



Science

Inquiry and Observation: Explore, Examine, and Investigate

What: Exploring, examining, and investigating involve the process of gathering information to learn about something new or less familiar. Each is fueled by curiosity and a drive to learn, and depends on the ability to ask questions, manipulate objects, and try things out to see what happens.

Why: Exploring, examining, and investigating are processes of discovery that help children understand the world around them. Through discovery, children learn to wonder and question. This stimulates children's motivation to figure things out on their own, rather than relying on others to tell them how things work.

How:

1. Pause Your Response

- Before answering children's questions, pause and invite children to try to answer their own question. Do this by asking additional questions, or offering comments that might help them arrive at an answer. For example, if a child asks, *How old is our class turtle?*, you might respond by asking questions like *How could we figure that out?* You might also say: *Well, he was born in August at the beginning of the school year. It's now December. Let's count the number of months from August to December. What could we use to help us remember the months?* Allow children to come up with ideas before sharing, *Let's use our calendar!* Use this strategy to model inquiry and problem solving, and to show children how they can ask questions, explore, and examine ways to gathering information, and investigate ways to gather information.
- Take note of the questions you ask children after they ask you questions. Write down questions that can generally help children gather information. Refer to this whenever children ask you questions about something in which they want to learn more.

2. What If

- Throughout the day, ask children "What if" questions. Try asking silly questions to engage children and build their enthusiasm around inquiry and problem solving. For example, *What if we had fur all over our bodies like lions?* or *What if we could fly to school?* Encourage children to ask questions like these themselves.
- Take note of what topics children mention frequently. For example, do all of their "what if" questions focus on animals? Use what you learn to cultivate interests and create new activities to work on inquiry and problem solving.

3. Notice Changes

- Encourage children to notice changes, such as a new pet in the classroom, the weather outside, plants growing in the garden, or what happens to their paintings when they dry. Take pictures to provide tangible ways for children to compare things over time.
- As children notice changes, listen and make note of how they learn about the change. Do they ask questions? What kinds of questions? Do they come up with experiments to investigate further? Do they generate their own predictions?

4. Let's Compare

- Compare objects throughout the day. For instance, you can compare raincoat colors, lunchbox covers, apple slices, shoe shapes, and height. Model comparisons by asking children to look at similar objects,



and then describe what you see as the same and different. Say, for example, *These are both shoes, but one is purple with a buckle and the other is blue with a velcro strap.* Ask children to look for similar objects on their own to compare.

- Take a picture of the items children compare. Post them on a chart alongside words that describe their similarities and differences. Refer back to these words as children find new objects to compare, and build the picture and descriptor list.

5. Science Center

- Provide tools that help children explore, examine, and investigate their questions. For example, include magnifying glasses, bug boxes, weight scales, eye droppers, rulers, and microscopes. Provide time each day for children to explore these items with their peers.
- Guide children's initial exploration by showing them how they can use these items. Include language that describes their actions. For example, *This button is so small. I'm going to use the magnifying glass so I can really see the color on those tiny threads and make the button look bigger.* Model exploration and examination through your actions and words so that they can continue to use these strategies to learn about new objects in their environment.
- Observe and even video children's exploration and use of these investigation tools. Try to capture their questions and how they seek answers. How are their findings communicated?

6. Family Chat

- Talk with families about the importance of inquiry and problem solving, and of giving children opportunities to examine, explore, and investigate so that they learn how to gather information and answer their own questions. Ask families to share children's interests (e.g., cooking utensils, trucks, bugs), and encourage them to help their child collect and compare information about one of these things. At school, have children share what they did at home with their families to learn about these objects.

