Exhibit Evaluation for Children's Exhibits or How Wrong Can Adults Be?

By
John A. Veverka

Why Ask?

Evaluation has long been a part of any interpretive planning strategy, especially for interpretive center or museum exhibits. When you consider the costs of exhibits to agencies (estimated at $200 per square foot of exhibit floor space) you would think that before the exhibits were delivered the agency would want to make sure they "worked," i.e. accomplished the objectives they were designed for. Unfortunately this evaluation process rarely happens and many exhibits quietly "fail" to make any contact with visitors.

I was recently a part of the Derse Exhibits team to plan, design, build, and "evaluate" exhibits for the new Kirby Science Center, in Sioux Falls, South Dakota. They had three empty floors and wanted top quality science exhibits to fill the building – a $3-million project. Part of the total project the client wanted was a thorough evaluation of exhibits to make sure that each exhibit accomplished its specific interpretive objectives. This short article will summarize what and how the evaluation took place and what the team and I learned from this "wrenching" experience called evaluation.

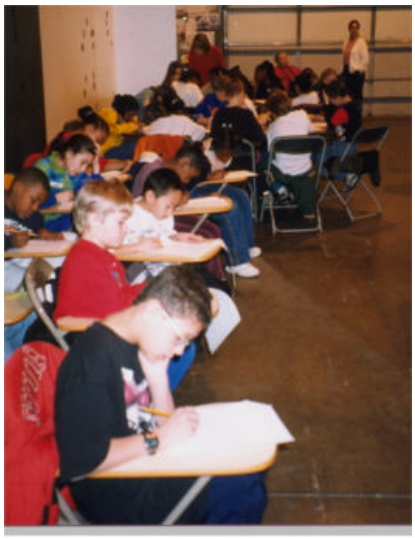
What Were the Exhibits Supposed To Do?

Before you can evaluate anything, you first have to know what it was supposed to accomplish. Part of the total exhibit plan was an "Interpretive Exhibit" plan. This consisted of each individual exhibit having – in writing – a specific concept the exhibit was to present, and specific learning, behavioral, and emotional objectives each exhibit was held accountable to accomplish. We would later evaluate the mock-up exhibits against those stated objectives.

The Evaluation Strategy.

For this evaluation strategy, I developed several different evaluation methods to be used for the total evaluation. The evaluation would take approximately 4 weeks. We set up draft/mock-up exhibits in the warehouse of Derse Exhibits – evaluating approximately 15 exhibits each week, representing 6 different science subject areas. We then arranged with local schools for teachers to bring in their classes to "test the exhibits" for us. We would test each set of 15 exhibits over the course of one week. The evaluation strategies included:

?? **A Written Pre-test and Post-test**. We brought in school busses of children from different schools to be our "audience" for the evaluation. Before being allowed to use the exhibits, each group took a short written multiple choice and true/false pre-test relating to each exhibits objectives. After the pre-test the children could then go and "use" the exhibits. After spending about 45 minutes with the exhibits they came back for a written post-test. We wanted to monitor any changes in what the children knew about the tested science concepts before seeing and using the exhibits and after they interacted with the exhibits.



The written pre/post-test evaluation took about 15 minutes to complete. After the children turned in their pre-test papers, they were allowed to go and "use" the exhibits.

?? **Observational Studies**. This part of the evaluation used a trained observer stationed at each exhibit to simply watch/record what the children did or didn't do. This told us a lot about things like "instructions," graphic placements, and subjects that children did and didn't have any interest in.

Observers were stationed by each exhibit to watch and see how the children interacted with and used the exhibits.

The Quick Fix – and Fix – and Fix Again.

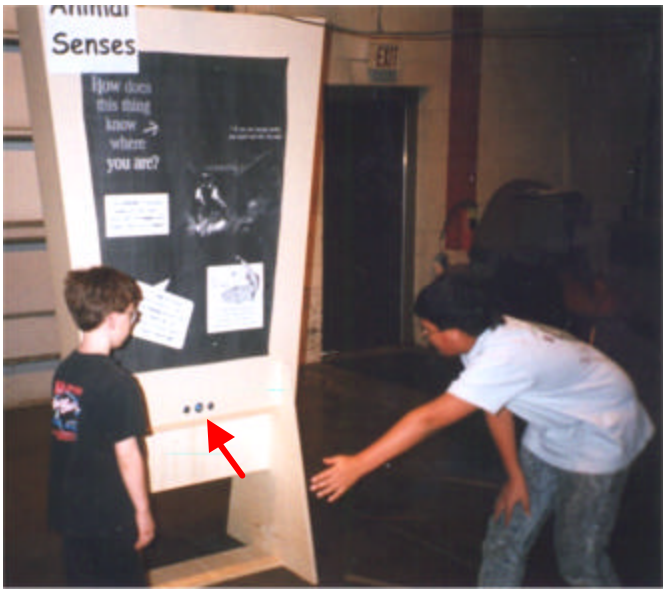
Essentially our plan was to have two groups of children test the exhibits on Monday of each of the four weeks. We would then analyze the test results and our observational results and make any changes to the exhibits on Tuesday. Bring in two new groups of students on Wednesday, make any more corrections on Thursday, we would do one final test on Friday, make any final adjustments, and then ship out the completed exhibits from that week's testing to the Science Center over the weekend. We would then repeat the evaluation process the next week for 15 different exhibits.

What We Found Out – Oh, the Pain!

What did we learn from this experience? We learned that if we had not done the testing, the great majority of the exhibits we "adults" planned would have been failures! Virtually EVERY exhibit we tested had to be "fixed" in some way. Here are a few examples of some of the things we observed:

For example, with this exhibit on "magnetism"(above) you were directed (left photo -arrow) to move the magnet on the chain **UNDER** the objects, the magnetic items would then move. Not one child followed these directions. They only used the magnet from **above**! They wanted to see the magnet on the chain interact directly with the item in the exhibit (right photo). We fixed this by changing the directions and raising items in each container so magnetic objects would react with the magnet held from above. We found that children found any written directions to be "invisible." In 98 percent of the cases, the children did not look at or read "any" directions unless an adult suggested they do so. If they had to read complex directions to do the activity, they usually left the activity.

Another interesting example of what and how children think was our "how bats find food" exhibit (below).



The exhibit has a sensor beam (arrow) that beeped when a person walked in front of it. As the child would walk closer to the exhibit, the beep would beep faster, to illustrate bats' eco-location ability. We found that the children made games out of the exhibit beeper trying to run past the beam, crawl under it, etc. They were **only** interested in the beam and how it worked – they could care less about bats!

We also were able to test the construction of the exhibits themselves, and some of the exhibit tools. For example, our "indestructible" microscopes (photo below) didn't last a week!

With constant use, and having the children lean, push, and tug on the microscopes, they quickly came unmounted. The exhibit designers had to experiment with a fastening system that was "difficult" for children to break. Break-proof exhibits for children are "a dream"! Most of the exhibit design team, used to doing exhibits for adults, found the children's exhibits to be an emotional and creative challenge. Children don't think like adults – surprise!!!

What We Learned.

This month long evaluation process taught us all a lot, most importantly that if we hadn't done the evaluation, we would have built exhibits using adult ideas of how children learn, which children would NOT have learned from.

Some key points:

From the pre- and post-tests, we found that there were some subjects students already had good concept level understanding of – they pre-tested at a 80 percent correct response or higher on the written test; and some areas that they had a very poor understanding of – with correct responses on the pre-test of 50 percent or less. We did find that when comparing the pre-test and post-test results, there were often increases in correct answers on the post-tests, depending on the individual exhibits. So the exhibits were generally working – but the initial post-test improvements were generally very weak, maybe only 5-15 percent improvements on post-tests at the start of the week (Monday testing). But by Friday, after the exhibits had gone through many changes in design, instructions presentation, and concept presentation, we were at an average of 80 percent comprehension or better on post-testing for most exhibits. By doing this **formative evaluation** throughout the week of testing, we ended up with "very good to excellent" exhibits as far as having their educational objectives accomplished at a 70 percent level or higher (our goal).

We found that EVERY exhibit we evaluated over the 4-week period (about 60 exhibits) had to have some "improvements." Some exhibits just needed a little fix – such as the addition of a label that said "push the button" (otherwise the button to start the activity would not be pushed), to some exhibits needing a major redesign.

We found that children did not even look at, let alone read, any "written" instructions. But we did have success in redesigning instructions in cartoon or "comic book" formats – more visual presentation instructions. The instructions themselves **had to look fun or interesting.** For many of these exhibits to be used most efficiently would require a docent. science educator, or teacher to help facilitate and direct the learning activity. But the exhibits did work effectively on their own after evaluation-driven redesigns. When our researchers facilitated the learning – explaining directions, etc. the exhibits worked wonderfully.

The design team and the client all learned that the ONLY way you will know for sure that you have a "successful" exhibit – not just a pretty exhibit – is to evaluate it with your intended target market group. The visitors will tell you if your exhibit is successful in communicating with them or not – if you ask them!

Summary

This short article only begins to touch on some of the many complex educational issues and design challenges we encountered in how the process help us to finally design and build exhibits that were really educationally successful. We believe that based on all that we learned about exhibit users for this museum, evaluation for any exhibit project is not an option, but a requirement, for true exhibit success.

References

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John Veverka
John Veverka & Associates
www.heritageinterp.com
jvainterp@aol.com