

EXAMPLES OF SCIENCE AND MATH SKILL BUILDING IN EVERYDAY EXPERIENCES

The Observation Game

Lay down in the grass or on a blanket with your child.

This is a game where the parent begins, in order to show how to play, and then takes turns with the child. The object of the game is to communicate observing the world using all the senses.

For example you could start with sight:

“I see trees. They look like giant broccoli! And then it is your child’s turn - “What do you see?” Continue with all of the senses...

I hear birds. They sound _____

I touch the grass. It feels _____

Now lie down together, and play the game again, for a new perspective! For example:

I see clouds. They look like _____

I hear wind blowing leaves. It sounds like _____

I touch the air with my hands and feet reaching up to the sky! It feels _____

When you come back in, encourage your child to tell someone else about what they saw, heard, smelled, and touched outside.

Living and Non-Living Activity

Go on a nature walk, and talk about what is living and what is non-living. Collect a few items to sit down and examine together, such as rocks, leaves, and insects. Then examine each item, and ask these questions: “Can it move or grow? Is it part of something that moves and grows? Does it have babies or make seeds? Is it part of something that has babies or makes seeds?” You can explain that these are the questions you need to answer to figure out what is living.

Bring your collection home, and grab some toy models of things – tell your child you know the toy is not living, but for this game you will pretend it is what it looks like, that is, you will pretend the toy tiger is a real tiger. (It represents a tiger.)

Make a pile for living things and non-living things. Sort the real items and the toy items into the piles, talking about each item, using the questions, and why you think it is living or non-living. In your science journal, write down the list of items, or even take a picture of the piles and add this to the journal – this is recording your data!

You could count how many items are in each pile, or make tally marks and then count the marks.

Add an inquiry question to support science thinking:

“Do animals eat living things, or non-living things?”

Create a “Science Journal”

Think of it as a scrapbook project, only you will both be recording observations, questions, and discoveries.

- In it, you will be writing down your child’s interests, questions, comments, and what you both find while investigating things you are interested in

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- As your child is able, she or he can add drawings, and perhaps want to practice their writing
- *When doing any these activities, you could enter the data into the science journal, and date the entry.*

The Nature Corner

Collect things from the yard or a park, and make a “nature corner” for them in the home

- Investigate the natural objects further using a magnifying glass, drawing the items, and taking them apart
- Parents can write down child questions and observations, and add this data to the Science Journal
- Parents and children can then research their questions together at the library

Extend the learning

1) Tape some leaves to a window – look at the veins in different leaves

- Measure how large a few leaves are, with string, or a ruler, or measuring tape
- Count how many points it has
- Compare it with other leaves – what is the same and what is different?
 - These are your math skills in action!
- Save these papers to put in your science journal, and date each entry

2) What Made This Mark?

Take a few of your sturdier nature items and lay them on a table together.

- Take a small amount of play-dough or “sculpty” clay, or real clay, and play another kind of “I Spy” game:
- While one of you closes their eyes, the other one makes an imprint of one of the items into the play-dough, and returns the item to where it was, or mixes up the whole pile.
- All eyes open now and the object of the game is to guess which object was used to make the impression, AND to explain to the other person HOW they figured it out - that is, what clues, or evidence, was used.

Let your child make the first imprint so you can model giving information on how you figured it out - again, make your thinking visible, even if you are not writing it down.

3) Outsides and Insides

Another great activity is to take things apart – children will need your guidance and supervision for this one. Outsides and insides of things really are fascinating!

- Pick up cones and leaves and flowers and small branches
- Use a magnifying glass and some flat end tweezers to help you pull things apart and see even more than your eyes can
- Smell and touch and closely examine each item

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Now take it a step further, and provide paper and colored pencils or crayons (because markers don't have enough colors to choose from), and have your child draw the outside and the inside of each item, if they are interested in doing so

- Compare different items on the outside and inside

As you investigate things together, write down what you hear your child wondering about, what questions they ask, what words they use to describe what they are seeing.

This is also a great opportunity to talk about being careful with natural things, and when it is OK to pick plants, why we don't take living things apart, and why we need an adult to be near us when we want to cut something open.

Investigate in your home as well:

- Raid the fridge, and investigate the outsides and insides of your fruits and vegetables before you eat them for snack or cook them for dinner
- Once you have done this a few times, ask your child to predict, based on past experience, what the food item will look like on the inside
- If desired, draw how the food looks on the outside, and on the inside
- One important note: This is science illustration, not art – so you are encouraging the child to look closely. Do not expect too much in the way of resemblance - the point is to look carefully and notice detail.
- An important step: encourage your child to report their findings to someone else by sharing new entries in their science journal, or telling them about their discoveries.

Follow Child Interests

Find out what is currently of interest to the child, since their interests motivate them. This also keeps learning science and math social, and fun, rather than demanding.

Focus on what is observable in their world – abstract concepts can come later! Allow your child to safely explore and play with materials before investigating deeper

- Record your child's questions and comments as they explore – to get ideas to pursue with them
- Give feedback that uses science vocabulary and descriptive language (for example, instead of "look what you found," say "I see you used a magnifying glass to see the leaf structure.")
- Ask genuine questions that lead to science thinking, for example,
"What were you thinking about when you tried that?"
"What might happen if...?"
"What do you think?"
"How would you describe it? What does it look/feel/smell/taste/sound like?"
"What can we do to find out?"
"Can you think of another way?"

"How are these two objects alike? Different?"

"Does this remind you of something you've seen before?"

- When investigating, support risk-taking – that is, trying something new leads to learning whether the new thing you tried works or not – this is how scientists work also!

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- Model curiosity and science behaviors - three great science words are: “I don’t know” and three more great science words are: “Let’s find out!”
- Look for accurate resources – seek information from Museum and science websites; look for current children’s books, since scientific thought changes with new evidence. Also look for books that have a science editor, to get the most accurate information.

One series we like: Let’s Read and Find Out Science Series Stages 1 & 2

Quantifying

Children enjoy exploring and keeping track of what is important to them.

“How many ladybugs did we find in the flowerbed?”

“Is that more or less than we found yesterday?”

“How many days before we visit Grandma and Grandpa?”

Measuring:

Children are infinitely interested in themselves! Inquiry questions could include:

“How big are you?”

Expand on the common answer – how tall, by also asking and recording:

“How wide are you?”

“How much do you weigh?”

“How high on the door can you reach?”

Record the date also, so you can compare the changes in the child through the year.

You could extend this further by measuring the child with an unusual measuring tool – that is, how many head-lengths are you? (Measure the child’s head from the top of the head to the chin, with a string. Then see how many of those strings it takes to get from the chin to the ground.)

Counting:

“How many people are coming for dinner?”

“How many plates will we need?”

“How many toes do I have?”

“How many toes does the dog have?”

Comparing:

You might start with each other – what size shoes do everyone in the house wear?

Or with your pets, “What is the same about our cat and dog? What is different?”

Developing an understanding of quantity:

Children come to understand “more than, less than, and the same” when important resources are involved, such as food! “Who has the biggest piece? Or do we all get the same size?”

One-to-one correspondence: We each need to get a strawberry, and there are three of us, so how many strawberries do we need?

All of these are math skills utilized in daily life and in science!