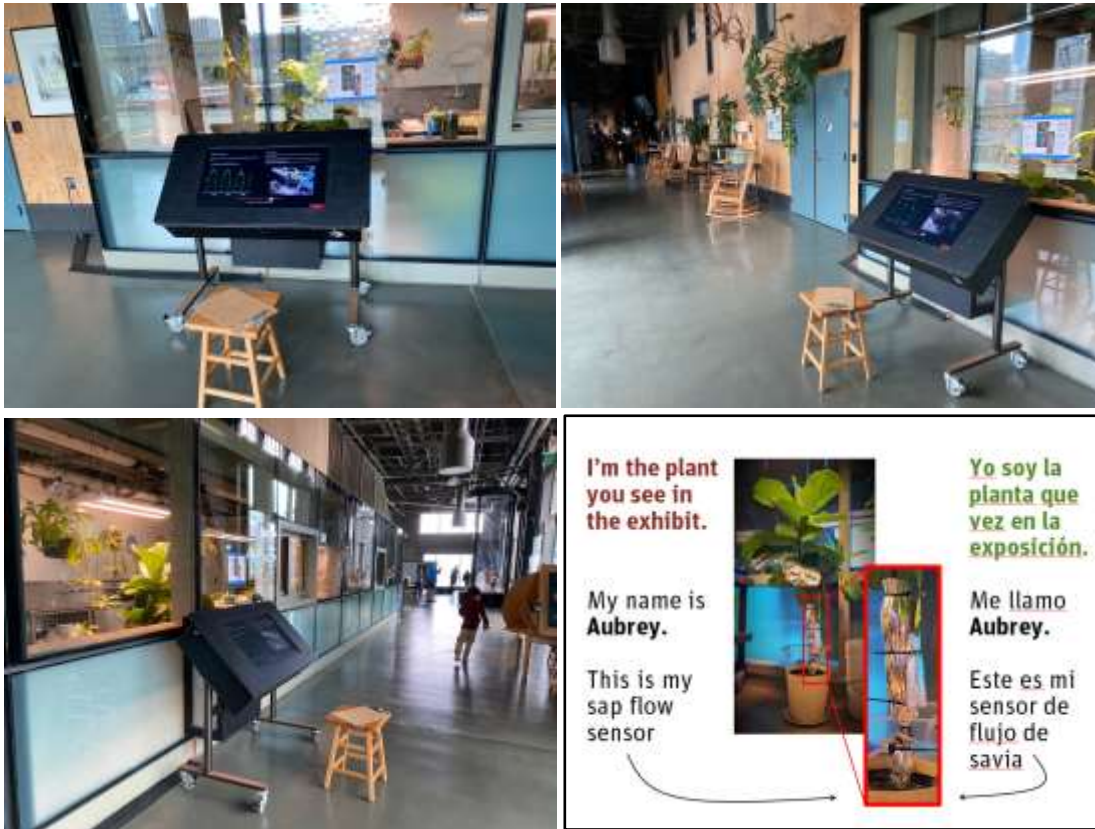
Purpose

- To determine whether visitors grasp that sap flow is linked to light and humidity
- To gauge whether visitors realize the data is updated live
- To determine if visitors understand the video is linked to the graph
- To understand whether visitors want to be able to interact more with the exhibit
- To identify unanswered questions visitors may still have after using the exhibit

Exhibit Description

- Touchscreen with graph showing sap flow (y-axis) over time (x-axis) and time-lapse video
- Sensors hooked up to a live plant
 - Plant located behind glass
- Label on glass explaining data on screen is from plant behind glass

Photos



Methods

- Evaluation took place on the annual Día de las Madres celebration on May 8, 2022
- Visitors were asked to participate using cued recruitment
- If they agreed to participate once approached by the evaluator, visitors were led to the exhibit, asked to use it as they wished and for as long as they liked, and then led through a short series of interview questions about their experience
- Participant recruitment and interviews took place in either English or Spanish

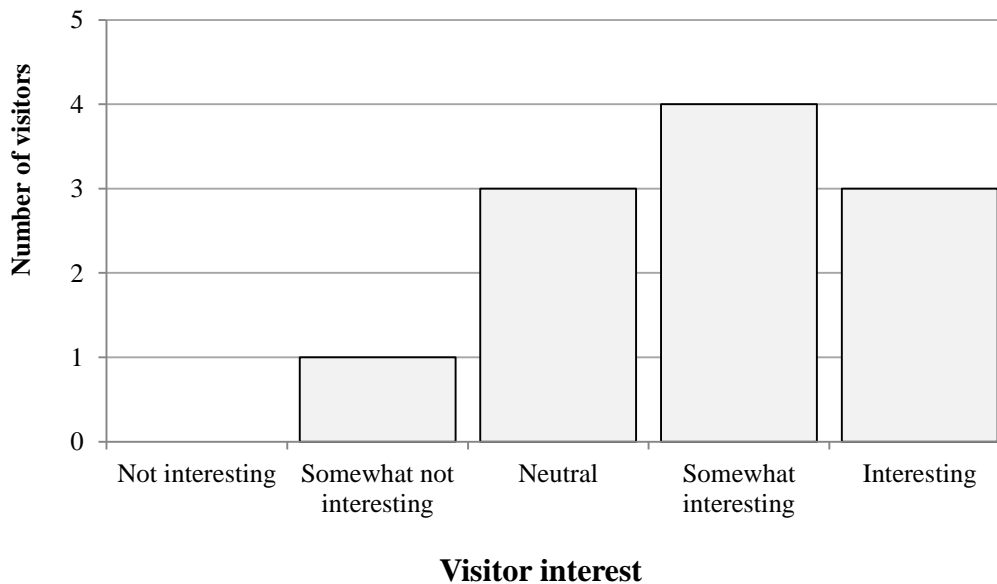
Selection Criteria

- Visitor had not been recruited for another evaluation earlier that day (i.e. not wearing a sticker)
- All participants had to be at least 8 years old
- Every participant had to be fluent in English and/or Spanish

Results

Summary

- Mean holding time: **2 minutes and 1 second**
- Mean interest rating: **3.8** on a 5-point scale



Findings

- Almost everyone understood there is a relationship between light and sap flow
- A lot of visitors were confused about the "point" of the exhibit
 - o e.g. What they are "supposed" to be looking at, doing, learning?
- People were unsure what "sap" is
 - o One person suggested explaining it by making a comparison to human biology (e.g. sap is like blood)
- Visitors expected to see the sap flowing, especially because of the exhibit title "See Sap Flow"
 - o Some wanted to touch sap as well
- About half the visitors did not realize they were looking at live data
- Some didn't notice that the plant was just behind the window, but those who did were pleasantly surprised
 - o But they wanted to see the whole plant (only the top was easily visible)
 - o Visitors wanted to see the sensor on the plant, or at least what it looked like
- Several visitors wanted to know larger context
 - o What are some practical applications of measuring sap flow?
 - o Why measure sap flow if it's a "predictable" pattern?
 - e.g. it's higher during daylight, lower in darkness, so why need a sensor at all?
 - o Visitors were curious whether there are other factors that affect sap flow besides amount of light
 - o Question arose about plants that might be more active during nighttime and whether their pattern of sap flow would be different
 - o Some visitors wanted to see data for more than 3 days to see if there were any big changes
 - e.g. Perhaps in the last 3 days nothing interesting or different happened but possibly had, say, a week ago
- There was confusion whether it's a live exhibit or a video
 - o Some visitors had an either/or mentality and were confused whether the video was live
- Visitors assumed there is a relationship between sap flow and movement of the plant
 - o Some people thought the sap flowing is what makes the plant move
 - V05: "During the dark periods, there's no movement so sap isn't flowing."
- Visitors expected the movements of the plant on the time-lapse video to be more noticeable

Recommendations

- Include animations showing sap flow
- Consider what we want the visitor experience to be
 - o Is it a knowledge dump about sap flow?
 - o Is it about getting visitors on a "plant time scale" ?
 - o Is it about witnessing a day in the life of a plant?
 - Compare a day (an hour?) in the life of a human with a day (week?) in the life of a plant?
 - Speed at which plant moves vs. speed at which human moves
 - Number of times plant is watered vs. number times of human drinks water
 - Rate of sap flow vs. human heart rate
- Consider anthropomorphizing what sap is
 - o e.g. Compare it to the biological functions of blood
- Rethink how the graph is presented
 - o Visitors struggled to make sense of it
 - Museum visitors often struggle to make sense of graphed data in the short time they spend at an exhibit
 - o Can the information be presented in a different way?
 - e.g. Pulsing circle instead of a graph