

Adjustable Plaything

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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 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

Adjustable Plaything

Visitor Interviews

7/1/00



Goals/context:

The developer, Charles Sowers, modified the exhibit Adjustable Plaything. Changes made to the label give the visitor a goal. When the visitor tunes the circuit correctly, visual feedback is provided by an LED light turning on and off as the circuit alternately opens and closes. Another change is that the strength of the new electromagnet is less than the previous one.

Adjustable Plaything presents the visitor with a puzzle, a problem to solve. Charles wanted to know how visitors respond to puzzle exhibits. Regarding Adjustable Plaything specifically, does its presence on the floor provide more enjoyment or more frustration for visitors?

Methods for evaluation:

Assistant project evaluator, Sarah Rezny, conducted twenty uncued interviews. All interviewees chose to use the exhibit, were at least eight years old, and remained engaged at the exhibit for more than ten seconds. After the visitor left the exhibit they were approached by the interviewer and asked to participate in a short interview about the exhibit. Joshua created the interview tool. A sample is included in the report.

N=20

17 Males

3 Females

19 Adults

1 Teens

0 visitors refused to be interviewed

The exhibit was in the same position when each of the interviewees approached it. In between visitors, Sarah reset the exhibit so that there was about one-half centimeter space between each brass knob and the rod. The weight was placed to the right of the electromagnet and the electromagnet was approximately the same distance from the rod.

For each visitor interviewed the following were observed:

1. Was the light blinking while the rod was swinging?
2. Was the timer counting while the rod was swinging?
3. Was the light blinking and the timer counting, while the rod was swinging?
4. Time (in seconds) the visitor spent at exhibit.

Findings:

- 6 of 20 (30%) visitors were able to operate the light and the timer. (Avg. time spent 94s)
- 8 of 20 (40%) visitors were able to operate the light or the timer (5 operated just the light and 3 operated just the timer). (Avg. time spent 56s)
- 6 of 20 (30%) visitors were able to operate neither the light nor the timer. (Avg. time spent 45s)
- Approximately 8 visitors stayed at the exhibit for less than 10 s

On reviewing the data, Josh and Sarah noticed that some of the visitors who described their experience as “Somewhat enjoyable” followed up with a positive explanation, and others gave a negative explanation of why they chose that ranking. For example, one visitor said, “Wasn’t sure what the point was other than making the rod vibrate.” Another visitor said, “Fun to see it move back and forth.” Yet both of these visitors chose “Somewhat enjoyable” to describe their experience with the exhibit.

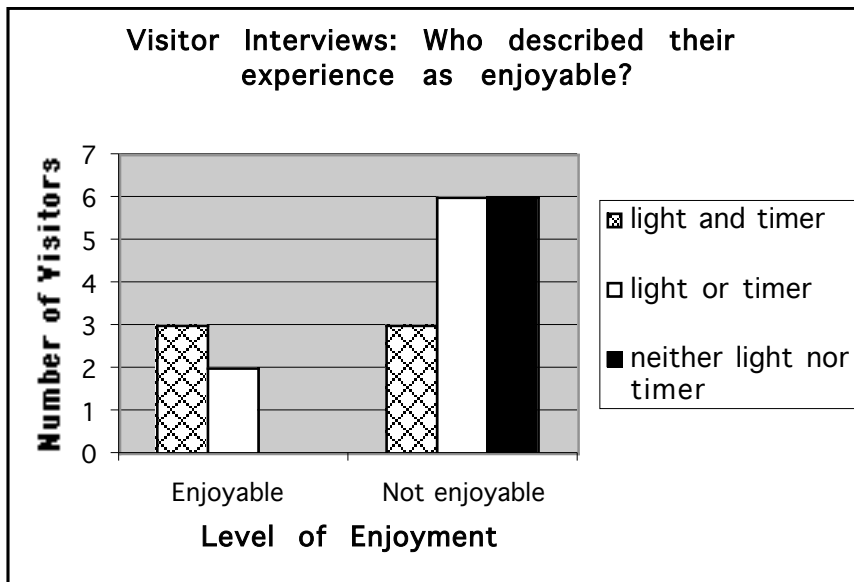
To avoid this funneling effect Josh and Sarah sorted the “Somewhat enjoyable” category, according to the visitors’ explanations, into the two remaining categories: “Enjoyable” and “Not enjoyable.” In this report, the category “Not enjoyable” includes all the “Not

enjoyable” responses that were collected and those “Somewhat enjoyable” responses where the visitors’ explanation was negative. Likewise the category “Enjoyable” includes the responses that were “Somewhat enjoyable” and had a positive explanation as well as the “Enjoyable” responses.

- 15 of 20 (75%) visitors described their experience with the exhibit as not enjoyable.
- 8 of 12 (40%) visitors described their experience with the exhibit as somewhat frustrating or frustrating.
- The more the visitor is able to operate at the exhibit the more they report enjoying their experience.
- Yet only 3 of 6 (50%) visitors who were able to operate both the light and the timer, described their experience as enjoyable.

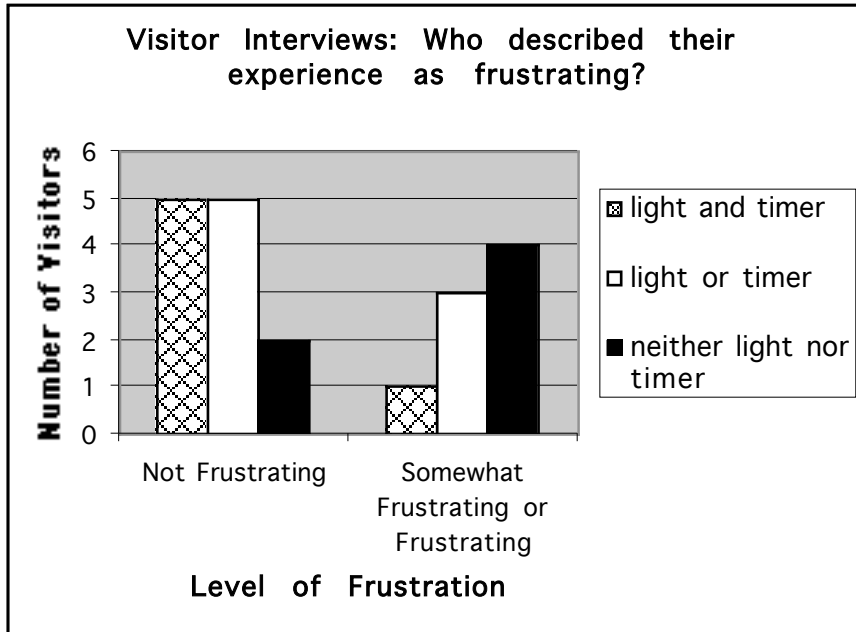
The following graph groups the visitors according to what they were able to operate, and displays the groups’ descriptions of how enjoyable their experiences with the exhibit were.

Graph #1



Graph #2 groups the visitors according to what they were able to operate, and displays the groups’ descriptions of how frustrating their experiences with the exhibit were.

Graph #2



The following table shows how the visitors' level of frustration corresponds to whether they enjoyed their experience with the exhibit or not.

Table #1

	Enjoyable	Not Enjoyable	Totals
Frustrating	0	2	2
Somewhat Frustrating	1	5	6
Not Frustrating	4	8	12
Totals	5	15	20

- 0 of 2 visitors who described their experience as frustrating thought it was enjoyable
- 1 of 6 visitors who described it as somewhat frustrating thought it was enjoyable.
- 4 of 12 visitors who said it was not frustrating also said it was enjoyable.
- The less frustrated visitors were the more likely they were to describe it as enjoyable.
- 8 of the 12 (67%) visitors who found it not frustrating also described it as not enjoyable. So though frustration is a factor in how much visitors enjoyed this exhibit it is clearly not the only factor.

- 18 Of 20 visitors read the label.

- 12 of 18 visitors said that reading the label was helpful. However from their explanations and body language I believe its help was minimal. For example the following quotes are from two of the people who said the label was helpful.

“Yeah - that means you’re trying to make rod vibrate.”

“Kind of, if you're a person who didn't know. [Didn't know what?] If you didn't understand, like if you were from a foreign country and didn't know what brass was.”

- 6 of 20 (30%) visitors requested information either on *What is the exhibit trying to show?* or *What does it do?*

Recommendations:

As displayed in Graph #1, 50% of the visitors who were able to operate the light (magnet) and the timer found the exhibit enjoyable, whereas only 30% of the visitors who got neither the light nor the timer to function said their experience was enjoyable. Graph #2 shows that levels of frustration also correspond to what the visitor was able to operate. The highest levels of frustration correspond to those who were able to operate neither light (magnet) nor the timer.

It follows that if a larger percentage of visitors were able to operate the light (magnet) and the timer, reported levels of enjoyment would increase and levels of frustration decrease. However the data also shows that even the visitors who were able to operate both the light (magnet) and the timer, did not necessarily enjoy they’re experience. Only 50% of this group described their experience as enjoyable.

In order to be successful the visitor must tighten the screw enough so that the circuit is closed but not so far that there’s no room for the rod to vibrate. Only when the screw is lightly touching the rod does one continue to hear the timer counting and/or the light blinking on and off as the rod is rhythmically drawn in and released by the magnet. Visitors often tighten the screws too far to witness this effect. One consideration is to shorten the screw that closes the circuit containing the timer so that when it’s completely screwed in, it barely touches the rod. By doing this more visitors will hear the timer counting and hopefully be encouraged to continue adjusting until they able to get the electromagnet to pulse.

At present the control that is near the visitors’ right hand is the one that controls the location of the electromagnet. Increasing the strength of the electromagnet would give the visitor feedback for even small adjustments to the knob that controls the electromagnet’s location and thus encouragement to continue adjusting the other knobs.

Another suggestion to consider is changing the orientation of the visitor with respect to the exhibit so that the opposing brass knobs are closest and the free end of the rod the furthest, with the timer just beyond that. This arrangement would place the two knobs that are most important to operating the light (magnet) and the timer in the first place the visitor is most likely to reach for.

The current label reads: *All controls made of brass may be adjusted to make the rod vibrate.* Several visitors were unclear if this was to be achieved by a means other than a simple push (one manual push keeps the rod vibrating for over a minute). One visitor said, “*Yes, I moved that around (brass knobs) but I had to start vibrating it myself – am I supposed to do that?*”

Charles and Sarah discussed the advantages of various possible labels. Including some that kept more of the element of surprise and play such as:

Adjustable Plaything: Cenco Model #7350 Play with the brass controls to find out what this goofy apparatus does.

Or simply,

Adjustable Plaything – What does it do? All controls made of brass may be adjusted.

Or

Adjustable Plaything: Cenco Model #7350 All controls made of brass may be adjusted to make a timer.

Six of the twenty visitors requested information either on *what is the exhibit trying to show?* or *What does it do?* A possible response to this request is to attach portions of the original owners’ manual. It is important to give care to which parts are made available to visitors (or how they are presented) so that the instructions for the use of the tool are not confused with instructions for use of the plaything.