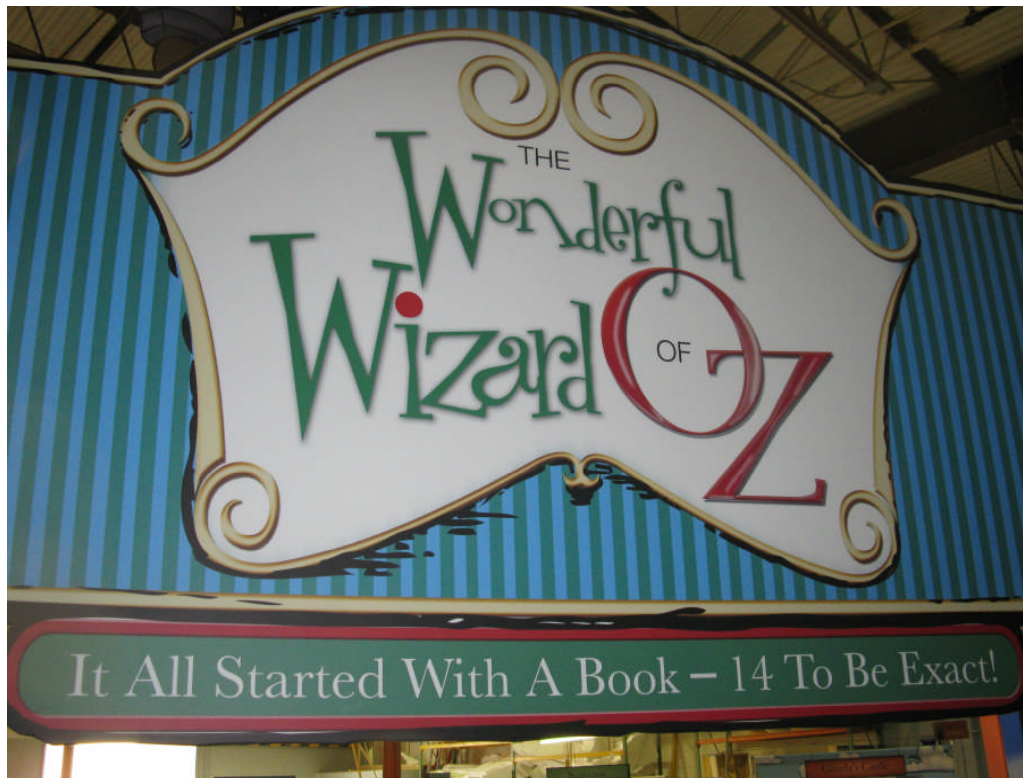


EXCERPTS FROM  
FORMATIVE  
EXHIBITION  
EVALUATION REPORT



by  
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## EXECUTIVE SUMMARY

Great Explorations contracted with TNI Consultants LLC to conduct a formative evaluation of *The Wonderful Wizard of Oz* to see if the mechanical gizmo in each exhibit works as it should, visitors understand how to use or interact with exhibit components, exhibits facilitate interaction within and between visitor groups, visitors learn messages at key exhibits and to gather feedback to inform the exhibition expansion.

Data were gathered from a total of 281 visitor groups (i.e., 83 at exit interviews, 198 at the exhibits). Information was gathered from visitor groups at Dorothy's House (25), Tornado (21), Land of Munchkins (23), Tin Woodman (24), Lion (24), Emerald City (24), Wicked Witch of the West (21), The Road of Yellow Brick (12) and Glinda the Good Witch of the South (24).

*The Wonderful Wizard of Oz* appears to be a success – fanciful, fun and educational. Through its whimsical color and design, the exhibition welcomes visitors and gives them permission to play, alone or with each other, regardless of age. The exhibits effectively promote interaction between adults, between children of all ages and between adults and children of all ages – primarily within visitor groups. Exhibit activities *engage* visitors. In addition to learning messages Great Explorations wanted them to learn, visitors are encouraged to engage in free play, creating their own meaning and relevance.

Learning is reinforced by redundancy -- that is experiential, hands-on activities about the same or similar messages created in different formats throughout the exhibition. Those multisensory experiences tap into the way each visitor chooses to learn.

The exhibition does not appear to require any major changes, although there are many minor changes to be made (and other changes that might be nice). Gizmos need to be tweaked and made much more durable -- most notably the watering can, tornado tops, tubes at Get with the Flow, the green glasses in Emerald City and the Winged Monkeys. The Great Explorations team needs to decide how much they want to tweak Eye Spy to address the disconnect between the gizmo and intended message.

Painting the edges of the 'books'/exhibits to look like book pages will add atmosphere and underscore the storybook approach. Rounding all corners and re-shaping protrusions will enhance visitor safety. Lighting was an issue in the Munchkin house, Chicken Coup and Cave. Some things just need to be made more prominent, like the Toto Signs. Visitors need to be more aware that there are backdrops on the Emerald City stage.

As much as possible, it is meaningful to children to be able to activate gizmos without help from an accompanying adult. Adding step stools throughout the exhibition will help children reach controls and costumes! Scattered seating for adults would also be a welcome addition. This is a terrific outing for multigenerational visitors, some of whom may need to sit frequently. Visitor studies show that this often increases time spent in an exhibition.

The Great Explorations team needs to think carefully about how much signage, if any, they want to introduce into the exhibit to inform, clarify and explain. Attaching laminated fact sheets to key exhibit activities might be a low cost / low profile way to make information available to visitors without cluttering the clean, crisp look of the exhibition.

Visitors, many of whom were museum members, had been anticipating the opening of *The Wonderful Wizard of Oz* for months. Most did not leave disappointed.

## **GREAT EXPLORATIONS CHILDREN'S MUSEUM**

Located in St. Petersburg, Florida, the mission of Great Explorations Children's Museum is to stimulate learning through creativity, play and exploration. This award-winning museum is a 501(c)(3) nonprofit organization which was incorporated in November 1986.

Drawing educational content from the arts, sciences, and humanities, Great Explorations' programs and exhibits encourage creative thinking, problem-solving, and discovery. Exhibits invite visitors to touch and explore or role play. Programs are presented in a multidisciplinary context and interactive style.

The museum is 24,000 square feet with 18,000 square feet of exhibits that are continually upgraded and rotated. Great Explorations toured up to five different exhibitions for more than 10 years to museums nationwide.

### ***THE WONDERFUL WIZARD OF OZ***

*The Wonderful Wizard of Oz* is a 1,500 square foot traveling exhibition designed and developed by Great Explorations Children's Museum in collaboration with Wacky World Studios, located in Oldsmar, Florida. The design/development team gathered front-end feedback from visitors that helped inform concepts for the storyline, content and visitor experiences.

Geared towards children ages 6 years and younger, the exhibition offers pop-up pages from the storybook, depicting vignettes about Dorothy's House, the Tornado, the Land of the Munchkins, the Tin Woodman, the Scarecrow, the Lion, The Road of Yellow Brick, Emerald City, The Balloon, The Wicked Witch of the West and Glinda the Good Witch of the South. Each vignette or section of the exhibition offers visitors up to three interactive activities. In addition to the exhibition, six Gallery Activities were created to provide visitors with a facilitated, interactive experience.

Great Explorations plans to add 1,000 square foot to the exhibition which will complement the original 1,500 square foot exhibition for those venues with large spaces. This addition to the exhibition will be ready to travel in fall of 2010.

*The Wonderful Wizard of Oz* exhibition was installed just inside the entrance to the Great Explorations gallery on December 3, 2009; museum staff relocated several permanent exhibits to make room for this traveling exhibition. The exhibition will remain here until it travels to its first venue, early in January 2010.

### **SCOPE OF WORK**

TNI Consultants LLC met with Jan Luth, Exhibition Project Manager and Julia McAllister, Director of Education and Exhibits at Great Explorations on October 20, 2009 to discuss the approach to a formative evaluation of 10 exhibits and 19 exhibit activities in *The Wonderful Wizard of Oz*.

The following exhibits and activities were included in this formative evaluation:

1. Dorothy's House (i.e., Chicken Coup, Cornfield, Animal Cubes)
2. Tornado (i.e., Video Monitor, Tornado Alley, Create a Vortex)

3. Land of Munchkins (i.e., Puppet Theater)
4. Tin Woodman (i.e., Feel the Beat, What's Your Pulse, Get with the Flow)
5. Scarecrow (i.e., Pick Your Brain, Brain Twisters)
6. Lion (i.e., Eye Spy)
7. The Road of Yellow Brick
8. Emerald City
9. The Wicked Witch of the West (i.e., Fling Winged Monkey, Build a Castle)
10. Glinda the Good Witch of the South (i.e., Reading Area, Silver Slippers)

The exhibit activities included in the formative evaluation were selected because there was some question on the part of the Great Explorations team about the gizmo operation, visitor reaction, learning and knowledge or ability to interact with the exhibit components. Again, time constraints were a factor; not everything could be included. The Balloon exhibit was not complete in its design and fabrication, so was not included in the formative evaluation.

In addition to feedback from observations and interviews at each exhibit, uncued exit interviews were used to determine the need for minor modifications to the exhibition and provide feedback to inform the design/development of the new 1,000 square foot addition to the exhibition.

Furthermore, the Great Explorations team set up two sections of the exhibition at the Clearwater Public Library for several days. Feedback from visitors in this non-museum setting is not included in this report.

### **Evaluation Outcomes**

Using the outcome-based planning and evaluation model, TNI Consultants LLC defined needs, inputs, activities, services, outputs, outcomes, indicators, data sources, methods of data collection and data points. Factors that potentially influence each outcome were also identified.

The five evaluation outcomes were defined as follows:

1. The mechanical gizmo in each exhibit works as it should.
2. Visitors understand how to use or interact with exhibit components.
3. Exhibits facilitate interaction within and between visitor groups.
4. Visitors learn messages at key exhibits.
5. Formative feedback informs the exhibition expansion.

### **Data Collection Methods and Forms**

Data to support the five outcomes were collected using focused observations, uncued interviews at the exhibits and uncued exit interviews. TNI Consultants LLC developed a data collection form for each exhibit that included space to record focused observations and responses to uncued exhibit interviews.

*Focused observations.* Data collectors unobtrusively observed randomly selected visitors or visitor groups at each of the 19 exhibit activities. Due to time and budget constraints, Great Explorations made the decision not to track the amount of time visitors spent at each exhibit activity but *was* interested in visitor behavior at each activity. Did visitors use the activities as the design team intended them to be used?

Reading and asking questions are indicators of learning; did visitors read or ask questions of each other? Did visitors notice the Toto signs in the exhibits and, if so, did they read them? And, for those visitors who did not use the exhibit activities as they were intended to be used, what visitor behaviors were observed?

For those exhibits designed to promote visitor interaction, data collectors observed whether interaction occurred or not and, if so, whether adults were interacting with adults, children with children or adults with children. Also of interest was whether people who came to the museum together interacted with each other within their group around an exhibit activity and whether that activity prompted interaction between unrelated visitor groups.

*Uncued Exhibit Interviews.* An uncued interview means that visitors were not told in advance that they would be interviewed. As the observed visitors left each exhibit, data collectors intercepted them to ask about messages learned at each exhibit activity and to probe for ways in which the exhibit could be improved.

*Uncued Exit Interviews.* Data collectors interviewed randomly selected visitors as they left *The Wonderful Wizard of Oz*. A separate data collection form was created on which to record responses from the uncued exit interview. The number of people in each group and the visitor mix (i.e., adult only, adult and children, children only) were recorded as were the date, data collector initials and time of visit (AM or PM).

Nine questions were asked during the exit interview. Questions sought to determine whether or not the Toto signs made visitors think about anything in particular or prompt visitor conversation (and, if so, about what). Since the exhibition was based on the book, *The Wonderful Wizard of Oz*, the team at Great Explorations wanted to know whether or not visitors knew about the book before viewing the exhibition, had read the book or were now interested in reading the book.

To inform the design/development of the exhibition expansion, visitors were asked what they would like to see more of or learn more about in relation to *The Wonderful Wizard of Oz*.

## **Data Collection Volunteers and Training**

Data were gathered by 11 AmeriCorps volunteers, who otherwise work on the floor at the museum. The volunteers attended a two-hour training on data collection on December 2, 2009, conducted by TNI Consultants LLC. The Exhibition Project Manager and Director of Education and Exhibits conducted a follow-up training for volunteers on Friday, December 4<sup>th</sup> for those volunteers unable to make the training on December 2<sup>nd</sup>.

Since the installation was a bit behind schedule, the training was held at Wacky World Studios, and included all exhibits except Dorothy's House, which was at the museum. The training included sharing the purpose of the evaluation, strategies for effective visitor observations and interviews, introduction of the data collection forms and actual use of the data collection forms during role play scenarios.

The importance of remaining obtrusive while gathering meaningful quotes and detailed observations at the exhibits was stressed during the training.

## Data Collection

Museum staff were eager to gather visitor feedback as quickly as possible so that any modifications to the exhibition could be made before the holidays. Time was of the essence.

Based on best practices in the field of visitor studies, the evaluator suggested that 20-25 observations and interviews at each of the 19 exhibit activities would provide an acceptable glimpse into visitor reaction to and experiences with exhibit activities; 75-100 exit interviews would yield a representative sampling of more general exhibit information. Furthermore, this would result in a manageable collection of feedback that could be collated, analyzed and reported in eight days, providing recommendations for change in a timely manner.

Data were gathered from a total of 281 visitor groups (i.e., 83 at exit interviews, 198 at exhibits). Information was gathered from visitor groups at Dorothy's House (25), Tornado (21), Land of Munchkins (23), Tin Woodman (24), Lion (24), Emerald City (24), Wicked Witch of the West (21), The Road of Yellow Brick (12) and Glinda the Good Witch of the South (24). Information was gathered from 83 visitor groups during exit interviews.

Although it would have been ideal to gather 20-25 observations at Glinda the Good Witch of the South, gathered data were distributed evenly across categories so the evaluator made the decision that 12 observations and interviews were sufficient, that additional observations would have likely yielded similar information.

Many visitors declined to be interviewed at the end of each exhibit – walking quickly away before the data collector could approach them or politely stating they needed to move on. Others simply stated 'they had no idea' how the activity or exhibit could be improved. Still other visitors, mostly members, were excited by this opportunity to help Great Explorations shape the exhibition, stating, "We've been looking forward to this for *months*."

Great Explorations Children's Museum opened *The Wonderful Wizard of Oz* with a breakfast and member preview at 8:00 AM on Saturday, December 5, 2009. As visitor groups paid their admission, they were given stickers to note they had paid. Additional colored stickers were given out so that data collectors could easily (and accurately) discern preschool children from elementary children. Stickers were placed on the children's backs, since most of the time they would have their backs to the data collectors while interacting with the exhibit activities.

Data collection began on Saturday, December 5<sup>th</sup> and 8:00 AM - 2:00 PM and continued from noon to 4:00 PM on Sunday, December 6<sup>th</sup>.

Due to the low number of visitors to the museum during the week, the evaluation plan called for most, if not all, data to be gathered on weekends. On Saturday, December 5<sup>th</sup>, five AmeriCorps volunteers and two museum staff were assigned times to conduct visitor observations and interviews. They rotated every two hours to a new exhibit, to conduct the exit interview or to click the number of visitors going through the exhibition during hours of evaluation.

On Sunday, December 6<sup>th</sup>, five AmeriCorps volunteers were assigned times to conduct visitor observations and interviews. They rotated every one and one-half hours to a new



exhibit, to conduct the exit interview or to click the number of visitors going through the exhibition during hours of evaluation.

While it is widely known that the characteristics of weekday visitors vary from weekend visitors, the time frame in which it was necessary to gather data mandated a necessary compromise of gathering most data from weekend visitors.

By 4:30 PM on Sunday, December 6<sup>th</sup>, 25 observations and interviews had been conducted at nine exhibits (i.e., Dorothy's House, Tornado, Scarecrow, Lion, Tin Woodman, Land of the Munchkins, Emerald City, Wicked Witch of the West, Glinda the Good Witch of the South); 4 observations and interviews were conducted at The Road of Yellow Brick exhibit on Saturday, December 5, 2009; 5 were conducted on Sunday, December 6, 2009; and 3 on Saturday, December 12, 2009. Twenty-nine exit interviews were conducted during the morning and afternoon on Saturday, December 5, 2009; and 19 during the afternoon of Sunday, December 6, 2009.

Exit interviews continued through the week, with 9 exit interviews conducted on the morning of Tuesday, December 8, 2009; 13 on the morning of Wednesday, December 9, 2009; 7 on Friday, December 11, 2009 and 6 on Saturday, December 12, 2009.

TNI Consultants LLC extends sincere thanks to the following AmeriCorps volunteers for their assistance in conducting visitor observations and interviews: Natalina Oliverio, Hannah Dahm, Adam Ryan, Joe Miller, Latasha Walters, Aaron Alper, Sydney Jones, Nicole Morelli, Thomas Mitchell, James Gray, Michelle Delucia and Julia Trip.

## **Sample**

Overall, AmeriCorps volunteers gathered feedback from a convenience sample of 281 visitor groups to *The Wonderful Wizard of Oz*.

During the exit interviews, it was noted whether visitors to the exhibition came alone (10), in groups of two (29), groups of three (20), groups of four (10) and in groups of five or more people (14). It was also noted whether adults came alone (4), children were alone (6) or whether the group mix was adults with children (61). If this evaluation were to be repeated, the evaluator would gather this same information during exhibit observations and interviews so as to end up with an total count of individuals in the total sample instead of the number of visitor groups in the sample.

## **Informed Consent**

In lieu of a consent form for each participant or group, the Great Explorations team posted signs at the entrance and exit of *The Wonderful Wizard of Oz*, stating that observations of visitors interacting with the exhibit were underway and that visitors could choose whether or not to participate in interviews with data collectors.

# **RESULTS: OBSERVATIONS AND INTERVIEWS**

## **DOROTHY'S HOUSE**

6 observations and interviews were conducted on the morning of Saturday, December 5, 2009 and 6 that afternoon; 13 conducted on the afternoon of Sunday, December 6, 2009 for a total of 25.

Dorothy's house was the first exhibit as visitors entered the gallery. Many visitors were heard to cry out, "Look, Dorothy's House!" as they passed through the entry way into the exhibition. Because activities at Dorothy's House were popular, an occasional backup line of visitors occurred. Despite this or because of it, data collectors observed 3/25 (1%) visiting groups going first to the Tornado exhibit and then returning to Dorothy's House.

### **DOROTHY'S HOUSE: CHICKEN COUP**

No one reported problems with the **Chicken Coup Gizmo** at the Dorothy's House exhibit.

| Visitor Behavior               | Chicken Coup |      |       |
|--------------------------------|--------------|------|-------|
|                                | Presch       | Elem | Adult |
| <b>Used as intended</b>        | 12           | 29   | 25    |
| Read                           | 0            | 1    | 0     |
| Asked questions                | 2            | 0    | 1     |
|                                |              |      |       |
| <b>Did not use as intended</b> | 0            | 1    | 0     |

#### **Comments: used the Chicken Coup as intended**

1. Children talked excitedly about what eggs were made of (wood). Children exclaimed, "Look, I can do it myself." Adults asked children and children asked each other, "Can you guess what hole the egg will fall into?"
2. Data collectors found the Chicken Coup to be very compelling amongst children, and children interacted within their group as well as with strangers to drop eggs, sort eggs and play with eggs. Several children of all ages returned repeatedly to play with this exhibit.
3. Parents and children created a game of trying to get the wooden eggs to fall into a certain bucket, usually the middle one!

#### **Comments: did not use the Chicken Coup as intended**

1. Elementary child let the eggs drop without a basket underneath to catch them.
2. Elementary children often removed baskets from underneath the egg drop to sort and play with the eggs.

### **DOROTHY'S HOUSE: CORNFIELD**

2 adults and 5 children reported problems with the **Cornfield Gizmo** at the Dorothy's House exhibit; they did not know how to tip the watering can. This was a visitor issue, since the watering can mechanism worked; visitors just didn't know how to activate it. One adult was overheard telling children, "The watering can isn't supposed to do anything."

| Visitor Behavior               | Cornfield |      |       |
|--------------------------------|-----------|------|-------|
|                                | Presch    | Elem | Adult |
| <b>Used as intended</b>        | 7         | 24   | 18    |
| Read                           | 0         | 0    | 1     |
| Asked questions                | 1         | 3    | 1     |
|                                |           |      |       |
| <b>Did not use as intended</b> | 1         | 1    | 0     |

**Comments: used the Cornfield as intended**

1. Several adults were observed explaining how plants grow to preschool children.
2. An elementary child figured out how to use the Cornfield activity; he showed his preschool age sibling how to work it.
3. One adult provided instruction for her preschool child, saying, "It's supposed to go *this way*."

**Comments: did not use the Cornfield as intended**

1. Elementary child pried the corn up using his hands instead of tilting the watering can.

**DOROTHY'S HOUSE: ANIMAL CUBES**

2 adults and 5 children reported problems with the **Animal Cube Gizmo** at the Dorothy's House exhibit; the cubes were very difficult to turn, children were unable to rotate the cubes to create an animal. In all cases, this was a gizmo issue, since the cubes were simply too difficult to rotate. A child used the weight of her body to turn the cube, which still did not rotate; the child was told by an accompanying adult, "They're not *supposed* to turn." Another parent, after pushing on the cubes, exclaimed, "Oh, this turns!"

| Visitor Behavior               | Animal Cubes |      |       |
|--------------------------------|--------------|------|-------|
|                                | Presch       | Elem | Adult |
| <b>Used as intended</b>        | 8            | 20   | 19    |
| Read                           | 0            | 0    | 0     |
| Asked questions                | 1            | 0    | 1     |
|                                |              |      |       |
| <b>Did not use as intended</b> | 0            | 4    | 2     |

**Comments: used the Animal Cubes as intended**

1. An adult took pictures of preschool child at the Animal Cubes. Another adult stated, "This is cute, can you match animals?" An elementary and preschool child ran up to the Animal Cubes saying, "That's neat!"
2. An adult asked his preschool and elementary children, "Can you make a different animal if I mix them up?" The children replied, "No, too tough!" The adult asked, "What if I help you?" They tried to move the cubes but were unable to budge them.
3. The accompanying adult asked the children, "What happens when you do this?" and indicated that they push on the cubes. The children tried to move the cubes, but were unable to do so, appearing a bit disappointed.

**Comments: did not use the Animal Cubes as intended**

1. Several elementary children tried, without success, to push the Animal Cubes with their feet to get them to move.

| <b>Toto Sign<br/>Dorothy's House</b> | <b># Adult</b> | <b># Child</b> |
|--------------------------------------|----------------|----------------|
| Read Toto sign                       | 0              | 0              |
| Did not read Toto sign               | 36             | 50             |

| <b>Messages: Dorothy's House</b> | <b># Child</b> |
|----------------------------------|----------------|
| <b>Where do eggs come from?</b>  |                |
| Chickens                         | 15             |
| Other (specify)                  | 5*             |
| Don't know                       | 3              |

\*Other responses to "Where do eggs come from?" included the following:

- Baby chicks
- Daddy
- Dinosaurs

| <b>Messages: Dorothy's House</b>    | <b># Child</b> |
|-------------------------------------|----------------|
| <b>What do plants need to grow?</b> |                |
| Water                               | 13             |
| Food and water                      | 7              |
| Sunlight                            | 3              |
| Food                                | 1              |
| Fertilizer                          | 1              |
| Vegetables                          | 1              |

## Comments:

1. Several adults were overhead saying, "Look at that, this says 12 eggs equals one dozen." Others remarked, "Hey, they're chickens! You learn that chicken's lay eggs...that's great!"
2. One adult asked his preschool and elementary children, "What happens?" to which the children cried, "Plants grow when you water them!"

## How could the Dorothy's House exhibit be improved?

1. Six visitors commented that a stepping stool would be helpful so children can reach the holes through which to drop the eggs and reach the clothes to get them off of the clothesline. The clothesline could be strung at a lower height so children could reach it.
2. "Nothing! It's great. We have been waiting months to come see this."
3. "More smiles at the House."
4. Three visitors stated they "like the exhibit the way it is."
5. Five visitors stated, "I don't know."
6. Three visitors stated "A painted house" or "Color"
7. "Perfect; love the black and white."
8. "More tornadoes, more eggs and real chickens"
9. "More of the garden"
10. "A playground area"

## **TORNADO EXHIBIT**

16 observations and interviews were conducted on the morning of Saturday, December 5, 2009; 5 were conducted on the afternoon of Sunday, December 6, 2009 for a total of 21.

### **TORNADO EXHIBIT: TORNADO ALLEY**

20 adults and 21 children reported problems with the **Tornado Alley Gizmo** at the Tornado exhibit, primarily because the small top would not spin. In two cases, visitors did not know what to do at this activity.

| Visitor Behavior               | Tornado Alley |      |       |
|--------------------------------|---------------|------|-------|
|                                | Presch        | Elem | Adult |
| <b>Used as intended</b>        | 4             | 14   | 18    |
| <b>Did not use as intended</b> | 3             | 4    | 3     |

**Comments: used Tornado Alley as intended**

1. Preschool child required parent to show how to spin the top, then seemed disinterested because s/he couldn't do it alone.
2. The parent of a preschool child set up Tornado Alley; the child spun the tornado and destroyed all the animals.
3. One parent remarked, "This is fun for the whole family!"
4. Said one father to his elementary child, "See how the tornado works."
5. Another dad helped an elementary child, explaining the animals and the tops.
6. Elementary child ask his parent, "How do I make the tornado work?"
7. Children of all ages remarked, "Can a tornado really destroy things like that?"

**Comments: did not use Tornado Alley as intended**

1. One preschool child just played with the toy animals.
2. Two preschool children shook the vortex but did not make it spin.
3. Two elementary children threw tops/hit tops very hard together; were rough on the exhibit.
4. Two other elementary children just played with the toys and threw them around.
5. One father asked his elementary child, "Do you want to look here?" to which the child replied, "No" and the two continued to walk through and out of the Tornado exhibit.
6. Several children just ran through Tornado Alley.

**Interaction at Tornado Alley** (A=Adult; C=Child)

|   | <b>A-A</b> | <b>C-C</b> | <b>A-C</b> |
|---|------------|------------|------------|
| <b>NO interaction</b>   | 0          | 0          | 1          |
| <b>In unit interaction</b>  | 4          | 10         | 17         |
| (people who came together<br>interacted with each other)            |            |            |            |
| <b>Between unit interaction</b>                                     | 0          | 2          | 0          |
| (people who did not come<br>together interacted with each<br>other) |            |            |            |

### **Comments on interaction at Tornado Alley:**

1. Two children played with the tornado as the parents watched; two other children set up all the animals and fences and then knocked all the animals down.
2. One parent and preschool child worked together to “destroy Tornado Alley”.
3. Two adults worked with their child to “destroy Tornado Alley”.
4. The father explained different animals to elementary child as they knocked them down.
5. A mother and preschool child played in Tornado Alley together.
6. The parent showed elementary child how to use the exhibit activity.
7. The adult and elementary child worked together by spinning the tornado top.
8. Mom helped two elementary children build a farm with all the animals while the children spun the tornado and knocked the animals over.
9. Parent had to help elementary child spin tops, noting, “It’s like a real twister.”
10. A grandmother helped her elementary grandchild set up all the animals and knocked them down with the tornado.
11. One adult asked elementary children, “How many is a dozen eggs?”
12. Two families and children (who did not visit together) used the exhibit together; the preschool children had a hard time making the tops spin.

### **TORNADO: VIDEO MONITOR**

| Visitor Behavior           | Video Monitor |      |       |
|----------------------------|---------------|------|-------|
|                            | Presch        | Elem | Adult |
| <b>Used as intended</b>    | 0             | 2    | 4     |
| Watched video              | 0             | 1    | 6     |
| <i>Did not watch video</i> | 7             | 9    | 13    |
| Asked questions            | 0             | 2    | 0     |

### **Comments: used the Video Monitor as intended**

1. Two adults watched the monitor and said to their two elementary children, “Look, it’s a storm.”
2. Two adults watched the monitor but their two elementary children paid no attention to the monitor.

3. One dad looked at the video monitor but did not talk about it with his partner or elementary child.
4. One adult and one preschool child watched the video briefly.

**TORNADO: CREATE A VORTEX**

11 adults and 13 children reported problems with the **Create a Vortex Gizmo** at the Tornado exhibit. In five cases, problems pertained to visitor issues, since visitors did not know how to make the water spin or had difficulty making the water spin. At least 10 children and 17 adults could not get the vortex out of the hole to actually use it, a source of frustration to all, and clearly a gizmo issue.

Not knowing how to create a vortex, visitors tried to help each other. One visitor commented, “Ya need to squeeze it,” as other visitors tried several ways to make the water spin. An adult and two elementary children asked each other, “How does it work?” An adult and elementary child could not make the tornado spin using the vortex bottles.

| Visitor Behavior               | Create A Vortex |      |       |
|--------------------------------|-----------------|------|-------|
|                                | Presch          | Elem | Adult |
| <b>Used as intended</b>        | 2               | 9    | 12    |
| Asked questions                | 2               | 2    | 4     |
| <b>Did not use as intended</b> | 1               | 7    | 9     |

**Comments: used Create a Vortex as intended**

1. An adult and one preschool child watched others make a vortex, saying, “Woah, cool!” as they watched the color changing vortex.
2. An adult remarked to her elementary girl, “I’ll bet you can do this at home and use this for a science project.” The elementary girl was able to make the vortex spin.
3. Elementary child stated, “It’s magic...”
4. Said one elementary child, “Look at this, mom, so awesome.”
5. Two adults and two elementary children stated, “Cool, look, we can make our own tornado; spin it around...we can make a vortex.”

Two adults asked the two elementary children to make a vortex; the two adults ran off and played with the Tornado Alley.

**Comments: did not use Create a Vortex as intended**

1. Preschool child hit bottles to try and create a vortex.



| Message: Tornado   | Presch | Elem | Adult |
|--|--------|------|-------|
| Look at these shapes.* Show me which shape looks like the tornado. |        |      |       |
| Cone   | 0      | 0    | 0     |
| Sphere   | 0      | 0    | 0     |
| Cylinder   | 2      | 4    | 5     |

\*Data collector showed a funnel, round ball and block cylinder to visitors.

Most visitors chose not to participate in this uncued exit interview; they were shy or wanted to move on to the next exhibit.

### **How could the Tornado exhibit be improved?**

1. Preschool child said, "I liked the light (color changing vortex)."
2. Preschool child and adult, "More tornadoes."
3. An adult noted, "Explain where tornados are and how they are made. Teach about tornado safety and what to do if a tornado is near you."
4. Two adults commented, "I love this exhibit."
5. An adult noted, "I liked the exhibit but it's hard to pull the vortex out of the hole."
6. An adult suggested, "Step stools or benches would be nice so children could reach the table."
7. Adult and elementary child said, "Make it easier to create the vortex; give us directions."
8. One mom of two preschool children and one elementary child said, "It's cool; I really like the electric tornado!"
9. Noted three adults, "The Toto signs need to be moved lower." – referring to signs at other exhibits, since there was no Toto Sign at the Tornado exhibit,

### **LAND OF THE MUNCHKINS**

19 observations and interviews were conducted on the afternoon of Saturday, December 5, 2009; 5 were conducted on the afternoon of Sunday, December 6, 2009 for a total of 23.

4 adults and 11 children reported an offensive odor coming from the Munchkin House at the Land of the Munchkins exhibit; an adult with an elementary child stated that "Munchkinland smelled bad; I don't want to go in." Another elementary child plugged his nose when going through the house.

**Interaction at Puppet Theater (A=Adult; C=Child)**

|   | A-A | C-C | A-C |
|---|-----|-----|-----|
| <b>NO interaction</b>   | 0   | 0   | 0   |
| <b>In unit interaction</b>                                    | 1   | 2   | 3   |
| (people who came together interacted with each other)         |     |     |     |
| <b>Between unit interact</b>                                  | 1   | 10  | 23  |
| (people who did not come together interacted with each other) |     |     |     |

| Visitor Behavior               | Puppet Theater |      |       |
|--------------------------------|----------------|------|-------|
|                                | Presch         | Elem | Adult |
| <b>Used as intended</b>        | 15             | 14   | 16    |
|                                |                |      |       |
| <b>Did not use as intended</b> | 5              | 7    | 2     |

**Comments: used the Puppets and/or Puppet Theater as intended**

1. Adult asks preschool child, "Do you see the puppets?" "I want this puppet...Oooh, look at this one." Preschool child goes behind stage. Mom is in front; they interact together. Child *tries* to fit the puppet through the hole. "Ooooh, look at the hat."
2. "Puppets. I can see you," said grandmother. "I want a puppet," said the preschooler. Mom and child play together and then dad joins in, all playing in front of the stage. Grandma says, "What a pretty one! Can you put this on me?" "We're singing together being happy." (singing ABCs)
3. Mom explained to preschool child about playing with the puppets and putting them away. The child played briefly with mom, who took a picture.
4. A preschool child picked up a puppet and tried to put it through the hole but the puppet would not fit through the hole. The child then put the puppet on the floor of the stage. "I want to play here," said the child. Dad said, "Let me take your picture over here." "No," said the child. In reference to the puppets, dad remarked, "These are the Munchkins, the little people in Oz."
5. Two preschool children played with the puppets outside of the puppet theater, making the puppets kiss; other children had showed them how to use the puppets.
6. An adult directed two preschool children to "get a puppet and do a puppet show." The children didn't want to. "Then watch Mom do it," said mom, as she put the puppet on the roof. "Hello, hello! Oh no..." as one of her daughters reached through the hole to get mom and her puppet.

7. An adult asked, "Do you want to play with the puppets?" Child replied, "No." And, they walked out of the exhibit.
8. The family – preschool and elementary child and two adults – made a small puppet show.
9. Mom engaged preschool and elementary daughters with the puppets, asking "Do these go here?" as she reached her arm with puppet behind the stage. Dad said, "Cool puppets." Mom agreed, saying, "These are nice puppets."
10. Preschool child and two elementary girls took the puppets behind the stage and then went back to the house. The preschooler held the puppets; the mother helped the child and her two sisters played with the puppets.
11. An adult cried, "Oh, look, puppets!" Preschool and elementary children made puppets fight and note, "Man, the heads don't fit in the hole!" The adults remarked about how nice the puppets were, "so cute and beautifully done."
12. Adult tried to encourage elementary child to do an Oz puppet show, but the child didn't want to. Another adult tried to engage elementary child in the puppets, showing him how to use the puppets and saying, "Hi little Munchkin, my name is SpongeBob."
13. Two elementary children hid behind the stage while dad showed them how to use the puppets and the stage. One child said, "Welcome to the Wizard of Oz." The children played with different puppets. Dad showed them how to clean up and put puppets away.
14. Dad asked elementary child, "Do you want to do a puppet show?" Elementary child said, "I want to do a puppet show!" Dad went behind the stage with two puppets. "I am the great and powerful Oz." "Hi, I'm the cook for Oz. What should I make for breakfast?" "I want Green Eggs and Ham." And the child took a photo of dad doing the puppet show.
15. "This looks like a Munchkin....I'm in the House."-- exclaimed two elementary boys before their parents pulled them on to the next location.
16. Adult and elementary child played with the puppets. The adult asked, "Do you like my hat...hair...clothes?" Elementary child replied, "No!" The adult tried to help the child tell a story.
17. "I want to see what I can do with this one!" said three elementary children. They took the puppets and put them on the roof. They tried to put them through the holes and found they did not fit. With a puppet on each hand, they played behind the stage and on the roof. The three elementary children interacted with each other as well as with another group of three children.

**Comments: *did not use the Puppets and/or Puppet Theater as intended***

1. Sixteen people used excessive force trying to smash the puppets through the holes:
  - 4 preschool children threw and slammed puppets on the floor and put their own faces up to the holes
  - 6 preschool children smashed the puppets through the holes
  - 3 elementary children smashed the puppets through the holes
  - 3 adults smashed the puppets through the holes

2. One preschool and one elementary child made the puppets fight.
3. Two elementary children with an adult returned to walk around the puppet theater and the Munchkin House 11 times, saying they were “going on this ride over and over again.”
4. An adult and preschool child walked around the back of the stage through the house and then left. Two groups of visitors did this.
5. One elementary child stood on the back supports of the puppet theater.
6. Elementary child played outside of the theater area, breaking sticks off.

| <b>When describing their puppet show, visitors...</b> | <b>Presch</b> | <b>Elem</b> | <b>Adult</b> |
|---|---------------|-------------|--------------|
| mentioned diversity / people's differences            | 0             | 0           | 1            |
| understood that the puppet characters are from Oz     | 0             | 4           | 4            |

| <b>Toto Sign<br/>Land of Munchkins</b> | <b># Adult</b> | <b># Child</b> |
|--|----------------|----------------|
| Read Toto sign                         | 1*             | 0              |
| <i>Did not read</i> Toto sign          | 20             | 26             |

\*The one dad who read the Toto sign subsequently referred to the Booklet.

### **Puppet Theater Messages: What was your puppet show about?**

Five visitors said their puppet show was about ‘nothing’; two were too shy to answer.

Seven visitors reported a message related to their puppet show that included...

- my family
- the Munchkins
- singing
- saying ‘hello’
- fighting
- a tea party
- making things up as they went along

### **How could the Puppets and/or the Puppet Theater be improved?**

1. Have books for sale in the gift shop
2. Three visitors replied, “Nothing.”
3. Make puppets talk.
4. Loved it.
5. Move the Toto signs down.
6. Provide guided show or scripts.

## EXIT INTERVIEWS

### TOTO SIGNS and BOOKLET

Six Toto Signs were placed throughout the exhibition, one at each of the following exhibits: Dorothy's House, Land of the Munchkins, Lion, Scarecrow, Tin Woodman and Glinda Good Witch of the South. Toto Signs included the following messages:

|  |
|--|
| - Dorothy's Home was special to her. What makes your home special?   |
| - The Tin Woodman wanted a heart so he would be kind and caring. How have you been kind and caring to someone?             |
| - The Scarecrow wanted a brain to make him smart. In what ways are you smart?  |
| - The Lion wanted courage to face his fears. What fears have you overcome?   |
| - All kinds of people live in Oz, just like in your neighborhood. Who are some of your friends who are different from you? |
| - You have the power to make your dreams come true. What dreams do you have?   |

Each Toto Sign was located at the very top of its exhibit, often towards one side. Only 12 visitors noticed or read the Toto Signs (4 adults and 8 children); 299 visitors (i.e., 136 adults and 163 children) did not read (or see) the signs.

| TOTO SIGNS                   | Did NOT READ |       | READ  |       |
|------------------------------|--------------|-------|-------|-------|
|                              | Adult        | Child | Adult | Child |
| <b>Dorothy's House</b>       | 36           | 50    | 0     | 0     |
| <b>Tin Woodman</b>           | 29           | 31    | 1     | 2     |
| <b>Scarecrow</b>             | 22           | 26    | 1     | 6     |
| <b>Lion</b>                  | 25           | 33    | 1     | 0     |
| <b>Land of Munchkins</b>     | 20           | 26    | 1     | 0     |
| <b>Glinda the Good Witch</b> | 26           | 23    | 0     | 0     |

### **Did Toto Signs prompt discussion? With whom and about what?**

Responses from the exit interview confirmed findings from the exhibit observations and Interviews. Eighty visitor groups interviewed upon leaving the exhibition did not see the Toto Signs; only three visitor groups interviewed upon leaving the exhibition saw the Toto Signs.

The Tin Woodman Toto Sign was read by one visitor group, which evolved into a discussion about the heart beat. The Lion Toto Sign was read by two visitor groups, prompting a discussion within one group about what each of them fears and how they find the courage to face their fears. The second group talked specifically about their older daughter's courage.

### **Did visitors use the booklet? If so, in what way?**

During the exit interview, 78% (65) of visitor groups stated they did not use the booklet; 7% (6) did not get a booklet and 10% (8) used the booklet. Of the 10% who used it, most started to read it but said they stopped when they became more interested in the exhibit activities. One visitor group stated they used the scavenger hunt in the booklet.

## **BOOK vs. FILM**

### **Did visitor groups know what came first, *The Wonderful Wizard of Oz* book or the *Wizard of Oz* movie?**

71% (59) of visitor groups stated that the book came before the movie. One visitor stated "Am sure the book came first because they wouldn't have made a movie then."

14% (12) of visitor groups stated the movie came before the book

13% (10) of visitor groups stated they had no idea whether the book or movie came first

### **Did visitor groups know this before visiting the museum today?**

55% (46) of visitor groups knew the book came before the movie before visiting the museum

23% (19) of visitor groups learned that the book came before the movie while visiting *The Wonderful Wizard of Oz* exhibition at Great Explorations

### **Who had (not) read the book? Are visitor groups now interested in reading the book?**

22% (18) of visitor groups stated they had read the book; 4% (4) who had already read the book expressed a desire now to read the book to their children

20% (17) of visitor groups stated they might *possibly* be interested in reading the book

74% (61) of visitor groups stated they had *not* read the book; one visitor stated she did not know about the 14 book series until she visited the exhibition

48% (40) of visitor groups stated they would now be interested in reading the book (Whether they will do so or not, we'll never know given the inability to follow-up)

## **VISITORS WANT TO SEE or LEARN MORE ABOUT...**

The final question in the exit interview was, "What would you like to see or learn more about in *The Wonderful Wizard of Oz*?" The Great Explorations team hoped that responses to this question would inform the design / development of the 1,000 square foot exhibition expansion. Here is what visitors would like to see or learn more about:

1. "History -- how the novel was written."
2. Three visitor groups asked for "More about the author."
3. "More explanations about how things work."
4. Two visitor groups asked for "More Munchkinland."
5. "Maybe a song in Munchkinland."

6. "Interested in the ruby red slippers."
7. "Goggles, do what? Explanation of Emerald City and goggles that turn everything green."
8. "Players doing a show a Emerald City."
9. "Have actors come into the exhibition."
10. "I am more interested than before. Older kids exhibits." (did not elaborate)
11. "What were the Wizard of Oz's first words?"
12. "Yellow Brick Road would be nice to follow..."
13. "More elaboration on the brick road."
14. "Have scenes from the movie playing throughout the exhibition and have music in each section."
15. "More Scarecrow."
16. "Would like to see some Flying Monkeys."
17. "Would like to see something with the Witch and Flying Monkey."
18. "More of the Lion; *more of the Wicked Witch castle.*"
19. "I think I've learned everything I wish to know about Oz."

## **DATA ANALYSIS**

TNI Consultants LLC reviewed data gathered at each exhibit and totaled quantitative data into a summary form for each exhibit; participant comments were compiled. TNI Consultants LLC then reviewed the data and searched for patterns or themes, drawing conclusions and making recommendations, as appropriate, based on the data.

The evaluation is a conversational gathering of information to give staff at Great Explorations feedback about what's working and what is not. The twenty to twenty-five observations and interviews at each exhibit (12 at Glinda), coupled with the 83 exit interviews, provide a glimpse into the visitor's reaction to and experience with each exhibit activity.

## **DISCUSSION**

Note: *italicized text identifies actions that could be considered by the Great Explorations team in modifying the exhibition; these points also appear in the table under Outcome 1.*

## Exhibition Layout

*The Wonderful Wizard of Oz* had a cramped footprint at Great Explorations. The Chicken Coup was placed directly inside the entryway, which caused occasional visitor back-ups due to the popularity of the activity. Towards the end, Emerald City, Glinda the Good Witch of the South and the Wicked Witch of the West were placed so closely together that it was difficult for visitors to interact with exhibits and allow other visitors to pass through. Placement of the Green Glasses in the center of this area did nothing to help traffic flow.

Because so much was so close, visitors often bounced from one exhibit to another as they noticed new things to see and do. This detracted from the overall visitor experience.

As venues consider the layout of the exhibition in their facility, consider that each “book” in the exhibit requires its own ‘personal space’, as free from distractions as possible. This allows visitors to focus on that exhibit and its activities before turning the corner to discover the next experience. While it is always enticing to get glimpses of what lies ahead, it should never be at the risk of detracting from the current experience.

## Accessibility

Unobstructed path of travel for people using wheelchairs, scooters or strollers is directly related to the layout and floor plan. Individual exhibits are more or less accessible to people with disabilities, depending on the disability and individual strengths and limitations. Venues will need to provide a reasonable accommodation, as required and necessary.

Overall, *The Wonderful Wizard of Oz* offers visitors multisensory experiences, especially through vision, hearing and touch. The backdrops to each exhibit are colorful and visually appealing. If someone is color blind, any meaning associated with color used in the exhibits should be readily apparent through context; the one exception may be the green glasses at Emerald City.

It's best practice not to glue stairs down behind photo cut-outs, since this prevents a child in a wheelchair from rolling behind the cut-out for a picture.

Text is presented in a straightforward, yet interesting font. The exception to this is the Get with the Flow signage, which should be simplified for easier reading at a glance.

*When scripts or guided play ideas are provided, making sure they are written using large print (16 point type or larger) using a sans serif font (e.g., Arial, Univers) which allows them to be read by visitors with low vision, whether they are young or old.*

*Great Explorations is encouraged to search each exhibit activity for ways to provide visitors with alternative ways with which to draw meaning from and experience the exhibit activities (e.g., Braille, large print, raised markings, texture, video with open captioning for visitors who are deaf and audio with sounds or words that emit when a button is pressed).*

*Great Explorations might want to compile a handout highlighting ways in which the exhibition is accessible to people with physical disabilities, intellectual disabilities, people who are blind and deaf as a way to bring new audiences through the door. Attention to these important details will make the experience inviting to all and be useful to venues in marketing the exhibition.*



## **Outcome 2: Visitors understand how to use or interact with exhibit components.**

Did visitors understand how to use or interact with exhibit components? Sometimes yes, sometimes no. Issues related to the gizmo operation are shared under Outcome 1.

Whether or not select exhibits promoted interaction within and between visitor groups are discussed under Outcome 3, including examples of visitor behavior.

What, if anything, visitors learned at select exhibits are addressed under Outcome 4. Whether or not visitors used the exhibits as intended are presented briefly in this section.

Overall, most visitors used each exhibit activity as intended. Interestingly, but not surprisingly, many adults asked their children questions about one exhibit while playing at another one. One adult asked elementary children, playing at the Tornado exhibit, "How many is a dozen eggs?" Adults find the information compelling enough to warrant follow-up queries and conversation.

One adult remarked to her elementary girl, "I'll bet you can do this at home and use this for a science project." The elementary girl was able to make the vortex spin! Nice to know that parents make the connection between exhibit activities and application to schoolwork. Those exhibit activities with the most disruptive behavior or abuse included hitting tops at Tornado Alley, smacking bottles at Create a Vortex, smashing puppets in Land of the Munchkins Puppet Theater, pulling tubes at Get with the Flow, smashing buttons in Eye Spy, smacking monkeys while Flinging the Winged Monkeys, throwing blocks at Build a Castle and throwing pillows at the reading area of Glinda the Good Witch of the South.

### **Dorothy's House**

Adults and children of all ages used the Chicken Coup and Cornfield activities as intended, dropping eggs, taking clothes off of the clothesline, toting baskets and taking pictures. Several visitors did not know to tip the watering can; a handful of children pried the corn up using their hands instead of tilting the watering can. The animal cubes were very difficult to rotate; not much could be done with them!

### **Tornado**

Most visitors used Tornado Alley as intended, which included asking questions about tornadoes, creating scenes and spinning the top to destroy the scene. When visitors did not use the activity as intended, they played with the toy animals, threw the toys or tops and hit the tops hard against the exhibit. Most visitors did not watch the video since the activities were much more compelling. Regardless, the video serves as 'atmosphere'.

About as many visitors who used Create a Vortex as intended also abused it, hitting the bottles and shaking the bottles without creating a vortex. The small holes containing the bottles made it difficult to get the bottles in and out to do the activity.

### **Land of Munchkins**

Most visitors used the Puppet Theater as designed, to stage puppet shows or dress up. Two preschool children played with the puppets outside of the puppet theater, making the puppets kiss; other children showed them how to use the puppets.

Six preschool children, 3 elementary children and three adults used excessive force to smash the puppets through the too-small holes in the Puppet Theater. Four preschool children slammed the puppets on the floor. One elementary child stood on the back supports of the puppet theater while another elementary child played outside the theater, breaking off sticks.

### **Tin Woodman**

Almost all visitors used the Tin Woodman activities as intended, which included reading and asking questions. Feel the Beat and Get with the Flow tended to be used more often than What's Your Pulse?, although that may be due to the fact that What's Your Pulse was offline all day Saturday, December 5<sup>th</sup>.

When visitors did not use Feel the Beat as intended, they were likely to sit on top of the exhibit or pound on the heart pad. Preschoolers were predisposed to pulling on the tubes of Get with the Flow; elementary children sat on top of the exhibit.

### **Scarecrow**

The Pick Your Brain activity had the highest number of visitors using it as intended. An adult said to an elementary child, "Samson [their dog] has this brain." -- and pointed to the brain of a dog. Parents asked their preschool child questions to get the child to understand that the brain was located in his head. Another adult asked his children, "Ok, guys, which brain is yours? Which character wanted a brain?" Only two adults abused this exhibit activity, pressing down hard on the brains.

Trying to solve puzzles at the Brain Teaser activities stimulated visitors to read directions and ask many questions – of those within their visitor groups as well as of total strangers.

### **Lion**

A moderate number of visitors used Eye Spy as intended, although were frustrated that the lights were working inconsistently. The activity did not stimulate visitors to ask many questions. There was a passive 'push the button and see what happens' mentality at this activity.

This exhibit activity had the highest abuse from preschool (and a few elementary) children, who *pounded* on several buttons at once, not looking at the lights to find the animals.

### **The Road of Yellow Bricks**

Visitors knew exactly what to do with the bins of yellow bricks. Both boys and girls, preschool and elementary, often started building the road at the wall mural, extending their road out into the exhibit area. Adults asked children to identify shapes, sort shapes into bins and/or make larger shapes from individual yellow bricks. Visitor groups seemed to really enjoy being able to just sit together and create something!

### **Emerald City**

Most visitors used Emerald City as intended, using the green glasses, manipulating props, dressing up in costumes and having their picture taken. Behaviors of visitors who did not use the exhibit as intended included chewing on Dorothy's hair, pulling on the cabinet doors and running head first into the wall behind the curtains, literally 'stepping into the story'. Many visitors did not understand that the three curtains were potential backdrops for a show.

One preschool child and an elementary child used the glasses to look at *all* the exhibits, not just Emerald City! Visitors frequently felt free to wear costumes or take props with them into other parts of the exhibition.

The Emerald City offered wonderful activities for creative play for both boys and girls, young and old, related to Oz or not. An elementary child cried, "Let's build Emerald City!" as he worked with an adult to create and build.

### **Wicked Witch of the West**

Visitors lined up to Fling the Winged Monkeys, although many wondered about the purpose behind this activity. With so much use, the monkeys were quickly in shreds. Some adults and children untied the monkeys and threw them at the bell, others threw the monkeys at the wall.

At Build a Castle, most visitors used both soft foam and wooden blocks to build on the platform, not on the floor. More visitors abused Build a Castle than used it as intended; this included adults. Disruptive behaviors included throwing the blocks at other exhibits, throwing blocks at other blocks and banging blocks together to make noise. Visitors often played with the blocks while waiting for Fling the Monkeys to become available.

### **Glinda the Good Witch of the South**

In the Reading Area, approximately the same numbers of adults, preschool and elementary children -- male and female -- used the area as intended as did not. Those who used the area as intended found it to be "very comfortable".

A mom and her daughter sat on pillows and read the *Scarecrow of Oz*; one mom showed her son *The Wizard of Oz* book. Another mom read *The Wizard of Oz* out loud as her preschool son sat on her lap. Her elementary daughter sat on pillows while playing with blocks and dad listened while flipping through *Ozma of Oz*.

One dad picked up a book, but did not read it; another adult male flipped through a book quickly.

Behaviors demonstrated by visitors not using the exhibit as designed, included picking up and throwing pillows, stomping up and down on pillows as well as stacking the pillows before kicking them over.

As visitors noticed the Silver Slippers, there were cries of, "Look at those shoes!" The majority of visitors used the Silver Slipper activity as intended, which meant that visitors took their own shoes off to click their heels, put their feet into the Silver Slippers and/or took pictures of visitors standing in the Silver Slippers -- whether from their visitor group or not.

One mom said, "Look at the shoes!" Preschool daughter said, "Wow!" the little girl liked the pillows on the floor as seats. Mom and the little girl helped clean up the books. Mom sat down with a baby to take a break, saying to the preschool girl, "Do you want to step in the shoes? You like shoes!"

On particularly touching example of using Silver Slippers as intended occurred when the older brother of a preschool girl help her position her feet in the slippers so mom could take a picture. Both children were beaming!

A light moment occurred when an elementary child ran up to the Silver Slippers and pointed to the slippers, exclaiming as she approached, "Look! There are lily pads!" -- sheer joy and exuberance trumping fact -- the beauty of fantasy and play.

For those visitors who did not use the Silver Slipper activity as intended, behaviors included preschool children jumping on the shoes and putting their hands in the shoes instead of their feet. A father and son avoided the slippers altogether and just threw pillows around.

### **Outcome 3: Exhibits facilitate interaction within and between visitor groups.**

Through its whimsical color and design, *The Wonderful Wizard of Oz* welcomes visitors and gives them permission, regardless of age, to play – alone or with each other.

Tornado Alley, The Land of Oz Puppet Theater, Brain Twister games, The Road of Yellow Bricks, Emerald City and the Wicked Witch of the West exhibit activities were specifically designed to promote interaction between visitors – whether visitors knew each other or not.

Although all of these activities were successful, Tornado Alley, Brain Twister and Emerald City promoted the highest degree of interaction between adults and children within visitor groups. Additionally, Pick Your Brain and the three activities at The Tin Woodman elicited *significant* interaction between adults and children within visitor groups.

#### **Tornado**

Tornado Alley encouraged visitors of all ages to build a scene and destroy it by spinning a 'tornado' top. This activity encouraged high levels of interaction between adults and children within a visitor group in the majority of visitor observations. Tornado Alley stimulated about half the children to interact with children in their visitor group. Multigenerational interactions between children, parents and grandparents were observed at Tornado Alley; everyone took part in creating scenes later destroyed by the spinning tops.

#### **Land of the Munchkins**

The Puppet Theater is brightly colored and highly effective in promoting interaction between adults-children and children-children, particularly *between* visitor groups. In half of the observations, children interacted with children between visitor groups; in two-thirds of the observations, adults and children interacted with other adults and children between groups.

Interactions most often revolved around deciding what puppet to select, what story to tell, where to tell it and with whom. Both adults and children were highly engaged in selecting puppets and story-telling.

Dad asked elementary child, "Do you want to do a puppet show?" Elementary child said, "I want to do a puppet show!" Dad went behind the stage with two puppets. "I am the great and powerful Oz." "Hi, I'm the cook for Oz. What should I make for breakfast?" "I want Green Eggs and Ham." The child took a photo of dad doing the puppet show.

"I want to see what I can do with this one!" said each of three elementary children. Each took a puppet and put it on the roof. They tried to put the puppets through the holes and found they did not fit. Undeterred, they played behind the stage and on the roof with a puppet on each hand. The three elementary children play-acted a story about Munchkins before being joined by elementary and preschool children from another group.

#### **The Tin Woodman**

Although The Tin Woodman was not specifically designed to foster visitor interaction, Get with the Flow, What's Your Pulse? and Feel the Beat are each popular, strong activities that promote visitor interaction and *significant* engagement. These exhibit activities prompted multiple adult-adult, child-child and adult-child interactions.

Each activity also does an effective job of getting visitors to share conversations about their own health and wellness or that of a friend or relative. The activities stimulated multigenerational conversations about health both within visitor groups and between visitor groups.

Visitors would look at the exhibit activities and then try to find their own heart beat or pulse. Each of the three exhibit activities encouraged interaction and immediate application; most visitors were eager to participate!

One dad initially walked up to Feel the Beat, pushed a button and walked elsewhere in the exhibit. He didn't put his hand on the exhibit heart until he saw someone else do it, at which time he returned to Feel the Beat and felt the heart beat in all three scenarios. While he didn't interact directly with anyone, he learned how to interact with the exhibit by observing another visitor, which contributed significantly to his visit.

### **Scarecrow**

Although the Scarecrow was not specifically designed to foster visitor interaction, Pick Your Brain prompted a *high* degree of engagement and interaction, primarily within visitor groups.

Adults and children looked at the brains and tried to match the brain to the animal. This prompted questions, comments and excitement (at being right) in both adults and children.

Two adults of two preschool children were fascinated with the brains, calling their preschool children to, "Come see how big the mouse brain is." Even adults became excited about what they saw, wanting to share their discoveries and new knowledge with others in their groups.

The Brain Twister games at the Scarecrow exhibit offered visitors five different puzzles placed in a trough about four feet long, a rather confined area. Despite this, adults and children stood shoulder to shoulder as they encouraged, advised and helped each other to solve puzzles. Brain Twister promoted adult-child interactions in 87% (21) observations. Twelve adults played with puzzles while their preschool and elementary children played elsewhere in the exhibition.

### **The Road of Yellow Bricks**

Using yellow pavers shaped like triangles, diamonds and trapezoids, children and adults built The Road of Yellow Brick. Data collectors took gender into account at this exhibit, noting that equal numbers of boys *and* girls built the road. The activity stimulated interaction within visitor groups between children and between adults and children. Visitor groups really enjoyed sitting down together and creating.

An adult male and female visited with an elementary male, who started to build a road with some bricks before trying to get dad involved in "construction, construction". Mom and dad joined in and soon the whole family was at work. "See Mom, we're building a yellow brick road," said the elementary male. "We need to turn it because of the Wizard."

A dad visited with his elementary daughter. He knelt down to begin building the road but did not continue the road from the wall mural. He asked his elementary daughter to help.

An adult female visited with a preschool girl. The preschool girl sorted the bricks out on the floor by shape, putting them back in the bins. Then, the two sat down. The preschool girl took out all the squares and laid them out on the floor. Mom took direction from her daughter, sorting shapes and putting them back in the bins.

Mom and her elementary boy visited the exhibit. Mom and her elementary son worked together to build the Yellow Brick Road. They started their road at the end of the wall mural and built out from there. Then mom stood back as her son played with the bricks.

### **Emerald City**

Visitors were *highly* engaged in dress up, using the stage as a photo opportunity, hiding behind the curtain or staging a play -- related or not to Oz. In 24 observations of visitor groups, 19 elementary children and 20 adults used props and costumes. Toto and Dorothy's basket were popular props. Four adults got dressed in costumes and got into the spirit. Emerald City is truly a community for children of *all* ages!

A preschool girl dressed up as Dorothy, but did not use the stage. Both children dressed up, becoming Oz characters. The elementary sibling pretended to be the Lion wanting to eat Dorothy. Mom warned, "You are not supposed to eat Dorothy, Lion!" Mom encouraged the children; the elementary child said, "Mom, wanna try? It's pretty cool!"

A preschool child identified Toto. Two adults took pictures at the Wizard cut-out. Dad imitated the scene in the movie where the Wizard says, "I am the powerful Oz."

While some visitors did not know what to do with the green glasses, others loved them. Two elementary children and one adult viewed The Road of Yellow brick through the green glasses and asked, "Remember how everything looked green?" as if the experience evoked a shared memory from their past.

### **Wicked Witch of the West**

Visitors have an opportunity to Build a Castle using wooden or soft foam blocks. Adults, preschool and elementary children used soft foam and wooden blocks in equal numbers. The soft foam cylindrical blocks, in particular, fit the hands of many preschoolers. That did not stop them from using the wooden blocks as well.

Some children played with the blocks while still dressed in their Emerald City costumes, building structures on the platform, not on the floor. Most conversation and sharing (or throwing) of blocks was within visitor groups.

Parents asked the preschool girl questions about the differently shaped blocks, like, "What is that, a rectangle?" Her brother came over to build a column using wooden blocks. Both children interacted with each other and with their parents as they played with the foam and wooden blocks.

This activity stimulated 'what if' questions from children and adults alike -- "What if our building collapsed and exploded?" A father asked the preschool girl what would happen if a tornado came through the castle they built. She didn't know; he knocked the blocks down!

#### **Outcome 4: Visitors learn messages at key exhibits.**

Many things influence what visitors do and how they experience any museum visit. If the exhibit isn't what they expected, they are disappointed; if the exhibit is fabulous, they are thrilled. They arrive with visiting cousins, they are ready for fun; they had a horrible week, they want to escape. They've stayed too long, they are cranky and hungry. So, it's not necessarily the fault of the museum exhibits if visitors don't learn anything!

What makes *The Wonderful Wizard of Oz* enjoyable and what makes learning fun are the multisensory experiences provided at each exhibit activity. The exhibition offers a multitude of experiences that directly reflect the multiple intelligences learning theory described by Howard Gardner. Those intelligences, or preference styles of learning, include the following:

- Logical / Mathematical Intelligence, for those who enjoy numbers and brain teasers
- Visual / Spatial intelligence, for those who draw, act, create or enjoy puzzles
- Bodily / Kinesthetic intelligence, for those who like dance or athletic activities
- Musical / Rhythmic intelligence, for those who love music, like to sing, hum or rap
- Interpersonal / Social intelligence, for those who like people, like cooperative activities
- Intrapersonal / Introspective intelligence, for those who are more solitary with a great imagination
- Verbal / Linguistic intelligence, for those who read and enjoy stories, love words
- Naturalist intelligence, for those who like nature, plants, animals, the environment

By offering experiential, hands-on activities in various formats throughout *The Wonderful Wizard of Oz*, there exists a built-in redundancy, which reinforces learning.

Some exhibits had definite messages, including Dorothy's House, Tornado, The Land of Oz Puppet Theater, The Tin Woodman, Scarecrow, Lion and The Balloon, although The Balloon was not included in the evaluation. For those visitors open to learning, what messages did they take away from each of these exhibits?

*Note: italicized text identifies actions that could be considered by the Great Explorations team in modifying the exhibition; these points also appear in the table under Outcome 1.*

#### **Dorothy's House**

Adults and children alike were charmed by this black and white exhibit. The majority of children articulated that eggs come from chickens, while three other sources included, "baby chicks", "dinosaurs", and "daddy"; 3 didn't know. This is a strong activity with a clear message.

Having played with the Cornfield activity, 13 children said that plants need 'water' to grow; 7 stated that plants need water *and* food, which was the intended message. Other responses included "fertilizer", "vegetables" and "sunlight". It is reasonable to expect that most visitors focused on water because the exhibit activity featured the watering can.

*If the Great Explorations team wants visitors to couple food with water in their take away learning, something that associates water with plant food should be added to the Cornfield activity.*

#### **Tornado**

As visitors left the Tornado exhibit, data collectors showed children the shapes of a cone, sphere and cylinder, asking them which most resembled a tornado. Each of the 11 visitors

surveyed replied “cylinder”; no one identified the cone as the correct answer. Why not? Both Tornado Alley and Create a Vortex are very popular activities. The video shows real tornado footage. Both the tops and bottled vortexes have conical shapes.

Are visitors so focused on having fun that they overlook the basic concept of tornado shape? *The museum team might want to consider posing a question at this exhibit to stimulate visitor thinking about the basic shape of a tornado.*

Children of all ages remarked, “Can a tornado really destroy things like that?” *The Great Explorations team might consider adding basic information about what a tornado is, where they occur, how to remain safe and what to do if a tornado is near you. This helps visitors understand that tornadoes are very real and makes a connection between exhibit and visitor.*

### **Land of the Munchkins**

The Land of the Oz is a diverse place. The intended message at the Land of the Munchkins Puppet Theater is about diversity – valuing and respecting differences. The exhibits team also hoped that visitors would understand that the puppets represent characters from Oz.

When asked what their puppet shows were about, children replied, “family”, “singing”, “saying hello”, “fighting”, “a tea party” and the Munchkins; others engaged in free play. Only one adult mentioned diversity; most adults and elementary children understood that the puppets were from Oz.

*If the Great Explorations team wishes to promote the diversity message, they may want to offer visitors three scripts, each related to diversity issues in Oz to stimulate visitor thinking. Visitors can then choose to use the scripts or stage their own show. Also, moving the Toto Sign to a more visible place in the exhibit should heighten visitor awareness of diversity at this exhibit activity.*

### **The Tin Woodman**

Get with the Flow, What’s Your Pulse? and Feel the Beat are each popular, strong activities that promote visitor interaction and engagement. Each activity also does an effective job of stimulating visitors to talk about their own health and wellness. Not only does the activity inspire multigenerational visitor conversations, it gets visitors to think about how the exhibit relates to them.

The majority of children identified the two colors of blood as red and blue at the Get with the Flow activity. A grandma chatted with a 28 year old visitor about veins and arteries. One couple recalled an appointment with a cardiologist while pushing the gizmo. Other adults talked about CPR with a preschool child as they explained red and blue blood.

Children had many questions including what blood is made of and why it is in their bodies. Adults seemed to struggle when trying to explain the concepts. One parent finally said, “There! The fluid is blood in your heart!”

Get with the Flow is one of the few activities with text to help explain concepts. Some visitors saw the text and others did not. Both seemed to struggle when trying to respond to children’s questions.

*The Great Explorations team might consider re-wording existing text and re-locating the text to provide adults with a simple, interesting way of explaining blood flow to children. Consider simplifying the font on the sign to be more legible at a glance.*



Feel the Beat is a great tactile experience. *Have a stool nearby so that small children can reach the touch pad.* The majority of children interviewed said that the heart beats fast when they run, adding that the heart goes “boom-boom” and “makes energy”. Only one child interviewed did not know.

A parent used this exhibit to explain grandma’s heart attack to preschool and elementary children. After an elementary child touched the heart pad in Feel the Beat, the adult said, “This is what your heart feels like when you walk.” Another child felt her chest to see if she could feel her own heart beating. “It’s fun,” she said.

*Many visitors enjoy learning the reason(s) why things work as they do. Towards that end, the Great Explorations team might want to add an explanation about why the heart beats faster when we run or slows down when we sleep or sit. Some visitors want to know! A laminated fact sheet, hole punched and chained to the exhibit activity, would be an easy reference for those visitors who want more information!*

What’s Your Pulse? illustrates the often obtuse concept of pulse, although visitors understandably continued to confuse pulse with heart beat. Two adults and one elementary child tried different activities to see if their pulses differed; an adult moved from sitting to standing in an attempt to detect a difference in his pulse. Eight children knew that the heart pumps blood; three children did not know.

*Because pulse and heart beat are linked, venues might want to consider setting them near each other. Visitors seem to enjoy going back and forth between the two. Does the Great Explorations team want to further explain the difference between heart beat and pulse?*

### **Scarecrow**

Children learned that brains are different sizes in different animals. Two preschool children and one elementary child noted, “The smaller the animal, the smaller the brain.” Some visitors were amazed by how small a mouse brain was while others were amazed by the texture of the brain.

The exhibition does an effective job of helping adults relate the unfamiliar to the familiar. An adult with elementary child, said, “Samson [their dog] has this brain.” -- pointing to the brain of a dog. Another parent made an association with the human brain and its location in the skull, asking the preschool child questions to show the child that the brain was located in the head.

### **Lion**

Most visitors appeared to be familiar with the game of Eye Spy. Only nine children reported that it was hard to see the animals in the picture because of camouflage. Two children offered ‘other’ responses that included, “They [animals] ran off” and “Because they light up?” Seventeen children did not know why it was difficult to see the animals in the picture.

There is a disconnect between the intended message of camouflage and the interactive experience of pressing a button and locating the animal by finding the lit eyes. This action might better be associated with a message about habitat, where the animal lives – since the lights place the animal in the forest. Since the animal is currently painted in the same color and pattern as the trees, the camouflage message does not make sense here.

Because not every visitor wants to learn, the activity could stand alone as a fun game. Other visitors enjoy learning. *Great Explorations might consider layering this exhibit activity so that visitors could do both. Repaint animals in their natural colors that would blend in, or camouflage, with new colors in the forested backdrop.*

### **The Road of Yellow Brick**

Although this exhibit activity had no message per se, the activity lends itself to identifying and learning shapes.

The female adult said, "This looks like fun. Let's take out all the triangles and see what it looks like afterwards!" The elementary female used mostly trapezoids and put the bricks together. She called the shapes by name as she took them out of the bins.

A visitor group consisted of mom, dad, preschool female and two elementary males came upon the exhibit when the shapes were all over the floor. Dad told the children, "Put the shapes into the correct bin. Put the diamond in the diamond container, etc." The children shrugged their shoulders and did as they were told.

Shapes were left out on the floor when an adult male and female with two preschool girls visited. The adult female asked the preschool girls about the names of the shapes as the girls put them away. "Put away the triangle, put away the trapezoid", etc. The preschool girl said, "Cool, I can match the shapes and put them together and make a yellow road." The two girls talked in an animated manner as they counted sides on each yellow brick shape and made larger shapes out of the yellow bricks.

### **Signage**

Overall, *The Wonderful Wizard of Oz* exhibition has minimal signage. Observations show that when text is provided, visitors read it. The exception to this is the Toto Signs, which were placed up too high, out of most sightlines.

Visitors pretty much now create their own meaning from the plethora of materials and activities. This, of course, means that some visitors leave with no meaning or new learning at all while others might leave with incorrect meaning or learning.

*The Great Explorations team must decide the extent to which they wish to direct the visitor experience. How much text, if any, do they want to infuse into the exhibition to clarify, explain, or stimulate visitor thinking?*

### **Toto Signs**

Unfortunately, neither visitor thinking nor conversation was stimulated by the Toto Signs because they were placed far too high and to the side. These Toto Signs have wonderful messages related to character development; all *should* spark conversations within visitor groups. The Great Explorations team has already directed Wacky World Studios to re-locate the Toto Signs.

### **The Book vs. Movie**

About half of the visitor groups knew the book existed before the movie prior to their museum visit. While at the exhibition, an additional 23% of visitor groups learned that the book came before the movie. That's exciting news, especially because 65% of those visitor groups stated they were now interested in reading the book, having not read it before. Of course, good intentions do not make something happen. The interviews were done anonymously, with no way of following up, so the information is presented for informational purposes only.

## SUMMARY

*The Wonderful Wizard of Oz* appears to be a success – fanciful, fun and educational. Through its whimsical color and design, the exhibition welcomes visitors and gives them permission to play, alone or with each other, regardless of age.

The exhibits effectively promotes interaction between adults, between children of all ages and between adults and children of all ages – primarily within visitor groups. Exhibit activities engage visitors. In addition to learning messages Great Explorations wanted them to learn, visitors are encouraged to engage in free play, creating their own meaning and relevance.

Learning is reinforced by redundancy -- that is experiential, hands-on activities about the same or similar messages created in different formats throughout the exhibition. Those multisensory experiences tap into the way each visitor chooses to learn.

The exhibition does not appear to require any major changes, although there are many minor changes to be made (and other changes that might be nice). Gizmos need to be tweaked and made much more durable -- most notably the watering can, tornado tops, tubes at Get with the Flow, the green glasses in Emerald City and the Winged Monkeys. The Great Explorations team needs to decide how much they want to tweak Eye Spy to address the disconnect between the gizmo and intended message.

Painting the edges of the 'books'/exhibits to look like book pages will add atmosphere and underscore the storybook approach. Rounding all corners and re-shaping protrusions will enhance visitor safety. Lighting was an issue in the Munchkin house, Chicken Coup and Cave. Some things just need to be made more prominent, like the Toto Signs. Visitors need to be more aware that there are backdrops on the Emerald City stage.

As much as possible, it is meaningful to children to be able to activate gizmos without help from an accompanying adult. Adding step stools throughout the exhibition will help children reach controls and costumes! It would be nice to provide scattered seating for adults throughout the exhibition. This is a terrific outing for multigenerational visitors, some of whom may find frequent rest stops of comfort. Visitor studies show that this often increases time spent in an exhibition.

The Great Explorations team needs to think carefully about how much signage, if any, they want to introduce into the exhibit to inform, clarify and explain. Attaching laminated fact sheets to key exhibit activities might be a low cost / low profile way to make information available to visitors without cluttering the clean, crisp look of the exhibition.

Visitors, many of whom were museum members, had been anticipating the opening of *The Wonderful Wizard of Oz* for months. Most did not leave disappointed.