



Labs in Life Initiative Remedial Evaluation

February 7, 2011

Prepared for:

Labs in Life Project

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Purpose & Research / Evaluation Question(s)

COSI developed and installed a set of exhibits to complement the health sciences research being conducted by Ohio State University researchers in four visible lab areas within the Life exhibit area at COSI. Specifically, the interactive experience platform was designed to serve as an interface between the labs and the public to provide space for community educational programming on nutrition and physical activity.

The purpose of this evaluation was to identify problems with the new exhibits that can be corrected through remediation.

Specifically, a timing and tracking study was conducted to see how the space was being used by guests in general and how the individual exhibit components were being used.

Method

In her 1998 book, "Paying Attention: Visitors and Museum Exhibitions," Serrell (1998) developed timing and tracking into a methodology for studying educational exhibitions by defining how thoroughly visitors use the exhibitions. "Exhibitions" appropriate for this methodology are generally considered to be elements (i.e., exhibits, labels, graphics, etc.) grouped in a defined area with didactic goals and containing interpretive materials.

The COSI Labs in Life (LIL) meets these criteria for an exhibition, however, there are some key differences between LIL and what is generally considered an "exhibition" at COSI:

- Though LIL is demarcated by design style, carpet color, and walls, it is in fact a subsection of the larger Life exhibit area, and the three possible entry/exit points blurs the boundaries of LIL.
- Exhibitions at COSI are most often temporary and evoke a sense of specialness and urgency that may not exist for LIL as part of a permanent exhibit area.

Serrell's timing and tracking methodology was adapted to meet the needs of LIL because the methodology not only measured indicators of thoroughness of use, but also allowed for detailed observation of exhibit component use.

Over three different days, a total of 30 individual adult guests were tracked through their LIL experience. Observations were unobtrusive with no interference by the researcher in

the guest's visit. Adults were selected because youth do not usually have agency over their visit and cannot always choose which exhibits to visit or how long to stay in an area. Adults were chosen by continuous selection from the main entrance, off the second floor hallway. Tracking for a guest ended when the guest left the LIL area (usually to the rest of the Life exhibit area) and did not immediately return to LIL. (In one case, a guest being tracked was recruited into a lab experience by an OSU staffer, at which time the tracking ended). Adults selected for tracking alternated between males and female when a family/social group presented the opportunity for choice.

A guest's total time in the LIL area was timed to the nearest minute. The guest's path through the area was recorded on a map of the area, and "stops" or other activity at the 14 defined elements was recorded.

The days chosen for observation (October 23, December 29, and December 30, 2010) were "moderately busy" to "busy" – that is to say that during observation, there were always several-to-many families/social groups in the exhibit area, with continual traffic to all of the interactive exhibits in the area. Two of the observation days had times when the Labs were staffed by OSU; on October 23, the labs were staffed with several OSU researchers who were interacting with guests both in the labs and on the exhibit floor. On December 30, two OSU staffers were present (and visible to guests) in a lab interacting with a guest/research subject during the first 10 minutes of observation.¹

Findings

For this study, 14 exhibit elements were defined:

- 4 Labs
 - 1 Transparent Talking Woman (TTW)
 - 1 Resting Heart Rate station
 - 1 Light Challenge
 - 1 Active Heart Rate station
- 2 Flexibility stations
- 2 Strength stations
- 2 Your Performance kiosks (1 of which is labeled "Nutrition Station")

Guests were observed a "stopping" at an exhibit element or "stopping and doing" something at an exhibit element. "Stopping" was defined (based on Serrell's work) as two feet planted for at least two seconds with eyes focused on the exhibit element. "Stopping and doing" was defined as "stopping" along with engagement in some

¹ An additional ten observations were conducted in January 2011, during a slow attendance period. The difference in observed behavior with the January sample was operational/traffic challenges with the heart rate arena were less apparent and less problematic on days when the exhibit area was sparsely populated, and somewhat longer visit time.

observable way such as touching the element, commenting about the element, or giving indication of reading such as leaning in or observable eye movement.

Element	No. of Guests			Total Activity per Like Element
	"Stop" Only	"Stop" and "Did"	Total Activity	
Lab "A"	10	n/a	10	26
Lab "B"	9	n/a	9	
Lab "C"	5	n/a	5	
Lab "D"	2	n/a	2	
Transparent Woman	10	n/a	10	10
Resting Heart Rate	3	1	4	5
Active Heart Rate	0	1	1	
Light Challenge	6	1	7	7
Flexibility "A"	2	2	4	12
Flexibility "B"	0	8	8	
Strength "A"	2	4	6	11
Strength "B"	0	5	5	
Your Performance	1	0	1	1
Your Perf/Nutrition	0	0	0	

Table 1: Elements and Observed Activity

Time. The amount of time (to the nearest minute) that guests spent in LIL ranged from 1 minute to 19 minutes; the average time was 3.8 minutes, and the most recorded amount of time was 1 minute.

Pathways/traffic patterns. All guests who were selected for this study were selected from the main entry near the second floor hallway. As noted above, many guests were immediately attracted to the Labs and also the Transparent Woman prominently located near the entrance. From there, guests had to turn right to continue into the LIL area. Many turned sharply right, attracted to the action at the Light Challenge. From there – especially so during the busier December observation days – many guests moved out of the LIL area into the "Mind" area of Life, missing the back or "west half" of LIL.

Slightly more than half of the guests tracked exited LIL through the "mind" area of Life, and several of these guests seemed drawn to the Praxinoscope exhibit – sometimes (though not always) led by a child. The Praxinoscope shows movement at a about a three-foot high level and seemed to attract attention away from LIL, especially among guests who stopped to watch the action at the Light Challenge.

Detail on path and exits of those tracked:

- 13 guests exited to the “mind” area of Life without ever going to the “west half” of the LIL area; many of these guests appeared to be drawn to the Praxinoscope exhibit beyond; most of these guests were observed during the two December observation periods.
- 3 guests walked through the entire LIL area before doubling back to exit into the “mind” area of Life; 2 of these guests visited in October and 1 in December
- 13 guests exited to the “spirit” area of Life after having walked through the entire LIL area; 8 of these guests visited in October and 5 in December.
- 1 guest was recruited to a lab experience, at which time tracking ended.

Discussion

Following is discussion organized by exhibit element.

Labs. The four visible lab spaces – sometimes staffed and brightly lighted, sometimes unstaffed and less brightly lighted – were each considered an element for which a guest might “stop.” However, because the activity with the OSU staffers was unpredictable, no other interaction beside “stop” were recorded for this study. In addition, the signs/graphics and videos addressing the labs and studies were not considered separate exhibit elements for this study, though – anecdotally – they did get attention from guests, especially those visiting on the October 23 observation day, and particularly among those who “stopped” at one or more labs. Even though the labs were not always active, the labs attracted attention from guests entering the exhibit area. Lab “A” containing the “Bod Pod” was especially attractive to guests.

Transparent Talking Women. Despite the name, this exhibit element was “mute” during this study and was present near the entrance to the exhibit area sans labels, graphics, or any interpretation. Despite the simplicity of this element, the TTW (as she is known to the COSI staff) was a draw, particularly among guests during the December observation days. Only “stops” were recorded for the TTW (again, because the study was originally designed to focus on the new exhibit elements), but anecdotally, many guests who stopped at the TTW showed signs of pointing and talking about this static exhibit.

Heart Rate. Three exhibit elements – the Resting Heart Rate Station, Light Challenge, and Active Heart Rate Station – were designed to be used as a set, with each guest measuring resting heart rate first, doing the Light Challenge (a highly physical activity designed to raise one’s hear rate), and then measure the active heart rate at the next station. For the purposes of this study, each element was observed separately, with “stops” and “dos” counted for each. Guests were also observed for pattern of use of these elements combined, and indeed none of the guests selected for tracking were observed using the set as intended.

Because the initial observation revealed this element being used in ways other than intended, and some operational concerns specifically in regard to traffic patterns, a separate observation was conducted focusing solely on the Heart Rate exhibit. The close observation on a busy day revealed a problem with guests entering the exhibit area and taking an immediate right turn into the heart rate arena (which is intended to be the exit to the arena). If the light table was in use, these guests would wait there; other guests would see this and form a line. At the same time, other guests were entering the arena at the intended entrance on the other side of the light table, and there, too, formed a line. The result was two separate entry lines that, while somewhat self regulated, seems to cause angst among some guests (as observed by body language) as to “whose turn” it was to approach the light table next. This problematic traffic pattern fluctuated during the day (a very busy attendance day), and waned somewhat during observation on less busy attendance days. (See appendix for detailed field notes from this focused observation.)

Flexibility Stations. These two identical exhibits proved popular and intuitive to use. Many guests “stopped” at both exhibits, though “did” only one of the two (likely recognizing that the exhibits were the same).

Strength Stations. These two identical exhibits also proved popular, though not as intuitive to use as the flexibility stations. Also, a problem with a sensor was identified early that caused these two exhibits to have vastly different readings for the same individual. Interestingly, there was a tendency for guests to try both of these exhibits, despite their apparent similarities. (The sensor problem was fixed and not an issue for the later observation periods.)

Your Performance. For these kiosks to be truly usable by guests, guests needed to have experienced one of the strength exhibits, one of the flexibility exhibits, the resting heart rate exhibit, the light challenge, and the active heart rate exhibit, AND recorded (or remembered) their performance indicators. None of the guests observed in the study did so. Though there was evidence of the performance cards being used (i.e., some littered the floor, were in the paper recycle box, and the displays ran out of cards late in the day).

Thoroughness of Use

Both Percentage of Diligent Visitors and the Sweep Rate Index were calculated to gauge relative thoroughness of use of the Labs in Life exhibit area. Although both of the measures (described below) indicate relatively low thoroughness of use of the Labs in Life exhibit area, it should be noted that these measurements are more commonly used for “exhibitions” which are perhaps more obviously demarcated than Labs in Life, and tend to be presented through marketing as “special” and/or temporary. Though a new exhibit area, Labs in Life is within an existing exhibit area (Life) and lacked the “temporariness” of a feature or travelling exhibition.

Percentage of Diligent Visitor. The Percentage of Diligent Visitor (%DV) is one measure of the thoroughness of use of an exhibit area. The %DV is the percentage of observed guests who stopped at or otherwise engage with at least 50% of the elements in the area. For the purposes of this study, there were 11 unique elements.

Unique Element	Note
Lab "A"	Though the four labs are similar, they are listed separately as each lab contained different equipment and activity.
Lab "B"	
Lab "C"	
Lab "D"	
Transparent Talking Women	
Resting Heart Rate	These three elements were intended to be a single experience; they are separate elements because that is how guests were observed using them.
Light Challenge Table	
Active Heart Rate	
Flexibility	There were two identical exhibits
Strength	There were two identical exhibits
Your Performance Station	There were two identical exhibits despite one being labeled "Nutrition Station"

Table 2: Elements for Percentage of Diligent Visitor Calculation

The number of observed guest visiting at least 5 of the 11 unique elements was 4, or 13.3% of the sample of 30. While low when compared to all exhibitions in Serrell’s meta analysis, this is typical for science center exhibitions.

Sweep Rate Index. Sweep Rate Index (SRI) is the average time (in minutes) spent in the exhibition divided into the square footage of the exhibit area. The area consistently accessible to guest in Labs in Life is 2,100 square feet, and does not include the area within the labs themselves. The amount of time in the exhibit area by observed guests ranged from less than a minute (which was rounded to 1) to 19 minutes, with an average time of 3.8 minutes for an SRI of 553. This SRI is relatively high, an indication of relatively little time spent in the exhibit area for its size; this high SRI is supported by the number of guests observed making a “quick exit” through the mind section of the Life exhibit area.

Summary and Recommendations

- Many guests followed a traffic pattern that took them past the heart rate arena and out of the area before experiencing the Strength, Flexibility, or Your Performance exhibits.
 - Recommendations:
 - Move the Praxinoscope exhibit in mind/Life so that it is less visible and attractive to those in the Labs area
 - Move the “Body” obelisk to obscure the view into the mind/Life area.

- Few people were observed using the Performance Cards or Performance Stations.
 - Recommendation:
 - Make the cards more obvious perhaps by use of an entry organizer; large “start here” lettering at the card holders; moving them to the entry.
- The Heart Rate Arena was not used as intended because it had traffic problems (people entering at the exit) and the one Heart Rate station was located outside of the arena and one inside the arena.
 - Adding signs at railing or above the area indicating entry/exit and purpose of the three exhibit elements together
 - Mark carpeting with entry and exit messages.
 - Install gate at the exit
 - Move/turn the Heart Rate stations so they are more visible by spectators and more obviously associated with the light/challenge table.