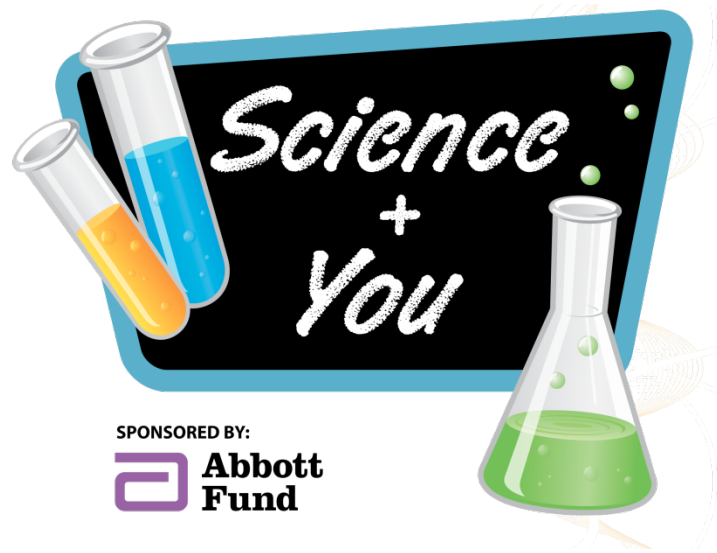


Science + You: Summative Evaluation Report of Findings November 2011

Prepared for Kohl Children's Museum by *Blue Scarf Consulting*



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EXECUTIVE SUMMARY

Science + You, an 11-component, immersive traveling exhibit developed by Kohl Children's Museum of Greater Chicago (KCM) in conjunction with scientists at Abbott, a global health care company, with support from the Abbott Fund, opened to the public on July 19, 2011. Aimed at children ages 3 through 8 and the adults who accompany them, *Science + You* offers visitors opportunities to investigate, experiment, and understand how science and scientists approach and solve problems related to human health and nutrition. Blue Scarf Consulting, LLC, has conducted two phases of evaluation: a post-installation, remedial evaluation (August 2011) and a summative evaluation (September-November 2011). Key findings from the remedial evaluation suggested that visitors were satisfied with their *Science + You* experience and understood all of the overarching concepts on which the exhibit is based. Visitors' perceptions of the various concepts presented were fairly on target and the majority found the information and activities engaging, interactive, and enjoyable.

The summative evaluation focused on answer the following questions:

- How and to what degree do families use the exhibit?
- How do families' experiences in *Science + You* influence their post-visit intentions and actions?
- How and to what degree does *Science + You* immediately resonate with children?

Findings from visitor observations and self-reported visitor feedback provide a very positive and rich picture of the connections people make with the *Science + You* exhibit concepts. Online survey data indicates that overall satisfaction with the *Science + You* experience and descriptions of the exhibit reflect the fun, interactive, informative and playful nature of components and are supportive of science learning, the work scientists do and how they do it, and connecting science to everyday life. Examples of the types of interactions and levels of engagement found in family observation narratives, provide a clear and strong snapshot of families working together at activities, observing one another, and having conversations to explain processes or results, make connections with everyday life, other components, or exhibit concepts.

Online survey data provides evidence of conversations sparked in nearly every component suggesting that *Science + You* provides an excellent environment for families discussions around the ways scientists investigate, experiment and how science and scientists approach and solve problems related to human health and nutrition. In addition to sharing conversations, signage proved to be helpful for sparking conversations and/or answer questions. Conversations continue on the way home and at home. Online survey data also indicates that activities and concepts featured in *Science + You* are likely to be repeated or investigated after a visit. Digital photos of magnetic collages done by children in the Poster Design component provide excellent examples of the breadth and depth of *Science + You* experiences and reflected knowledge.

The summative evaluation report of findings provides detailed descriptions and analysis of all data gathered to understand how families use the exhibit at the museum, how the exhibit influences their intentions beyond the museum walls, and what about the *Science + You* exhibit resonates with children before they even leave the space.

INTRODUCTION

Science + You, an 11-component, immersive traveling exhibit developed by Kohl Children's Museum of Greater Chicago (KCM) in conjunction with scientists at Abbott, a global health care company, with support from the Abbott Fund, opened to the public on July 19, 2011. Aimed at children ages 3 through 8 and the adults who accompany them, *Science + You* offers visitors opportunities to investigate, experiment, and understand how science and scientists approach and solve problems related to human health and nutrition. KCM engaged Blue Scarf Consulting, LLC, a Minnesota-based evaluation service, to conduct two phases of evaluation: a post-installation, remedial evaluation to gain insight into visitors' interest, use, and satisfaction with the exhibit (August 2011) and a summative evaluation (September-November 2011).

Key findings from the remedial evaluation suggested that visitors were satisfied with the experience they had in *Science + You* and understood all of the overarching concepts on which the exhibit is based. Visitors' perceptions of the various concepts presented were fairly on target and the majority found the information and activities engaging, interactive, and enjoyable. Both adults and children showed a reasonable level of interest and involvement in the components, which were well attended with two exceptions: Poster Design and Test Tube Peg Board. The Microscopes component was the one component that was of equal interest to adults and children, and both groups reported being equally involved with this component.

The summative evaluation aims to understand:

- How and to what degree do families use the exhibit?
- How do families' experiences in *Science + You* influence their post-visit intentions and actions?
- How and to what degree does *Science + You* immediately resonate with children?

METHODS AND SAMPLE

To provide a rich snapshot of the interaction and engagement of visitors' *Science + You* experience, three methods were used: observations, online survey, and a reflective collage activity.

OBSERVATIONS

A purposive sample of 34 families (adults with children ages 3-8) was observed on weekdays and weekends between September 27 and October 7, 2011. A purposive sample was chosen as the best way to achieve a good representation of the visiting population of children with single adults with those accompanied by adult couples, senior adults and children, 3-5 year olds and 6-8 year olds, and ethnically/racially diverse by sight. Observations included a written narrative documenting families' overall use of the exhibit, adult and child engagement with each other and their level of engagement with the activities. To maximize the amount of information recorded, the observation instrument included a checklist of adult roles drawn from the Boston Children's Museum's Adult Child Interaction

Inventory (ACII)¹ and exhibit components, and codes for type of interaction and level of engagement (see Appendix A). The interaction codes are meant to quickly record who, among the group, is interacting at any given time and include the following combinations: Child with Child, Child with Adult, Child Alone, Child with Staff, Adult with Staff, and Adult with Adult.

A standard engagement scale of 1 to 4, where 1 is Minimal, 2 is Cursory, 3 is Moderate, and 4 is Extensive, was modified to reflect the levels of engagement of most interest to KCM: Moderate and Extensive as described below:

Moderate (explores component fairly thoroughly. Views elements with interest; appears engaged and focused; seems to listen fairly closely; picks up objects, begins to play or engage in conversation related to the component, may point out certain elements.)

Extensive (explores component in depth. Views elements intently; extremely engaged and focused; plays intently; engages in fairly extended conversation with others about the area/component, or points out many aspects of the component/area.)

Group information—relationship, number of males and females, children’s ages, and prior visitation—was also collected to ensure continuity of the sample and provide context for findings. Email contact information was also collected if families were willing to participate in a follow-up online survey.

Of the 34 observations conducted, 29 were analyzed for this report. Five were discarded because the children in the group were younger than three years old or the group spent less than five minutes in the gallery. Family groups consisted of 34 adults (11 males, 23 females) and 46 children (30 males, 16 females). Adults were primarily parents (n=26) with three adults identifying themselves as grandparents. The average time spent in the exhibit was 12.5 minutes; 18 groups indicated they had visited *Science + You* prior to that day’s visit. Observations occurred on weekdays (n=23) and weekend days (n=6) and were conducted entirely by KCM staff, who had attended a half-day training facilitated by Blue Scarf on September 21, 2011 (see Appendix B).

ONLINE SURVEY

To gather insights from the visitors’ perspective of their *Science + You* experience, an online survey was developed and disseminated to all observed families who agreed to participate in the survey as well as a random sample of visitors in the gallery to ensure that a sufficient number of responses were received. The online survey was similar to the one used during remedial evaluation to gather similar information about component use but adapted to also capture what visitors actually did in the components, the helpfulness of signage, conversations sparked during and after the experience, and intentions to extend the experience through various activities reflected in the exhibit, for example, make a healthy soup, use a microscope, investigate germs and antibodies.

¹ Boston Children’s Museums’ *Adult and child interaction inventory: a tool for exhibit development and evaluation (ACII)*, Beaumont, 2007.

A total of 41 responses to the survey were received. However, 11 of those were incomplete and dropped from the analysis. Of the 30 respondents who completed the survey, 73% (n=22) indicated the children they brought to the *Science + You* exhibit were between the ages of three and five years old; 37% (n=11) brought children six to eight years old; 33% (n=10) brought children zero to two years old; and 17% (n=5) brought children over eight years old.² The majority of respondents (67%, n=20) identified themselves as KCM members; 63% (n=19) said this was their first visit to the exhibit; and 93% (n=28) agreed that they would recommend *Science + You* to a friend, family member, or co-worker who had children three to eight years old.

REFLECTIVE COLLAGE

To investigate the influence of exhibit messages and components on children, KCM staff took digital photographs of 100 collages made with magnetic cutouts (photos, graphics, and sentence strips) by children as part of an existing activity in the Poster Design area. The activity supports an exhibit concept that “people communicate through pictures and words” and provided an excellent opportunity to embed unobtrusive evaluation for capturing children’s reflections on their *Science + You* experience. Of the 100 digital photos, 30 were randomly selected using an online random number generator, <http://www.randomizer.org/>, and scored as high, medium, or low based on the following rubric:

<i>High Impact</i>	Collage reflects five or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures.
<i>Medium Impact</i>	Collage reflects three or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures.
<i>Low Impact</i>	Collage reflects one or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures.

The rubric allows a simple structure for analysis of both breadth and depth of these reflective pieces, which were collected without context for the age or any information about what the actual visit the collage represents. Digital photographs were taken by KCM staff at random intervals after the collages had been completed and displayed in the exhibit. No demographic information or observations were gathered in conjunction with the photographs.

² Total percentage and counts exceeds 100% and 30 responses because respondents brought multiple children to the exhibit.

FINDINGS

HOW AND TO WHAT DEGREE DO FAMILIES USE THE EXHIBIT?

Online survey data indicates that 83% (n=25) respondents indicated that they were overall very or extremely satisfied with their *Science + You* experience. In response to the question, “How would you describe the *Science + You* exhibit to a family member, friend, or co-worker, the majority of respondents’ descriptions of the exhibit reflected the fun, interactive, informative and playful nature of components. Roughly one-fifth of respondents described the exhibit as supportive of science learning, the work scientists do and how they do it, and connecting science to everyday life.

I would tell them that this exhibit is a great way to expose young children to some of the basic science ideas.

How science plays an integral role in our every day lives

Helps children familiarize themselves with the world of science.

Introduces young children to science and the roles and activities of scientists.

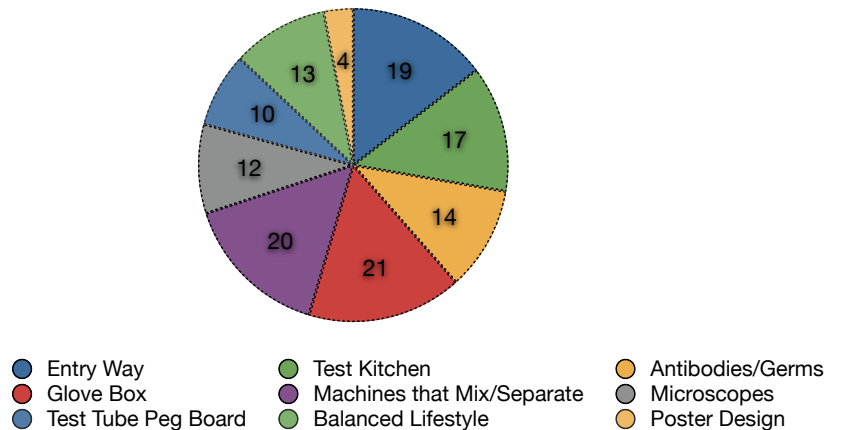
A great place to learn about physical and nutritional sciences for children over 3 years.

Exhibition detailing different techniques scientists’ use and a nutrition exhibit, but the two didn't really go together

Additional data from the online survey, family observations, and children’s collages provide support for the positive influence of the *Science + You* exhibit.

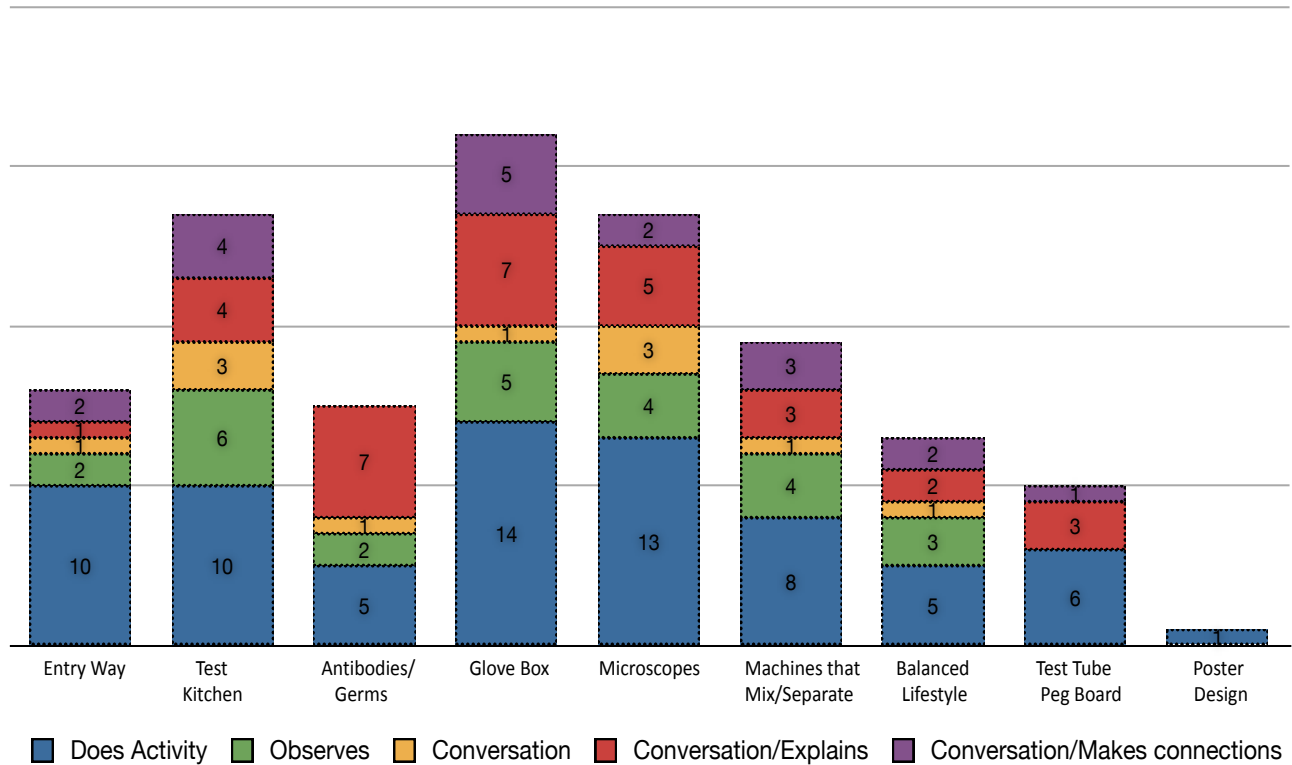
Observed interaction and engagement between children and adults in *Science + You* was quite positive. Figure 1 provides a breakdown of all instances observed. Observation data consists of 126 instances of visitors using exhibit components. While all components were visited, the Machines that Mix and Separate and Glove Box components had the most instances of interaction, followed by the Entry Way and the Test Kitchen. It is important to note that the fewer observations of exhibits deeper into the exhibit such as Microscopes, Poster Design, and Test Tube Peg Board may have more to do with the limited 15 minute observation period rather than whether visitors actually used the exhibit.

Figure 1: Number of observed visitor interactions at exhibit components



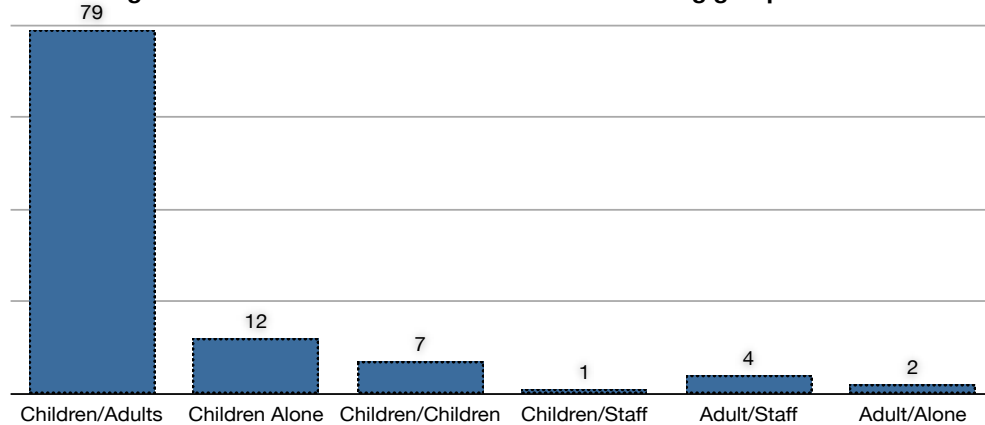
Interactions were coded by type: 1) does activity; 2) observes; and 3) conversation—explains functions and makes connections. Figure 2 shows a breakdown of observed interactions by type, showing clearly that “does activity” was the most observed type of interaction. Conversations, in general and specified as either “explains” or “makes connection,” took place in all but one component, Poster Demonstration. These findings show the strong interactive nature of the *Science + You* exhibit for both hands-on and minds-on activities

Figure 2: Observed interactions by type



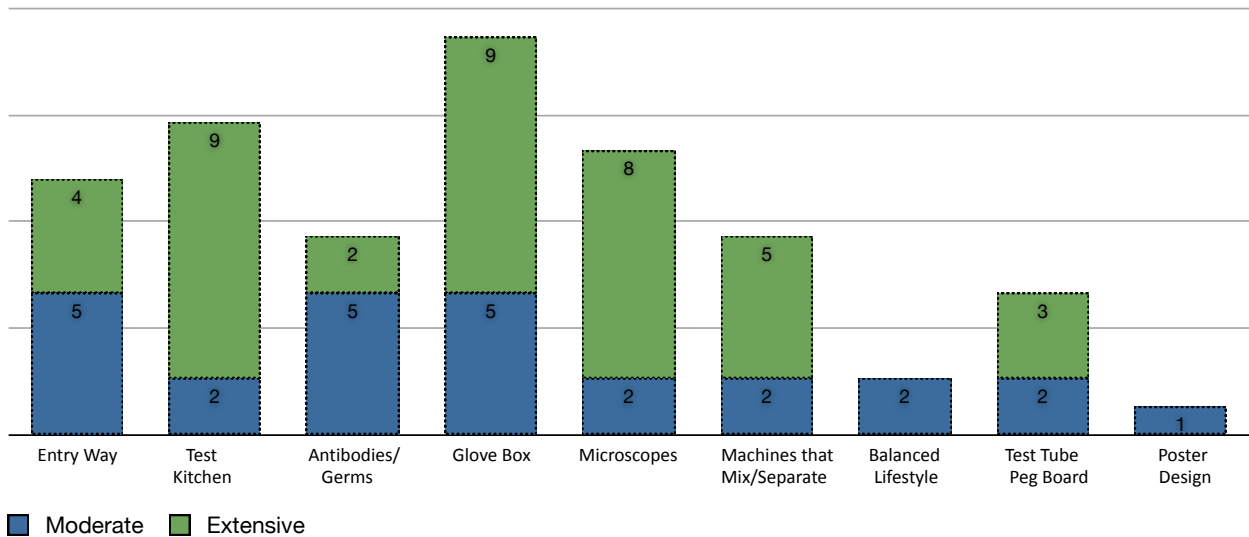
Of these 126 observed stops at components, the majority (n=79) occurred between children and adults. Figure 3 provides a breakdown of all observed interactions between group members by type.

Figure 3: Observed instances of interactions among group members



Engagement between group members were coded as either moderate or extensive. A code of moderate was given if visitors were observed exploring the component fairly thoroughly, viewing elements with interest and appearing engaged and focused. A code of extensive was given when visitors were observed exploring the component in depth, viewing elements intently, and appearing extremely engaged and focused. Figure 4 provides a breakdown of engagement levels by component. The top three components for extensive engagement are the Test Kitchen, Glove Box, and Machines that Mix/Separate. This finding is not surprising as all of these components lend themselves to extensive engagement and confirms that visitors' use of these components reflects its intention for engagement.

Figure 4: Level of observed engagement by component



To further understand engagement between adults and children supported by *Science + You*, data was collected on the roles adults assumed during the observed visit. Drawing from the Boston Children's Museum's *Adult and child interaction inventory (ACII)*³ interactions between adult and child interactions were checked as they were observed. Table 1 provides a description of each role.

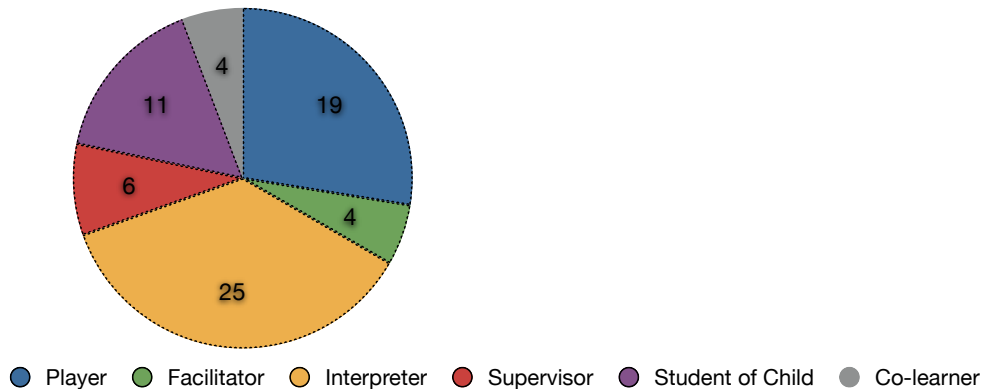
Table 1: Adult roles.

Adult Role	ACII Description
Player	Adult plays independently or with child, either may initiate play.
Facilitator	Non-verbal scaffolding and reinforcement through cues and prompts.
Interpreter	Verbal scaffolding and reinforcement through cues and prompts.
Supervisor	Concerned with child's safety and interactions with others; gives direction.
Student of child	Observes child, makes suggestions.
Co-learner	Works collaboratively to solve a problem, relying in part on child's thinking to stimulate adult's thinking; through play adult is reminded of concepts, skills.

³ Boston Children's Museums' *Adult and child interaction inventory: a tool for exhibit development and evaluation (ACII)*, Beaumont, 2007.

Two of the inventory interactions were modified for this study. The Student of Child and Co-learner roles are meant to elicit descriptions by adults during a verbal interview and not seen during observations. However, it seemed reasonable that some level of both roles might be observed, so the descriptions were modified for this study. Figure 5 provides a breakdown of observed instances of the adult roles described in Table 1. The most often observed roles were that of Interpreter (n=36) and Player (n=29). While data collectors indicated observing instances of adults being a Student of Child and Co-learner, descriptions provided in their narratives for both were uncertain. It is likely that data collection training was insufficient and/or the two roles are truly more suited for documentation through the interview process. Therefore, the data for those two roles is included herein but unsubstantiated.

Figure 5: Observed instances of adult roles



Examples of the types of interactions, adult roles, and levels of engagement are found in the observation narratives, providing a clear snapshot of families working together at activities, observing one another, and having conversations to explain processes or results, and/or making connections with everyday life, other components, or exhibit concepts. Examples of extensive engagement include:

Boy stirs ingredients. Adult female: *What should we make?* Boy: *I'm making shrimp with milk* (looks through ingredients in large bowl) *and this*. Adult female: *And this is?* Boy: *And some pepper*. Adult female: *Looks delicious. How about pears? Look at [the] recipes over here*. Boy: *I'll read this. You need eggs, green beans*. Adult female: *Okay*. Boy: *Pasta and water*. Adult female: *You can make soup over here, too*. Boy: *How do you turn it on?* Adult female shows boy how it works and reads directions to boy: *Take a veg [sic]*. Boy: *Where are the vegs [sic]?* Both look through ingredients. Boy: *I want cheese*. Adult female: *Use water and milk* (points to 5 signs). Boy places (item) in pot. Adult female: *Press button. You did it!* Boy goes back to mixing and brings over to adult female: *Mommy, here's your soup*. Adult female: *Yum*. Boy looking for food to place in bowl while looking at signage: *I need bread*. (5-year-old-boy, Test Kitchen; Player, Interpreter)

Adult female: *What are we going to cure? What diseases do dolphins have? What are we filling up, Abby? What kind of medicines?* Girl 1: *Mine is medicines*. Adult female: *Are you mixing medicines together to get the right dosage?* Girl 1: *I'm mixing to get medicine*. Girl 2: *Medicine is only for dolphins*. Adult female: *How are we going to get the medicine in them?* Girl 2: *All the medicines, which (go) in the bead?* Adult female: *Do you think these medicines explode? Can we breathe this medicine? I guess this is why the medicines can't be touched*. (5-year-old-girls, Glove Box; Player, Interpreter)

Boy escorted to (component). Fascinated with the magnet device; asks adult female: *How do you work this?* Adult female gave instruction and direction to all parts of this. Boy spent about 6 minutes here. (4-year-old-boy, Machines that Mix/Separate; Interpreter)

Boy went straight to (component). Did not know how to operate. Experimented working the device. Asked staff for help; briefly showed the child how to use device. Adult female gave child direction. Boy experimented and was successful. Shouted out, *I did it.* (4-year-old-boy, Antibodies and Germs; Interpreter)

Adult female reads headings at child puzzle: *What we do need to keep us healthy?* Girl 1: *Broccoli.* Adult female: *What goes in you meal spot to give us energy to take care of all the dolphins?* Girl 1: *Sandwiches.* Adult female reads about snacks: *What snacks are you choosing?* Girl 2: *Eggs.* Adult female: *What exercises do we need for smart brains?* (they look for puzzle pieces) *Like this-a purple border. We need to clean up when you're finished.* Girl 1: *Why is this lighting up?* Adult female: *Because you did the food choices correctly. This is working well because of team work.* (5-year-old-girls, Balanced Lifestyles; Interpreter, Supervisor)

Examples of moderate engagement include:

Boy moves to video screen at Antibodies; adult female reads signs/video to boy. Boy moves to side of antibody, figures out how to move magnet, *I found it.* Boy explains it to adult female then leaves. (7-year-old-boy, Antibodies and Germs; Interpreter)

Boy 1: *Oh my goodness...that's like...* Adult female: *Put your finger under there.* Girl looking at Boy 1: *Look at finger print.* Adult female: *Finger prints?* Girl: *Finger print.* (6-and 7-year-old-boys; 3½-year-old-girl, Microscopes; Interpreter)

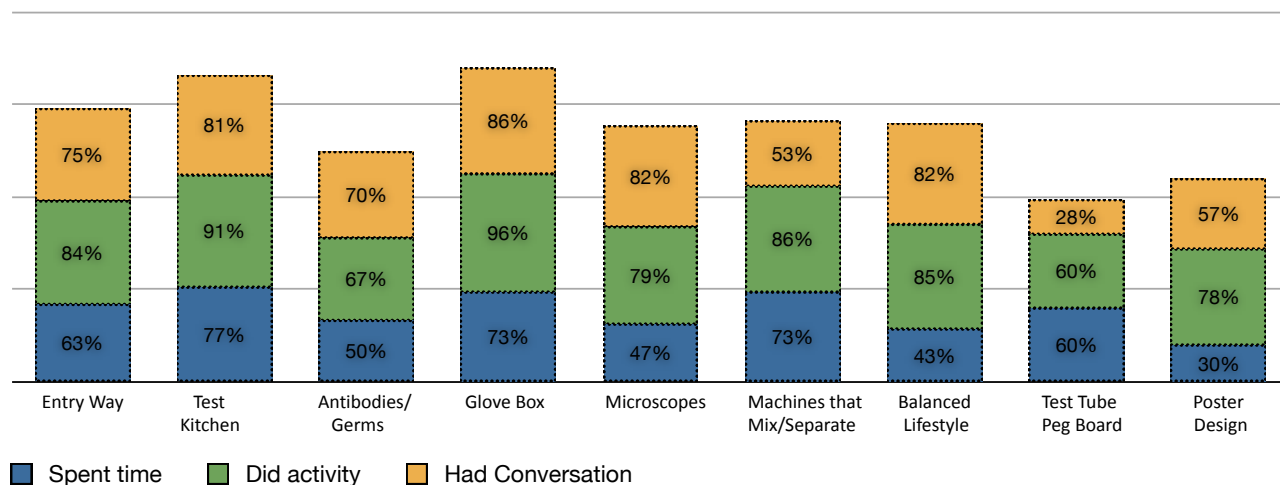
Adult female: *Need some onion. What's this?* Girl: *Potato* (places magnet on cookie sheet). Adult female: *All goes in oven?* (4-year-old-girl, Poster Design; Player, Interpreter)

Adult male: *Let's try this.* Puts all materials in bin, starts fresh. Girl shows veg. Adult male shows girl "rest": *See how it lights up.* Girl looking to place puzzle pieces, watching Adult male: *That was a snack. Look it lit up. Now, exercise.* Girl: *Yes,* and places piece. Body lights up. (4-year-old-girl, Balanced Lifestyle; Player, Interpreter)

HOW DO FAMILIES' EXPERIENCES IN SCIENCE + YOU INFLUENCE THEIR POST-VISIT INTENTIONS AND ACTIONS?

Self-report data from families who completed the online survey (n=30) indicates good overall usage of all components. Online survey respondents were a mix of families who were agreed to be observed as they visited the exhibit and those who were recruited as they exited the exhibit. Components that had the highest percentage of visitors spending time, Test Kitchen (77%), Glove Box (73%), and Machines that Mix/Separate (73%), also had the highest percentage of visitors doing the component activities, Test Kitchen (91%), Glove Box (96%), and Machines that Mix/Separate (85%). Figure 6 provides a breakdown of percentages of visitors who said they spent time at, did an activity, and had a conversation at *Science + You* components.

Figure 6: Percentage of visitors utilizing components and type of use



Interestingly, components that had the least percentage of visitors spending time—Microscopes (47%) and Balanced Lifestyles (43%)—had quite a high percentage of visitors doing the component activities, 79% and 85% respectively *and* having conversations, 82% at both components. This finding reflects the hands-on/minds-on nature of these to activities and the opportunities each provides for visitors to work together or talk through the concepts and challenges presented to them. It also supports the notion that observational data may have missed these instances due to the limited 15 minute duration of observation combined with the location of these components within the KCM exhibit layout.

Respondents’ descriptions of what their children did in each component reflect the ease with which activities are used and that component concepts are clearly received.

Entry Way

My son stomped on the colored pads repeatedly, put on a lab coat, and used the sink to pretend to wash his hands.

Pushed the shower button and felt the air coming out of the vent above.

We stepped on the "shoe cleaning" mats and used the hand washer.

Test Kitchen

"Cooked" healthy dishes.

Made soup while using the food groups.

Talked about healthy foods.

Antibodies/Germs

Collected all germs and then dropped them onto the antibody/white blood cell to fight disease.

The activity where you move the germs and antibodies to the white blood cells.

Glove Box

He enjoyed measuring the stuff that was inside the box and pouring it into the other measuring tubes.

They played with each of the glove boxes and practiced using the tools.

[They] put their hands in the gloves and poured the beads into the beakers.

Microscopes

We looked at our hands. I was surprised at how bad all of our cuticles looked. They were looking at the lines in their skin, and even stretched their shirt to look at the letters. Also, the variety of bug parts.

[We] looked at all the different items and slides as well as our own hair, clothes, hands, etc

They were amazed that little things could look so large.

Balanced Lifestyle

Put the puzzle pieces in the body for examples of healthy lifestyle.

Activated the speaking component by completing the exercise.

Poster Design

We did this together and I basically found the different pictures to put on the metal piece and we talked about what we did while in the exhibit.

We loved this to review all they had seen and done while there.

Four components were cited as challenging for some respondents:

Antibodies/Germs

The first time we did this activity we didn't realize the wheels on the rails went up and down, so we couldn't figure out how to make it work. After a few minutes we came back to it and then I realized it went up and down. The actual components were a little stiff and tough for my 4 year old to move on his own at first. This was slightly improved on our second visit. I did have to show another mother how to work the exhibit. Both times my son had a good time picking up balls from the bottom of the exhibit and moving them up into the cups.

Glove Box

We both took turns putting our hands in the gloves and moving the dots into the containers. We had a little trouble using some of the containers because they were a little too big for the space. The large measuring cups were too big to tip into the vials effectively. If the box itself was a little taller that would make things easier.

Microscopes

They were looking at the slides...but it was kind of hard to figure out what they were...maybe include more interesting things that they can actually see...they were using their hands etc...

Machines that Mix/Separate

He moved some of the items around to mix and separate them. He spent more time with the magnetic ones, but was a bit impatient in trying to reach the goal (fully mixing or separating each).

Flipping over the separate balls and stirred the gold flakes, pressed the button to centrifuge the balls and vibrate them.

Used the magnet to move the colored discs. Pressed the button that spun to separate.

Test Tube Peg Board

My 12 month old was more interested in this one because she likes to move things around and fit them into holes. It's similar to the pegs in the transportation room, so she had great fun with this area.

Made patterns and moved them around.

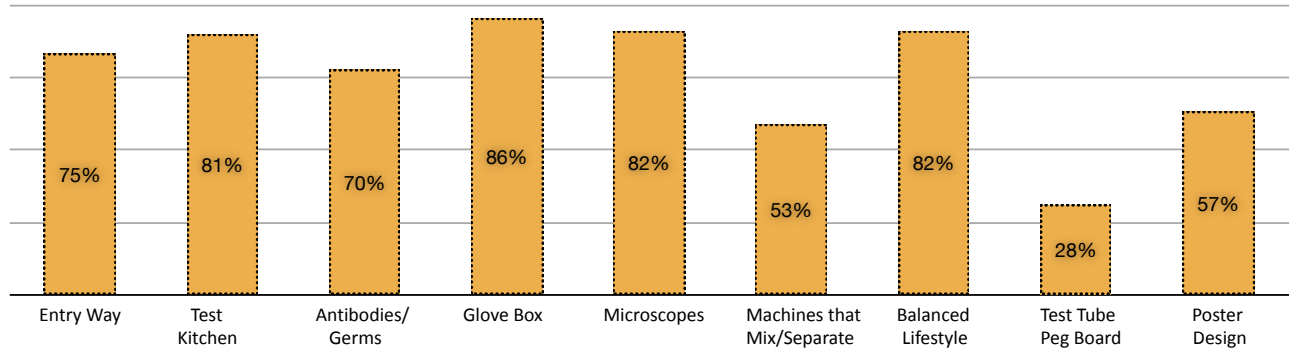
They liked making new shapes and moving the color pegs.

Balanced Lifestyles

He moved some of the tiles into the various spaces. It was helpful that they were different shapes, but he wasn't quite sure why some of the items weren't acceptable as a meal or a healthy snack.

Respondents reported a high percentage of conversations sparked during the time spent in nearly every component. Figure 7 provides a breakdown of that data. Clearly, *Science + You* provides an environment for families to discuss how scientists investigate, experiment, and understand how science and scientists approach and solve problems related to human health and nutrition!

Figure 7: Percentage of self-reported conversations by component



Respondents' descriptions of the conversations sparked while visiting specific *Science + You* components fall into three categories: 1) supportive of component concepts; 2) activity instruction/description; and 3) connecting the component activity to everyday life). Comments related to component concepts include explaining actions and relating them to *Science + You* concepts, challenges, processes, and results. For example:

Entry Way

We talked about removing the germs from our clothes before we enter the "lab" just like scientists do.

I told him about washing his hands and that he should wash them as long as it takes to sing the song.

Test Kitchen

Compared what foods we ate that are healthy

My three year old wanted to know what qualified as protein while my six year old asked if you need three different food groups to make a healthy soup like the exhibit indicated.

We did talk about some of the elements that go into a healthy meal. He's very into deciding whether or not things are healthy right now.

Glove Box

We discussed how you can use different test tubes to measure things.

Discussed why scientists have to use gloves and why we use them too.

We talked about how hard it was to fill with gloves, the different sizes of containers, etc.

Microscopes

Talked about how items look different when magnified.

[We] shared ideas of other materials to look at.

Balanced Lifestyle

Talked about the fact that healthy lifestyle makes for a complete and healthy body.

Poster Design

We just talked about what was going on and what we looked at while playing in the exhibit.

Machines that Mix/Separate

We just talked about what the machines did.

We discussed why separators and mixers are needed.

Test Tube Peg Board

Talked about shapes and colors.

Comments that related to instruction/description consist of explaining how to do an activity, providing encouragement, or asking guiding questions. For example:

Entry Way

He asked about why the floor was changing and I explained that there was liquid in the tiles that moved when his weight pushed down on it.

Test Kitchen

My son was giving me what he prepared. I asked him what he was cooking.

I tried to talk about healthy foods and how you need to combine different things from different groups.

Helped them to identify foods.

Antibodies/Germs

I told him what the exhibit was about.

Glove Box

I helped him put the three test tubes and told him that the funnel will help him fill the test tubes faster.

Asking him how he could pick up beads and where he could transfer it.

Encouraging her not to give up.

Overall description of how to use the glove box.

Microscopes

How to do it; what the items were.

Balanced Lifestyle

What each of the items were; what's a healthy snack versus one we have only occasionally.

What components belong [in] what space and if it was exercise or food.

Description of shapes and where they fit.

Machines that Mix/Separate

Why some balls were separated. What caused this.

I asked them if they noticed how the items were separating

Test Tube Peg Board

Explained to them what to do there.

We talked about the different shapes and why they were making them.

Perhaps most supportive of the useful nature of the *Science + You* components and messages were the conversations reflecting the ease with which exhibit concepts and activities were connected to everyday life. For example:

Entry Way

We discussed which regular household items we use that are similar to the scientists' tools.

Test Kitchen

They said that is not how their mother makes soup.

Antibodies/Germs

We talked about how germs make you sick and how antibodies like those in the shots he gets at the doctor prevent you from getting sick.

We talked about the vitamins we take, and the healthy foods that we eat, as well as personal hygiene, which help us fight germs.

I told them when the purple balls cascaded down it was like someone sneezing on them and spreading a lot of germs.

Glove Box

They mentioned the different shapes to fill, we talked about the beakers, and general containers found around the house.

Balanced Lifestyles

We talked about why certain items didn't work as a meal or a snack. He will often ask for a sandwich or soup for breakfast, so he had some trouble understanding why some options weren't allowed.

We just finished a nutrition unit and we reviewed what we had talked about.

The data also indicates that the *Science + You* experiences continued to prompt conversations among 33% of respondents beyond the museum walls. Those conversations included:

He told his sister a few days later how we played with the test tubes and he got to put the gloves on and pour the stuff from one test tube into another.

He asked for a healthy snack in the car, reminded me that his sister had gotten shots to make her healthy, and asked if we could cook something when we got home.

Talking about a healthy lifestyle, measuring and food mixing

They told their dad about making a pattern, moving purple balls and watching them fall down, filling containers and one son wants a mat like the one in the exhibit.

Talked of how we had just studied these and then got to see the exhibit

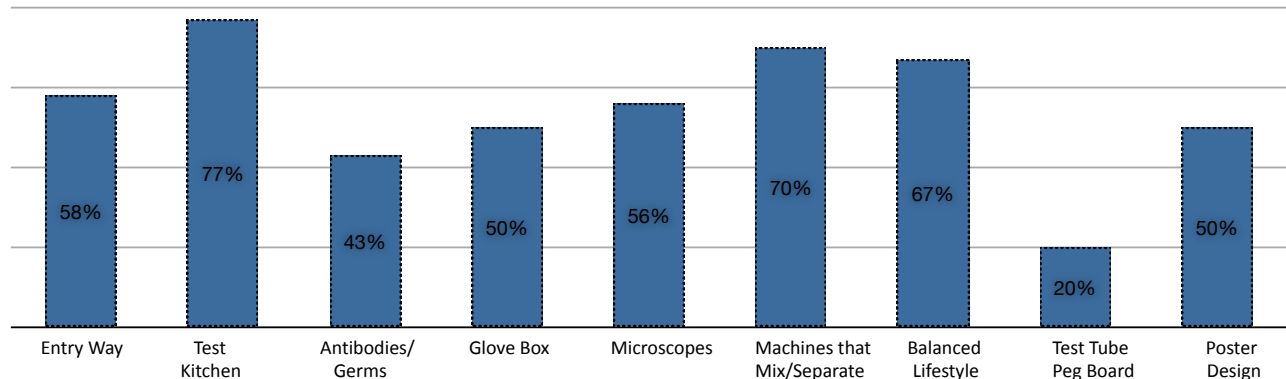
We told Daddy about the microscopes and the gloves exhibit

She liked all the colorful pictures

We always talk about what our favorite areas were and where we will go next time.

In addition to sharing conversations, respondents also share whether and how component signage was helpful for sparking conversations and/or answer questions. The data clearly indicates that the signage and text found in and around exhibit components was helpful to respondents and their children. Figure 8 shows a breakdown of the percentage of respondents who indicated component signage was helpful.

Figure 8: Percentage of self-reported helpfulness of signage by component



With two exceptions—Antibodies/Germs and Test Tube Peg Board—at least half to three-quarters of respondents found helpful text at each exhibit component. Examples of how signage was helpful fall into two categories: 1) supporting component concepts; and 2) activity instruction/description. Comments related to supporting component concepts included:

Entry Way

Not bringing outside dirt into the lab.

Explaining why scientists need to use shower to prepare for work.

Test Kitchen

Pictures of what goes in each food group.

Glove Box

I read to my six year old that it said scientists use gloves to protect them from substances.

Balanced Lifestyle

We discussed the examples of each item.

Comments related to activity instruction/description included:

Test Kitchen

Honestly the helpful part was just explaining how to use the exhibit. My son is four so he's not as interested in the nitty gritty science at this point so he tends to ask questions about why certain foods are healthy and why others are not.

The instruction helped by six year old while my three year old understood that

she had to pick one "picture" from at least three of the lists

The "prompting ideas" features.

Glove Box

The directions were helpful to my kids.

Describing some questions/activities.

Explanation of glove boxes.

Microscopes

I was able to identify the bug wings etc.

The examples of what to look at--we also looked at paper money under the microscope, which was pretty interesting.

The slide titles.

Balanced Lifestyle

The signage giving options of where each item belonged.

Prompts of what to use.

Pictures of the food.

Poster Design

The instructions of how to use the area.

Machines that Mix/Separate

Explaining purpose of the different items.

Description of the different mixing techniques.

Finally, a few respondent comments reflected signage being helpful in connecting concepts and information to everyday life, in sparking conversation and imagination.

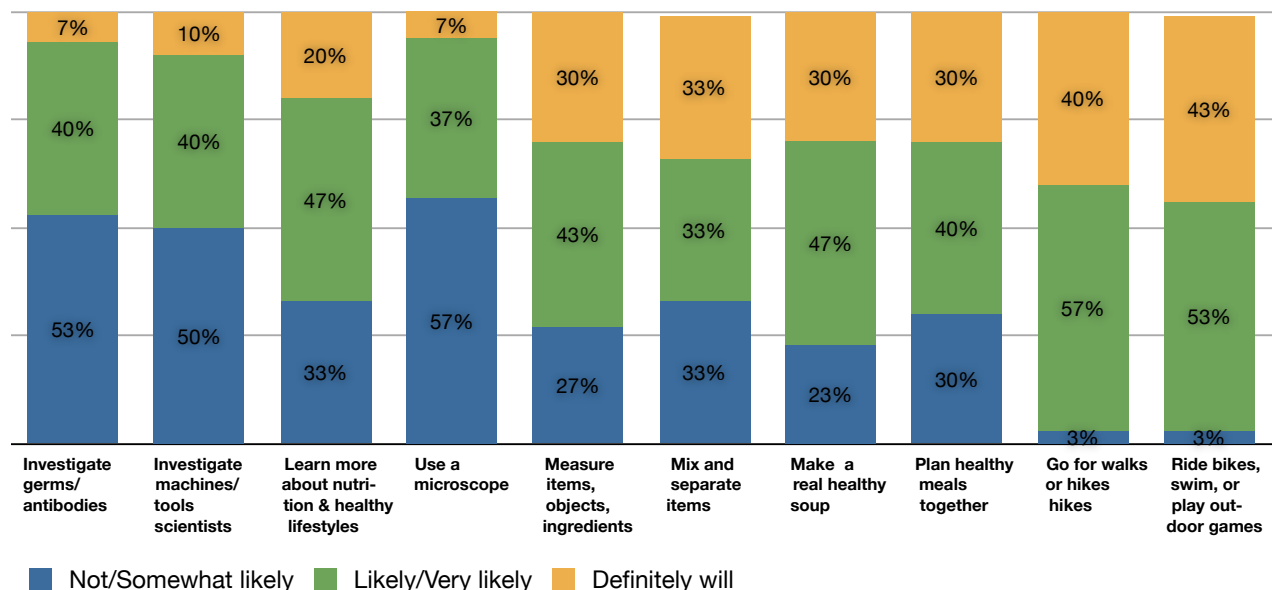
The information about the separators (sieves) and the food combinations were conversation starters.

You can read it to your kids to give them ideas of how to use their imagination. My 2 & 4 [year olds] were making up their own [sic] and saying it was medicines.

We discussed how we use separators and mixers at home.

Respondents' intentions for extending and supporting their *Science + You* experience were quite promising. Figure 9 provides a breakdown of responses for the likelihood of 10 follow-up activities featured in *Science + You*, clearly indicating that the exhibit messages and actions made a positive impression on respondents.

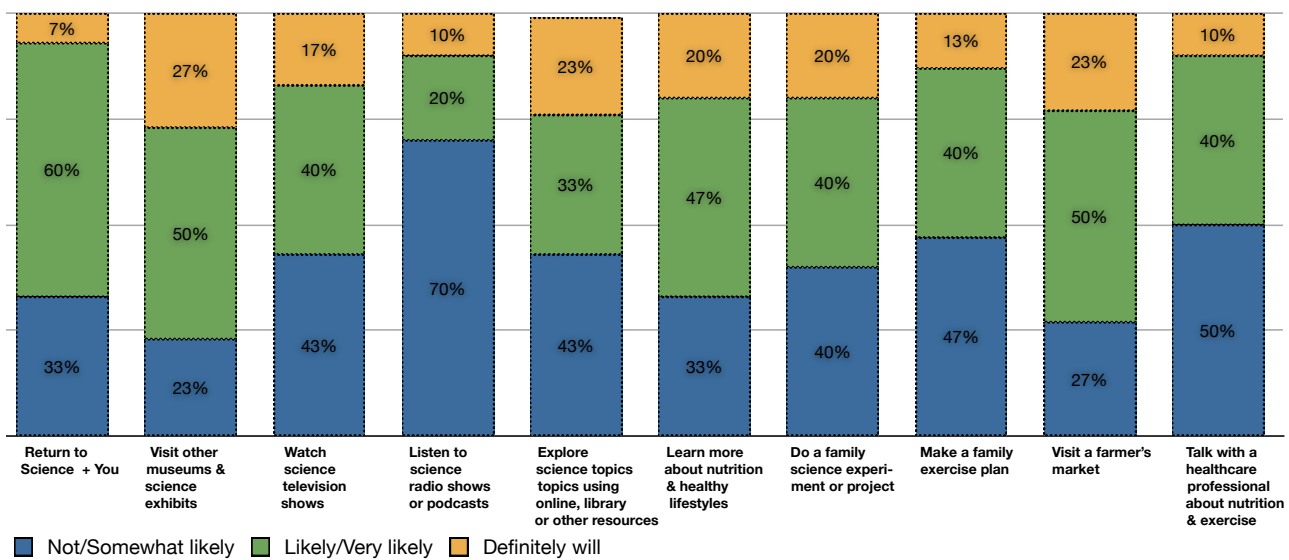
Figure 9: Percentage of respondents likelihood to do or attempt follow up activities featured in Science + You



As might be expected, the activities that are the most accessible and affordable—going for walks, riding bikes, making a real healthy soup, and planning healthy meals—are the most likely to be accomplished. Conversely, those activities perceived to be less accessible—use a microscope, investigate machines/tools scientists’ use—received the lowest percentage of likelihood. Based on the everyday connections people have with antibodies and germs, it is a bit surprising that learning more about that topic fell into the least likelihood category. On the other, while fascinated by the component, several respondents mentioned it was challenging for their children to physically manipulate the activity and this may account for perceived difficulty or complexity.

The likelihood of respondents following up with the ten additional activities related but not directly featured in *Science + You* were also positive. For example, 67% (n=20) said they would or were likely to revisit the *Science + You* exhibit; 77% (n=23) said they would likely visit other science museums and science-related exhibits; and 73% (n=22) said they would like visit a farmer’s market. Figure 10 provides a breakdown of responses received for follow-up activities not featured in *Science + You*.

Figure 10: Percentage of respondents likelihood to do or attempt follow up activities in support of their Science + You experience



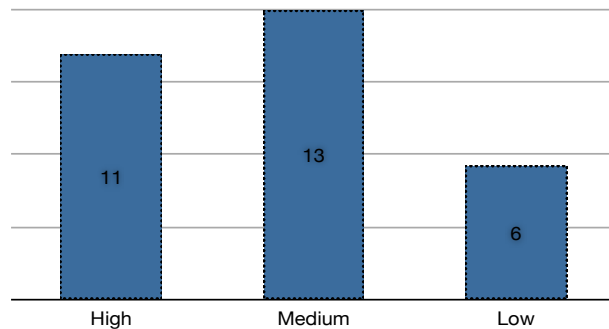
Being likely or very likely to follow-up an informal learning like *Science + You* with featured or related activities shows the positive influence of the exhibition for building understanding and interest that goes beyond the museum walls.

HOW AND TO WHAT DEGREE DOES SCIENCE + YOU IMMEDIATELY RESONATE WITH CHILDREN?

To gain insight into how children experience *Science + You*, digital photographs were taken of 100 collages done and posted by children as part of the Poster Design component activity. Collage scores were quite positive, indicating that the concepts and activities resonated with children to the extent that they were able to reflect on their exhibit experiences in some amount of detail.

A random sample of 30 photos was selected and scored as High, Medium, or Low. Photos, graphics and sentence strips were grouped together by concept—overarching and individual component; each concept receives one point. These scores provide a simple structure for analysis of the breadth of understanding of exhibit concepts. Scores do not reflect the depth of understanding, which is evident in nearly every example, regardless of score, by the multiple representations for each concept category (overarching or individual component). Figure 11 provides a breakdown of collage scores.


Figure 11: Overall children’s collage scores




Collages scored “High” reflected five or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures. Examples include:

High Score Collage 1		
Key Concept	Evidence	Points
Scientists use technology and machines to create and innovate	Photo; “Scientist use tools to solve problems” text	1
Individual Components/Concepts		
Component	Evidence	Points
Balanced Lifestyle	Photo; dancing	1
Test Kitchen	bread & butter; onions; cheese; grains/pasta	
Machines that Stir	Glitter in water, scientist	1
Glove Boxes	Pouring	1
Antibodies/Germs	Antibody catching germ, exhibit activity photo	1
Entry Way	Clean shoes photo	1
TOTAL		6


High Score Collage 2		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Balanced Lifestyle	Reading, snack piece	1
Test Kitchen	Soup pot, potatoes, grains, orange; water	1
Machines that Mix/Separate	Separator	1
Glove Boxes		1
Antibodies/Germs	Antibody photo	1
Entry Way	Photo (washing hands)	1
Test Tube Peg Board	“I made a pattern” text	1
TOTAL		7


<p>High Score</p> <p>Collage 3</p> 		
Key Concept	Evidence	Points
Scientists use technology and machines to create and innovate.	"Scientists use tools to solve problems" text	2
Science shows us that people need balanced nutrition, exercise and rest to stay healthy.	"A balanced diet can help people stay healthy."	
Individual Components/Concepts		
Component	Evidence	Points
Microscopes	"I used a microscope to see objects up close." "Scientists use microscopes to see objects they can't see with their own eyes."	1
Machines that Mix/Separate	"V-tube"; "magnet stirrer"	1
Glove Boxes	"I used a glove box."	1
Antibodies/Germs	"I helped antibodies remove germs."	1
Entry Way	"Hand washing is the most important step in staying healthy."	1
TOTAL		7


<p>High Score</p> <p>Collage 4</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Grapes & nuts; grains (2); legumes, squash, watermelons;	1
Microscopes		1
Machines that Mix/Separate	Photo: woman in lab coat using V-tube; woman in lab coat using centrifuge.	1
Test Tube Peg Board	Text: Test tubes	1
Balanced Lifestyle	"Each meal should contain 3 out of the 5 food groups (meats/beans, vegetables, fruit, grains, dairy)" "Each meal should contain items from 3 different food groups." Puzzle pieces: rest, coloring, watching t.v., soup bowl, beans, eggs	1
Entry Way	"Scientists need a clean environment to work."	1
TOTAL		6

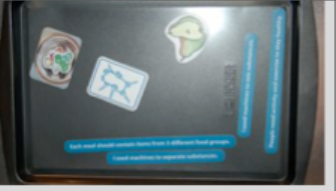
Collage 4 provides good example of depth as well as breadth of understanding. For example, there are four items represented for Test Kitchen and eight items associated with Balanced Lifestyle. The multiple representations suggest a depth of knowledge gained from spending time at these two components and either finding familiar things to connect with or discovering new things that this child could make sense of and found meaningful.

Just under half of collages were scored as "Medium" for reflected three or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures. Examples include:

<p>Medium Score</p> <p>Collage 5</p> 		
Key Concept	Evidence	Points
Scientists conduct research to discover how to improve human health	"Scientists conduct research to discover how to improve human health."	1
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Grains, cauliflower, pasta, bread, Photo: plate with chicken leg, carrot, water.	1
Microscopes	"I used a microscope to see objects up close." (2); "Scientists use microscopes to see objects they can't see with their own eyes."; Slide graphic	1
Balanced Lifestyles	Puzzle pieces: girls dancing, fish and greens.	1
TOTAL		4

<p>Medium Score</p> <p>Collage 7</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Cottage cheese, corn, orange, shrimp, grapes & nuts, rice.	1
Antibody/Germs	Germ graphic	1
Balanced Lifestyle	"People need a balanced lifestyle to stay healthy."; puzzle pieces: carrot snack, veggie snack, playing checkers, sweeping, reading.	1
TOTAL		3


<p>Medium Score</p> <p>Collage 6</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Entry Way	"Scientists need clean environments to work."	1
Test Kitchen	Photo: soup pot; pineapple, rice, grapes & nuts; peas, cottage cheese; "Each meal should contain items from 3 different food groups." "Each meal should contain 3 out of the 5 food groups (meat/beans, vegetables, fruit, grains, dairy)."	1
Machines that Mix/Separate	"I used machines to separate substances." "Scientists use machines to mix substances." "Scientists use machines to separate substances."	1
Balanced Lifestyle	"People need a balanced lifestyle to stay healthy." Puzzle pieces: cookies, sweeping, reading.	1
TOTAL		4


<p>Medium Score</p> <p>Collage 8</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Photo of veggies in soup bowl.	1
Machines that Mix/Separate	"I used machines to separate substances"; "I used machines to mix substances"	1
Antibody/Germs	Antibody graphic	1
TOTAL		3


Collages 5 and 6 reflect a level of depth of understanding not accounted for in scoring rubric. Collage 5 provides eight representations for the Test Kitchen component and three


representations for Microscopes. The use of sentence strips to represent Microscopes suggests a real connection with the component concepts. Collage 6 shows even more depth as the graphic representations for Test Kitchen—fruit, cottage cheese, and rice—also reflect both sentence strips, in particular, “Each meal should contain 3 out of the 5 food groups (meat/beans, vegetables, fruit, grains, dairy).”

Collages scored “Low” reflected at least one key exhibit concepts/big ideas and/or components visited through a combination of words and pictures. Examples include:

<p>Low Score Collage 9</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Soup pot, cabbage, sweet potato	1
Balanced Lifestyles	Puzzle piece: children playing.	1
TOTAL		2

<p>Low Score Collage 10</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Pasta, grains, chicken leg; "Science shows us that people need balanced nutrition to stay healthy."	1
Balanced Lifestyles	Puzzle pieces: soup, veggie snack, children sweeping, coloring.	1
TOTAL		2

<p>Low Score Collage 11</p> 		
Key Concept	Evidence	Points
N/A		
Individual Components/Concepts		
Component	Evidence	Points
Test Kitchen	Apple, banana, orange; beans, sweet potato, broccoli, spinach, grains, eggs, onions, potatoes, chicken leg, pork chop, tortillas, tomatoes	1
TOTAL		1

<p>Low Score Collage 12</p> 		
Key Concept	Evidence	Points
Science shows us that people need balanced nutrition, exercise and rest to stay healthy.	"A balanced diet can help people stay healthy."	1
Individual Components/Concepts		
Component	Evidence	Points
N/A		0
TOTAL		1

In the Low score category, collages 10 and 11 provide examples of depth. Similar to Collage 6, the graphic representations for Test Kitchen in collage 10 illustrate the sentence strip. This suggests both understanding and visualization of the concept, “Science shows us that people need balanced nutrition to stay healthy.” Collage 10 reflects the wide range of item, 14 in all, that resonated with this child from spending time in the Test Kitchen.

CONCLUSIONS

Findings from visitor observations and self-reported visitor feedback provide a very positive and rich picture of the connections people make with the *Science + You* exhibit concepts and components. Online survey data indicates that a majority of the 30 respondents were overall very or extremely satisfied with their *Science + You* experience and described the exhibit reflected the fun, interactive, informative and playful nature of components. Roughly one-fifth of respondents described the exhibit as supportive of science learning, the work scientists do and how they do it, and connecting science to everyday life.

Interactions and engagement between and among observed groups was strong given the 15-minute observation time allotment. Engagement was seen most often between adults and children and varied in intensity from component to component. Observations of adults roles in these interactions were most often that of Interpreter—verbal scaffolding and reinforcement through cues and prompts—and Player—adult plays independently or with child, either may initiate play. The top three components for extensive engagement were the Test Kitchen, Glove Box, and Machines that Mix/Separate, which is not surprising since all of these lend themselves to extensive engagement. Examples of the types of interactions, adult roles, and levels of engagement are found in the observation narratives, provide a clear snapshot of families working together at activities, observing one another, and having conversations to explain processes or results, and/or making connections with everyday life, other components, or exhibit concepts.

Self-report data from families who completed the online survey further supports good overall usage of all components. Mirroring the observation data, survey respondents most often visited the Test Kitchen, Glove Box, and Machines that Mix/Separate components. These same components were also ones where respondents indicated they did the activity available. Interestingly, the components that had the lowest percentage of visitors spending time—Microscopes and Balanced Lifestyles—both were areas that received the highest percentage of reported activities *and* having conversations, 82% at both components. This finding reflects the hands-on/minds-on nature of these to activities and the opportunities each provides for visitors to work together or talk through the concepts and challenges presented to them.

Respondents' descriptions of how they looked together at their cuticles under the microscopes and were surprised by how bad they looked or talking about the magnetic pieces in Poster Design while make a poster, or making patterns together at Test Tube Peg Board reflect the attractiveness and ease with which activities are used and that component concepts are clearly received. The challenges that online survey respondents shared were minimal and fairly easy to address. In a couple of instances, simply trying again or getting assistance from staff solved the problem.

Examples of the usefulness of signage were also found in both observational and self-report data. With two exceptions—Antibodies/Germs and Test Tube Peg Board—at least half to three-quarters of online survey respondents said they found helpful text at each exhibit component for supporting component concepts, doing the activity, and sparking conversations. Additionally, conversations during and after visiting *Science + You* suggest that exhibit messages, concepts, and activities are relevant to adults and children’s every day lives. Respondents’ intentions to try or do 20 related or feature follow-up activities were quite positive. Of the 10 activities featured in the exhibit, the activities that are the most accessible and affordable—going for walks, riding bikes, making a real healthy soup, and planning healthy meals—are the most likely to be accomplished. Conversely, those activities perceived to be less accessible—use a microscope, investigate machines/tools scientists’ use—received the lowest percentage of likelihood. This may also be due to the very young age of most respondents’ children. The likelihood of respondents following up with the ten additional activities related but not directly featured in *Science + You* were also positive, with roughly two-thirds of online survey respondents indicating they would or were likely to revisit the *Science + You* exhibit.

Finally, the scores of children’s magnet collages suggest that *Science + You* resonates with children. The breadth of reflections signifies the range of concepts taken in during a visit to the exhibit. Depth of exhibit concepts was seen in the complexity of photos and graphics to illustrate sentence strips of specific components.

APPENDICES:

APPENDIX A: OBSERVATION INSTRUMENT

APPENDIX B: TRAINING PROTOCOL

APPENDIX C: ONLINE SURVEY

APPENDIX D: COLLAGE SCORING RUBRIC

Date: _____	<input type="checkbox"/> Weekday	<input type="checkbox"/> Weekend	Time In: _____	Time Out: _____	Group # _____
Visitor Interactions:	CC = Child with Child CA = Child with Adult CO = Child alone		CS = Child with Staff AS = Adult with Staff AA = Adult with Adult		Type of Interaction
			A = Does activity O = Observes C = Conversation: E = Explains functions M = Makes connections		Obsvr: _____
Engagement Scale: 3 = Moderate (explores component fairly thoroughly. Views elements with interest; appears engaged and focused; seems to listen fairly closely; picks up objects, begins to play or engage in conversation related to the component, may point out certain elements.) 4 = Extensive (explores component in depth. Views elements intently; extremely engaged and focused; plays intently; engages in fairly extended conversation with others about the area/component, or points out many aspects of the component/area.					

Caregiver Roles	Observations	Visitor Codes
<input type="checkbox"/> <i>Player</i> (Adult plays independently or with child, either may initiate play). <input type="checkbox"/> <i>Facilitator</i> (Non-verbal scaffolding and reinforcement through cues and prompts). <input type="checkbox"/> <i>Interpreter</i> (Verbal scaffolding and reinforcement through cues and prompts). <input type="checkbox"/> <i>Supervisor</i> (Concerned with child's safety and interactions with others; direction). <input type="checkbox"/> <i>Student of child</i> (Observes child, makes suggestions). <input type="checkbox"/> <i>Co-learner</i> (Works collaboratively to solve a problem, relying in part on child's thinking to stimulate adult's thinking; thru play adult is reminded of concepts, skills).	<div style="background-color: #cccccc; padding: 2px;">Components Visited</div> <input type="checkbox"/> Entry Way <input type="checkbox"/> Test Kitchen <input type="checkbox"/> Antibodies/Germes <input type="checkbox"/> Glove Box <input type="checkbox"/> Machines that Mix/Separate <input type="checkbox"/> Microscopes <input type="checkbox"/> Test Tube Peg Board <input type="checkbox"/> Balanced Lifestyle <input type="checkbox"/> Poster Design	GROUP INFO: NO CARETAKERS Relationship: <input type="checkbox"/> Parent <input type="checkbox"/> Grandparent <input type="checkbox"/> Aunt/Uncle <input type="checkbox"/> Cousin <input type="checkbox"/> Older sibling # of Adult (M) ___ (F) ___ # of Kids (b) ___ (g) ___ Kids Ages: _____ Prior visit? <input type="checkbox"/> Yes <input type="checkbox"/> No Would you be willing to complete a short follow up survey on line in the next 24-48 hours? <input type="checkbox"/> Yes <input type="checkbox"/> No Email: _____

**KOHL CHILDREN'S MUSEUM
SCIENCE + YOU EVALUATION**

OBSERVATION PROTOCOL

TARGET VISITOR: Adults with children 3-8 years old
TIMEFRAME: September 24 – October 5, 2011

GOAL: 30 completed observations

Overview:

- Observations will be done with a purposive sample of 30 groups of adults with children.
 - Purposive = data collectors will select groups that appear to be representative of the visiting population and try to ensure that a range from one extreme to the other is included, i.e. a balance of children with single adults with those accompanied by adult couples; senior adults and children; 3-5 year olds and 6-8 year olds; ethnically/racial diversity by sight where possible.
- Staff will approach adult visitors in the Science + You exhibit, explain evaluation in progress and ask their permission to observe them as they move through the exhibit. With the visitors verbal permission:
 - Visitor demographics (relationship, ages, prior visitation to exhibit) will be recorded.
 - Request visitor's participation in follow up online survey and collect email address.
 - Visitors invited to enjoy the exhibit; staff follows recording observations in a running narrative.
- Observations will last a minimum of 15 minutes, maximum of 20 minutes.
- At the conclusion of the observation, staff will review and clean up notes, store completed observations, and prepare for the next observation.

MATERIALS

- Observation sheets, clipboard, pen or pencil

INSTRUCTIONS

- Complete date, day, group #, and "Obsvr" (data collector initials) on Observation Sheet

Date: _____	<input type="checkbox"/> Weekday	<input type="checkbox"/> Weekend	Time In: _____	Time Out: _____	Group # _____
					Obsvr: _____

- Review Interaction Codes and Engagement Scale

Visitor Interactions:

CC = Child with Child CS= Child with Staff
CA = Child with Adult AS= Adult with Staff
CO = Child alone AA= Adult with Adult

Type of Interaction

A = Does activity
O = Observes
C = Conversation: E= Explains functions
M= Makes connections

Engagement Scale:

3 = Moderate (explores component fairly thoroughly. Views elements with interest; appears engaged and focused; seems to listen fairly closely; picks up objects, begins to play or engage in conversation related to the component, may point out certain elements.)

4 = Extensive (explores component in depth. Views elements intently; extremely engaged and focused; plays intently; engages in fairly extended conversation with others about the area/component, or points out many aspects of the component/area.)

- Review Caregiver Roles

- Player* (Adult plays independently or with child, either may initiate play).
- Facilitator* (Non-verbal scaffolding and reinforcement through cues and prompts).
- Interpreter* (Verbal scaffolding and reinforcement through cues and prompts).
- Supervisor* (Concerned with child's safety and interactions with others).
- Student of child* (Observes child, makes suggestions, "teaches" parent).
- Co-learner* (Works collaboratively to solve a problem, relying in part on child's thinking to stimulate adult's thinking; thru play adult is reminded of concepts, skills).

- Review Components Visited

- Entry Way
- Test Kitchen
- Antibodies/Germs
- Glove Box
- Machines that Mix/Separate **Intercept**
- Microscopes
- Test Tube Peg Board
- Balanced Lifestyle
- Poster Design

- Approach adult with children just outside exhibit, prior to entering. Smile and say:

"Hello. We're conducting an evaluation of this exhibit and are interested in how visitors are use it. Would you mind if I tag along and take some notes?"

If hesitates, "It's unobtrusive. I just observe and take notes. Most people forget I'm even there."

If no, "Okay, enjoy the exhibit."

If yes, "Great! I have a couple of questions for you before you go in."

➔ Complete **GROUP INFO** section in upper right corner of Observation Sheet, including:

Would you be willing to complete a short follow up survey on line in the next 24-48 hours?

Observe:

- Move with group into exhibit
- Adult approached will serve as the observation target
 - If group splits, observer will follow adult
 - If adult leaves the exhibit (bathroom break, phone call), observation ends.
 - Observe for no less than 5 minutes, no more than 20 minutes.
- Record interactions in a running narrative with relevant conversation:

F and b working together at Balanced Lifestyles. F says "where does this go?" b takes piece "Here. No, here!" Gets wrong buzzer. F "try again" b puts piece in original place and gets it right b "I did it!"

- Relevant conversation include:

- Connections between activity and everyday life, past/present/future experience
- Instruction or direction on how to do activity; teaching or learning together.

- Sharing the experience, i.e. “This is fun” or “I want to do it again”

Record conversations as best you can. If the conversation includes other group members, record those, too, not just those that involve the target adult.

F and b working together at Balanced Lifestyles. F says “where does this go?” b takes piece “Here. No, here!” Gets wrong buzzer. F “try again” b puts piece in original place and gets it right b “I did it!” M – “let’s see, where does this one go? It’s broccoli.” F – “you like broccoli.” b – “broccoli, yes. And carrots, too.”

If an adult or child from another group interacts with group you are observing, record as “another adult (or child) visitor.”

F and b working together at Balanced Lifestyles. F says “where does this go?” b takes piece “Here. No, here!” Gets wrong buzzer. F “try again” b puts piece in original place and gets it right b “I did it!” M – “let’s see, where does this one go? It’s broccoli.” F – “you like broccoli.” b – “broccoli, yes. And carrots, too.” Another adult at component tells her child “he likes broccoli, too.”

It’s okay to summarize when conversation is interesting but repetitive:

b & g go back and forth about who will go first. M steps in to resolve, “you’ll take turns.”

Coding:

- When possible, code observed interactions and engagement using codes on top portion of the observation sheet. Code in either the far right column or circled within narrative:

F and b work together at Balanced Lifestyles. F says “where does this go?” b takes piece “Here. No, here!” Gets wrong buzzer. F “try again” b puts piece in original place and gets it right b “I did it!”

CA, A4 (= Child with Adult, Does Activity Extensive Engagement)

- Check of Caregiver Roles and Components Visits as you observe if possible. Otherwise, do so when you review/clean-up notes.
 - Only check once, not each time role occurs or component is visited. Looking for “whether or not” rather than how many times.
- When observation concludes, review/clean-up observation sheet.
 - As you read, make sure Caretaker Roles and Components Visited are checked off.
 - Visitor Interactions and Engagement Scales are circled if within text.
 - Codes should appear for each instance they occur.
- Take a break
- Prepare and conduct next observation.

Analysis:

All data (complete and incomplete) should be sent to Blue Scarf Consulting by or before October 10, 2011.

What if...

- Adult and child separate. Follow the adult. They will reconnect with the child and we are as interested in their use of the exhibit as we are the child's and of the adult and child together. If this scenario occurs, pay attention to and make note of what the adult or child bring to one another when they reconnect. For example, a child might want to show the adult what they have been doing or direct them to a different component. The adult may share a connection from another component with one the child is at or wants to go to.
- Adult and child leave to use the bathroom. End observation...even if they come back later.
 - Exception: if there are two adults in the group and one adult leaves, you can switch to the second adult in the group. When the adult who left returns, **STAY WITH THE SECOND ADULT.**
- Child leaves exhibit and adult follows...then comes back later. Same as above.
- Adult and child leave within 3-5 minutes of entering the exhibit. Mark observation "Incomplete, left within 3-5 minutes." Forward to Blue Scarf with completed observations.
- Presentation in Poster Demo area. Continue observations noting interactions as best you can.
- If adult speaks to child in another language during observation, record your impression of what adult might have said. Or, when observation is concluded, you can ask adult what they said:

"I noticed you said something to your child in another language when you were (doing whatever they were doing). Can you tell me what you said?"

Thank you for making time to take our survey. The Kohl Children's Museum is very interested in your thoughts on the Science + You exhibit and looks forward to using the information you provide in this survey to inform the development of future exhibits.

The survey should take 5-10 minutes to complete. Should you have any problems with completing the survey please contact Pat Knable at pknable@kohlchildrensmuseum.org.

In appreciation for sharing your thoughts, you will have the option to participate in a raffle for a free annual Kohl Children's Museum membership. You will be prompted to opt into the raffle at the end of the survey. Keep or Delete?

Please complete this survey within 24 hours of receipt.

To begin the survey, click Next.

1. How many times have you visited the Science + You exhibit?
This was the first time
At least once before
Three or more times

2. Please indicate your overall level of satisfaction with the Science + You exhibit.
Not at all
Slightly
Somewhat
Very
Extremely

The next questions relate to what you did in the Science + You exhibit.

(For each component, picture and the following 4 questions)

3. Did your child/children spend time in (exhibit component)? Yes/No
4. Did your child/children (add specific name) activity in this component? Yes/No Describe what your child did,
5. Did you have conversations with your child/children at this exhibit?(if yes then next question – if no then move on)
6. What did you conversation entail?
7. Did you find the signage / text helpful for sparking or answering questions and conversation?
Yes/No/Don't remember
 - a. If yes, give an example of something you read in this component that was helpful.

We interested in how the Science + You exhibit supports learning outside the museum walls.

8. Did your visit to the Science + You exhibit spark any conversation on the way home or later in the day? Yes/No/Don't remember
- If yes, share what you recall from that conversation.
9. Thinking about what you did and saw and talked about in the Science + You exhibit, please read the list of follow up activities and indicate how likely your family is to do or attempt them in the next 2-3 months: (Select all)

(Possible activities) time frames

Return visit to the Science + You exhibit

Visiting science museums, zoos, botanical gardens, planetariums, and other science centers.

Watch children or adult science television shows.

Listen to science radio shows or podcasts.

Exploring science topics using resources in the local library, including books, the Internet, and other resources.

Investigate germs and antibodies

Investigate machines and tools scientists use.

Learn more about nutrition and healthy lifestyles

Do a family science experiment or project.

Use a microscope

Measure items, objects or ingredients

Mix and separate items

Make a real soup

Plan healthy meals together

Make a family exercise plan (go for walks or hikes, ride bicycles, swim, play outdoor games)

Visit a farmer's market

Talk with a healthcare professional about nutrition and exercise

10. How would you describe the Science + You exhibit to friend, family member, or co-worker?
Keep

11. Would you recommend Science + You to a friend, family member, or co-worker who has children 3-8 years old? Keep

12. What ages are the children you brought to see Science + You? (select all that apply) KEEP
0-2 years old

3-5 years old

6-8 years old

Over 8 years old

13. Are you a current member of the Kohl Children's Museum? Keep

14. Your zip code

15. Finally, we greatly appreciate the time you have taken to complete this survey. Would you be willing to further participate in a short follow up telephone interview in the next 10 days? Yes/No

a. If yes, please provide the following information:

i. When is the best time to call? (select all)

1. 9:00-12:00 Monday-Friday
2. 1:00-5:00 Monday-Friday
3. 5:00-9:00 Monday-Friday
4. 9:00-12:00 Saturday
5. 1:00-5:00 Saturday
6. Any of the above

ii. What is the best number to call for the time(s) you selected? (fill in)

16. Upon completion of this survey, you are eligible to enter a raffle for a free annual museum membership. If you would like to participate in the raffle, please enter your name and email address in the boxes below.

Science + You Children’s Collage Proposed Scoring Rubric

Scoring: One (1) point for each key exhibit concept or component represented.

<i>High Impact</i>	Collage reflects 5 or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures.
<i>Medium Impact</i>	Collage reflects 3 or more key exhibit concepts/big ideas and/or components visited through a combination of words and pictures.
<i>Low Impact</i>	Collage reflects 1 key exhibit concept or component visited through a combination of words and pictures.

Overall exhibit concepts/big ideas:

- Scientists conduct research to discover how to improve human health.
- Scientists use technology and machines to create and innovate.
- Scientists use many different resources to explore and solve problems.
- Science shows us that people need balanced nutrition, exercise and rest to stay healthy.

Individual components

Component	Key Concepts	Elements/Activities
Entry Way	Scientists need clean environments to work.	Clean shoes (floor gel pads); wash hands (handwashing sinks, singing); pretend shower; lab coat
Test Kitchen	People need balanced nutrition to stay healthy	Food puzzle pieces (pie-shaped and free-style); soup pots; big soup bowl; kitchen utensils(?).
Antibodies/Germs	Antibodies protect people from germs.	Sliding antibody to capture germ (photo of activity; antibody catching germ)
Glove Box	Scientists use glove boxes to contain substances and protect themselves.	Manipulating items in boxes with gloved hands; solve mathematical problems by measuring, pouring and sifting.
Machines that Stir	Scientists use machines to mix substances.	The magnet stirrer and V tube are machines that stir (stir water and glitter by hand; push button to see other substances stirred).
Machines that Separate	Scientists use machines to separate substances.	Centrifuge and sieve (push button centrifuge; manipulate sieve by hand; manipulate magnets with magnetic stick)
Microscopes	Scientists use microscopes to magnify objects for observaton and evaluation.	View objects (hands, sticks, leaves, grass; slides-insects, plant parts) flip book.
Test Tube Peg Board	Scientists look for patterns to solve problems.	Create patterns, sort by color, size.
Balanced Lifestyle	Science shows us that people need a balanced lifestyle.	Food and activity (play, rest) puzzle pieces
Poster Design	People communication through pictures and words.	???