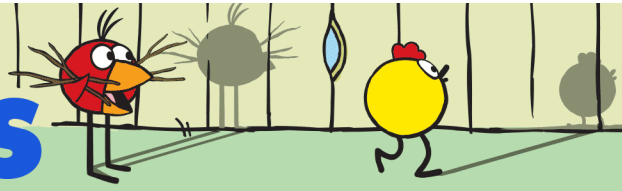




Explore SHADOWS



Facilitator's Guide Teaching Strategies for Exploring Shadows with Children

About This Guide

This facilitator's is designed to help you share teaching strategies with preschool educators using the PEEP science curriculum on Shadows.

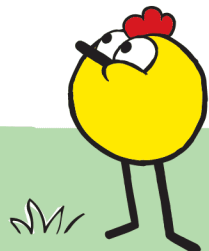
The training is broken into two five-hour sections. The content includes four teaching strategies that are key to exploring science with young children: Learning Environments, Science Talk, Documentation and Reflection, and Individualized Instruction. Part I of the training focuses on two strategies: Learning Environments and Science Talk. Part II addresses the other two teaching strategies: Documentation and Reflection and Individualized Instruction.

The training includes multiple ways for educators to explore these teaching strategies. These include videos of preschool educators modeling the strategies while exploring shadows with children, a variety of *Share and Discuss* exercises, hands-on science activities, and a learning activity (or homework) to connect the information presented in Part I with the concept and strategies covered in Part II.

Preparing Ahead of Time

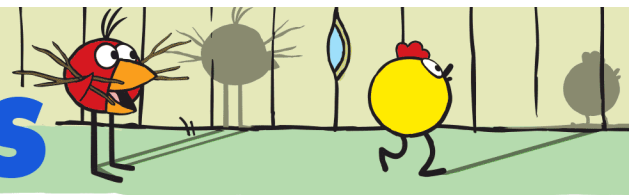
There are several things you should do in advance:

- **Review this Facilitator's Guide.** As the leader of this training, familiarize yourself with the teaching strategies covered so you can discuss them in a natural, conversational way.
- **Visit the PEEP Web site** (peepandthebigwideworld.com) and become comfortable with the Educator section. It features:
 - The PEEP Curriculum (including a section devoted to Shadows that we'll focus on)
 - Teaching Strategies (including this facilitator's guide, the teaching strategies videos, and other materials for the training.)
- **Review the agenda for both Part I and Part II**, which will guide you through the training and keep you on schedule (pp. 3–4).

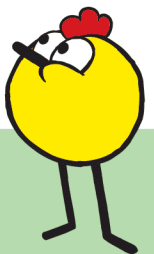




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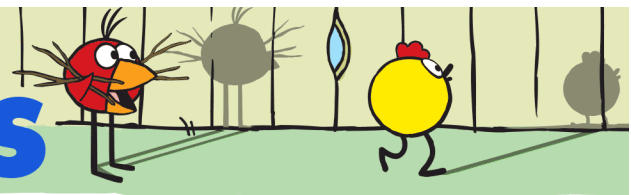


- **Review the two PowerPoints**, which you can download from the Teaching Strategies section of the Plants unit. There's one for Part I and another for Part II. It will give you a start-to-finish framework for the training.
- **Download the four teaching strategy videos** ahead of time from the Teaching Strategies section of the Shadows unit. To locate the four videos, click through the tabs at the top of the Teaching Strategies page for Shadows. One video appears under each tab: Learning Environments, Science Talk, Documentation and Reflection, and Individualized Instruction. Right-click or option click the "Download" button and choose "Save As" to download them.
- **Do a practice run-through** using the facilitator's guide, the PowerPoints, and the videos together. Rehearse and fine-tune your presentation to "make it your own." Take note of where you will leave the PowerPoints for active sharing and discussion among participants.
- **Collect the materials** you'll need for the *Share and Discuss* exercises and the four hands-on science activities. The complete list of materials for these activities appears on page 4 of this guide.
- **Try the hands-on science activities and the *Share and Discuss* exercises** you'll be asking participants to do.
- **Test the technology** you'll be using for the training. Will you have Internet access to show the PEEP Web site? Is your projector working properly? At the end of Part I, you'll give participants a tour of the PEEP Web site, ideally using a live Internet connection. If you don't have Internet access, you can use screenshots included in the PowerPoints.
- **Print the Training Handouts** for each participant, which can be found under the Teaching Strategies section of the Shadows science unit.
- **Print the Curriculum Planner PDF**, which can be found with the Shadows Curriculum. From the PEEP home page select Educators, then the Shadows curriculum. You'll find the button for the Curriculum Planner PDF in the upper right hand corner.
- **Factor in break times.** Each training consists of five hours of instruction and discussion—you'll want to add in extra time for breaks throughout the session.





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Materials for Share and Discuss Exercises and Hands-On Activities

Instructions for facilitating activities are found within the body of the training. The materials needed are repeated there as well.

Share and Discuss Exercises

- paper and pencils
- whiteboard or flip chart
- construction paper
- poster board
- colored markers and/or dry erase markers
- tape or glue
- sticky notes, small and large

Hands-On Activity: Learning Environments

Some or all of the following:

- large roll of paper for tracing children's full-length shadows (or chart paper)
- desk lamp with a 100-watt bulb (or a slide projector or overhead projector)
- flashlight
- various objects to make shadows (fork, block, toy car, book, small box, toy plane, etc.)
- **for Mini Shadow Theater:** Using the bottom of a cardboard box (preferably larger than a shoebox), cut out a large rectangle from the bottom panel, leaving about a 1½-inch border around the edges. Cover the opening you made with wax paper (or white paper) and secure it with tape.
- **for Large Shadow Theater:** Drape a sheet across two chairs that are a few feet apart. Use binder clips or tape to attach the corners of the sheet to the top and bottom of each chair and make sure that the sheet is stretched tightly. Place the lamp behind the theater so that it shines through the sheet.

Share and Discuss: Science Talk

- flashlight (per pair)

Hands-On Activity: Science Talk

For each group:

- desk lamp with a 100-watt bulb (or a slide projector) for each group
- wall to project shadows onto
- chart paper taped to the wall
- small objects—toy, mug, pencil, etc.
- markers

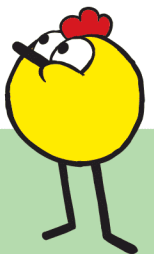
Hands-On Activity: Documentation and Reflection

- art supplies listed above under Share and Discuss Exercises

Hands-On Activity: Individualized Instruction

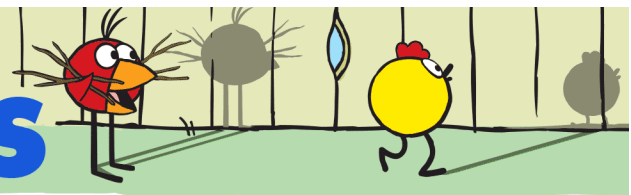
Prepare one mini shadow theater per pair:

- Cut out a large rectangle from the bottom of a box (one larger than a shoebox is preferable), leaving about a 1½-inch border around the edges. Cover the opening you made with wax paper (or white paper) and secure it with tape. This is the theater.
- From the open end of the box, you'll prop a flashlight so it shines light on the paper.
- Place an object between the flashlight and the paper and see its shadow projected on the outside of the theater.





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Facilitator's Agenda

Below is the agenda and recommended timing for Part I and Part II of the training. (Remember to add in breaks.)

PART I (5 hours)

Introduction (30 min.)

- About this Training: Agenda (5 min.)
- What is PEEP and the Big Wide World? (5 min.)
- The PEEP Science Curriculum (5 min.)
- The Educator's Role (5 min.)
- Share and Discuss: Your Experiences Teaching Science (10 min.)

Learning Environments (120 min.)

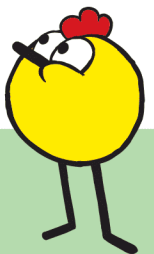
- Introduction (15 min.)
- Watch and Discuss the Video (20 min.)
- Teaching Strategies
 - Planning a Thoughtful Learning Environment (10 min.)
 - Share and Discuss (15 min.)
 - Offering Choices (10 min.)
 - Share and Discuss (15 min.)
- Hands-on Science Activity: Learning Environments (30 min.)
- Wrap Up (5 min.)

Science Talk (120 min.)

- Introduction (15 min.)
- Watch and Discuss the Video (20 min.)
- Teaching Strategies
 - Modeling Science Talk (10 min.)
 - Share and Discuss (15 min.)
 - Asking Open-Ended Questions (10 min.)
 - Share and Discuss (15 min.)
- Hands-on Science Activity: Science Talk (30 min.)
- Wrap Up (5 min.)

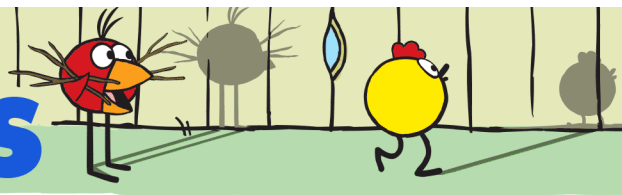
Preparing to Teach (30 min.)

- Tour of the PEEP Web site (15 min.)
- Homework Assignment (15 min.)





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PART II (5 hours)

About this Training: Agenda (5 min.)

Share Your Experiences (25 min.)

- Review and Discuss the Homework Assignment

Documentation and Reflection (120 min.)

- Introduction (15 min.)
- Watch and Discuss the Video (20 min.)
- Teaching Strategies
 - Encouraging Children to Document (10 min.)
 - Share and Discuss (15 min.)
 - Reflecting Together (10 min.)
 - Share and Discuss (15 min.)
- Hands-on Activity: Documentation (30 min.)
- Wrap Up (5 min.)

Individualized Instruction (120 min.)

- Introduction (15 min.)
- Watch and Discuss the Video (20 min.)
- Teaching Strategies
 - Planning for Children of Different Ages and Developmental Stages (10 min.)
 - Share and Discuss (15 min.)
 - Planning for Children with Different Interests and Learning Styles (10 min.)
 - Share and Discuss (15 min.)
- Hands-on Activity: Individualized Instruction (30 min.)
- Wrap Up (5 min.)

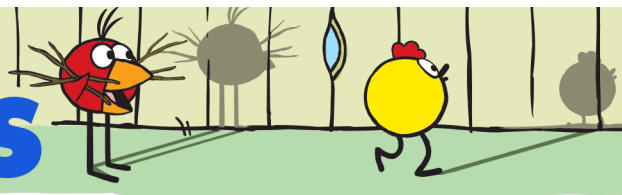
Review PEEP Resources (30 minutes)

- Tour of the PEEP Teaching Strategy Resources
- Other PEEP science subjects





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<PPT slide #1>

PART I: Teaching Strategies for Exploring Shadows with Children (5 hours)

Introduction (30 min.)

Welcome participants. Introduce yourself and share your background.

<PPT slide #2>

About this Training: Agenda (5 min.)

In this training, we will share strategies for teaching science to children.

Today we'll explore two topics:

- **Learning Environments:** how to set up your classroom to encourage science exploration.
- **Science Talk:** how to get children thinking and talking like scientists by asking open-ended questions, making comparisons, sharing results, and learning new words to describe what they are seeing and doing.

If you are going to teach the second part of the training on a separate day, tell participants:

In Part II of training, we'll explore:

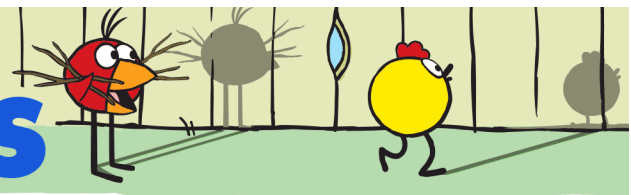
- **Documentation and Reflection:** how to document children's science experiences to help them understand and think more deeply about them.
- **Individualized Instruction:** how to tailor your teaching for a child's individual needs and abilities—age, developmental stage, interests, and learning styles.

Then, introduce PEEP.





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<PPT slide #3>

What is PEEP and the Big Wide World? (5 min.)

This training is part of the preschool educational resources offered by the public television program, *PEEP and the Big Wide World*.

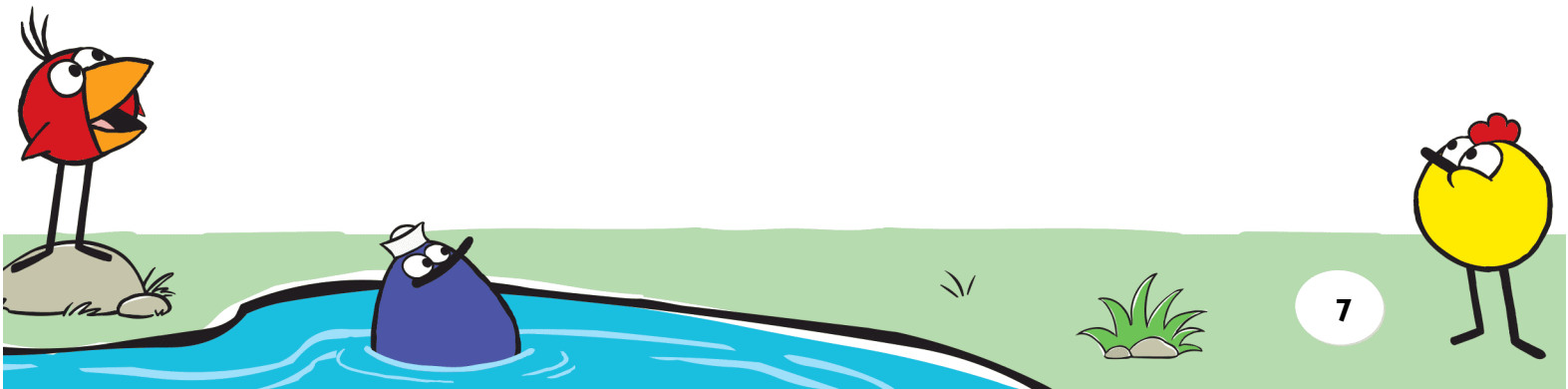
- PEEP is an animated show for 3- to 5-year-olds airing on public television stations. (Each station makes decisions about when to air PEEP; check local listings.)
- Funding for PEEP comes from the National Science Foundation.
- PEEP introduces science to children through the animated adventures of its three main characters: a chick named Peep, and his friends Chirp and Quack (a robin and a duck).
- The PEEP Web site is easy to remember: www.peepandthebigwideworld.com. There you'll find episodes from the show, age-appropriate games for children, and lots of free resources for educators like yourself—including this training and the PEEP curriculum.
- Just about everything on the site—including the PEEP episodes—is offered in both English and Spanish.

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The PEEP Science Curriculum (5 min.)

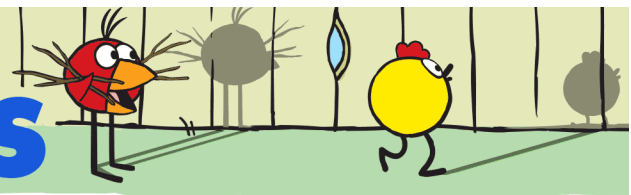
This training will help prepare you to teach the PEEP science curriculum.

- The curriculum covers six science topics: Plants, Water, Shadows, Ramps, Sound, and Color.
- Each curriculum offers three weeks of exploration, featuring books, videos, hands-on activities, and learning center ideas. Between one to two hours of science is offered each day, which you can weave into your daily schedule. You can also spread the three weeks of exploration over a longer period of time.
- If you can't devote this amount of time to science, the Web site also offers a selection of stand-alone activities. With these stand-alone suggestions, you have the flexibility of offering an individual science activity when it fits your schedule.
- We'll take a tour of the curriculum on the Web site at the end of today's training.





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<PPT slide #5>

Best Practices for Preschool Science

A good science programs should emphasize:

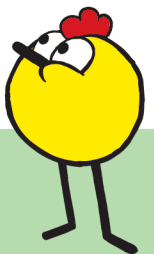
- **The world children live in.** These science units focus on topics children already encounter in their daily lives—water, sound, plants, color, shadows, and ramps (or movement). Through the PEEP curriculum, children will explore things they can actively experience for themselves—like dripping water faucets or their shadows on a sunny day. They won't be studying science concepts like dinosaurs or planets. These concepts are often fascinating to young children, but they can't be explored in a hands-on way and are therefore too abstract.
- **Hands-on science exploration.** Young children learn from direct experience—they need to be able to see, hear, touch, and manipulate objects. Instead of **telling** children about their world, the PEEP curriculum will help them discover it for themselves.
- **The process of science rather than the results.** Science is about questioning, predicting, and testing rather than achieving a specific outcome. The PEEP curriculum gets children thinking and experimenting—much more valuable than getting the answers right, particularly at this age.
- **Sustained exploration.** PEEP focuses on a science topic for several weeks. Whether you include science activities on a daily basis or once or twice a week, returning to a topic gives children the time they need to observe, wonder, and deepen their understanding.
- **Building literacy.** Thinking and talking about science (asking questions, experimenting, making comparisons, discussing results) expands children's vocabulary, increases their listening and comprehension skills, and strengthens their ability to reason, engage, and concentrate.

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The Educator's Role (5 min.)

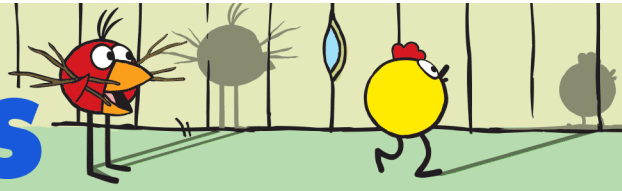
You are your children's guide to discovering and understanding their world.

- **Explore together.** Your role is to explore alongside children, to get them thinking and questioning, and to share your own enthusiasm and curiosity.
- **You don't need a degree in science!** You won't be explaining gravity, sound waves, or the water cycle. These are concepts for later years. Instead, children will see how objects fall, compare different sounds, and explore the shape of water drops. You'll teach them something that's far more important at this age than science concepts: critical thinking skills and the ability to focus and problem-solve.





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- **It's OK to say "I don't know."** Follow it up with "Let's see if we can find out together" and join your children in the joy of exploring their question with a new investigation or discovering the answer in a book.

Share and Discuss: Your Experiences Teaching Science (10 min.)

Leave PowerPoint and ask the group:

How many of you have taught science before? Acknowledge the raised hands. Then have them share their experiences with science exploration:

- What science topics have you explored? How long did you stay on each topic?
- What challenges have you encountered? How did you engage infants and toddlers as well as older children?

<PPT slide #7>

LEARNING ENVIRONMENTS (120 min.)

We're now going to talk about setting up rich and stimulating learning environments for science exploration.

Introduce Learning Environments (15 min.)

Use this outline to begin your discussion of learning environments.

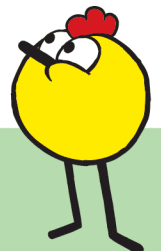
Ask the following questions to discover what participants already know about the subject. Write their comments on a chart/whiteboard. Fill in any ideas or observations participants did not mention.

<PPT slide #8>

What different types of learning centers can be offered in a classroom?

<PPT slide #9>

- **Permanent learning centers**—You already have learning centers in your classroom—space designed for specific types of exploration, such as a block center, dramatic play area, art table, or book corner. (Ask for other examples from the group.)





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- **Temporary, flexible spaces** can also be created or transformed as needed—whether they are indoor or outdoor areas. A “science area” may be a table that is used as a rotating exploration center with tubs that are brought out and journals to record observations.

How does an intentionally planned learning environment encourage science exploration?

- **Science exploration is about direct experience and hands-on investigation.** Learning centers are laboratories that allow children to look at, touch, and manipulate objects.
- **Science exploration is about making predictions, testing, and experimentation.** Because learning centers encourage free exploration, they allow children:
 - to experiment in their own time and in their own way.
 - the freedom to pursue what captures their interests.
 - to build their understanding by repeating an experience more than once.

<PPT slide #10>

Review the Learning Outcomes

Conclude your introduction by sharing the session’s learning outcomes with participants. They will learn to:

- Design spaces intentionally to encourage children’s hands-on science exploration.
- Set up a variety of learning environments that support many different types of learning.

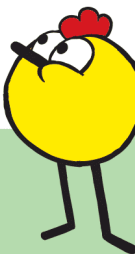
Watch and Discuss the Video (20 min.)

Tell participants that the strategies they’ll be focusing on are:

- Planning a Thoughtful Learning Environment
- Offering Choices

Next, introduce the video:

Here’s a short video of an educator exploring the PEEP science unit on shadows. Afterwards, we’ll discuss how she set up and used her learning centers.





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<PPT slide #11. Watch VIDEO: Explore Shadows: Learning Environments>

After watching, ask the following questions and write observations on a flip chart or whiteboard.

- What were some of the different learning centers featured in the video?
- How did the educator make these centers welcoming and accessible?
- Which learning centers seemed to generate the most excitement among children? Why do you think that was so?

<PPT slide #12>

Teaching Strategy: Planning a Thoughtful Learning Environment (10 min.)

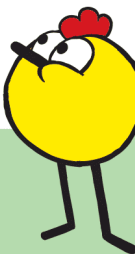
Begin your discussion of the first teaching strategy by asking the following question:

<PPT slide #13>

How do we create a well-organized, intentionally planned learning environment for science?

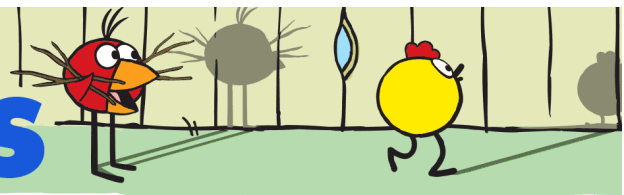
<PPT slide #14>

- **Organize the space with your children in mind.** To create a dynamic environment for science exploration, think about:
 - What do I want them to learn about?
 - What experiences do I want them to have?
 - Based on what I want them to learn, what materials should I selectively set out?
 - Do I want them sitting, standing, or both?
 - How much space do the activities at the center require?
 - How many children do I want in an area at one time?
 - Will this space work for my youngest as well as my oldest children? If not, what alternative activities can I offer younger/older children?
- **Modify your permanent learning centers to include science investigations.** If your classroom already has a permanent science center, use it as an area to explore shadows. If you cannot add a permanent science learning center, modify the learning centers you already have, such as your block, dramatic play, art, and library centers, tailoring them to your science explorations.
Example: Put flashlights and objects such as puppets and dim the lights to turn the center into a shadow play area.





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- **Create temporary science centers for specific science explorations.**
 - You'll want to create new centers devoted to shadows. You can remove these temporary spaces once your plant explorations are over.
 - Use cardboard boxes, rugs, or even chalk or tape to create temporary learning spaces, both indoors and outdoors.
 - Learning centers don't need to take up lots of room. They can set up in a corner of a room or on a window ledge.

- **Use learning centers for both guided activities and free exploration.**
 - A learning center can be used for an adult-guided activity that focuses on a specific investigation as well as one that offers free exploration.
 - If you've already led children in a guided activity in a particular learning center, they will feel comfortable returning to that familiar setting and exploring on their own later on.
 - It's also valuable to let children play freely at a learning center *before* you've introduced it in a guided activity. That way, they can make discoveries on their own and develop theories that will later be tested and refined.

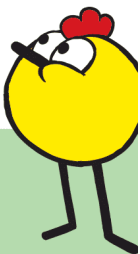
- **Place materials in easy-to-reach locations.**
 - If materials are easily reachable, in appropriate containers, and at the right height for children, they will feel comfortable using them and will be drawn to experiment.

- **Plan for messes.**
 - Science can get messy. Leave clean-up materials nearby and allow children to take responsibility for cleaning spills and messes.
 - Children need the freedom to explore materials in a center with as few restrictions as possible. Planning for mishaps helps eliminate some of the warnings and reprimands that can interfere with a young scientist's discoveries.

Share and Discuss (Wall Chart) (15 min.)

Leave PowerPoint. On a whiteboard or chart paper, create two columns with the headings:

- Permanent Learning Centers
- Temporary/Flexible Learning Centers





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1. Ask participants to get up and list their permanent learning centers in one column. If a learning center has already been added to the list (a water table or block center, for instance), have participants with the same learning center just add a check mark next to it. In the second column, have them list any temporary learning centers they've created in the past (they don't need to be related to science) or any flexible centers—ones they remove at the end of the day or week.
2. As a group, study the two lists and discuss anything unusual or out of the ordinary.
3. Then ask: Does your space present any challenges? How have you overcome them?

<PPT slide #15>

Teaching Strategy: Offering Choices (10 min.)

Begin your discussion of this strategy by asking the following question:

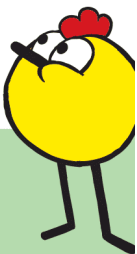
<PPT slide #16>

What are some ways to offer children variety and choices?

Learning centers can offer different and varied experiences and are a great way to respond to children's different interests, abilities, and learning styles.

<PPT slide #17>

- **Different spaces** create different experiences for learning:
 - **open spaces** for energetic explorations
 - **tables and rugs** for hands-on activities
 - **quiet spaces** for reading or time by oneself
 - **yards and playgrounds** for outdoor investigations
 - **display areas** with a bulletin board, wall, or table to display art, charts, and other forms of documenting children's work
- **Varied materials** keep children stimulated and engaged.
 - **Adding or taking away materials** on different days keeps interest high and can change the focus of children's exploration. **Example:** Set out different objects each day for shadow play—for example, toy cars one day, and forks another.
 - **But be selective** with the materials—too much choice can be overwhelming for young children as well as weaken the specific learning goal you have in mind.





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- **Work with what you have.** Creating a rich learning environment takes planning and imagination—not a lot of new or expensive materials.

Share and Discuss (in Pairs) (15 min.)

Leave PowerPoint and have participants discuss offering variety and choice—in pairs or in larger groups, depending on the size of your training:

- What have you done with your classroom space to provide variety and stimulation?
- Can you share some stories of how children’s free play at a learning center has led them to surprising discoveries or novel ways of using the materials?

<PPT slide #18>

Hands-On Activity: Learning Centers (30 min.)

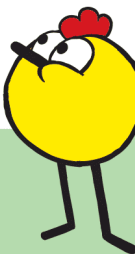
Next, ask participants to imagine a variety of learning centers they’d create for the PEEP Shadows unit.

Leader Prep

Display some or all of the following props to help participants envision the activities and learning centers from the Shadows unit.

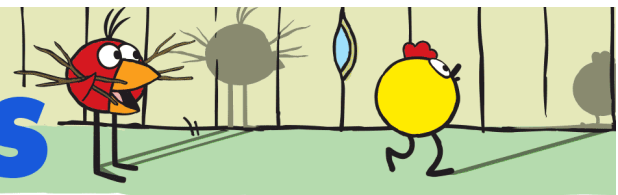
Materials and Assembly

- large roll of paper for tracing children’s full-length shadows (or chart paper)
- desk lamp with a 100-watt bulb (or a slide projector or overhead projector)
- flashlight
- various objects to make shadows (fork, block, toy car, book, small box, toy plane, etc.)
- **for Mini Shadow Theater:** Using the bottom of a cardboard box (preferably larger than a shoebox), cut out a large rectangle from the bottom panel, leaving about a 1½-inch border around the edges. Cover the opening you made with wax paper (or white paper) and secure it with tape.
- **for Large Shadow Theater:** Drape a sheet across two chairs that are a few feet apart. Use binder clips or tape to attach the corners of the sheet to the top and bottom of each chair and make sure that the sheet is stretched tightly. Place the lamp behind the theater so that it shines through the sheet.





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Directions

1. *Holding up the different props, tell participants about some of the activities from the Shadows unit. Children will:*
 - trace their shadows onto paper (outdoors and indoors)
 - make shadows using the light from a lamp
 - create shadows with flashlights
 - use their hands or shadow puppets to put on a shadow play in a mini shadow theater
 - put on a shadow play using their own shadow and shadow puppets in a large shadow theater
2. *Divide the group into pairs and have them brainstorm ideas about what would make a varied and stimulating learning environment for exploring shadows. (They are free to suggest other shadow learning centers as well—not just the ones represented by the props.)*
3. *Then ask pairs to sketch out and label several different learning centers on paper. Have them post their sketches on the wall. They should identify the space they'll use, where it's located, whether it will be temporary or permanent, and what materials it will feature.*
4. *Have each pair present their learning center sketches to the group.*

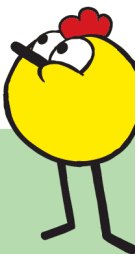
Wrap Up (5 min.)

- *Invite participants to jot down three new ideas related to learning centers they would like to try in the future. Ask volunteers to share what they wrote down.*
- *Pass out the handout, Teaching Strategies: Learning Environments, which summarizes the teaching strategies just reviewed. It also features additional examples from the Ramps science unit not covered in the training.*

<PPT slide #19>

SCIENCE TALK (120 min.)

We're now going to discuss "science talk." When children explore science, they need to express themselves like scientists do—asking questions, describing what they're doing, making comparisons and predictions, and discussing results.





Explore SHADOWS



Introduce Science Talk (15 min.)

Use this outline to begin your discussion of “science talk.” Ask what participants already know about the subject. Write their comments on a chart/whiteboard. Fill in any ideas or observations participants did not mention.

<PPT slide #20>

What do we mean by “science talk?”

<PPT slide #21>

- Science talk happens when children discuss their investigations by asking questions, describing what they’re doing or investigating, making comparisons and predictions, sharing and discussing results, and learning new vocabulary to describe what they are seeing and doing.
- Science talk can happen any time and any place—not just during science explorations. It can take place during snack time as children compare amounts of water in their cups or the colors of their apples. It can happen on a walk outside as children inspect an anthill or crunch leaves.
- **Examples:**
 - I think that tree is blocking my shadow.*
 - I can see my shadow over here, but I can’t see it over there.*
 - The shadow looks fuzzy when I pull my hand farther away.*

Emphasize:

- **One misconception** educators sometimes have is that science talk needs to sound “scientific.” As you can see from the examples above, for young children, that’s not the case—they clearly show a child’s active and curious mind predicting, observing, and making distinctions.

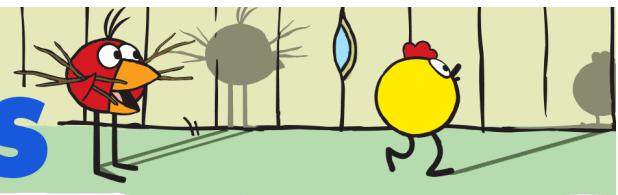
Why is science talk important?

- **Science talk helps children deepen their science explorations** by encouraging them to think through an idea, ask a new question, or try something new. Science talk is not just a way of communicating—it is part of how we think and learn about the world.





Explore SHADOWS



- **Language is a tool for thinking and learning as well as communicating.** When children use science talk, it helps them develop understanding, share ideas, build vocabulary, and increase their listening and comprehension skills.

<PPT slide #22>

Review the Learning Outcomes

Conclude your introduction by sharing the session's learning outcomes with participants. They will learn to:

- model science talk for children.
- ask open-ended questions to encourage exploration and talk.
- inspire children to talk about science .
- build children's language skills, listening skills, and science vocabulary through science talk.

Watch and Discuss the Video (20 min.)

First, read aloud the two teaching strategies you've written on a flip chart or whiteboard:

- Modeling Science Talk
- Asking Open-Ended Questions

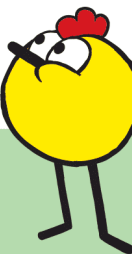
Next, introduce the video:

Here's a short video of a child care educator using the PEEP science unit on shadows and engaging in science talk.

<PPT slide #23. WATCH VIDEO: Explore Shadows: Science Talk>

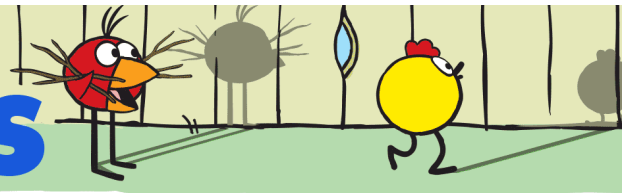
After watching, ask the following questions and write observations on a flip chart or whiteboard.

- What were some of the different ways you saw the educator modeling science talk?
- What activities seemed to engage children the most? Were children using science talk during those activities? How were they using it?
- Were there opportunities for science talk that the educator missed?





Explore SHADOWS



<PPT slide #24>

Teaching Strategy: Modeling Science Talk (10 min.)

Begin a discussion by asking the following questions:

<PPT slide #25>

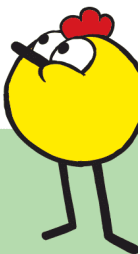
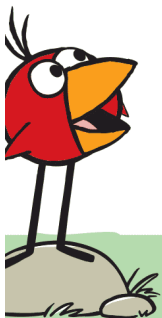
Why is modeling science talk an effective teaching strategy?

- By modeling how to pose questions, keep a discussion going, use vocabulary words, or narrate your actions and thoughts, you help develop children's abilities to listen, reflect, understand, and communicate.
- Children are mimics. By modeling science talk, you help them build vocabulary and discover the power and importance of words.

What are some ways to model science talk for children?

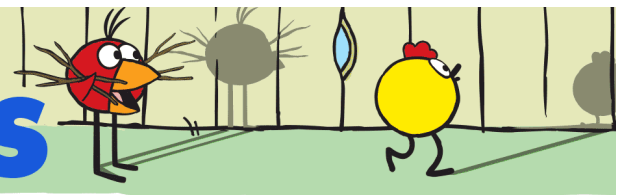
<PPT slide #26>

- **Let children know what you're wondering about.** Ask questions and make observations as you engage in activities.
- **Narrate your actions so children learn to describe aloud what they are doing.** Use action words such as *observe*, *compare*, *contrast*, *change*, *discover*, and *predict*. When you describe your investigations in detail, children will be encouraged to do the same.
- **Incorporate new words as children do hands-on activities.** Repeat new vocabulary words so children begin to understand how to use them. Ask them questions using the new words to find out whether they grasp the meaning.
- **Use rich, descriptive language.** Embroider your sentences with vivid adjectives. Children may not always understand their meaning right away, but expressive vocabulary will stimulate their curiosity and interest in language.
- **Ask follow-up questions.** Keep the conversation going and allow it to grow deeper by asking more questions. Children don't always know there's more to say on the subject until you show them how to analyze further through your questions.





Explore SHADOWS



Share and Discuss (Role Play) (15 min.)

Leave PowerPoint. In pairs, have participants role-play.

Materials

- flashlight (per pair)

Directions

1. Give each pair a flashlight.
2. Have one model the educator, the other the student.
3. Have the educator encourage the student to make shadows using the flashlight.
4. Have the educator use science talk to encourage the child to make predictions, describe what happens, and pursue new ideas.
5. Ask for some volunteers to share examples of their science talk.

<PPT slide #27>

Teaching Strategy: Asking Open-Ended Questions (10 min.)

Begin a discussion by asking the following question:

<PPT slide #28>

What are open-ended questions and why are they so valuable?

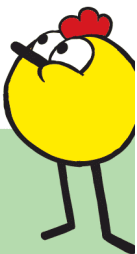
- An open-ended question is one that can't be answered with just one or two words, or with a simple yes or no.
- They are phrased in a way that encourages children to explain and expand upon their thoughts or to focus on what they're doing/pursuing.
- As children answer open-ended questions, they build expressive language skills, reflect on what they're observing, and go deeper into their explorations.

<PPT slide #29>

Share some examples:

Open-ended questions often begin with the words "how," "what," or "why:"

- **How questions:** How do you think I can make my shadow disappear? How much longer is this shadow than that shadow? How can you tell?
- **What questions:** What would happen if you moved the block farther from the light? What are some ways you can change the shape of this shadow? What do you think will happen to your shadow if the sun goes behind a cloud?





Explore SHADOWS



- **Why do you think questions:** When you ask children “Why” questions, try to follow it with “do you think.” Why do you think the shadow will look like that at night? Why do you think that glass won’t make a shadow? Using “Why do you think . . . ,” encourages children to offer their opinion and explain their thinking. Asking “why” without “do you think” might lead children to believe there is a right and wrong answer.

Mention:

But open-ended questions aren’t always the best strategy.

- They aren’t always the best choice in all situations and for all children. Some children may need more structure and guidance. You might get more from them by asking an either/or question, or a yes/no question, which can help them to discuss how things are different and how they are similar. After asking several either/or or yes/no questions, you could then ask an open-ended question.

Share and Discuss (Practicing Open-Ended Questions) (15 min.)

Leave PowerPoint. Use the following exercise to have participants practice open-ended questions. Part I takes place with a partner; Part II is with the whole group.

Part I: Getting-to-Know-You Questions

Tell participants:

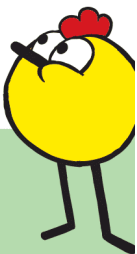
1. Let’s practice creating a few open-ended questions by finding a person you haven’t met before and introducing yourself.
2. Get to know them by asking **ONLY** open-ended questions. After four or five questions, switch roles.
3. Finish by discussing with your partner: How did asking open-ended questions create a richer conversation?

Part II: Science Questions

Tell participants as a group:

Now we’ll try turning a few yes/no or either/or questions into open-ended ones. Ask for volunteers to reword the following:

- Was it this object or that object that made the shadow?
- Can you see your eyes, nose, and mouth when you look at your shadow? Or the color of your hair or clothes?
- If we want to make the shadow bigger, should we hold the flashlight closer or farther away?





Explore SHADOWS



(You may want to write these questions on chart paper.)

Conclude by sharing these thoughts:

- Most people discover that creating open-ended questions is an acquired skill.
- If it is challenging for you, when leading a science activity, come prepared with a list of open-ended questions until it becomes a natural part of your teaching.

<PPT slide #30>

Hands-On Activity: Science Talk (30 min.)

To conclude this session, break participants into two groups. Have them practice modeling science talk and posing open-ended questions while doing one of the activities in the Shadows curriculum:

Big and Little Shadows

Objective: Make big and little shadows by moving objects closer to and farther from a light.

Materials

For each group:

- desk lamp with a 100-watt bulb (or a slide projector) for each group
- wall to project shadows onto
- chart paper taped to the wall
- small objects—toy, mug, pencil, etc.
- markers

Directions

1. Make shadows with your hands and with small objects, using the lamp's light.
2. What's the biggest and the smallest shadow you can make with one object? Trace the smallest shadow your group can make onto the chart paper attached to the wall. Then trace the biggest shadow.

Share and Discuss

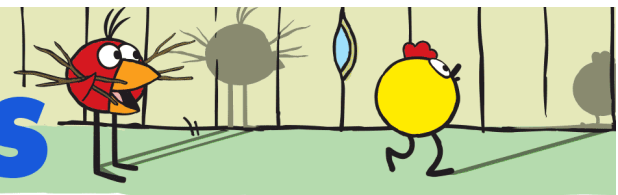
- Now that you've done the activity, think about how you would introduce it to children. How might you elicit their prior knowledge of shadows?
- As children experiment, what would you say to encourage them to talk about what they're discovering?

Then have a few volunteers share with the larger group the ways they might encourage children to report their observations and discoveries.





Explore SHADOWS



Facilitator's Cheat Sheet

Some questions to ask children as they experiment:

1. Look how the shadow changes as you move your hand closer to the light! How is it changing?
2. Compare the two shadow tracings by asking:
 - What happens to the size of the shadow when you move closer to the light? What happens to its size when you move farther away?
 - When did the shadows look fuzzy? When did the shadows look clearer?
3. Some vocabulary you might use:
 - descriptive words such as *outline*, *position*, *shape*, *fuzzy*, *clear*, *closer*, and *farther*
 - science process words like *describe*, *compare*, *observe*, and *notice*

Then have a few volunteers share their ideas with the larger group.

Wrap Up (5 min.)

- Ask participants to jot down three things related to science talk they would like to try in the future. Ask volunteers to share what they wrote down.
- Pass out the handout, *Teaching Strategies: Science Talk*, which summarizes the teaching strategies just reviewed. It also features additional examples from the *Shadows* science unit not covered in the training.

<PPT slide #31>

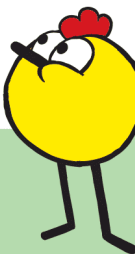
Preparing to Teach PEEP (30 min.)

Tell participants that in this final part of the training, you'll give them a tour of the PEEP Web site and a homework assignment: They'll do one of the PEEP science activities or set up a learning center with their children. During Part II of the training, they'll report on their experiences facilitating the activity.

Tour of the PEEP Web site (15 min.)

Facilitator Prep

- Use the live site for the Web site tour, if you have an Internet connection. Otherwise, use the PowerPoint slides, which include screenshots of the site.
- In Step 3 below, you'll show them how to download the Curriculum Planner. Print out a few copies of the Planner ahead of time to display.





Explore SHADOWS



Your goal is to familiarize participants with the Web site and where to find activities. Using either the live site or PowerPoint slides, demonstrate how to navigate the Web site.

<PPT slide #32>

1. Show participants the **PEEP home page** and the different sections of the Web site:
 - The buttons/tabs across the top for Kids, Parents, Educators, and About PEEP.
 - The button for the Spanish version of the site.

(If you're on the live site, click on each tab and show them what's offered under each. Otherwise use the PowerPoint slides.)

<PPT slide #33>

2. Show them the **Educators page**, pointing out where the six curriculum topic buttons are. Then choose the **Shadows curriculum**. Explain that the curriculum can be accessed online. The material is also available on mobile devices—tablets and smart phones.

<PPT slide #34>

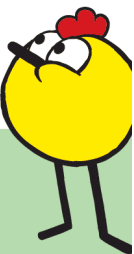
3. Click on the tabs at the top to show them the 3 pages that **display the activities for Week 1, Week 2, and Week 3** of the curriculum.
4. Point out the button where you can print out a **PDF of the three-week Curriculum Planner**. If you printed out hard copies of the Planner ahead of time, show them to the group.
5. Explain that the three-week curriculum features books, videos, hands-on activities, and learning center ideas. Between one to two hours of science is offered each day, which you can weave into your daily schedule. You can also spread the three weeks of exploration over a longer period of time. Show them that each day offers:

Morning Circle

- Each morning begins with a book or PEEP video about the science topic being studied. The videos are nine-minute animated PEEP episodes or one-and-a-half-minute live-action videos featuring children. They are used as a springboard for discussion about science with children.
- Each story or video is followed by a related, short hands-on activity.

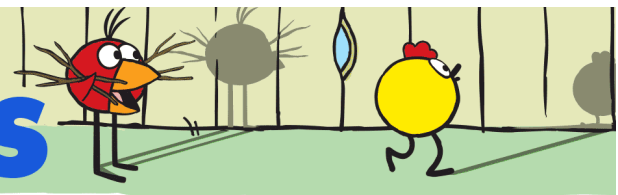
Learning Centers

- 4–6 different learning centers to give children time for free exploration.





Explore SHADOWS



Guided Activity

- A longer hands-on science activity. This is the central part of the curriculum, and the guided activities often build upon each other, gradually becoming more advanced explorations.

Closing Circle

- Time to review the day's discoveries.

As you review the different parts of the curriculum, click on them to show them examples of each type of activity.

(Note: If participants question the use of videos and online games in the curriculum, explain that the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center agree that technology and interactive media can enhance early learning, provided it is used intentionally.)

<PPT slide #35>

6. Then click on the tab near the top that says **About This Unit.**

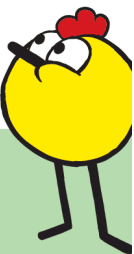
- Explain that this section provides an overview of the curriculum.
- It also covers Learning Goals, Materials, and Handouts for Parents.
- One of the most helpful sections is called “Prepare to Teach,” which introduces you to the activities, materials, and science concepts covered in this curriculum. You’ll roll up your sleeves and try some of the hands-on activities yourself!

<PPT slide #36>

7. Then click on the tab at the top of the page called **Stand-Alone Activities.** Explain that in addition to the “Full Curriculum,” PEEP offers a smaller selection of hands-on activities from the Shadows curriculum—between 14 and 16 activities. If you can’t devote the time to offering the full curriculum, you may want to use these stand-alone activities when it fits your schedule.

Homework Assignment (15 min.)

Tell participants that you’ll conclude Part I by giving them a homework assignment. Pass out the homework handout.





Explore SHADOWS



<PPT slide #37>

Explain the assignment:

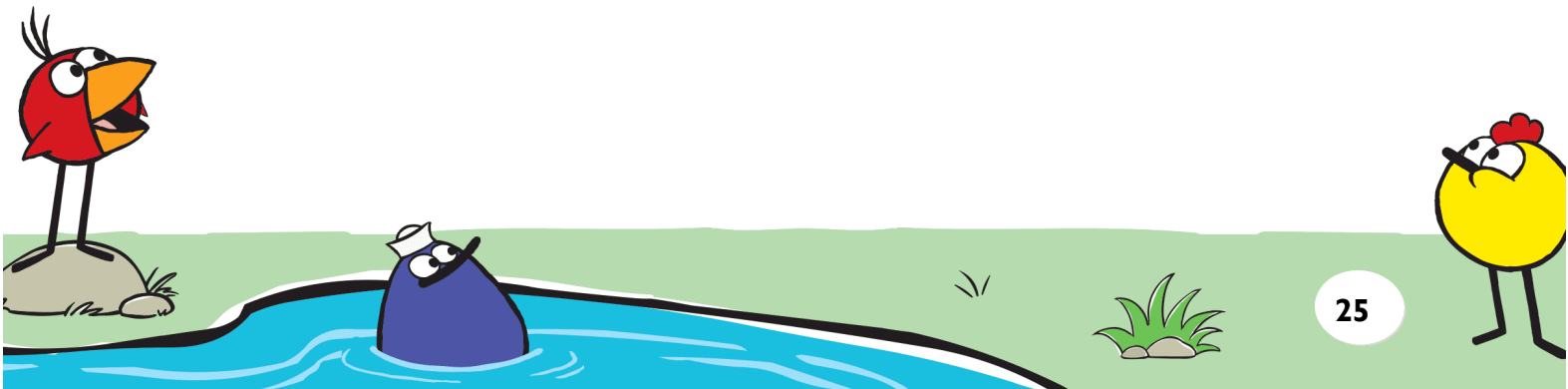
- Use the online PEEP Shadows curriculum to choose **one guided activity** to do with children OR set up **one learning center** for children to explore freely. The link is: www.peepandthebigwideworld.com
- As children explore, document their investigation using drawings, pictures, or charts. Write down the children's observations as they do the activity.
- Use the documentation to create a poster, photo album, scrapbook, or other form of visual display that records the children's experiences with the activity or learning center.
- At the next session, everyone will share their visual displays and discuss what they learned.

Tell participants to be prepared to answer these questions:

1. Which learning center or guided activity did you choose to set up? Why? What appealed to you about it?
2. How did you incorporate the teaching strategies—those from Learning Centers or Science Talk?
3. What was the most satisfying part of leading the guided activity or setting up your learning center? What was challenging?

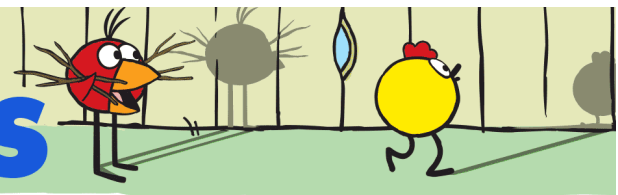
<PPT slide #38>

Thank participants and ask for any final questions. Share the details of the next training with them.





Explore SHADOWS



Facilitator Note:

Before leading Part II, thoroughly review the “Prepare Ahead of Time” section at the beginning of the guide. Use the second PowerPoint provided for Part II.

<PowerPoint slide #1>

PART 2: Teaching Strategies for Exploring Shadows with Children (5 hours)

Welcome returning participants.

<PowerPoint slide #2>

About this Training: Agenda (5 min.)

Share today’s agenda. Tell participants:

First, we’ll share experiences participants had with the homework. Then we’ll explore these topics:

- **Documentation and Reflection:** how to document children’s science explorations to help them understand and think more deeply about them.
- **Individualized Instruction:** how to tailor your teaching for a child’s individual needs and abilities—age, developmental stage, interests, and learning styles.

We’ll finish by taking a tour of the other Teaching Strategy resources on the Website.

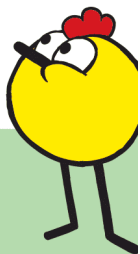
<PowerPoint slide #3>

Homework: Share Your Experiences (25 min.)

Review and Discuss the Homework Assignment

Briefly review the homework assignment: to set up either **one learning center** or lead **one guided activity** from the online PEEP Shadows curriculum and to create a visual display to share with the group.

- Give participants a few minutes to set up their homework displays—perhaps on a table or posted on the wall.





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- Have participants go on a “gallery walk,” viewing different displays and making notes of questions or comments they might have about particular displays.
- Gather as a group, and ask for volunteers to share stories and highlights of their experiences, referring to their displays. Have the group ask questions, being sure to touch upon the questions in the homework assignment:
 1. Which learning center or guided activity did you choose to set up? Why? What appealed to you about it?
 2. How did you incorporate the teaching strategies—those from Learning Environments or Science Talk?
 3. What was the most satisfying part of leading the guided activity or setting up your learning center? What was challenging?

Have as many volunteers discuss the homework as is possible in the 30-minute period.

<PPT slide #4>

Documentation and Reflection (120 min.)

We’re now going to talk about documentation—recording children’s explorations through drawings, charts, photos, and other methods.

Introduce Documentation and Reflection (15 min.)

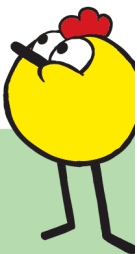
Begin by telling participants that it’s clear they already know a great deal about documentation and reflection: it’s exactly what they did with their homework assignments!

Then ask them the following questions, writing their comments on a chart/whiteboard. Fill in any ideas or observations they don’t mention.

<PowerPoint slide #5>

What is documentation and reflection?

- Documentation is the process of recording experiences.
- It can take many forms: drawing; taking notes; creating charts and models; taking photographs; or making video or audio recordings.
- It helps children reflect on and understand their science explorations by sparking conversations and helping them to think more deeply about their work.





Why is documentation and reflection important?

<PowerPoint slide #6>

- **Children don't learn from their experiences alone; they need to revisit and think about what they've done.**
 - Looking at a photo or chart helps children remember and review what they were investigating.
 - Talking about what they've done helps clarify their thoughts.
 - They will often notice new things about their work when they review it.
- **It captures the process of scientific inquiry.**
 - Science is a process. It includes asking questions, making predictions, experimenting, testing, problem solving, and sharing ideas. Documentation helps capture the *process* of scientific inquiry—the steps children take to get a result—not just the result.
 - It allows children to see the steps they took: the “before” and “after,” the cause and effect.
 - Children begin to learn that an important part of science is collecting, describing, and recording data.
- **Language skills are strengthened.** Commenting on documentation asks children to:
 - clarify their ideas
 - explain their reasoning
 - communicate their perspectives, both to themselves and to others
 - use and repeat new scientific words and incorporate them into their vocabulary
- **It gives children a sense of ownership and pride.**
 - To see their work documented gives children a sense of ownership—making it more likely that they will remember, apply, and build upon this learning.
 - Recording something gives it importance. It shows that you take children's explorations seriously.
- **It's a valuable teaching tool,** allowing you to:
 - develop lesson plans that respond to the needs of each individual child. With your notes, transcriptions, and photos, you can see what really catches the children's attention. What was hard for them to grasp? What do they want to know more about?
 - communicate with parents and share concrete examples of children's work. Set up a bulletin board with photos, charts, and drawings that children can show their caregivers and talk about at pick-up time. Create a portfolio for each child that shows evidence of his/her growth and learning over time.





Explore SHADOWS



<PowerPoint slide #7>

Review the Learning Outcomes

Share the session's learning outcomes with participants. They will learn to:

- create different types of documentation.
- use documentation to help children reflect on their science discoveries.
- identify why documentation and reflection is an effective teaching strategy.

Watch and Discuss the Video (20 min.)

First, read aloud the two teaching strategies you've written on a flip chart or whiteboard:

- Encouraging Children to Document
- Reflecting Together

Next, introduce the video:

You'll watch a short video of an educator exploring the PEEP science unit on shadows. Afterwards, we'll discuss how she used documentation and reflection.

<PPT slide #8. Watch VIDEO: Explore Shadows: Documentation and Reflection>

After watching:

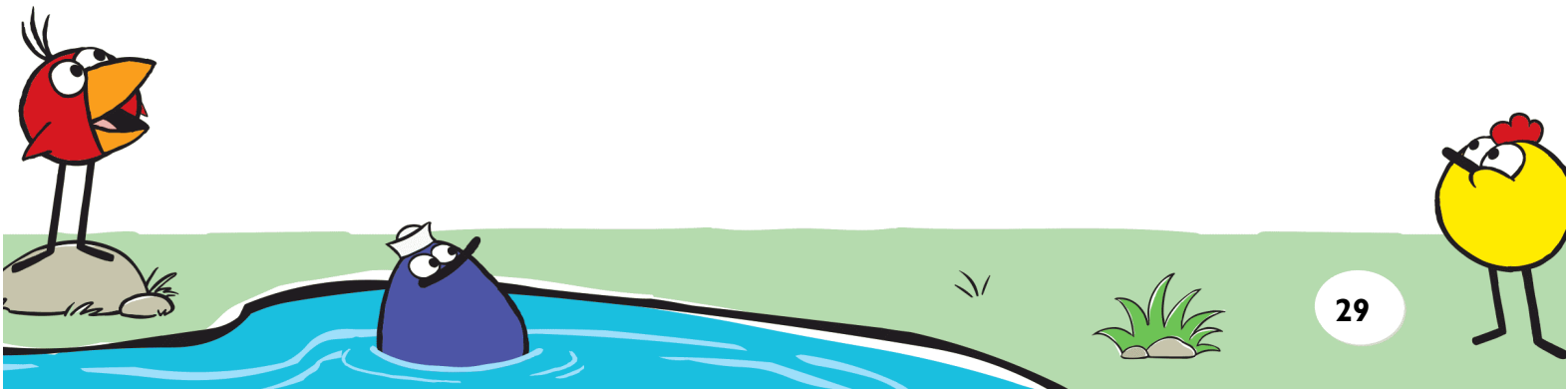
Ask the group the following questions and write their observations on a flip chart or whiteboard.

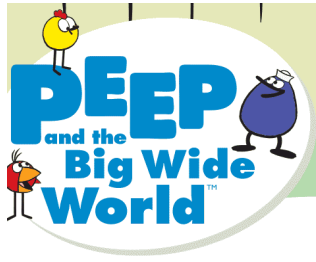
- What were some of the different ways you saw the educator and her children documenting their experiences?
- How did she support children in creating documentation?
- Have you noticed how documentation helps children think more deeply about their work? Explain.

<PPT slide #9>

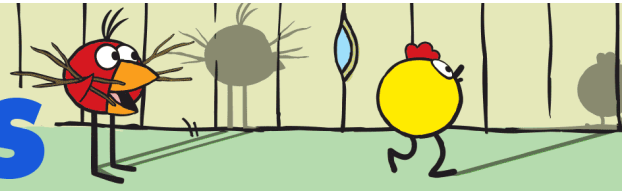
Teaching Strategy: Encouraging Children to Document (10 min.)

Begin your discussion of this strategy by asking the following question. Fill in any ideas or observations participants do not mention.





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<PPT slide #10>

What are some of the ways children can be encouraged to document their work?

List participants' responses on a chart or whiteboard. Add any points they did not include.

<PPT slide #11>

- **Drawings** are an ideal way for children to make their learning visible.
- **Charts and graphs** allow children to “see” or visualize their thinking and to compare their results with peers.
- **Models:** Children can sort physical objects into categories (e.g., things that roll/slide; light colors/dark colors; things that float/sink; things that make loud/soft noises). Provide bins, boxes, or other containers so they can sort the items.
- **Writing down children’s observations** (usually in an abbreviated form) helps children clarify and communicate their thinking.
- **Writing down children’s predictions** (usually in an abbreviated form) allows them to compare what they thought would happen to what actually happened.
- **Recording, videotaping, or photographing** a child’s demonstration or explanation gives children perspective on what they have accomplished.

Share and Discuss (Document the Discussion) (15 min.)

Leave PowerPoint.

As a group, have participants discuss their experiences with documentation, using the questions below. At the same time, ask for a volunteer to document the group’s responses to question #1 and another to document responses to question #2. Give each volunteer a marker and a flip chart or have them use a whiteboard.

1. What kinds of documentation do you typically do with children?
2. Do you use cameras, video, or audio recording devices when you document? How has technology helped you? Have you encountered any problems with it?
3. Can you think of any examples where documentation helped you with your lesson plans? Any stories to share?
4. What challenges have you run into while having children document their explorations?





Explore SHADOWS



When the group discussion ends, have the two volunteers share the ways they documented questions #1 and #2.

<PPT slide #12>

Teaching Strategy: Reflecting Together (10 min.)

Begin your discussion of this strategy by asking the following question. Fill in any ideas or observations participants do not mention.

<PPT slide #13>

Why is reflecting together important?

After children document their work, it's important they have a chance to revisit and reflect on it: that's where much of their understanding about what they experienced takes place. Reflecting together helps:

- strengthen children's reasoning abilities
- builds their communication skills
- to identify their thinking and learning.

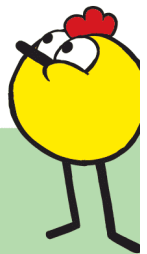
What are some of the ways to use documentation to promote reflection?

<PPT slide #14>

- **Sharing ideas as a group**
 - Have a child present her documentation in a group and encourage the others to ask questions or comment on something they find interesting. Speaking in front of a receptive audience will make the child who is presenting feel excited and proud to be showing his work.
 - The audience also benefits by working on their ability to listen and sustain attention, and by developing social skills in taking turns.

<PPT slide #15>

- **One-on-one conversations**
 - Not all children will want to share their reflections in a group.
 - Having a conversation with a child during or after he or she has created documentation gives you the chance to explore with this child on his or her own terms.
- **Including families in reflection**
 - Consider inviting caregivers to come and observe as children talk about their creations. Children are eager to share their discoveries with their families, and this strengthens the home/school connection.





Explore SHADOWS



Share and Discuss (in Pairs) (15 min.)

(Leave PowerPoint.)

Have participants discuss this strategy—in pairs or in larger groups, depending on the size of your training.

With their partners or small groups, ask participants to reflect on their own experiences.

- What types of documentation have you found most effective for generating children's conversations?
- What differences have you noticed between group reflection and reflecting with children individually? Any success stories to share?

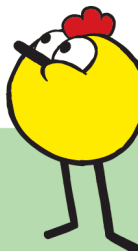
<PPT slide #16>

Hands-On Activity: Documentation (30 min.)

Next, have participants do one of the hands-on activities from the PEEP Shadows unit. After they do the activity, they'll explore ways it might be documented.

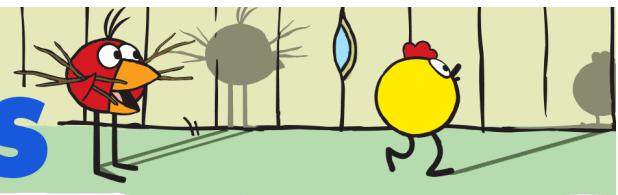
Facilitator Prep

1. **Documentation materials:** *Supply participants with paper, poster board, markers, glue and tape, large sticky notes. Tell them they can use these materials to document their exploration/discoveries. They may also consider taking photos with their phone. (They won't have the time or means to print out photos, but they can either describe or sketch out how they would use them.)*
2. **Documentation displays:** *On different sections of your wall, post the following headings, each representing a type of documentation:*
 - Drawings
 - Notes
 - Photos
 - Charts
 - Posters
 - Maps
 - Other





Explore SHADOWS



Shadow Walk

Objective: Identify shadows we see outside every day.

Directions

1. Go outside for 5 minutes and notice different shadows and think about why they look the way they do. Notice their positions and shapes. Take notes and/or photos, or make sketches.
2. Search for shadows made by bushes, parked cars, bikes, telephone poles, etc. What are the biggest and smallest shadows you can find? Look for surfaces with different textures, like a fence, stairs, a bench, rocks, or a wall—what shadows do they create?
3. Back inside, use the art supplies to complete at least one type of documentation and post it under the corresponding heading in the room.
4. If you have more time, jot down other ideas on large sticky notes and add them under the headings.

Share and Discuss: Documentation

Choose a few examples of participants' documentation to discuss with the group. Ask:

- How would you use this documentation to spark children's conversation?
- With this documentation, what open-ended questions would you ask children to help them reflect?

(Alternative Activity: *If participants cannot go outside, set up some bright lights indoors and use props near the lights to cast interesting shadows.*)

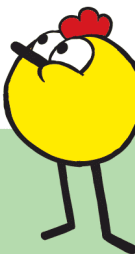
Wrap Up (5 min.)

- Conclude by inviting participants to jot down three things related to documentation and reflection that they'd like to try with their children. Ask volunteers to share what they wrote down.
- Pass out the handout, *Teaching Strategies: Documentation and Reflection*, which summarizes the teaching strategies just reviewed. It also features additional examples from the *Shadows* science unit not covered in the training.

<PPT slide #17>

Individualized Instruction (120 min.)

This session of the training focuses on individualized instruction. By planning activities that respond to each child's individual needs and abilities—their age, developmental stage, interests, and learning styles—educators can help all children thrive.





Explore SHADOWS



Introduce Individualized Instruction (15 min.)

Begin your discussion by asking participants the following questions to discover what they already know about the subject. Write their comments on a chart/whiteboard. Fill in any ideas or observations they do not mention.

<PPT slide #18>

What is individualized instruction?

- It's a way of teaching that takes into account each child's unique characteristics, including age, developmental stage, interests, and learning styles. Not all mature at the same rate. Children who are close in age can be quite different in terms of development. Attention span and interest level will affect their ability to focus.
- With an awareness of children's differences, an educator can tailor his or her teaching in a way that helps children learn according to their needs and interests.

Why is individualized instruction important?

<PPT slide #19>

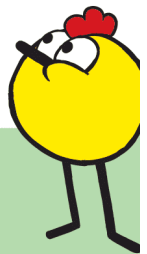
- Responding to children's varied abilities, experiences, and interests is critical to teaching. Children who have the opportunities to follow their own interests and learn in their own ways are more engaged and invested in the learning.
- Recognizing children's unique learning abilities, interests, strengths, and challenges will make them feel valued and competent. Children who are acknowledged in this way are more likely to persist in questioning and problem solving.
- By carefully observing children, educators can plan a wide variety of activities that address a range of skills and learning goals.

<PPT slide #20>

Review the Learning Outcomes

Share the session's learning outcomes with participants. They will learn to:

- Identify the need for different types of individualized instruction—by age and development, and by varying interests, strengths, and challenges.
- Engage each child by offering choices, presenting ideas and information in many different ways, and facilitating learning through different social groupings—whole groups, pairings, and one-on-one, for example.





Explore SHADOWS



- Use personal observation to get to know students and integrate this knowledge into planning and teaching.

Watch and Discuss the Video (20 min.)

First, read aloud the two teaching strategies you've written on a flip chart or whiteboard:

- Plan for Children of Different Ages and Developmental Stages
- Plan for Children with Different Interests and Learning Styles

Next, introduce the video:

You'll watch a short video of an educator exploring the PEEP science unit on shadows. Afterwards, you'll discuss how she used individualized instruction.

<PPT slide #21. Watch VIDEO: Explore Shadows: Individualized Instruction>

After watching:

Ask the group the following questions and write their observations on a flip chart or whiteboard.

- What were some of the different ways you saw the educator adapting activities to engage children at different developmental stages?
- Did you notice differences in how different children engaged with the activity? What did you notice?

<PPT slide #22>

Teaching Strategy: Planning for Children of Different Ages and Developmental Stages (10 min.)

Begin your discussion of this strategy by asking the following question. Fill in any ideas or observations participants do not mention.

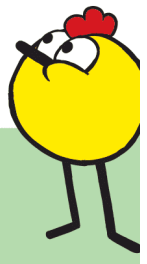
<PPT slide #23>

What are some ways to take age and development into account?

List participants' responses on a chart or whiteboard. Add any points they did not include.

<PPT slide #24>

- **Explain the same concept in different ways.**
 - The more ways you explore an idea with children, the more likely they will be able to understand and remember it.

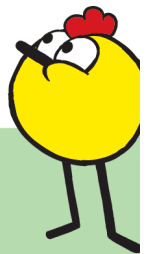




Explore SHADOWS



- Even children who quickly grasped the concept can benefit from hearing different explanations and watching demonstrations.
- You can encourage peer-to-peer learning—having children explain concepts to each other.
- **Adjust the materials.** During science explorations, children need to be “hands-on” at whatever stage of motor skills development they’re at. You may need to provide different tools for different children—an easy-to-use turkey baster instead of an eyedropper or a larger rather than a smaller ball.
- **Offer independence—or more support.**
 - Some children may finish an activity quickly. Have additional materials and extension activities ready so they can explore further on their own.
 - Some children may need more guidance and thrive on the support you give them.
- **Plan different social groupings.** The way you group children during activities can enhance individualized learning.
 - **Pair children so that an older child mentors a younger one.** Younger children will be inspired to push their abilities when they see older children in action. Older children will develop language skills and social skills (and a sense of pride) as they explain things to a younger partner. They may also learn how to share and compromise.
 - **Working with groups of the same age is also important.** There will be some activities that you’ll only want to do with older children and some that will work best with a younger crowd. To ensure that this happens, you might set aside a time each week for same-age peers to collaborate.
 - **Offer whole group activities for mixed ages.** Most science activities easily work for all ages and give children the chance to collaborate. These activities also help children learn from one another, develop patience, and appreciate others’ perspectives.
 - **One-on-one attention.** Find opportunities throughout the day to check in with individual children to gain insight into their abilities, strengths, and weaknesses. Connect with students who may be having difficulty with an activity or trouble interacting with other children—your attention can make all the difference.





Explore SHADOWS



Share and Discuss (Carousel) (15 min.)

(Leave PowerPoint.)

Use the following exercise to encourage discussion.

1. Divide your group in two (if there is an odd number, consider including yourself in the activity.)
2. The first group will form a tight circle in the center of the room, facing outward.
3. The second group will form a circle around the inner circle, so that each participant in the outer circle faces someone in the inner circle.
4. Ask participants the first question below, giving each participant two minutes to respond.
5. Then ask the outer circle to rotate one space to the right so that they are facing a new partner. Continue rotating the outer circle one space after posing each of the remaining questions:
 - What are some of the developmental differences you notice among the children in your program?
 - How have you adapted activities to meet the needs of these children? What have been your greatest successes? What has been a struggle?
 - What are some of ways you've grouped children? What's been most effective?
 - What are some ways you make learning experiences engaging for all students in your classroom?

<PPT slide #25>

Teaching Strategy: Planning for Children with Different Interests and Learning Styles (10 min.)

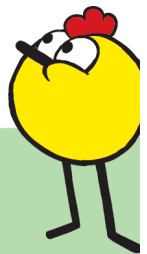
Begin your discussion of this strategy by asking the following question. Fill in any ideas or observations participants do not mention.

<PPT slide #26>

What are some ways to address children's different interests and learning styles?

<PPT slide #27>

- **Get to know each child.** Learn their interests, strengths, and weaknesses by observing them in action.

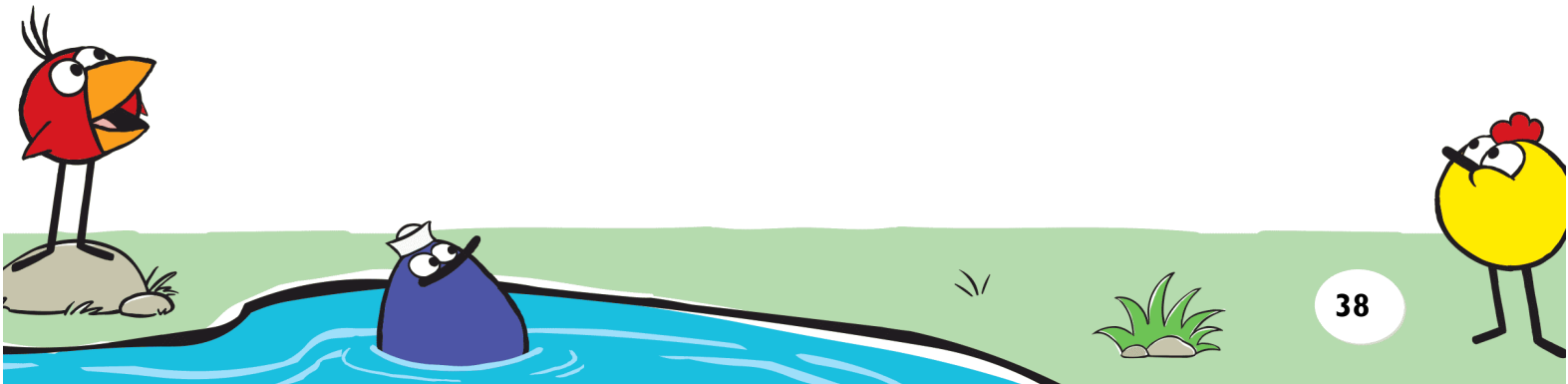




Explore SHADOWS



- **Keep an observation journal** on hand. Dedicate a page to each child in your group. Take notes on what children like, what they already know, and what you hope to teach them more about. Make notes about children who work well together and observe how children play and interact. Use these insights to inform your teaching.
- **Identify learning styles.**
 - **Most children have particular styles of learning they respond to best;** they may gravitate toward visual, auditory, or kinesthetic learning. Over time, you will become familiar with whether children prefer to learn by hearing, looking, moving, or a combination of these different learning styles.
 - **Address learning styles** in your instructions by explaining, demonstrating and, if appropriate, letting children try the activity or participate in the demonstration in a hands-on way.
 - **Offering visual, auditory, and kinesthetic experiences** doesn't just benefit the child who prefers to listen, look, or move. Research shows that the more ways in which an idea is presented, the more children understand and retain the idea.
- **Offer Choices.** One effective way to address the unique needs and interests of each child in your program is to devote your learning centers to different aspects of learning. Provide children with a variety of materials and a variety of different spaces (open spaces, small nooks, the water table, block area, etc.).





Explore SHADOWS



Share and Discuss (in Pairs) (15 min.)

(Leave PowerPoint.)

With their partners or small groups, ask participants to reflect on their own experiences.

- What's an example of an observation about a child that's informed your planning and teaching?
- Are you always able to tell if a child prefers to learn through listening, looking, or moving? What would you say is your own preferred way of learning?

<PPT slide #28>

Hands-On Activity: Individualized Instruction (30 min.)

Have participants work in pairs to do this science activity from the Shadows curriculum and answer the questions about individualized instruction below.

Hand Shadow Puppets

Objective: Make shadow puppets with your hands in a mini shadow theater.

Leader Prep and Materials Needed

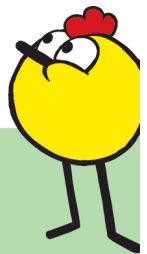
Prepare mini shadow theaters ahead of time (one per pair of participants), or have participants assemble them themselves. (**Note:** If you have participants create their own shadow theaters, explain that if they did this activity with children, they—the educators—would most likely supply ready-made theaters for them.)

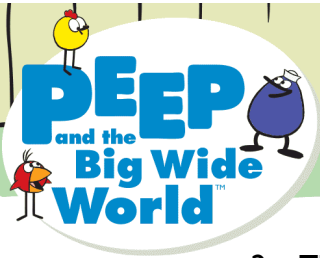
- Cut out a large rectangle from the bottom of a box (one larger than a shoebox is preferable), leaving about a 1½-inch border around the edges. Cover the opening you made with wax paper (or white paper) and secure it with tape. This is the theater.
- From the open end of the box, you'll prop a flashlight so it shines light on the paper.
- Place an object between the flashlight and the paper and see its shadow projected on the outside of the theater.

Directions

In this activity, you'll make shadow puppets using your hands.

1. Think of shadow puppets you can make using one or both of your hands. Demonstrate your hand puppet in the mini theater as your partner watches from the other side.





Explore SHADOWS



2. Then see if your partner can imitate making your puppet shadow.
3. Alternate creating and imitating puppets with your partner.

Share and Discuss: Individualized Instruction

1. What difficulties might some children run into while doing this activity? How might you help them? How would you introduce this activity to a varied group of children, making sure everyone understands the instructions?
2. How would you guide this activity with older children who need more of a challenge or children who want to work independently?
3. How might you involve your infants and toddlers?

Then have a few volunteers share their ideas with the larger group.

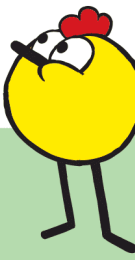
Facilitator's Cheat Sheet

A few possible strategies:

1. Children might have trouble understanding where their hands will need to be placed in relation to the theater and the flashlight to make the shadow puppet appear. You might ask for a volunteer to demonstrate how the theater works, and have the rest of the children offer suggestions.
2. For more of a challenge, have **older children**—or children who want to work more independently—put on a short play with several hand puppets. Watch it together as a group.
3. Keep your **infants and toddlers** close to you while you point out the different hand puppets, exclaiming: “Look, Charlie! Do you see the funny puppet? Is it moving? What do you think it is? Could it be a bird?” Or have them wave their hands in front of a light and point out the shadow they’re making: “Wow! Look at the shadow you made on the wall! How did you do that?”

Wrap Up (5 min.)

- Invite participants to jot down three things that they want to try related to Individualized Instruction. Ask for volunteers to share what they wrote down.
- Pass out the handout, *Teaching Strategies: Individualized Instruction*, which summarizes the teaching strategies just reviewed. It also features additional examples from the *Shadows* science unit not covered in the training.





Explore SHADOWS



<PPT slide #29>

Review PEEP Resources (20 min.)

Conclude the training by telling them PEEP offers other Teaching Strategy resources and that you'll demonstrate how to navigate through the Web site to find them.

Facilitator Prep

Show the live site, if possible, with your Internet connection. Otherwise, use the PowerPoint slides, which include screenshots of the site.

Tour of the PEEP Teaching Strategies Resources

Tell participants that each of the six PEEP science topics has a Teaching Strategies section devoted to it.

<PPT slide #30>

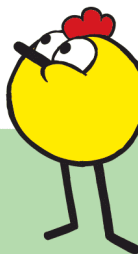
1. From the Educators page, click on Teaching Strategies.

<PPT slide #31>

2. Show them that they have a choice of choosing between "Family Child Care Educators" and "Center-Based Educators." Explain that the same teaching strategies are offered under each section, but that the videos were produced with each particular type of educator in mind.
3. Point out the buttons for the six different science units: Plants, Color, Sound, Ramps, Shadows, and Water. Explain that there are teaching strategy videos and PDFs for each of the science units that can be printed.

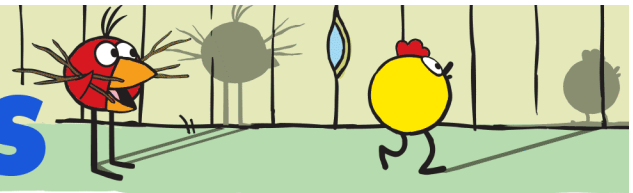
<PPT slide #32>

4. Click through to "Center-Based Educators" under Shadows.
 - Here they'll find the videos they watched today, along with the handouts (PDF) for the Teaching Strategies.
 - Point out the four tabs running horizontally across the top: Science Talk, Learning Environments, Individualized Instruction, and Documentation and Reflection. Click on each to show them that there is a new video and teaching strategy PDF for each topic.
 - Click on the Teaching Strategies button to show them how to download the teaching strategies.
 - Explain that by choosing the "Spanish" button at the top of the page, participants can also view Spanish language videos on the same topics and download the Teaching Strategies handouts in Spanish.





Explore SHADOWS



<PPT slide #33>

5. Finally, show them how easy it is to navigate back and forth between the Teaching Strategies and the Curriculum.

Closing Remarks

<PPT slide #34>

Thank participants for attending and ask for any final questions. Pass out the evaluation form (one of the handouts), and encourage them to fill it out.



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