

# Preschool Science

# The Peep Approach



Photo: Theresa Montgomery

*Early science experiences are important for children. Children learn to look closely at the world, perform simple investigations, make generalizations about the way things work, and make predictions based on past experiences.*

*Children share their ideas through discussions, drawings, and simple record-keeping. They begin to understand early scientific vocabulary, as well as concepts of time and measurement. And most importantly, they develop a healthy respect for themselves and the natural world.*

—Cynthia Hoisington,  
Development Services  
ABCD Head Start  
Boston, MA

When given time, space, and interesting materials, preschool children consistently engage in hands-on play that builds their understanding of how the world works, like making shadows on a wall, or watching water drip from a faucet. This forms the foundation on which later science understanding is developed. The *Peep* approach to preschool science exploration is built on the following developmental principles.

### **Young children learn from direct contact with objects.**

A good science exploration is one that can be investigated using **hands-on activities that can be repeated** again and again in different ways. Children need to be able to look, touch, and manipulate objects many times, in many ways, and in different settings. For example, in the Explore Water unit, children observe water drops on leaves after a rainstorm, watch them drip from a faucet or their own fingertips at a sink, and squeeze them from eyedroppers onto wax paper.

### **Children connect different experiences to form ideas about how things work.**

Children draw conclusions based on their experiences. By exploring one science topic for several weeks in many different ways, children **build new and more complex understandings**. For example, children may think that plants need light to grow. In the *Peep* unit, Explore Plants, children sprout bean seeds in a dark closet *and* next to a sunny window. They observe, gather data, and compare the results, refining their understanding of the role light plays in the development of a plant.

### **Preschoolers are immersed in their own perspectives.**

Since young children make meaning from objects and events that affect them directly, **science investigations should stem from their interests**. Explorations into shadows and plants can grow from questions kids ask, such as: *Why does my shadow disappear? How can I keep my plant alive?*

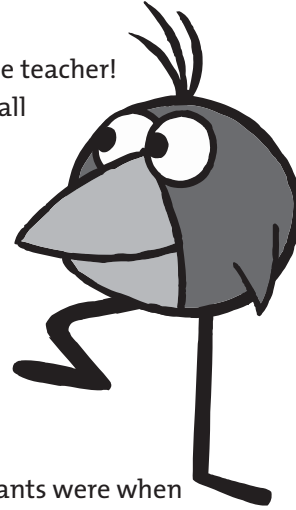
### **Children like to exert control over their environment.**

When children can act on objects or events and see a response, they feel empowered and begin to understand cause-and-effect relationships. Science investigations should include plenty of opportunities for children to pose “What happens if...?” questions, to make decisions, and then **observe the results of their actions**. For example, in a shadow investigation, a child might ask, *What happens if I move my hand closer to the lamp?* Trying it out, the child discovers that his or her hand shadow grows larger and blurrier.

# The Role of the Teacher

An important ingredient for rich science experiences is you, the teacher! As a teacher, **you do not need to be a science expert** and have all the answers. Your role is to support children's science play by:

- preparing yourself and your classroom
- playing alongside children
- asking open-ended questions
- making cross-curricular connections
- helping children reflect



## Prepare Yourself and Your Classroom

Remember how fascinating things like shadows, water, and plants were when you were four? Each *Peep Explorer's Guide* unit begins with a section called **Roll Up Your Sleeves: Teacher Preparation**. A series of quick activities and simple science explanations leads you through a hands-on exploration of the same materials your students will be using.

Questions are posed to help you reflect on what you've learned and how you might apply it in your teaching. For example, in the Explore Shadows unit, questions will prompt you to think about how shadows change and move when you hold a flashlight above an object, then move it around in circles. Reflecting about what happened and why you think it happened helps you make sense of your experiences and gives you a deeper understanding of the key science concepts.

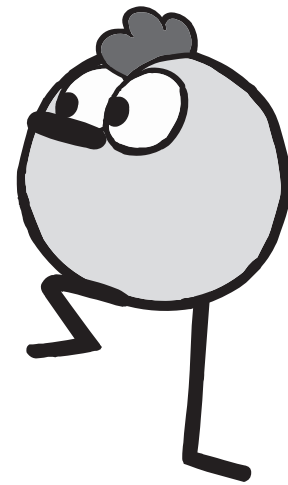
Your **first-hand experience** with the materials will help you think of ways your children might use them. How might you want to prepare the space or adapt the activity? What kinds of questions might your children have?

A **Teacher Reflection** section at the end of each unit gives you a chance to think about the experience, both the successes and the challenges. Open-ended questions encourage you to jot down ideas for modifying or expanding the materials and activities the next time you use the unit.

## Play Alongside Children

Science exploration in each *Peep* unit begins by offering children time to **freely explore** the materials you have provided, both indoors and outdoors. Find out what children think and what interests them by observing their play. Watch what they do with the materials and listen to their comments about what they are doing. This can help you discover the knowledge children have about a topic, what they believe, what interests them, and what kinds of experiences will lead them to new discoveries.

Then play alongside your students, using the **guided activities** provided in the *Peep Explorer's Guide*. While you do this, model scientific skills and attitudes, like curiosity, focused engagement in the activity, and a willingness to share ideas. You can also provide assistance when needed, like helping a child to trace a shadow or holding a funnel over a bottle. When appropriate, make rules with children regarding the safe use of materials.



## Ask Open-Ended Questions

Questions can **transform ordinary play into science play** by keeping kids focused on observing, asking questions, and drawing conclusions based on evidence. The *Peep Explorer's Guide* provides examples of these open-ended questions throughout. For example: *Look at Carly's shadow on the sidewalk. Can you see her eyes? Why do you think you can't? Do you think we could make shadows like that indoors? How?*



Photo: Theresa Montgomery

## Make Cross-Curricular Connections

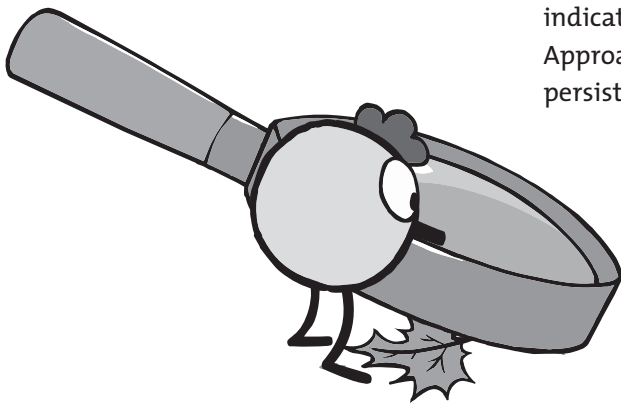
There are many natural, meaningful ways to incorporate **language, literacy, and math activities** into children's science play. The *Peep Explorer's Guide* helps identify these opportunities. Introduce new vocabulary as it comes up in the context of the children's explorations. Read books related to science topics and encourage children to write, draw, and discuss what they are doing and learning. Provide math experiences as you count, measure, chart, and graph.

## Help Children Reflect

Hands-on learning is an interactive process of exploring, observing, questioning, and processing what you have learned (or think you have learned) through discussion, writing, and reflection. Asking kids to reflect on their experiences and share their thoughts and ideas at circle time or in small group discussions helps them make sense of their experiences. Each guided exploration in the *Peep Explorer's Guide* culminates with a **Reflect and Share** section, with suggested questions and activities to help children generalize their experiences and see patterns.

# Science Standards

The *Peep Explorer's Guide* activities and pedagogical approach align with the Head Start Child Outcomes Framework. A Correlation Chart, provided at [peepandthebigwideworld.org/resources/explorers-guide.html](http://peepandthebigwideworld.org/resources/explorers-guide.html), indicates the correlation with Head Start Language Development, Mathematics, and Science indicators. The *Peep Explorer's Guide* also aligns with the Head Start Approaches to Learning, fostering initiative and curiosity, engagement and persistence, reasoning and problem solving.



# Resources to Enhance Your Science Explorations

## PEEP and the Big Wide World Web site

The *Peep* Web site, [peepandthebigwideworld.org](http://peepandthebigwideworld.org), offers great resources for children, parents, and educators to further encourage children's science play.

**Watch a video.** The animated shows and live-action video clips that accompany the six *Explorer's Guide* units are available for free viewing on the *Peep* Web site. Choose English or Spanish audio.

**Play a game.** Enjoy interactive science and math games especially designed for preschool children. To read about the educational objectives behind the games, go to **About Peep** and then to **About Our Games**.

**Find a great Anywhere Activity to do with your child.** Find easy, fun ideas to turn everyday family situations—like a walk in the park, bathtime, or snack time—into rich science and math experiences.

**Learn about young children and science learning.** What's the best way to introduce young children to science? Learn about the latest research and read an informative interview with *Peep and the Big Wide World's* science content director, Karen Worth.



To order DVDs and books, visit [shop.wgbh.org](http://shop.wgbh.org), or call 1-888-255-9231.

## PEEP and the Big Wide World DVDs

The following DVDs include *Peep* episodes featured in the *Explorer's Guide* units. You may want to purchase these videos for whole class viewing. Videos offer both English and Spanish audio tracks.

### Chirp Flies

*Sounds Like...* (Sound) and five other episodes

### Peep Figures It Out

*Night Light* (Shadows), *The Whatchamacallit* (Ramps), and four other episodes

### Peep Finds

*Night Light* (Shadows) and five other episodes

### Peep Floats

*The Fish Museum* (Water) and five other episodes



## PEEP and the Big Wide World Books with Audio CD

Enjoy four new adventures with Peep and his friends! Each 24-page storybook includes sticker sheets and a CD featuring a read-along of the story and music.

**Shadows**

**Measuring**

**Animal Homes**

**Seasons**



# Watch Additional Related **PEEP** and the Big Wide World Episodes

The following *Peep and the Big Wide World* animated shows correspond with the science themes in the six *Explorer's Guide* units. Watching them with your students can enhance your science explorations. As an educator, you may record these episodes from your television and use them for educational purposes for up to one year after broadcast. Some of these episodes are also available on DVD.

## Explore Shadows

- *Go West Young Peep* (available on DVD: "Peep Figures It Out")
- *Shadow Play* (available on DVD: "Peep Figures It Out")

## Explore Water

- *Current Events* (available on DVD: "Peep Floats")
- *The Mystery of the Thing That Went and Came Back*
- *Dry Duck, Part II*

## Explore Plants

- *Flower Shower*
- *The Root Problem*

## Explore Color

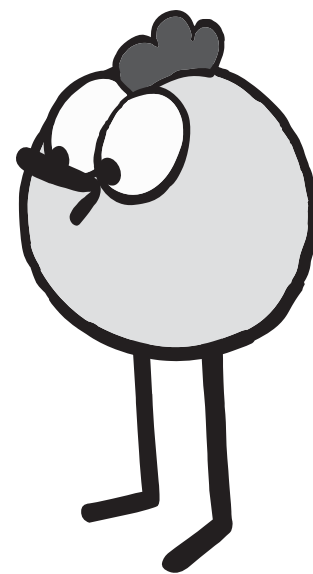
- *Peep's Color Quest*

## Explore Sound

- *Give Me a Call* (available on DVD: "Quack Knows It All")
- *Hear Here*

## Explore Ramps

- *Marble Mover*
- *Quack and the Very Big Rock* (available on DVD: "Quack Knows It All")



## More Great Early Childhood Resources from WGBH



### **Curious George**

Inspire exploration of science, engineering, and math in the world around us. (Ages 3–6)  
[pbskids.org/curiousgeorge](http://pbskids.org/curiousgeorge)



### **Arthur**

Encourage positive social behavior and promote problem-solving skills with resources that address topics relevant to children's lives, such as health, media, and conflict resolution. (Ages 4 and up)  
[pbskidsgo.org/arthur](http://pbskidsgo.org/arthur)



### **Between the Lions**

Build literacy with videos, games, and other activities that present the many joys of reading. (Ages 4–7)  
[pbskids.org/lions](http://pbskids.org/lions)

# Credits

The *Peep Explorer's Guide* was produced by the Educational Outreach Department of WGBH.

## Director, Educational Outreach

Julie Benyo

## Associate Director, Educational Outreach

Thea Sahr

## Manager, Educational Content

Sonja Latimore

## Manager, Educational Outreach

Mary Haggerty

## Associate Manager, Educational Content

Cyrisse Jaffee

## Editorial Project Directors

Elly Schottman

Jennifer Lisle

## Outreach Project Director

Gay Mohrbacher

## Assistant Editors

Lauren Feinberg

Claudette Dawes

## Content Advisors

Karen Worth

*Senior Scientist, Center for Science Education  
Education Development Center, Inc.*

Cynthia Hoisington

*Curriculum Design Associate*

*Education Development Center, Inc.*

## Writers

Sharon Grollman

Cynthia Hoisington

Elly Schottman

## Teacher Consultants and Field Testers

Kate Adie

Beth Antista

Diana Barron

Jessica Cruz

BJ Daniel

Ben Mardell

Dina Mardell

Jennifer Medeiros

Nikki Pina

Jennifer Sutton

Tiffany Young

## Reviewers

R. Bhaskar

*Senior Research Fellow, Harvard University*

Barbara Bowman

*President, Erikson Institute*

*Advanced Study in Child Development*

Carol Copple

*Publication's Editor*

*National Association for the Education  
of Young Children*

## Designers

Peter Lyons

Julie Powers

Dennis O'Reilly

Rusha Sopariwala

## Illustrators

Rick Pinchera

Vadim Kapridov

## Series Executive Producer

Kate Taylor

## Series Senior Producer

Marisa Wolsky

## Series Project Director

Blyth Lord

## Special thanks to the other teachers and students who field-tested this program

Cobb County Head Start, Marietta, GA

ABCD Head Start, Dorchester, MA

USC School for Early Childhood Education, Los Angeles, CA

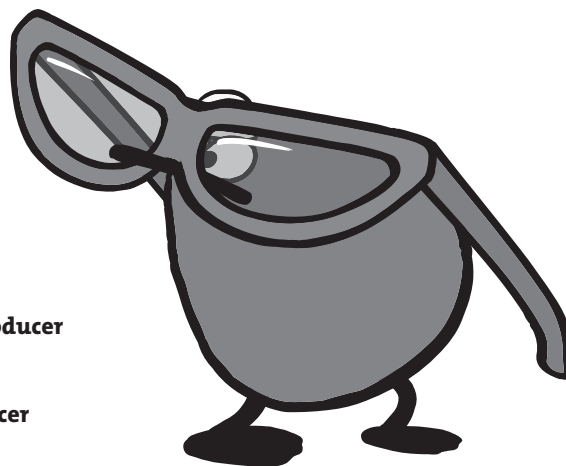
Carole Robertson Center for Learning, Chicago, IL

Effie O. Ellis Head Start, Chicago, IL

Salvation Army Child Care Program, Chicago, IL

Shiloah Head Start, Chicago, IL

Temple Head Start, Chicago, IL



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