



# Exploring and Discovering

## Introduction

Parents are their children's first and most important teachers—and the world is their classroom! Children are naturally curious. They like to explore everything around them, ask lots of questions, and experiment with objects and ideas. When parents see their little ones as beginner scientists and offer them opportunities to get excited about exploring the world and discovering new knowledge, they help their children to develop skills that will get them ready for school.

For babies and toddlers, early math and science include concepts such as exploring cause and effect, gravity and balance, measuring, and noticing patterns. Some parents may be intimidated by the notion that they need to be “teaching” their children math and science. Yet it’s everyday routines and conversation that help children hear math-related vocabulary (for example, *more than*, *less than*, *bigger*, *smaller*) and science-related vocabulary (for example, *explore*, *investigate*, *float*, *sink*, *heavy*, *light*). As they play, read books, and take walks, children also discover colors, shapes, and numbers. Knowing about the world around them enables children to build confidence and problem-solving skills that will help them to thrive in everything that they do.

This parenting workshop is designed to offer parents strategies and activities that will encourage them to find the many learning opportunities that exist at home and on the go. Through discussions, hands-on activities, take-home resources, and the “Exploring & Discovering” video, you'll find everything you need to:

- Communicate the importance of recognizing the learning in everyday experiences.
- Demonstrate examples of how exploration can lead to math and science learning.
- Offer strategies for building upon a child's interests to create rich learning experiences.
- Communicate the importance of parents engaging in conversations with their children, asking questions, and encouraging children to wonder.
- Explain the importance of children using all of their senses as they interact with the world around them.
- Suggest daily adventures for both babies and toddlers that will encourage learning in math and science.
- Recommend common objects and activities that will inspire learning and exploration.

- Lead parents in reflecting on how they can apply what they have learned with their own children.
- Try out and practice new ideas with parents.

The Exploring and Discovering workshop has been divided into the following sections:

**The World Is Your Classroom**—This section reinforces the importance of encouraging exploration right from the start.

**Follow the Leader**—This section explores the importance of following your child's lead when it comes to learning. It focuses on ways to build on your child's interests to create rich learning experiences.

**Everyday, Everywhere Learning**—This section shares ways that parents can make the most of everyday experiences and routines to build math and science skills.

As you lead this workshop you'll be using the “Exploring & Discovering” video. In this 05:57 minute video you'll meet:

- Kash (4 months) as he explores with his senses.
- Ronan (2 years) as he builds math and science skills on a nature walk.
- Siblings Aliyah (6 years) and Lamarques (3 years) and their cousin Rosonn (17 months) as they discover shapes and build things.
- Ange-Yolette (3 years) and her brother Gregory (6 years) as they do experiments with water and learn about science.

## Preparing for the Workshop

Before you begin, read the “Parenting Videos Workshop Overview,” which contains helpful tips and information about the workshop series. In addition, you will want to:

- Make copies of the following Parent Tips. Have them available for parents to pick up before the workshop begins or distribute them at the end.
  - *Big, Bigger, Biggest: Measuring*
  - *Count Me In! Learning about Numbers*
  - *Good Books for Babies*
  - *Good Books for Toddlers*
  - *Let's Go for a Walk!*

- *Splish Splash: Water and Bathtime Fun*
  - *Talk, Talk, Talk!*
  - *What's That? Everyday Science*
  - *Additional Resources* (You may also want to display some of the books from this list.)
- Watch the “Exploring & Discovering” video. Take notes as you watch (and as you read through this guide). Keep a notebook of additional ideas and questions. You know your group best and can adapt the workshop to fit the needs and interests of the participants.
  - Decide on an opening icebreaker activity. You may want to tailor the activity to the theme of the workshop. For instance, you can go around the room and ask parents to recall their favorite place or thing to explore as a child.
  - Gather your supplies, including pencils, pens, and paper, as well as refreshments. For the “What Is It?” activity, you will need: torn fabric or bandanas to use as blindfolds, and common household objects such as egg cartons, aluminum pie plates, bananas, squishy balls, pipe cleaners, and a plastic bottle full of pebbles. You might also add objects that make different sounds or that have interesting textures or smells, such as a rattle or squeaker, a small bowl of pasta or peeled grapes, a piece of sandpaper or a doily, or a sprig of mint, thyme, or lavender.
  - For the “Learning Challenge” activity, you will need: scrap paper, crayons, and a pair of scissors for each group.
  - If you are providing a series of workshops, have a flyer ready with future dates and times.

## Section One: The World Is Your Classroom

### Leading Your Group

Begin by sharing the importance of encouraging exploration and learning right from the start. You can mention:

- You are your child's first and most important teacher.
- Children are born ready to learn, and the world around them is their classroom.
- Babies and toddlers are natural scientists. They love to experiment with objects, solve problems, and test out ideas.
- Babies and toddlers learn more when they explore with all of their senses. Encourage them to hear, taste, touch, see, and smell the objects they encounter.

- As children explore, they gain essential skills in both math and science. They'll learn to compare and contrast the things that they look at, make observations about how different things work, and conduct experiments. For instance, when they experiment with *What will happen if I add a big block to the top of my tower?* or *What will happen if I let go of this rock?*, they are beginning to learn about gravity and balance.
- As parents and their children talk about the world around them, children will hear and learn words related to math and science. As they line up sticks on the ground, they may use words such as *first*, *second*, and *third*, or *short*, *shorter*, and *shortest*. As they run up and down a ramp, they'll discover words such as *fast* and *slow*.
- Through their explorations, children also develop persistence and confidence. As they follow their curiosity and try to figure out how a latch works or what surfaces a magnet will stick to, they'll have to try and try again, adapt their strategies, and work through frustration. These key problem-solving skills will help children thrive in all areas of life.
- It's important that parents provide *just enough* help so that children can experience the joy of solving problems themselves. A little assistance and praise will help children explore for longer. They'll become less fatigued if they are encouraged by the occasional helping hand or "hooray!" In fact, researchers have found that children explore and learn more when parents introduce something and then let children make their own discoveries, rather than showing or telling them how things work.

### Chat and Share

Ask parents to think about ways that their children explore the things around them. This will encourage them to reflect upon the many senses that children use when they are actively learning. You can ask:

- What objects do your children like to explore?
- Think about how they explore. What sense(s) do they use? What makes them smile? What makes them frustrated? What frightens them?
- What do you think they are learning from these experiences? What can you do to encourage these explorations?

NOTE: Write down any additional questions that you would like to include. Is there an anecdote from your own life that you can share? Add that, too.

### Watching and Learning

Watch the entire "Exploring & Discovering" video together. (Note: You will have an opportunity to return to various segments of the video throughout the workshop.) Before you watch, let parents know:

- In this video, you'll see children building math and science skills as they explore the world around them.
- Notice how they explore and the different senses that they use to make discoveries.

### Reviewing and Reflecting

Lead a conversation about what parents noticed in the video. You might ask:

- In the video, Kash listens to the noise a puzzle pieces makes and reaches for objects while he is on his tummy on a blanket. Ange-Yolette experiments with colors as her mom makes green bubbles. Lamarques learns about gravity and balance as he builds a block tower, and Ronan investigates the properties of water as he explores ice on a walk outside.
- What other learning did you see taking place?

### Trying It Out

**What Is It?** Encourage parents to explore like children.

- Ask parents, *When you come upon an object that you've never seen before, how do you usually approach it?*
- Divide parents into pairs. Give a blindfold to one member of each pair. Instruct that person to put the blindfold on.
- Now give an object to the other person. Have him hand the object to his partner.
- Have the person with the blindfold explore the object. Ask, *How many details can you notice about this object?*
- Ask the partner without the blindfold to take note of how the other person explores the object. What senses does she use? Does she shake or poke it? Does she ask questions? What other strategies does she use?
- Now have the pairs switch places.
- Gather as a group and invite parents to share their observations. What did they learn from the experience? Did they notice things they would not have noticed if they were only seeing the objects and not exploring them hands-on?
- Ask parents to brainstorm ways they might encourage their babies and toddlers to engage all of their senses as they explore.

## Section Two: Follow the Leader

### Leading Your Group, Part 1

Share the importance of following children's leads when it comes to exploring and learning. You can mention:

- Watch to see what your child is interested in and build your explorations around the objects and experiences that capture his attention.
- Your child will be more likely to learn and remember if she's excited.
- Ask lots of questions to keep the explorations going. Remember, however, to keep the fun in the activity.

### Chat and Share

Ask parents to think about their children's interests. This will help them to identify people, places, and things that will provide the best opportunities for learning. You can ask:

- What is your child most interested in? Does he get excited to go outside? Does he love animals or vehicles? Does he love being physical? Does he want to take things apart and discover how they work?
- What does your child want to know more about?

NOTE: Write down any additional questions that you would like to include. Is there an anecdote from your own life that you can share? Add that, too.

### Watching and Learning

Watch a portion of "Playing & Learning" together. Begin at 00:46, as Ronan and his dad are going for a walk, and end at 01:38, after Ange-Yollette and her brother have done water experiments. Ask parents to note how the parents in the video take advantage of their children's interests to really engage them.

### Reviewing and Reflecting

Lead a conversation about what parents noticed in the video. You might ask:

- Ronan's dad notices that when they are outside, Ronan wants to know about everything. When Ronan is interested in a frozen puddle, his dad stops and engages him in an exploration. Ronan slides his feet on the ice, pokes the ice with a stick, and asks questions. What science concepts does he have the opportunity to explore as he plays with the ice?
- Ange-Yollette is interested in pouring things, so her mom sets up a "lab" where she and her brother can conduct water experiments. How does Ange-Yollette respond to this activity?

- In what ways do your children's interests lead your activities and family adventures?

### Trying It Out

**What Do You Want to Know More About?** Brainstorm places to go that will engage children's interests and curiosity.

- On a large sheet of paper or white board, ask parents to list their children's interests. You might begin the list by asking: *Who has children who are fascinated by animals? What animals are they most interested in? Does anyone have a little one that loves trucks and heavy machinery? Who likes to swing or climb?* Continue listing children's interests.
- As a group, go through the list and come up with places that parents and children might go to really investigate these interests. Someone might mention walking by a specific construction site, visiting a local farm, or a particularly kid-friendly grocery store.
- Write down parents' ideas and encourage them to copy down the ideas that are most relevant to them.

### Leading Your Group, Part 2

Now discuss some of the ways that parents can build off of children's interests to teach math and science skills. You can mention:

- Math and science learning requires trial and error and experimentation.
- The more hands-on that activities are, the more children can build math and science skills.
- As your child explores, you can introduce words about size, quantity, and time. You can point out colors, textures, and numbers.

### Chat and Share

Ask parents to remember an adventure that they've had with their child. Ask them to think how they might have added math and science learning to that adventure. This will encourage parents to notice how easy it can be to enhance learning. You can ask:

- What has your child recently explored?
- Did you notice any math and science aspects during this exploration?
- What might you have done to encourage more math and science learning during this exploration?

NOTE: Write down additional questions that you would like to include. Is there an anecdote from your own life that you can share? Add that, too.

### Watching and Learning

Watch a portion of "Exploring & Discovering" together. Begin at 01:43, as the cousins are rolling dough, and end at 02:13, as Lamarques is "selling" the balls that he made. Let parents know:

- In this segment, you'll be watching toddlers play with dough.
- Notice how their mother and grandmother bring math learning into this experience.

### Reviewing and Reflecting

Lead a conversation about things parents noticed in the video. You might ask:

- Beyond counting, what other math skills do you think the cousins were building as they played?
- What are some other math and science concepts that might be explored with dough? Examples might include: equal and unequal portions (dividing), fractions, size and weight comparisons, patterns, measuring (when making dough or mixing colors), and so on.

### Trying It Out

**Learning Challenge.** Guide parents in creating their own math and science explorations.

- Have parents work in small groups. Give each group a piece of paper, some crayons, and scissors.
- Challenge parents to come up with a learning experience that will build math and science skills using only the objects you have provided.
- To get parents started, you might offer a few suggestions, such as: folding the paper to make different shapes; cutting the paper to create shapes that can be used to make patterns; crinkling, tearing, and writing on the paper to make sounds. You can also suggest blowing on the paper in different ways or dropping the paper to see how fast it falls, then cutting the paper into smaller pieces to see if those pieces fall faster or slower.
- Gather together and ask for volunteers to share their games and experiments.
- Encourage parents to try these games out at home. (Although babies often love to tear and rip paper, they would not be using scissors. In addition, remind parents that newspapers contain harmful inks for babies, and parents should prevent their children from putting newspapers in their mouths.)
- As an alternative, you could use the same materials as in the "What Is It?" activity and give each group a different set of items than they had before (making sure each item is safe for babies). Encourage each group to come up with some explorations and experiments, such as: dropping things and comparing how far or how fast they go, testing the strength of materials, comparing size and weight, building and balancing, rolling, and so on.



## Section Three: Everyday, Everywhere Learning

### Leading Your Group

Begin by discussing the many ways that families can experience rich learning explorations as they go about their daily routines. You can mention:

- Children are discovering everything for the first time. Routines that are ordinary to you will be exciting to your little one. She will be excited to explore common objects that she sees you using every day.
- When you explore as you go, your child will discover that everything holds the potential for learning.
- In the bath, your child can explore how water drips, drains, splashes, and moves objects; as you cook, your child can measure and pour; as you do the laundry, you can sort colors, match pairs, and compare sizes. Notice patterns as you get dressed or while outside, count steps as you walk up stairs, or sing a number song such as “One, Two, Buckle My Shoe.”
- Let your child investigate objects that you use every day without showing her how they work. This will give her the chance to learn through trial and error.
- As you go about your routines, wonder aloud and let your child hear your reasoning in simple terms. When measuring water you might say: *Hmmmm...I need one cup of water. Let's see, that's not quite enough water. Let me add a little more. Oops, that's too much water, I'll pour a little water out of the measuring cup....*

### Chat and Share

Ask parents to think about their daily routines. This will encourage them to begin imagining how they can create learning opportunities in these moments. You can ask:

- Think about the daily errands and routines that you do with your child.
- What are some of the things your child might be learning as you do them?

NOTE: Write down any additional questions that you would like to include. Is there an anecdote from your own life that you can share? Add that, too.

### Watching and Learning

Watch a portion of "Exploring & Discovering" together. Begin the video at 03:21, as Ange-Yolette and Gregory are eating snacks, and end at 04:36, as Kash and his parents are in the kitchen. Before watching, let parents know:

- In this segment, you'll see parents encouraging children to explore in the kitchen.
- Notice the learning opportunities that can occur during mealtimes.

## Reviewing and Reflecting

Lead a conversation about things parents noticed in the video. You might ask:

- In the video, Ange-Yolette and Gregory sort colors and count in both English and Spanish during snack time. What other learning opportunities do mealtimes present?
- Ronan helps prepare his own lunch. As he spreads the peanut butter, he and his dad talk about shapes. How does your child help out during your daily routines? What do you think he learns as he helps?
- While Kash's dad is cooking, Kash is in his infant carrier up on the counter so that he can be a part of the sights, sounds, and smells of cooking. Even though Kash is a baby, what does he gain from being included in such activities?

## Trying It Out

***A Day in the Life.*** Help parents to think of learning adventures that can happen during daily routines.

- Ask parents to name routines that take place on a daily basis. They might mention: brushing teeth, getting dressed, taking the bus, etc. Write these routines on a large sheet of paper or white board.
- Break parents into small groups and assign a routine to each group.
- Have the groups list all of the learning opportunities that may be available during the course of their assigned routine. Encourage them to think of objects that might be explored, questions that might be asked, words that might be learned, connections that children may uncover or create, and discoveries that might be made.
- Gather the groups together and have volunteers share their lists. Write parents' ideas on the board.
- Ask for two volunteers to come up and role-play one of the learning moments. Have one parent be the adult and one be the child. If you chose, for instance, "brushing teeth," the "parent" can lead the "child" in activities that are part of the routine, such as: counting to a certain number or singing a song to help the child brush long enough; letting the child make "rain" by shaking off a wet toothbrush; having the child feel the texture of the bristles on his hand; talking about the temperature of the water; or helping the child fit the toothbrush into a holder.

## Wrapping Up

As you say goodbye to your group, remind parents that daily explorations are full of opportunities for learning. You might say:

- Children are born ready to learn, and the world is their classroom.
- Children learn best when they explore with all of their senses.
- Let your child experiment, make mistakes, and discover how things work. As she does, she'll be building skills in math and science.
- Follow your child's lead and build upon the things he's interested in.
- Ask lots of questions to encourage her discoveries.
- Let your child hear you wondering aloud and explaining your thinking in simple terms.
- Have fun as you explore! Your child will develop a love of learning that will last a lifetime.

If possible, leave time so parents can mingle and chat with one another, talk with you individually, and browse the books and other materials you've brought.

**MASSACHUSETTS EARLY LEARNING GUIDELINES FOR INFANTS AND TODDLERS**

The Exploring and Discovering workshop has been designed to meet the Massachusetts Early Learning Guidelines for Infants and Toddlers. The purpose for these guidelines, developed by the Massachusetts Association for the Education of Young Children for the Department of Early Education and Care (EEC) in 2010, is to provide a comprehensive view of the development of infants and toddlers while documenting the experiences that support this development. The guidelines are for parents as well as early education and care professionals.

The first three years of life are a time of rapid brain development and learning. This time becomes critically important for infants and toddlers as they develop foundations for learning. As their children's first teachers, parents have the greatest impact on their children's lives.

Early learning and development are multidimensional. Developmental domains (categories or dimensions of children's learning and development) are highly interrelated. Development in one domain influences development in other domains.

For more information about the guidelines, including definitions of terms, visit <http://www.mass.gov/edu/birth-grade-12/early-education-and-care/curriculum-and-learning/>.

The Exploring and Discovering workshop aligns with the following guidelines:

**FOR BABIES (0-15 MONTHS)**

*Language and Communication Development*

- Demonstrates the meaning of language by listening.
- Develops expressive language.
- Engages in social communication.

*Cognitive Development*

- Refines reflexes into purposeful actions.
- Develops memory skills.
- Performs simple actions to make things happen and displays a beginning understanding of cause and effect.
- Develops problem-solving skills.
- Explores materials and discovers mathematical concepts.
- Explores the environment making new discoveries.

*Social and Emotional Development*

- Relates to, trusts, and becomes attached to consistent educators.
- Acts as a social being by engaging with others and the world around them.
- Begins to regulate own feelings and behavior.

- Develops a positive sense of self.

*Approaches to Learning*

- Shows eagerness and curiosity as a learner.
- Becomes intentional and persistent in their learning and discovery.

**FOR TODDLERS (12-33 MONTHS)**

*Language and Communication Development*

- Demonstrates understanding of spoken (or signed) language.
- Develops expressive language.
- Engages in social communication.
- Uses language to ask questions and tell stories.
- Learns control over their movements as they reach out, grasp and release objects.

*Cognitive Development*

- Develops increasing memory of past events and knowledge.
- Demonstrates an awareness that predictable things happen as a result of actions.
- Experiments with a variety of problem-solving strategies.
- Develops early scientific skills through exploration and discovery.
- Explores materials and discovers mathematical concepts.
- Begins to develop the foundation for social science.

*Social and Emotional Development*

- Relates to, trusts, and becomes attached to consistent educators.
- Experiences and expresses a range of emotions.
- Progresses in regulating own feelings and behaviors.
- Develops a positive sense of self.

*Approaches to Learning*

- Shows eagerness and curiosity as a learner.
- Becomes intentional and persistent in their learning and discovery.