



# SCIENCE EVERYWHERE

**Prekindergarten Inquiry-Based Learning:**  
**Nurturing a child's curiosity while instilling a life-long love of science.**  
New York State Education Department



Children are innately curious and possess a natural desire to discover and explore the world around them. As caregivers or educators, we have a responsibility to nurture this innate curiosity and encourage their natural inclination to ask questions. Science Everywhere is an initiative that aims to do just that by utilizing inquiry-based learning. This approach empowers children to take ownership of their learning and expand their knowledge by problem-solving and making real-world connections. The best place to start? Right outside your windows and doors! Here are five easy steps to get you started regardless of the topic you choose:

## 1 Set the Stage!

Inquiry-based learning, or IBL for short, is a student-driven approach to learning that begins with a question. The classroom or outdoors becomes the space for student-led exploration. Students ask questions, investigate, and research in order to answer them. To initiate this process, pay attention to your students, listen and observe them carefully. Record the questions they ask and look for emerging themes such as changes in seasons, different kinds of birds, families, friends, bugs, flowers, etc. Use one of these questions as a starting point for planning and let the students take the lead in their own learning journey.

### EXAMPLE

You took your class on a walk around the neighborhood and saw a nest in a tree. You overheard the students ask: Why do birds live in nests? What are nests made of? Are all nests the same size? How many colors do birds come in? How do birds fly? since you saw a nest and many students asked about it, you consider "What are nests?" for your essential question.



## Prepare for Learning

Once you've decided on your essential question or topic, create a stimulating environment. Set up spaces with open-ended materials and resources that are sensory rich to encourage exploration and (e.g., art supplies, photographs, magnifying glasses, books, natural items, field trips, video clips, music, etc.)

### EXAMPLE

Preparing your classroom with bird-themed items can be both fun and educational. Here are a few ways to incorporate a bird inquiry in your classroom:

- Include photos of birds, nests, and natural items to create a visually stimulating environment.
- Leave open wall space to display student art and anchor charts created for use throughout the investigation.
- Provide birdseed (if nut allergies use dyed dry rice or chick peas), nest materials, feathers, and plastic eggs for hands-on exploration.
- Stock up on both fiction and non-fiction books related to the topic to encourage reading and learning.

## 3

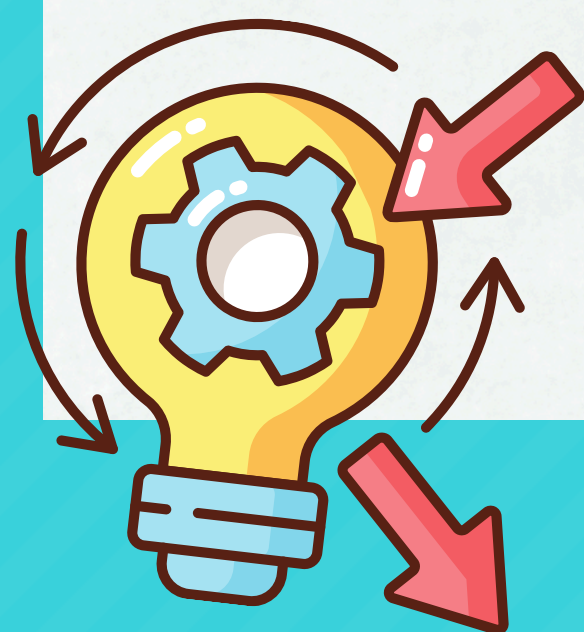
## Let the Exploration Begin!

To develop a deep understanding of any topic, it's important to invest time in background research and learning new vocabulary. Give your students ample time to explore their interests and questions through various activities in whole group and small group settings and thematic learning centers.

### EXAMPLE

Let's shake things up with some hands-on learning!

- Take a hike in nature.
- Blast off on a virtual or in-person field trip.
- Whip up some culinary magic in the kitchen.
- Spark those curious minds by tossing out open-ended questions and making a safe space where students can fire off their own questions like rockets.

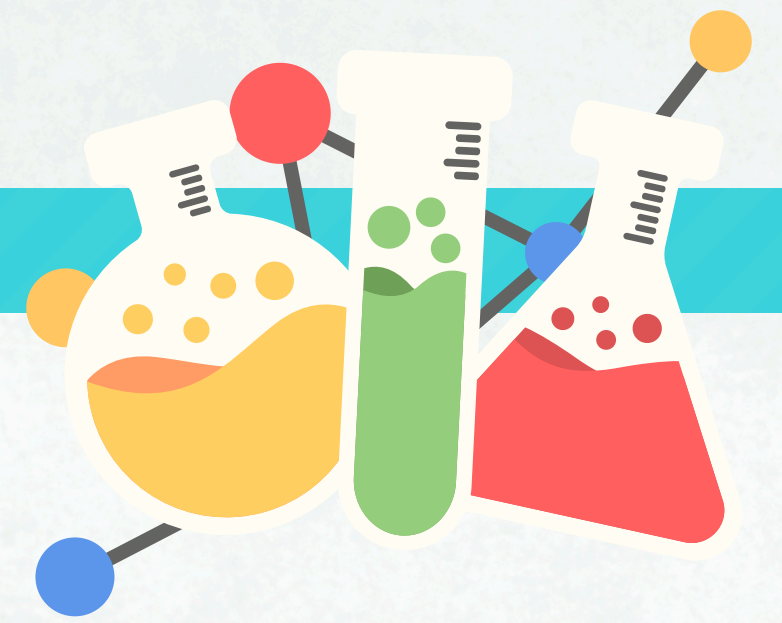


## Guide Students Through the Exploration

When working on a problem, guide your students through a process of critical thinking to help them arrive at solutions. Your role is to facilitate and lead your students through different learning activities, such as whole group, small group, and thematic learning centers. As you guide them, it's important to provide space for independent exploration.

### EXAMPLE

Spread a variety of nonfiction texts about different bird species and nests across tables. Give students the opportunity to delve into the texts. Offer guidance by sharing observations like "I notice a large nest" and ask prompting questions such as "Which bird species do you think built this nest?"



## 5

## Support Students to Share their Understandings

Children play and work in small and whole groups and discuss their ideas, observations, and conclusions, sometimes with prompting from the teacher. Learning for young children is a social process, so provide opportunities for children to explain their thinking with their peers. Encourage children to compare their observations and ideas.

Collaborative problem-solving and investigating shared interests with others are excellent ways to enhance children's learning. The inquiry process provides a context for educators to engage in sustained, shared conversations with children. For both teachers and children, the practice of sharing ideas, observations, assumptions, and new learnings is an important part of making meaning out of the inquiry process.

### EXAMPLE

#### Whole Group

- Display an assortment of images to encourage discussion
- Create an anchor chart question and solicit responses from students
- Turn and talk

#### Small Group

- Create authentic artwork
- Design models (example: design a nest)
- Integrate the NYS PreK Learning Standards within the investigation (example: sequencing and sorting)

# Reflect on the Exploration

Reflection is an integral part of the inquiry learning process. It's not just about asking students to consider their opinions on the subject matter, but also reflecting on the learning process itself. This is where metacognition comes into play; encouraging students to think about their thinking. By focusing on how they learned, in addition to what they learned, students can improve their overall learning experience.

## EXAMPLE

- What is one interesting thing you learned about birds this week, today, or during this activity?
- What do you think you did well today?
- What was challenging for you during this activity?
- What accomplishment during the activity made you feel proud?
- What else would you like to learn about birds?
- Which aspect of this project did you enjoy the most, and why?
- What changes would you make for next time?



## Timelines and Classroom Management

Inquiry projects can vary in duration, taking anywhere from a few weeks to several months, depending on how interested children remain in the topic of exploration. It's important to remember that if children lose interest, it's time to move on to a new exploration to keep them engaged and motivated.

