

# READY, SET, SCHOOL

## Formative Evaluation: Ready, Set, School Exhibit Space



September 2013

Hardin Engelhardt  
Education and Evaluation Specialist  
[hengelhardt@marbleskidsmuseum.org](mailto:hengelhardt@marbleskidsmuseum.org)  
(919)857-1012

## **Introduction**

This report presents a project overview and findings from a formative evaluation of the Ready, Set, School prototype exhibit space at Marbles Kids Museum in Raleigh, NC. This study was conducted by museum staff in consultation with Randi Korn & Associates in May 2013. Because the exhibit is in its formative stages, it is not appropriate to fully measure outcomes. This summary gives some indication of the extent to which intended outcomes may be possible to achieve and explores exhibit design and installation related to these outcomes.

## **Project Overview and History**

In July 2012, Marbles Kids Museum was awarded funding from the Institute of Museum and Library Services to develop and implement a school readiness project entitled "Ready, Set, School." Research shows that two major predictors of early school success are familiarity with the routines, materials, practices and expectations of the classroom and parental involvement in education. The goal of this project is to provide opportunities for hands-on play in a "Ready, Set, School" exhibit space and participation in play-based, school-like programming and events so children and families can experience together what school will be like. These shared experiences in the exhibit and related programming and events are intended to spark curiosity and conversation about what to expect in school. Parent messaging and resources throughout the exhibit space will educate parents about child development and school readiness, as well as provide information on how to support school success at home.

In October 2012, Marbles Kids Museum conducted focus groups with parents of children age 3-5, preschool and early elementary educators, and staff from organizations involved with early childhood education in Wake County, NC. All three stakeholder groups held a common vision for the Ready, Set, School exhibit space and programming, including:

- A classroom-like, center-based school readiness exhibit space
- On-going readiness-focused programming for children in the exhibit space, in addition to more in-depth programming such as readiness camps, programs, and expanded events.
- School readiness programming for parents
- Exhibit, programming, and messaging that emphasizes that readiness includes all aspects of development: social, emotional, physical, and cognitive and that social and emotional components are of particular importance.

In December 2012, Marbles Kids Museum staff participated in a site visit to Boston Children's Museum's Countdown to Kindergarten exhibit and met with museum staff to discuss their school readiness initiatives. Marbles Kids Museum staff also visited exemplar preschool and Kindergarten classrooms across Wake County and consulted with the Wake County Public Schools Office of Early Learning and early childhood educators on classroom design.

## **Preliminary Exhibit Design**

Based on our research, focus group findings, and site visits, Marbles Kids Museum developed a prototype exhibit plan. The preliminary plan includes the following exhibit components which were evaluated through this formative evaluation. Exhibit components include:

- Literacy Station
- Math Station
- Science/Exploration Station
- Writing Station
- Sensory Table
- Light Table
- Circle Time Area

The Ready, Set, School exhibit components are intended to foster a range of early childhood skills that have been shown to lead to school success.

### ***Socio-Emotional Skills and Habits of Mind***

Educators, parents, and community partners reported that socio-emotional skills and habits of mind are the most important aspects of school readiness. Research supports this belief. Opportunities to foster social and emotional development and to educate parents about this area of child development will be incorporated all areas of the Ready, Set, School exhibit space.

Key social and emotional skills for young children include:

1. *Self and other awareness*: Understanding and identifying feelings; knowing when one's feelings shift; understanding the difference between thinking, feeling, and acting; understanding that one's actions have consequences in terms of others' feelings.
2. *Mood management*: Handling and managing difficult feelings; controlling impulses; handling anger constructively.
3. *Self-motivation*: Being able to set goals and persevere towards them with optimism and hope, even in the face of setbacks
4. *Empathy*: Being able to put yourself in someone else's shoes both cognitively and affectively; being able to take someone's perspective; being able to show you care
5. *Management of relationships*: Making friends, handling friendships; resolving conflicts; cooperating; collaborating.

Source: *Center on the Social and Emotional Foundations of Early Learning*, <http://csefel.vanderbilt.edu/>

Key habits of mind that support school success include:

1. *Persisting (Stick to it!)*: Persevering in a task through to completion; remaining focused. Looking for ways to reach your goal when stuck.
2. *Managing impulsivity (Take your time!)*: Thinking before acting; remaining calm, thoughtful, and deliberative.
3. *Listening with understanding and empathy (Understand others!)*: Devoting mental energy to another person's thoughts and ideas. Making an effort to perceive another's point of view and emotions.
4. *Thinking flexibly (Look at it another way!)*: Being able to change perspectives, generate alternatives, consider options.
5. *Thinking about thinking (Know your knowing!)*: Being aware of your own thoughts, strategies, feelings and actions, and their effect on others.

6. *Striving for accuracy (Check it again!)*: Always doing your best. Setting high standards. Checking and finding ways to improve constantly.
7. *Questioning and problem posing (How do you know?)*: Having a questioning attitude; knowing what data are needed and developing questioning strategies to produce those data. Finding problems to solve.
8. *Applying past knowledge to new situations (Use what you learn!)*: Accessing prior knowledge; transferring knowledge beyond the situation in which it was learned.
9. *Thinking and communicating with clarity and precision (Be clear!)*: Striving for accurate communication in both written and oral form; avoiding overgeneralizations, distortions, deletions, and exaggerations.
10. *Gather data through all senses (Use your natural pathways!)*: Pay attention to the world around you.
11. *Creating, imagining, and innovating (Try a different way!)*: Generating new and novel ideas, fluency, originality.
12. *Responding with wonderment and awe (Have fun figuring it out!)*: Finding the world awesome, mysterious, and being intrigued with phenomena and beauty.
13. *Taking responsible risks (Venture out!)*: Being adventuresome; living on the edge of one's competence. Try new things constantly.
14. *Finding humor (Laugh a little!)*: Finding the whimsical, incongruous, and unexpected. Being able to laugh at oneself.
15. *Thinking interdependently (Work together!)*: Being able to work in and learn from others in reciprocal situations. Team work.
16. *Remaining open to continuous learning (I have so much more to learn!)*: Having humility and pride when admitting we don't know; resisting complacency.

Source: *Habits of Mind*, <http://www.habitsofmind.org/>

### **Physical Skills**

Opportunities for children to use and build fine motor skills will be available throughout the Ready, Set, School exhibit. Other spaces in the museum provide opportunities for children to practice large motor skills. Large motor opportunities will not be included in the Ready, Set, School space. Fine motor skills for young children include:

1. Grasping
2. Picking up objects
3. Releasing objects
4. Using tools
5. Imitating and copying patterns
6. Eye-hand coordination

### **Literacy Skills**

Opportunities to foster early literacy skills will primarily take place in the literacy station, writing station, book nook, and circle time areas. Key early literacy skills include:

1. *Print Motivation*: Being interested in and enjoying books
2. *Print Awareness*: Noticing print everywhere, knowing how to handle a book, knowing how to follow the written word on the page (print concepts)
3. *Letter Knowledge*: Knowing that letters are different from each other, knowing letter names and sounds, recognizing letters everywhere
4. *Vocabulary*: Knowing the names of things
5. *Phonological Awareness*: Hearing and playing with the smaller sounds of words and recognizing that words are made up of different sounds.
6. *Narrative Skills*: Describing things and events, telling stories, knowing the order of events, and making predictions.

Source: *Get Ready to Read!* <http://www.getreadytoread.org/>

## **Math and Science Skills**

Math and science skills will be addressed in the math and science/exploration stations, as well as the sensory and light tables.

Early math skills include:

1. *Number Sense*: Ability to count accurately.
2. *Representation*: Making mathematical ideas real by using words, pictures, and symbols and objects.
3. *Spatial Sense*: Ideas about shape, size, space, position, direction, and movement.
4. *Measurement*: Length, height, weight, volume, time.
5. *Estimation*: Ability to make a good guess about the amount or size of something.
6. *Patterns*: Patterns are things that repeat in a logical way—numbers, shapes, images.
7. *Problem-solving*: Ability to think through a problem and recognize there is more than one path to the answer.

Source: Zero to Three <http://www.zerotothree.org/child-development/early-development/supporting-early-math-skills.html>

Early science skills include:

1. *Observing*: Noticing different properties of objects and events using the senses.
2. *Classifying*: Grouping objects and events according to their properties; sorting by color, shape, size or sorting by multiple properties.
3. *Measuring and Using Numbers*: Describing quantity using physical attributes; estimating; recording data; using tools; understanding spatial relationships.
4. *Communicating*: Using language, drawings, and other tools to describe observed events and relationships. Asking questions.
5. *Inferring and Predicting*: Making predictions about what might happen based on past observations and experiences, including cause-effect relationships.
6. *Defining Operations*: Defining terms and ideas used in context of experiences and communicating.
7. *Making Hypotheses*: Proposing explanations based on what is observed.
8. *Experimenting*: Exploring, manipulating, and investigating to find what happens.

Source: National Science Teachers Association, [www.nsta.org](http://www.nsta.org)

## **Ready, Set, School Prototype Exhibit Space**

During the month of May 2013, Marbles Kids Museum utilized a classroom space called Think Tank to prototype the Ready, Set, School exhibit components and activities. The following photos represent that space:

### ***Full Exhibit***



### ***Literacy Station***



**Math Station**



**Science/Exploration Station**



**Writing Station**



**Book Nook/Circle Time Area**

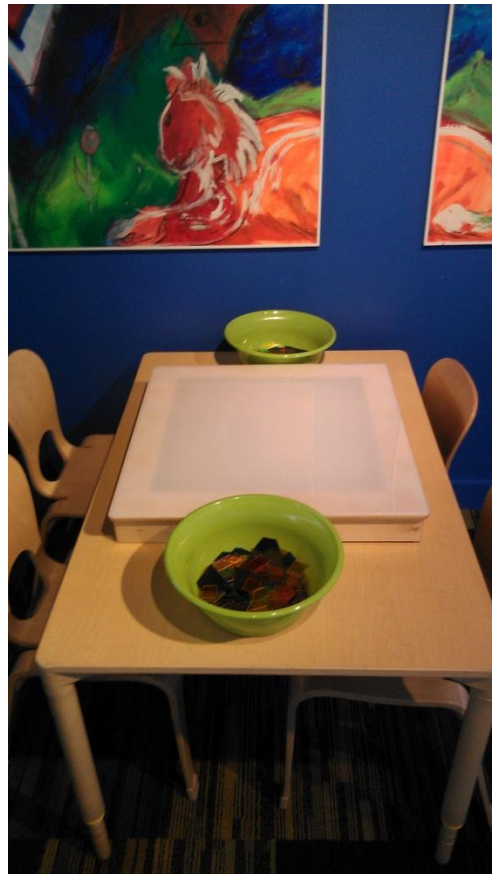


**Sensory Table**





## Light Table



From June through the present, Marbles continues to prototype the exhibit and activities in the space that Ready, Set, School will be permanently installed. The following photos represent this space:

## Full Exhibit



## Literacy Station



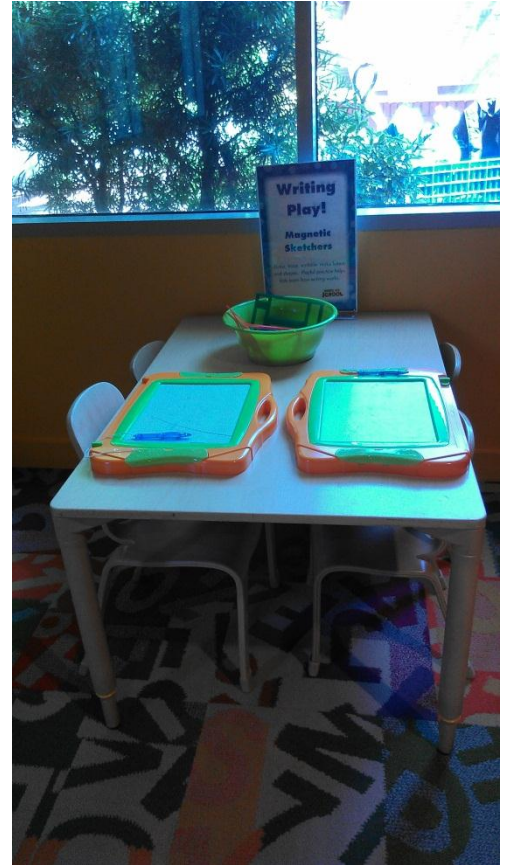
## Math Station



Science/Exploration Station



Writing Station



Book Nook/Circle Time Area



*Sensory Table*



*Light Table*



## **Purpose**

The purpose of this formative evaluation was:

- To determine the extent to which Ready, Set, School prototype activities accomplish our desired outcomes.
- To determine which prototype activities guests engage with and for how long.
- To gauge guests' level of engagement with activities, including any challenges they encounter.
- To gauge guests' understanding of the activities' purpose, including connections to school readiness.
- To assess guests' learning at the activities
- To assess adult guests' understanding of the play prompts, including suggestions for improvement.

## **Outcomes**

Marbles Kids Museum identified the following outcomes, or intended results, for the Ready, Set, School exhibit space among children, adults, and community partners. The outcomes for children and adults are explored in this evaluation.

### Children

1. Children practice and build socio-emotional, cognitive, and physical skills through play in Ready, Set, School.
2. Children connect and/or transfer Ready, Set, School experiences beyond the museum.
3. Children become familiar with a school space, materials, and language through Ready, Set, School experiences.

### Adults

1. Adults become familiar with a school space, materials, and language through Ready, Set, School experiences.
2. Adults support children's Ready, Set, School experiences beyond the museum.
3. Adults understand that school readiness involves building socio-emotional, cognitive, and physical skills.

### Community Partners:

1. Partners understand the role of play in school readiness.
2. Partners value Marbles as a resource and partner for school readiness.

## **Methodology**

Marbles Kids Museum staff conducted adult interviews and play observations during May 2013. 44 child-adult pairs were intercepted, interviewed, and observed in play in the Ready, Set, School prototype classroom space. 51 child-adult pairs were simply observed in play in the space.

## **Key Findings**

### **Play Observations**

- Guests spent an average of 19 minutes playing in the Ready, Set, School prototype space.
- Children were observed engaging at high levels in all behaviors identified as being evidence of intended outcomes.
- Higher rates of parent engagement were informally observed in the Ready, Set, School space than in other areas of the museum.
- The Science/Exploration Station and Sensory Station were the most visited areas of the exhibit.
- The Book Nook and Literacy Station were the least visited areas of the exhibit.
- The most popular exhibit areas were the same for all age groups: Science, Sensory, and Writing.
- The most popular exhibit area for females was Sensory. The most popular exhibit area for males was Science. More females than males visited the Literacy and Writing areas. The least popular areas for both males and females were Literacy and the Book Nook.

### **Adult Interviews**

- Adults reported that children were applying previously learned skills and content to their play in the Ready, Set, School space.
- 95 % of adults interviewed were able to make a connection and articulate how activities in the Ready, Set, School space supported school readiness.
- Adults commented on how exhibit activities sparked ideas for how to offer similar experiences at home or how observations they made about their child during Ready, Set, School play will impact how they engage with their child in other settings.
- Most adults (86%) that were interviewed identified cognitive or fine motor skills that children were learning or practicing in the Ready, Set, School space. Few (14%) mentioned socio-emotional skills.
- Only 50% of interviewed adults read the activity signs in the prototype space.

## **Summary of Overall Play Observations**

51 overall play observations were conducted in the Ready, Set, School prototype classroom space. The purpose of the observations was to determine:

- Total amount of time children and their caregivers spent in Ready, Set, School
- Where children and their caregivers spent their time in Ready, Set, School

Eligible guests included children ages 2-5 years old visiting with one or more adults. Children visiting in school or camp groups were ineligible. Children were randomly selected for observation.

## Demographic Characteristics of Guests Observed

Gender		<i>n</i>
Female		28
Male		23
Age		<i>n</i>
2-3 years-old		21
4-5 years-old		30

## Average Time Spent in the Ready, Set, School Prototype Space

Average time spent in Ready, Set, School	19 minutes
Shortest time spent in Ready, Set, School	2 minutes
Longest time spent in Ready, Set, School	120 minutes

## Where Guests Spent Time in the Ready, Set, School Prototype Space:

Observers noted which areas subjects visited and how long they spent in each area:

Exhibit Area	<i>n</i>	%	Average Visit Time	Longest Time	Shortest Time
Science/Exploration Station	30	59%	5 min	28 min	1 min
Sensory Table	28	55%	7 min	31 min	1 min
Writing Station	24	47%	8 min	46 min	1 min
Light Box	19	37%	5 min	30 min	1 min
Math Station	12	24%	6 min	30 min	1 min
Literacy Station	9	18%	3 min	8 min	1 min
Book Nook	4	8%	7 min	12 min	1 min

The most popular areas of the exhibit are Science, Sensory Table, and Writing Stations. The least visited areas of the exhibit are Literacy Station and Book Nook.

## Where Guests Spent Time in Ready, Set, School by Gender and Age:

### Exhibit Area Participation by Age:

	Math		Literacy		Science		Writing		Sensory		Book Nook		Light Box	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Age 2-3</b>	4	19%	6	29%	10	48%	8	38%	9	43%	1	5%	5	24%
<b>Age 4-5</b>	8	27%	3	10%	20	67%	16	53%	19	63%	3	10%	14	47%
<b>Total</b>	12	24%	9	18%	30	59%	24	47%	28	55%	4	19%	19	37%

On average, 2-3 year-olds visited 2 exhibit areas while 4-5 year-olds visited 2.8 exhibit areas. The most popular exhibit areas for both age groups were the same: Science, Sensory, and Writing. A larger percentage of 2-3 year-olds played in the Literacy area. A larger percentage of 4-5 year-olds played in the Light Box, Math, Science, Writing, Sensory, and Book Nook areas.

**Exhibit Area Participation Percentage Participation by Gender:**

	Math		Literacy		Science		Writing		Sensory		Book Nook		Light Box	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
<b>Female</b>	7	25%	6	21%	15	54%	14	50%	17	61%	3	11%	10	36%
<b>Male</b>	5	22%	3	13%	15	65%	10	43%	11	48%	1	4%	9	39%
<b>Total</b>	12	24%	9	18%	30	59%	24	47%	28	55%	4	19%	19	37%

Females visited an average of 2.6 exhibit areas. Males visited an average of 2.3 exhibit areas. The most popular exhibit area for females was Sensory. The most popular exhibit area for males was Science. More females than males visited the Literacy and Writing areas. The least popular areas for both males and females were Literacy and the Book Nook.



## Summary of Child-Adult Pair Observations and Interviews

44 child-adult pairs were randomly intercepted, observed in play, and interviewed after visiting each exhibit area in the Ready, Set, School prototype classroom space. Eligible adults included adults in family or intergenerational social groups visiting with at least one child 2 to 5 years old and who were English-speaking. Adults visiting in camp or school groups were ineligible.

### Demographic Characteristics of Child-Adult Pairs Interviewed

Children's Gender		n	%
Female		20	45%
Male		24	55%
Children's Age		n	%
2		20	45%
3		14	32%
4		8	18%
5		2	5%
Adults Gender		n	%
Female		29	66%
Male		15	34%
Adult Age		n	%
20-29		10	23%
30-39		26	59%
40-49		6	14%
50-59		0	0%
60-69		2	5%
Average age		34.6	
Relationship to child		n	%
Parent		38	86%
Grandparent		2	5%
Other		4	9%
Identity Group		n	%
African American/Black		0	0%
American Indian		0	0%
Asian/Pacific Islander		0	0%
Caucasian/White		42	95%
Hispanic/Latino		0	0%
Multi-ethnic		2	5%
Other or no response		0	0%
Highest Level of Education		n	%
Some high school		0	0%
High school graduate		1	2%
Technical school		0	0%
Some college/associate's degree		10	23%
College graduate/Bachelor's degree		17	39%
Some graduate work		7	16%
Graduate/Professional degree		9	20%
Visitation Frequency		n	%
First time visitors		4	11%
Members		30	81%
1-2 visits per year		3	8%
3-4 visits per year		6	16%
5-6 visits per year		4	11%
More than 6 visits per year		24	65%

*\*Please note that child-adult pairs were randomly intercepted for participation. A more diverse group would have been selected if we had been able to intentionally select participants.*

## Child Behaviors Observed in Exhibit Areas

Observers tracked child behaviors that occurred in each exhibit area. These behaviors were identified as evidence of Marbles' outcomes or indicators. The chart below details the number of occurrences of each behavior and the percentage of time it occurred when children played in that area.

Behavior	Literacy		Math		Science		Writing		Total	
	n	%	n	%	n	%	n	%	n	%
Child uses fine motor skills.	10	100%	11	100%	10	91%	12	100%	43	98%
Child shares with others.	4	40%	3	27%	5	45%	3	25%	15	34%
Child independently engages with activity.	4	40%	4	36%	5	45%	6	50%	19	43%
Child plays with others.	9	90%	9	82%	8	73%	10	83%	36	82%
Child communicates needs, wants, or feelings.	6	60%	11	100%	7	64%	10	83%	34	77%
Child stays focused and perseveres.	7	70%	7	64%	6	55%	9	75%	29	66%
Child uses materials to work toward a particular goal.	9	90%	10	91%	9	82%	11	92%	39	89%
Child approximates or uses early literacy/math/science/writing skills.	10	100%	9	82%	8	73%	10	83%	37	84%

These behaviors provide insight into the extent to which the activities in the Ready, Set, School prototype space are achieving our first desired outcome for children: *Children practice and build socio-emotional, cognitive, and physical skills through play in Ready, Set, School.*

- **Socio-emotional Skills:** Sharing, independent engagement, playing with others, communicating needs, wants and feelings, focusing and persevering, and working towards a goal are all behaviors associated with school readiness and success. In the Ready, Set, School prototype space:
  - Sharing: 34% of children shared with others. Sharing was observed most at the science station and least at the writing station.
    - Observed examples:
      - "Here's one for you!"
      - Child asks, "You want to make one?"
      - Child moves over to make space for sibling.
  - Independent engagement: 43% of children engaged independently with activities. Independent engagement was observed most at the writing station and least at the math station.
    - Observed examples:
      - Child continues to play when mom walks away.
      - Child moves alone to a new station.
      - Child says, "Now I'll do it by myself."
  - Playing with others: 82% of children played with others. Playing with others was observed most at the literacy station and least at the science station.
    - Observed examples:
      - "You do this one."
      - "Want to work on this?"
      - Adult suggests words to spell. Child finds letters and hands them to adult.
      - Child watched what another child at station was doing and then engaged in same behavior.

- Parent holds a stencil while child traces.
  - Child says to another child, "We can look together."
- **Communication:** 83% of children communicated needs, wants, and feelings. Communication was observed most at the math station and least at the literacy station.
  - **Observed examples:**
    - "Aw...that didn't work."
    - "I'm done."
    - Child asks, "Which letter is this?"
    - Child asks, "How does it look Mommy?"
    - Child says, "Ooo. I did it. Did you see?"
    - Child says, "I want to do red. Let's do blue again."
    - Child asks, "Can you help me please?"
    - Child asks adult for desired items
- **Focus and Perseverance:** 66% of children stayed focus and persevered. Focus and perseverance was observed most at the writing station and least at the math station.
  - **Observed examples:**
    - Child and adult work together to put together all 26 alphabet puzzles
    - Child persists in looking for desired letter
    - Child repeats activity using several different tracing stencils
    - Child tries activity several different ways
- **Goal-oriented behavior:** 89% of children worked towards a particular goal. Goal-oriented behavior was observed most at the writing station and least at the science station.
  - **Observed examples:**
    - "Let's spell zippity!"
    - Spelling name
    - Child works to find all lower case letters
    - Putting letter stamps in alphabetical order
    - "I'll use stamps to spell my name."
    - "I'm trying to find sparkly rocks."
    - "Maybe I can do what you did."
    - "I'm going to finish this."
- **Overall.** The most frequently observed socio-emotional skills were goal-oriented behavior (89%), playing with others (82%), and communicating needs, wants, and feelings (77%). The least frequently observed socio-emotional skills were sharing with others (34%) and independent engagement with activities (43%). It should be noted that the highest level of social interaction was informally observed at the sensory station, though we did not track behaviors at that activity.
- **Cognitive Skills:** Using or approximating early literacy, math, science, and writing skills demonstrates cognitive skills. 84% of children used or approximated these skills. Using or approximating cognitive skills was observed most at the literacy station (100%) and least at the science station (73%).
  - **Literacy skills:** At the literacy station, observers looked for early literacy skills such as naming things, telling stories, making predictions, writing, drawing, identifying letters or letter sounds. 100% of children used or approximated early literacy skills at the literacy station.

- Observed examples:
      - “That’s a Z!”
      - Mom holds up letter J. Child responds, “I.” “Very close,” replies mom.
      - Identifying letters at parent’s request
      - Naming pictures and beginning sounds of words
      - Finding matching sets of upper and lower case letters
      - Child asks, “What starts with an A sound?”
  - Math skills: At the math station, observers looked for early math skills such as counting, making patterns, sorting, identifying numbers, comparing, measuring, and sequencing. 82% of children used or approximated these skills.
    - Observed examples:
      - Identifying shapes and colors
      - Counting objects
      - Sequencing blocks by size
      - Sorting by color
  - Science Skills: At the science station, observers looked for early science skills like observing, classifying, investigating, asking questions, describing, experimenting. 73% of children used or approximated early science skills at the science station.
    - Observed examples:
      - Child looks at bugs with magnifying glass.
      - Child names different bugs
      - Describing and sorting rocks
      - Balancing a scale by adding more blocks
  - Writing Skills: Observers looked for early writing skills such as writing, drawing, scribbling, telling stories, making letters, or tracing. At the writing station, 83% of children used or approximated early writing skills.
    - Observed examples:
      - Drawing shapes
      - Writing and naming letters
      - Child asks adult about punctuation stamps
      - Child finds letters parent names
      - Child stamps letters left to right
- Physical Skills: The Ready, Set, School prototype exhibit provided many opportunities for children to use and build fine motor skills. Other spaces in the museum provide opportunities for children to practice large motor skills. Large motor opportunities are not present in the Ready, Set, School space. 98% of children demonstrated the use of fine motor skills in the exhibit. Demonstrated skills included: using tweezers and tongs, writing, and manipulating small objects.
  - Observed examples:
    - Putting puzzle pieces together
    - Holding and writing with pencil
    - Stringing pattern beads
    - Tracing letters and shapes
    - Using letter stamps

- Holding paper with one hand, writing implement with other
- Using tweezers to pick up objects
- Stretching rubber bands on geoboard

## Summary of Adult Interviews

When each child-adult pair finished playing, adults were interviewed about their experience.

### Engagement

Adults were asked what they felt was most engaging about each activity.

- Literacy Station: At the literacy station, parents mentioned familiarity with materials, having pictures associated with letters, the opportunity to learn and practice letter names and sounds, and having lots of letters to search through as most engaging. The mention of having similar materials at home and the opportunity to practice known skills relates to two of our intended outcomes: Children connect and/or transfer Ready, Set, School experiences beyond the museum and adults support children's Ready, Set, School experiences beyond the museum.

*"We have magnet letters at home. They were familiar. He uses them a lot at home." [L3]*

*"Having all of the letters there to search through and identify is engaging. We can spell his name by finding letters and then assembling them. Part of the fun is searching and constructing." [L10]*

*"He loves spelling. We always try to work on letters at home. We sing the alphabet." [L1]*

- Math Station: At the math station, parents felt that having colorful materials, open-ended activities, and some challenge engaged children.

*"This is challenging, but not too much." [M10]*

*"This is good for fine motor skills. You have to get the small rubber band on the small peg." [M8]*

*"Making designs is engaging. We first came over and looked at the designs. We challenged ourselves to make them better." [M7]*

*"They're just blocks, but there's a creative aspect to it. He can make whatever he wants."*

- Science Station: Parents felt that novel materials, challenge, and the opportunity to explore were the most engaging aspects of the science station.

*"It was fun to figure out which side of the scale to add to." [S7]*

*"The puff balls attracted us. She hadn't seen a scale before. She liked playing with cause and effect." [S6]*

*"Science is my girls' thing. We're always collecting rocks. We came to this room last week and she wanted to come here first today." [S5]*

*"She likes looking at things and examining them. That's why I took her here first." [S4]*

*"The magnifying glasses make exploring more interesting." [S1]*

- Writing Station: At the writing station, parents named novelty, color, and the scaffolding provided by the materials as being most engaging.

*"The stamps. He can spell his name, but can't quite write it yet." [W2]*

*"She's never seen stamps before. She could make letters herself with them."*[W3]

*"Stamps are so much fun. They like putting ink on themselves and choosing colors."*[W6]

*"Being so young, she wants to draw but isn't there with her motor skills. Tracing gave her confidence because it was a guide. She could practice holding markers. The stencils also encourage shape recognition."*[W10]

Adults were also asked what was least engaging about each activity. The responses across stations were similar. Adults mentioned children's short attention spans, being distracted by other activities in the room, activities being too difficult for the child, missing or damaged materials, and children's innate preferences.

### **Activity**

Adults were asked to describe what they were doing or trying to accomplish at the station and if they experienced any challenges.

- **Literacy Station:** At the literacy station, parents said they were identifying or reviewing letters, sounds and numbers, practicing matching and sorting skills, spelling, naming colors, ordering letters and numbers. Challenges included maintaining the child's attention, the combination of upper and lower case letters, being distracted by other activities in the space, and sorting through the large number of letters.

*"I let her play on her own. She knows her letters and sounds. She asked about letters she didn't know."*[L4]

*"He knows the letters already, but only upper case. We were learning lower case."*[L3]

*"We were trying to spell his name. I was trying to get him to recognize the sounds of the letters and how they blend together. When we couldn't find a letter quickly, his interest starting waning."*[L10]

- **Math Station:** At the math station, parents reported that they were building structures, learning about length, identifying shapes and colors, creating designs, making patterns, problem-solving, matching, and sorting. When asked if they encountered any challenges, some parents felt that the activity was too challenging for their child's level of cognitive or fine motor skills.

*"We were making designs, a diamond with a design on top. My older son freestyled it. For my younger son, it was hard to get the rubber bands on the pegs, but he did it."*[M7]

*"We were problem-solving, matching, and identifying similar patterns. He picked a hard one! I needed to help him turn the shapes."*[M1]

*"She was matching colors and shapes and naming shapes. It was reinforcing things she already knows."*[M11]

- **Science Station:** Parents said they were experimenting with magnifying glasses, practicing using tweezers, identifying insects and rocks, sorting by properties, learning about weight and balance, and just exploring at the science station. They noted challenges like children's attention spans, level of focus, and the stability of the scale.

*"I was seeing if he would notice the difference in how things looked through the magnifier. I also wanted to see if he could figure out how the tweezers worked."*[S11]

*"We were naming the insects and matching them to the pictures in the book."*[S1]

*"We were sorting by color and texture. It was all exciting. His attention span isn't huge. We sorted by hard and soft, what the rocks felt like."*[S3]

*"I was trying to get the concept through to him of scale and using weight to balance."*[S7]

- **Writing Station:** At the writing station, parents stated that they were stamping words, drawing shapes, tracing, spelling, and working on letter recognition. Challenges mentioned included staying on the paper, maintaining focus, and the messiness of the ink.

*"We were spelling different words. She spelled her name and then traced the letters she stamped."*[W7]

*"I gave her the chance to experience making shapes herself and to see what she accomplished. It was challenging for her to hold the marker correctly and stamp on the paper."*[W10]

*"The main thing we're working on at his age is to recognize the letters in his name. He's getting better, but we're still working on it."*[W5]

## **Learning**

Adults were asked what they took away or learned from the activity and what their children learned or took away from the activity.

**Literacy Station:** Parents said that they had learned more about their child's interests and abilities at the literacy station and had been reminded to or got ideas for how to build literacy at home. Parents felt that the activity helped their children learn or reinforce knowledge about letters and sounds and build vocabulary.

*"I should buy magnetic letter and numbers. My daughter likes affirmation about getting things right."*[L2]

*"This would be fun and easy to replicate at home. It never occurred to me to use a pan. She was reminded about the letter J and it reinforced the ABC's."*[L9]

*"This is a good idea for me to do with him at home—use magnets on a cookie sheet. It's a different way to do letters. He got a better understanding of big and little letters. He loves to spell and do numbers."*[L1]"

*"I learned how well she can associate sounds and letters. She took away sound recognition."*[L5]

*"I found out he likes puzzles. We did a puzzle recently with lots of pieces and he got bored. This was good for him. He was doing sounds and letters. He realized the purpose of the game and got into it."*[L8]

- **Math Station:** At the math station, parents learned more about their children's interests and abilities and discovered skills that they could reinforce at home. Parents felt that children learned or reinforced concepts like size, shape, color, patterns, and practiced fine motor skills.

*"In the end, when we put them all back, I learned that she knows how to pick up. She's starting to understand different sizes. She seemed to like the white blocks best."*[M4]

*"I need to be doing more patterns at home. He's really good at that. I learned that he could do it! I didn't tell him this was hard, I gave him confidence. He knows his shapes and colors."*[M1]

*"He's been learning about patterns at preschool, so I think he was mimicking that."* [M6]

*"This focuses on creativity. It allows him to use his imagination and make his own designs."*[M7]

- **Science Station:** Parents also said they learned more about their children's interests and abilities at the science station and got ideas for science exploration at home. Parents felt that the station sparked an interest in science and encouraged curiosity and that children learned or reinforced concepts like weight, balance, size, sorting, and counting.

*"This was another way of finding out his learning style and finding his limits of fun and learning. He learned patience and that he couldn't manually balance the scale. He experimented with which block to take away."*[S7]

*"We need to get two magnifying glasses to have at home. We only have one. This reinforces what she knows and likes. She is interested in nature."*[S3]

*"I was surprised how interested she was in this. I got ideas for home. She has a better understanding of balance and weight. She likes to get on our scale. This reinforces those concepts."*[S6]

- **Writing Station:** At the writing station, parents stated that they got ideas for writing play at home and learned more about their children’s abilities. Parents felt that children learned and reinforced knowledge about letters, sounds, shapes, colors, and patterns.

*“I learned that my child is interested in newness. We’ve played with markers before, but not stamps.”[W3]*

*“I learned about how we could start practicing and learning the motion of writing. My child learned the difference of associating upper and lower case letters.”[W7]*

*“We could try this at home—the idea of tracing. This was inspirational. She’s interested in shapes. This was a chance to practice drawing. Any practice is good.”[W10]*

*“I noticed that my daughter likes to find patterns and make connections. She pointed out the double letters in her name.”[W6]*

### **School Readiness**

Adults were asked to explain how, if at all, each activity was helpful for school. 95% of adults were able to articulate a connection between the activity and school readiness. 86% of adults cited cognitive or fine motor skills associated with school readiness, like letter recognition or identifying shapes. 14% cited socio-emotional skills associated with school readiness, like creativity or problem-solving.

- **Literacy Station:** Parents noted that learning about letters, sounds, and how they connect helps get kids ready for school. One shared that the activity let her get a picture of what her child knew and what they still need to work on.

*“Interaction with letters helps with school. This gave us the opportunity to talk about letters, sounds, and putting them together.”[L9]*

*“This is preparing him. It’s foundations. Getting the letters and sounds is a stepping stone to reading, so he’s getting ready for Kindergarten.”[L1]*

*“Since we’re homeschooling, this lets me see what her favorites are and what we need to focus on.”[L4]*

- **Math Station:** At the math station, parents felt that kids were practicing creativity, problem-solving, and fine motor skills, which they associated with school readiness.

*“This involved problem-solving and basics like colors and shapes that you need for school.”[M5]*

*“It develops fine motor skills and sparks creativity.”[M8]*

*“Lots of ways—shapes, colors, creativity, finger dexterity, patience.”[M7]*

*“Pattern recognition, color and shape recognition, and fine motor skills.”[M6]*

- **Science Station:** Parents felt that the science station fostered school readiness by encouraging exploration and experimentation, by building familiarity with science tools, and teaching concepts like sorting and counting.

*“This is really helpful. We’re learning how to identify different shapes and rocks and to use the magnifier.”[S4]*

*“For younger kids, they’re learning counting, colors, and textures. Older kids are learning more complex concepts.”[S5]*

*“Anything that encourages learning is helpful for school.”[S1]*

- **Writing Station:** Parents felt that the writing station was helpful for school because it developed letter recognition and the fine motor skills needed to write.

*“Tracing is good motor skill practice. It requires control.”[W10]*



*"This incorporates a lot of elements—letter-sound association and writing. She was able to stamp the letter and then go back and trace it."*[W7]

*"It helps him learn letters, spelling, and punctuation too."*[W1]

### **Signage and Parent Messaging**

Adults were asked if they noticed the sign on the activity table, what the sign was trying to communicate, if anything was confusing or unclear, or if they had suggestions for improving the sign. 50 % of interviewed adults had noticed and read the sign prior to being interviewed.

- **Literacy Station:** 5 out of 10 adults noticed the sign at the table. No one found the sign to be unclear or had suggestions for improvement. Parents said that the sign gave directions for the activity and explained the connection to school readiness.

*"It's all about getting ready for school. All the activities are fun and educational."*[L9]

*"It explains that the beginning stage of reading is knowing sounds."*[L7]

- **Math Station:** 6 out of 11 adults noticed the sign at the math station. The adults stated that the sign provided guidance for what you could do at the station. One adult suggested adding a visual to provide an example.

*"The sign lists different aspects of the blocks. It says, 'these are things you'll learn at this table.'"*[M4]

*"It gives instructions. The Ready, Set, School draws you in. It lets you know at this station you're going to make shapes."*[M7]

*"It tells that building with blocks is math."*[M6]

- **Science Station:** 7 out of 11 adults noticed the science station signs. Parents said that the sign sparked ideas for what to do at the station and explained what children are learning.

*"The sign encourages you to explore and learn as they explore, like researching."*[S2]

*"It sparked an idea about what to do—colors and textures."*[S3]

*"It tells that you're working on different parts of the brain or skill sets. You're having fun, but it's learning."*[S6]

- **Writing Station:** At the writing station, 4 out of 12 adults noticed the sign. Parents stated that the sign gave directions or ideas about what to do at the station and let you know that the activity helped kids learn to write. One parent suggested mentioning letter recognition on the sign.

*"It tells you to practice letter writing and shapes."*[W11]

*"It's for parents telling them to help kids make letters or shapes or just draw what they want."*[W12]

*"It means that playing with stamps helps kids learn letters."*[W4]

## Conclusions

This formative evaluation of the Ready, Set, School exhibit space and activities indicates that the more permanent exhibit is likely to achieve its intended outcomes.

### Children

Outcome	Evidence
<i>Children practice and build socio-emotional, cognitive, and physical skills through play in Ready, Set, School.</i>	<ul style="list-style-type: none"> <li>Children were observed engaging at high levels in all behaviors identified by Marbles Kids Museum as being evidence of indicators. Children demonstrated the lowest rates of sharing (34%) and independent engagement (43%). More sharing was informally observed at the sensory station and light table and was not tracked for this evaluation. Higher rates of parent engagement were informally observed in the Ready, Set, School space than in other areas of the museum, accounting for the relatively lower rate of independent engagement.</li> </ul>
<i>Children connect and/or transfer Ready, Set, School experiences beyond the museum.</i>	<ul style="list-style-type: none"> <li>Parents reported in interviews that children were applying previously learned skills and content to their play in the Ready, Set, School space. Further evaluation would be needed to assess whether children transfer learning and experiences from Ready, Set, School to other settings.</li> </ul>
<i>Children become familiar with a school space, materials, and language through Ready, Set, School experiences.</i>	<ul style="list-style-type: none"> <li>Children engaged in play at all stations and with all activities present in the Ready, Set, School space. The stations and materials are similar to those available in Kindergarten and preschool classrooms.</li> </ul>

### Adults

Outcome	Evidence
<i>Adults become familiar with a school space, materials, and language through Ready, Set, School experiences.</i>	<ul style="list-style-type: none"> <li>Adults engaged with children in play at all stations and with all activities present in the Ready, Set, School space. The stations and materials are similar to those available in Kindergarten and preschool classrooms. Signage highlighted how and what children are learning at each station.</li> <li>95 % of adults interviewed were able to make a connection and articulate how an activity supported school readiness.</li> </ul>
<i>Adults support children's Ready, Set, School experiences beyond the museum.</i>	<ul style="list-style-type: none"> <li>Many adults interviewed stated that exhibit activities reinforced content and learning activities that they were already doing at home with children.</li> <li>Many adults commented on how exhibit activities sparked ideas for them about how to offer similar experiences at home or how observations they made about their child during Ready, Set, School play will impact what they do with their child in other settings.</li> </ul>
<i>Adults understand that school readiness involves building socio-emotional, cognitive, and physical skills.</i>	<ul style="list-style-type: none"> <li>95 % of adults interviewed were able to make a connection and articulate how an activity supported school readiness.</li> <li>Most adults (86%) that were interviewed identified cognitive or fine motor skills that children were learning or practicing in the Ready, Set, School space. Few (14%) mentioned socio-emotional skills.</li> </ul>

---

## **Implications:**

- Children played at all centers in the Ready, Set, School prototype space. The Literacy Center and Book Nook saw the least play. Since reading and encouraging reading are a critical piece of school readiness, we will include a Book Nook in the permanent exhibit space, but incorporate it into the Morning Meeting area and not devote as much space to it. In addition, we will include books at each station that relate to the offered activity so that reading is not confined just to the Book Nook and to model for parents the importance of offering books everywhere. We will seek out additional activities for the literacy station that engage more guests in play. We will also seek out activities that attract more girls to science and more boys to writing.
- More social play was observed informally at the sensory station and light box. Because socio-emotional skills are the foundation for school success, these exhibit components will be more prominently included in the permanent space to provide more opportunities for social play.
- Classroom features that are central elements of most Kindergarten classrooms but were not incorporated in the prototype exhibit space will be included and emphasized in the permanent space, including a cubby area, a Morning Meeting area, alphabet and number charts, a map, globe, and clock. This will help us more strongly achieve our intended outcome of building child and adult familiarity with school space, materials, and language.
- Only 50% of interviewed adults read the activity signs in the prototype space. In addition, few adults mentioned socio-emotional skills when asked what children were learning in the exhibit space and how that related to school readiness. Several parents mentioned children having short attention spans or a limited ability to focus without a grasp of what an age-appropriate attention span or degree of focus might be. In the permanent exhibit space, we can seek to emphasize the socio-emotional skills children build through play, how these relate to school readiness, and how parents can foster these skills in the museum and other settings both in exhibit signage and the environment.