

TRAINING HANDOUTS

Photocopy these handouts for participants:

- **Teaching Strategy Handouts**
(pass each one out after your session on the strategy)
 1. Learning Environments
 2. Science Talk
 3. Documentation and Reflection
 4. Individualized Instruction
- **Homework assignment** (pass out at the end of Part I of the training)
- **Training Evaluation** (pass out at the end of your training)



Explore PLANTS



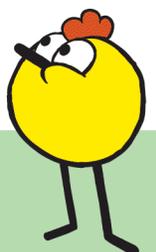
Teaching Strategies Learning Environments

What Is an Effective Learning Environment?

- **A safe and well-organized learning environment** is full of sensory (visual, tactile, hearing, and kinesthetic) opportunities.
- **It offers children a variety of experiences**, giving them the freedom to explore what captures their attention. It doesn't have to be limited to one learning center or the classroom. It can include all areas of the room, meal times, hand washing, outdoor play, and observing the world outside.
- **Permanent learning centers**, like a science center, library corner, block center, or dramatic play area, can be modified or changed so they serve as plant exploration centers.
- **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.
- Learning environments for exploring plants can be used for **specific guided activities** or opened up for **free exploration**.

How does a learning environment encourage science exploration?

- **Science exploration is about direct experience and hands-on investigation.** Learning centers allow children to:
 - explore on their own time and in their own way.
 - look at, touch, and manipulate objects.
 - build their understanding by repeating an activity many times.
- **A variety of different spaces and materials can** contribute to learning, including:
 - open spaces for energetic explorations.
 - quiet spaces for reflection, reading, or alone time.
 - playgrounds for outdoor investigations.





Explore PLANTS



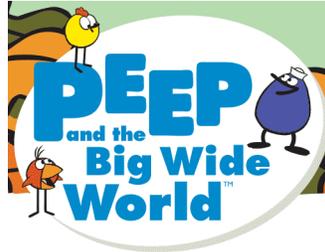
Teaching Strategy: Planning a Learning Environment

Why is planning a learning environment an effective teaching strategy?

A well-organized, intentionally planned learning environment encourages children to explore with specific materials and learning goals in mind.

- **Modify your permanent learning spaces or create flexible ones.** If your classroom already has a permanent science center, use it as an area to explore plants. 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 shovels, pots, and artificial flowers in your dramatic play area to transform it into a garden center. You'll also want to create temporary spaces that focus on different plant explorations. A window and window ledge can become a place to display and observe growing plants.
- **Use learning environments for both guided activities and free exploration.** A learning center can double as a setting for an educator-guided activity that focuses on a specific investigation as well as one that offers free exploration.
Example: You might lead a guided activity in which children plant seeds. After the activity, you might put out seeds for children to sort and count on their own, or add to a Plant Museum.
- **Work with what you have.** Creating a rich learning environment for plant exploration doesn't take a lot of additional materials. After all, plants are all around us—the places right outside your door hold potential for adventures with plants, flowers, and trees.





Explore PLANTS



- **Organize the space and materials.** To help you create a dynamic environment for science exploration, ask yourself some questions that will help inform the activities you choose, the spaces you set up, and the materials you make available to children:
 - What experiences do I want children to have?
 - What do I want children to learn about plants?
 - What are their interests, abilities, and cultural backgrounds?
 - Do I want children to be sitting, standing, or both?
 - How much space does the activity require?
 - Is the activity messy?
 - Will the activity work differently indoors and outdoors?
 - What other props will support the children’s learning about plants?

- **Place materials in accessible locations.**
 - If materials such as spray bottles, soil, and water are easily reachable, in appropriate containers, and at the right height, children will feel comfortable working and will be drawn to experiment.
 - Simple rules will help them develop a sense of responsibility for the materials.

- **Plan for messes—leave materials for cleaning up nearby.**
 - Science can get messy. If children are watering seeds and repotting plants, spills are inevitable. Have plenty of paper towels ready and allow children to take responsibility for cleaning spills.
 - 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.
 - Asking children to help in any cleanup can increase their sense of responsibility.

- **Make the most of your outdoor spaces.** Enjoy being outside and listening and observing when you are there. Science is play too!
Example: Children can search for plants in the cracks of a sidewalk or along a stone wall. They can hunt for plants and then create their own field guide featuring pictures and dictated descriptions of their findings.
Example: Encourage children to measure tree trunks with their arms or play a movement game where they pretend to be seeds that sprout and grow into big, tall plants.





Explore PLANTS



Your Experiences

- What types of permanent indoor learning environments exist in your classroom?
- What is your outdoor space like? What activities seem to work best outdoors?
- What kinds of temporary learning centers have you created—indoors and outdoors?
- Does your space present any challenges? How have you overcome them?

Teaching Strategy: Offering Choices

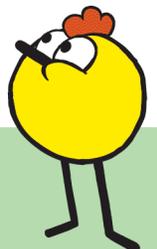
Why is offering choices an effective teaching strategy?

Children appreciate options. Flexibility and choice are key when setting up a learning space. Offer children different and varied experiences, and let them follow their interests. This strategy not only helps address a child's individual needs, but it also helps children to become independent learners.

Spaces

You already have learning centers in your classroom—spaces designed for specific types of exploration. Help children become familiar with what happens there and the different choices available to them. You can use cardboard boxes, rugs, or even chalk to create temporary learning spaces, both indoors and outdoors. Learning areas can also be tables with chairs or just a corner of a room. You can adapt these spaces for learning about plants in a variety of ways:

- **Open space:** This learning area (indoors and outdoors) allows children to move their bodies. Children can play a version of Duck, Duck, Goose! (Seed, Seed, Sprout), match leaves to trees, or collect twigs and branches and sort them into categories.
- **Water area:** The water table is a great place to experiment with growing things. Children can water plants and sprout seeds.
- **Rug:** This is where children can get comfortable for read-alouds, browsing field guides, and sorting seed packs.
- **Table:** Tables provide a natural location for spreading out and working on plant-related activities.
- **Library area:** In the library area, children can browse through and read more plant-related books and field guides.





Explore PLANTS



- **Art area:** Here children have access to easels, smocks, paper, crayons, markers, and paints.
- **Quiet area:** Setting aside a quiet area gives children a place to retell stories about plants or spend a few peaceful moments looking out the window at nature.
- **Sensory area:** The sensory area is ideal for hands-on activities. Children can experiment with leaves, bark, soil, and seeds.
- **Display area:** Use a bulletin board, wall, and/or table to display art, charts, and works in progress.

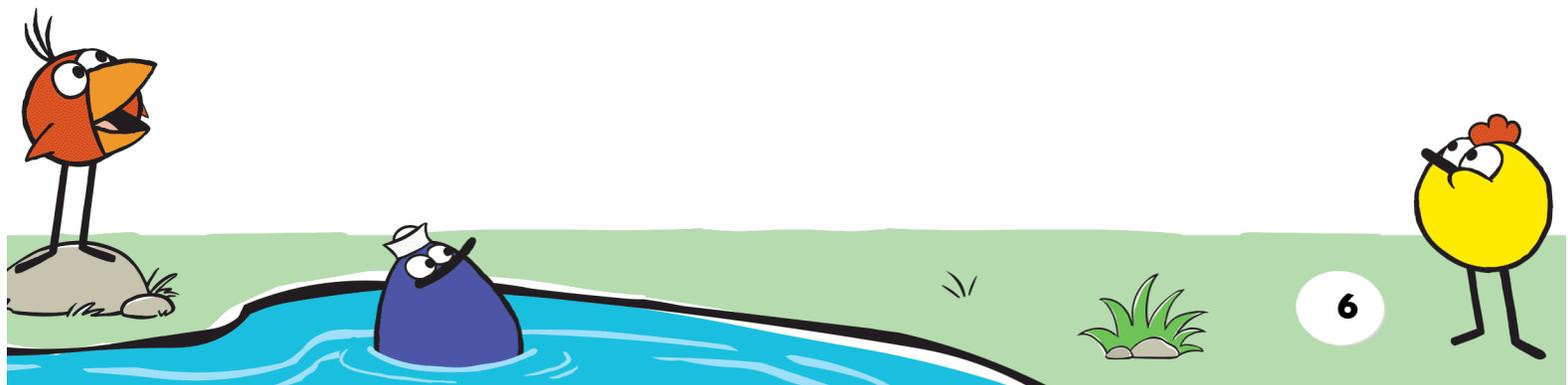
Materials

Offer a choice of stimulating and interesting materials. Different types of materials encourage different types of exploration.

- **Leaf Sorting Center** and a **Leaf and Bark Rubbing Center:** You can create one station where children make rubbings or collages using leaves and bark, and another where they sort leaves according to shape, size, or color. They may naturally gravitate to one station or the other. After they've explored both, you'll have a great opportunity for a discussion about leaves and their attributes.
- **Indoor Garden:** Set up an indoor garden with houseplants, cut flowers, and collected branches and twigs. Provide spray bottles for children to water the plants or challenge them to create a plant-watering device using a zip lock bag. Lay out string or paper strips for measuring growth.
- You can add variety by **adding or taking away materials** on different days.
- **Remember to be selective, however**—too much choice can be overwhelming for young children. For instance, if your learning center focuses on growing seeds, set out just one type of seed that day.

Your Experiences

- What types of learning centers have been most effective in your setting?
- What have you done with your space to make it varied and to stimulate the curiosity of children with different interests and abilities?
- What might you add/change after hearing about these ideas?





Explore PLANTS



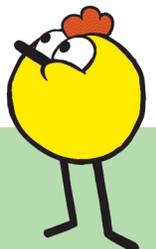
Teaching Strategy: Encouraging Exploration Throughout the Day

Why is encouraging exploration an effective teaching strategy?

- Science is all about investigation and discovery; it's hands-on and requires that children learn through experimentation and trial-and-error.
- As you explore plants, make sure some of your learning environments support open-ended exploration, so children can follow their own interests, explore further, and make new discoveries. (At other times, you can use this same learning center as the setting for guided activity focused on a specific investigation.)

The following strategies will help encourage learning everywhere:

- **Allow lots of free exploration.** This may lead children down new and perhaps unexpected paths, and help them become invested in learning about plants.
Example: You may have a learning center with both potted and cut flowers for children to observe and compare along with supplies for measuring and watering the plants. One child might decide to water both and draw pictures depicting what happens.
- **Follow children's lead.** Science exploration works best when you are following children's interests and addressing their questions—that guarantees they'll be engaged and motivated. They will also become more confident in their abilities, and develop leadership skills and independence.
Example: If children are playing outside and a child notices the roots of a tree, call everyone over to investigate. Together, look for roots of other plants growing outside. Then bring out some of the plants children have been growing in plastic sandwich bags to compare the roots. Take photos showing the different roots that children discover and create a gallery in the classroom.
- **Integrate plant learning throughout the day.** Everyday routines offer an easy way to explore plants.
Example: During snack time, look for seeds in fruit or discuss how every living thing needs water to help it live and grow. As you play outside, point out plants and trees. As children get ready to go home, have them sing a plant-related song or rhyme.





- **Use the whole space as a palette for learning.** Your environment and the world right outside your door offer opportunities for learning about plants.
Example: Try gathering around a window for a game of I Spy. During meal time, look at what plants everyone is eating. Ask families to notice what plants they see when they go home from school at night.

Your Experiences

- Can you share a time when you followed a child's lead and a spontaneous learning moment occurred?
- In what surprising places have learning moments happened in your program?
- How do you encourage learning and discovery during your daily routines—while taking a walk, for example, or preparing for lunch?
- What might you add/change after hearing about these ideas?

More Resources

For more information on learning environments

There are additional Teaching Strategy PDFs on the PEEP Web site along with instructional videos. These illustrate learning environments related to the other PEEP science units: Colors, Water, Shadows, Ramps, and Sound.

For more videos and information on other topics

In addition, the Web site offers Teaching Strategies and videos on other professional development topics: Documentation and Reflection, Individualized Instruction, and Science Talk.





Explore PLANTS



Teaching Strategies Science Talk

What Is Science Talk?

- **Language is crucial to learning and communication** in all subjects. Science is no exception. As children investigate and explore plants, they need to talk about their work just the way scientists would—this is "science talk."
- **Science talk happens when** children ask questions, make comparisons and predictions, share and discuss results, and learn new words to describe what they are seeing and doing.

Examples:

I think it's going to grow really big if we give it water!

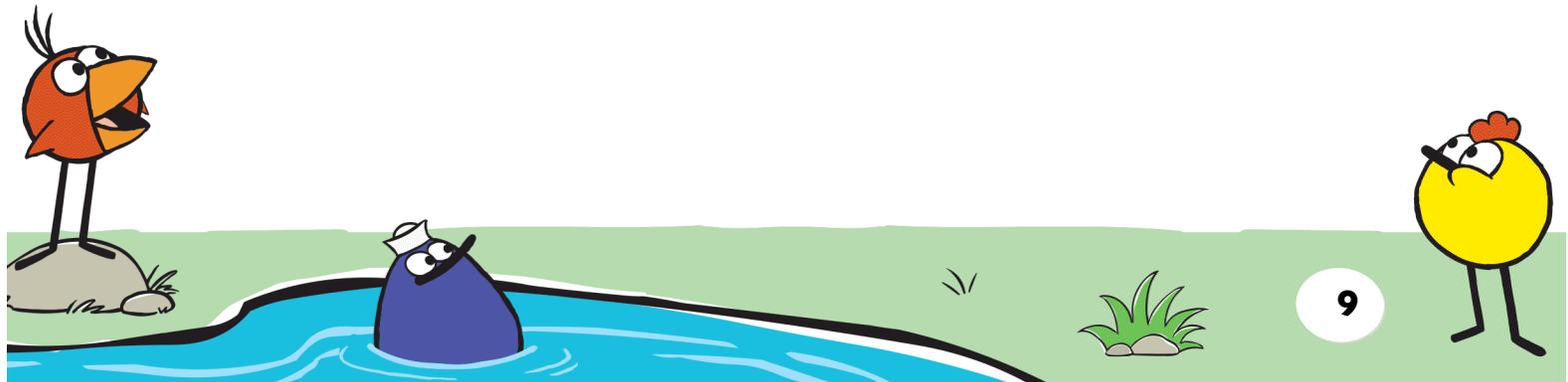
This plant has green leaves but this one has orange leaves.

Some fruits have lots of tiny seeds and others have one big one.

- **One misconception** educators sometimes have is that science talk needs to sound "scientific." As you can see from the examples above, that's not always the case—but they clearly show a child's active and curious mind predicting, observing, and making distinctions.
- **Science talk can happen any time and any place**—not just during science explorations. It happens during snack time as children compare amounts of water in their cups or the colors of their apples. It happens outside on the playground as children inspect an anthill or crunch leaves.

Why is science talk important?

- **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.
- **Science talk helps children to go deeper in 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 PLANTS



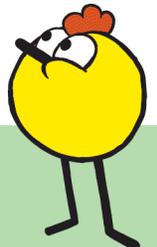
Teaching Strategy: Modeling Science Talk

Why is modeling science talk an effective teaching strategy?

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

Here are some ways to model science talk while exploring plants.

- **Compare and contrast plants you notice throughout the day.**
Example: *Look, at that bouquet of flowers! The petals on the roses look different today! More of the roses have opened up and some petals have even fallen off the rose and onto the table. Look at the edges of some of the petals—some look like they are wilting or drooping. I'm curious about what the roses will look like when we check them tomorrow.*
- **Let children know what you're wondering about.**
Example: *You might hold up a seed as you say, I wonder which seed pack this belongs in? How do you think I can figure that out?*
- **Incorporate new words as children do hands-on activities.**
Example: *You might introduce the word sprout as you observe your seeds growing. Look, this seed has sprouted! What do you think the sprouts look like? Do they remind you of anything you have seen before?*
- **Narrate your actions so children learn to describe aloud what they are doing.** Use action words such as *observe, compare, change, discover, and measure.* Use descriptive words such as *longer, taller, soft, rough.*
Example: *You might say, I wonder what will happen if I put this plant clipping in the sun and this one in the dark closet. When you investigate more closely, children will be encouraged to do the same.*
- **Use rich, descriptive language.**
Example: *Look! This piece of bark is rough and bumpy and the grooves make a swirling pattern.*





Explore PLANTS



Your Experiences

- What are some of your own stories about modeling science talk? What's been successful? What's been a struggle?
- What are some ways you've encouraged children to enrich their language and incorporate science vocabulary?
- What did you learn from the video that you might try in your own teaching?

Teaching Strategy: Asking Open-Ended Questions

How does asking open-ended questions encourage science talk?

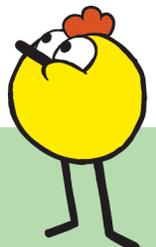
- An open-ended question is one that usually can't be answered with just one or two words, or with a simple yes or no. They are phrased in a way that encourages children to explain and expand upon their thoughts.
- As children answer open-ended questions, they build expressive language skills, reflect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

Composing open-ended questions takes a little practice.

- Most people discover that it's an acquired skill.
- It's a good idea to come prepared with a list of such questions when leading a science activity, until it becomes a natural part of your teaching.

Some examples:

- **How questions:** *How do you think we can help this seed to grow? How is this leaf different from that leaf? How is it the same?*
- **What questions:** *What do you notice about this tree? What's different about it from that one over there? What would happen if we did not water this seed? What do you think is inside this fruit?*
- **Do you think . . . questions:** The use of "Do you think . . .," when relevant, encourages children's thinking—instead of focusing on getting the right answer. *What do you think the inside of this fruit will look like? How long do you think it took these tall trees to grow? Why do you think that?*





Open-ended questions aren't always the answer.

- Keep in mind that they aren't always the best choice in all situations and for all children. Some children may need more structure and guidance.

Example: Instead of asking *Can you describe the plant?*, you might get more from some children by asking an either/or question: *Do you think we'll see the first sprouts growing on the paper towels or in the cups? Why do you think so?* That way, they begin to learn to make distinctions and comparisons.

Your Experiences

- Do you intentionally use open-ended questions with children? What's your experience been?
- What differences have you noticed in the way children answer when you ask open-ended questions?
- Since formulating open-ended questions takes a bit of practice, let's try turning a few *yes/no* or *either/or* questions into open-ended ones:

Do you think this plant will grow if we water it and give it light?
Will the seeds in this fruit be large or small?
Is this leaf rough or smooth?

Teaching Strategy: Encouraging Science Talk Among Children

How does encouraging science talk among children benefit your teaching?

When you select an activity that excites them, or have a discussion that piques their interest, you encourage children to participate more actively and to spontaneously talk about what they are doing and thinking.

Here are some ways to engage them:

- **Find out what excites children.** Take the time to observe them. Notice their interests and incorporate these interests into your activities.
Example: Begin your plant explorations by going on a nature walk together. When you get back to your classroom ask children to describe or draw one plant that they noticed and liked.





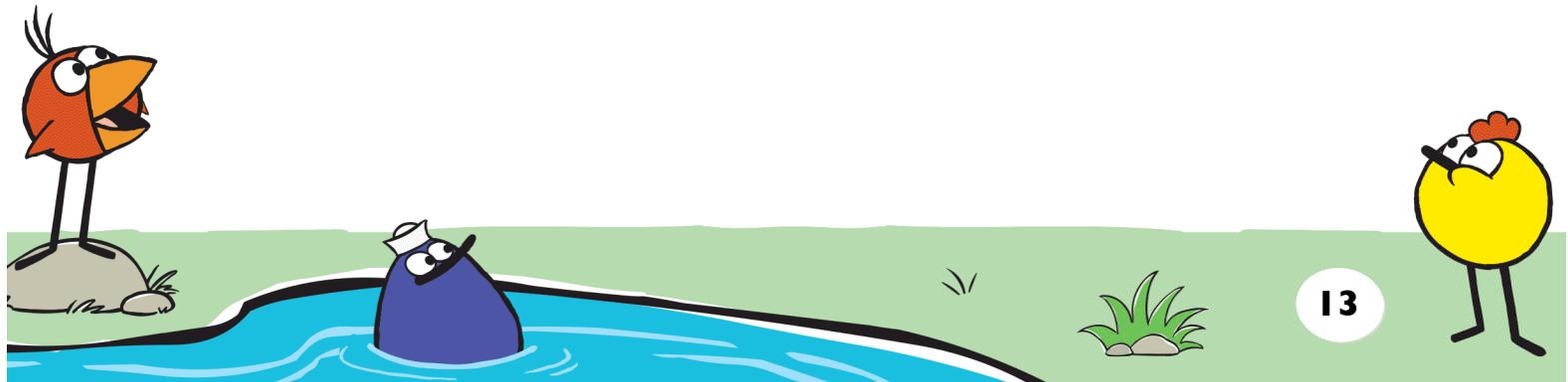
Explore PLANTS



- **Personalize the learning by incorporating children's experiences** into the things you are doing.
Example: You might have children bring in leaves that they find in their yard or a favorite park. They might also bring in a clipping from a plant that they have at home and see if they can make it grow in the classroom.
- **Promote science talk among children.** By encouraging children to discuss things together, you give them the chance to teach and guide one another. Through their collaborations, children often take the learning in new directions you might never have anticipated. You can even ask children to discuss and plan during their lunch and give them afternoon time to put their plans into action.
Example: You can pair children up and present them with a problem that they have to solve together, such as, *Which of these branches do you think come from the same tree?*
- **Introduce mystery.** Children always have a lot to talk about when there is a mystery involved. Mysteries engage children in science talk because they inspire children to wonder, make predictions, and become detectives.
Example: Create a Mystery Bag with leaves, grasses, seeds, and twigs in it. [Say, To play the game, reach into the bag, pick one item, and describe what you are feeling. Then try to guess what it is. After you've guessed, pull it out and see if you guessed right!](#)

Your Experiences

- Are there certain activities that seem to stimulate children's conversation? How do you get children curious, excited, and asking questions?
- What are ways you relate science explorations to children's own lives? How has personalizing the learning been effective?
- How do you encourage children to talk to each other about their science explorations? Have any challenges come up, and how have you handled them?
- Presenting children with a mystery is a great way to get them talking and wondering. What other approaches have worked for you?





More Resources

For more information on science talk

There are additional Teaching Strategy PDFs on the PEEP Web site along with instructional videos. These illustrate science talk related to the other PEEP science units: Colors, Water, Shadows, Ramps, and Sound.

For more videos and information on other topics

In addition, the Web site offers Teaching Strategies and videos on other professional development topics: Learning Environments, Individualized Instruction, and Documentation and Reflection.





Explore PLANTS



Teaching Strategies Documentation and Reflection

What Is Documentation and Reflection?

- Documentation is the process of recording experiences.
- Using documentation, children and educators can look back on their experiences during an activity and think more deeply about them.

What are some types of documentation?

- **Child-generated documentation** happens when children record their own learning. It can include:
 - drawing a picture of what they did
 - taking photos of their work
 - explaining what they're doing and what happened while you transcribe their words
- **Educator-generated documentation** can include:
 - creating charts
 - making notes
 - taking photos
 - recording audio
 - shooting video

Why is documentation and reflection important?

- **Children don't learn from their experiences alone.**
 - They need to think about what they have done and talk with others.
 - They will often notice new things about their work the second or third time they review it.
- **It gives children a sense of ownership.**
 - To see their work documented gives children a sense of ownership—making it much more likely that they will remember, apply, and build upon this learning.





- **It captures the process of scientific inquiry.**
 - Science is a process that includes predictions, testing, questioning, problem solving, experimentation, and sharing ideas. Documentation helps capture the process of scientific inquiry, not just the outcomes.
 - It allows children to see the steps they took.
 - Children begin to learn that an important part of science is collecting, describing, and recording of data.

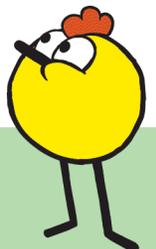
- **Language skills are strengthened.** Commenting on documentation asks children to:
 - clarify their ideas
 - explain their reasoning
 - communicate their perspectives, both to themselves and to others
 - use and repeat new scientific words and incorporate them into their vocabulary

- **It is an invaluable teaching tool,** allowing you to:
 - develop activities that respond to the needs of each child
 - communicate with parents and share concrete examples of children's work
 - show children the connections between the different activities and ideas they've been exploring
 - understand an individual child's skills, growth, struggles, or misconceptions
 - assess children's thinking and your own teaching

Teaching Strategy: Encouraging Children to Create Documentation

Why is encouraging children to create documentation an effective teaching strategy?

By helping children document what they are doing, you make it possible for them to reflect on their work and to understand and make sense of their experiences.



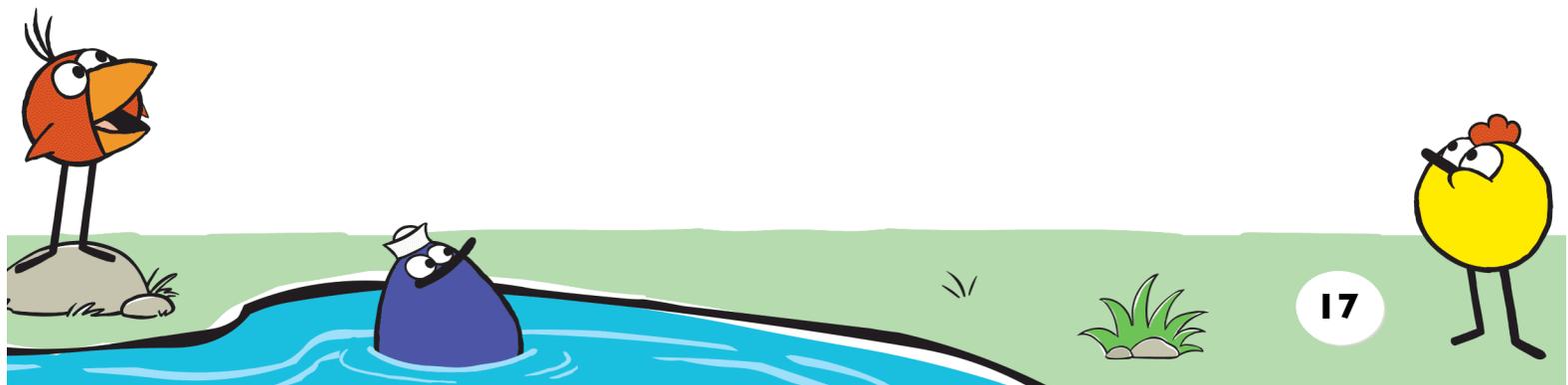


Children can be encouraged to document their work in many different ways:

- **Drawing pictures** is an ideal way for children to make their learning visible.
Example: On a trip outside, you might have children do rubbings of the bark on several different trees. Back inside, they can compare their rubbings and discuss similarities and differences.
- **Charts, graphs, and models** allow children to “see” or visualize their thinking and to compare their results with peers.
Example: Children might keep track of how tall each plant is using a piece of yarn or long paper strip for measuring. Have a piece of yarn or paper designated for each plant. Children can hold the yarn or paper vertically next to the plant and mark off the plant’s height each day with a marker.
- **Dictating thoughts** for you to transcribe (usually in an abbreviated form) helps children learn about their thought process. Children learn about their thinking through the act of communicating.
Example: An educator might accompany children as they make observations on a nature walk. Later she can read their words back to them as they reflect upon the walk. Reading the child’s dictation back to her to check for accuracy further cements this process.
- **Recording, videotaping, or photographing** a child’s demonstration or explanation gives children perspective on what they have accomplished.
Example: Children might document the development of bean plants they are growing by taking photos of them each day and posting them on a large chart.

Your Experiences

- What kinds of documentation do you typically do with children?
- What types of documentation do children seem most interested in creating—do some forms come more naturally to them than others?
- Have you run into any challenges while having children document their explorations? What kind?





Explore PLANTS



Teaching Strategy:

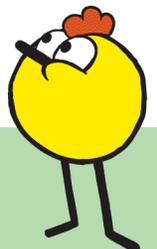
Using Documentation and Reflection as Teaching Tools

How does using documentation and reflection benefit your teaching?

Documentation will engage children, deepen their learning, and make connections between the different science activities you've shared together. It will spark conversation and get children to share what they did and learned. It will also help you decide how to support the child's learning.

There are many benefits to documenting children's work:

- **It helps children remember, share, and reflect** on their ideas and experiences. Looking at a photo or chart helps children recall their thoughts and ideas about what they were pursuing.
Example: To document how to plant grass seeds in soil and in plastic sandwich bags, you might take photographs documenting a child demonstrating each step of the planting process. The photos can help children recall their experiences and spark conversation about the differences and similarities between growing seeds in soil and in plastic sandwich bags. The photos can also be used as a "how to" instructional that can be brought home and shared with parents so that children can continue experimenting with growing seeds at home.
- **It connects ideas and builds on learning.** Documentation helps children see connections between the different activities they've done and encourages them to think more deeply about them. Charts are especially good for this.
Example: You might begin a week of exploration with a chart called, "Things That Grow Around Me." Each day children can add growing things that they noticed on the way to and from school. At the end of each day, review what is already on the chart and add any new plants, trees, or flowers that children suggest. Returning to the chart each day helps them think back on the activities they have done and see the thread of ideas that connects them.
- **It shows that you take children's explorations seriously.** Recording something gives it importance.
Example: You might videotape children as they display twigs, seeds, and bark they discovered on a scavenger hunt. Invite children to describe what they found. The very fact that you've taped their explorations shows children that you consider their explorations valuable.





- **It helps with lesson plans and in understanding the needs of each child.** Documentation is key in helping you plan instruction and future activities. With your notes, transcriptions, and photos, you can see what really catches the children's attention. What do they want to know more about? What was hard for them to grasp? Did they seem to engage more in indoor or outdoor activities about plants?
- **It enables specific communication with parents or caregivers.** Here are a few activities you can use:
 - Send home children's drawings and transcriptions.
 - Set up a bulletin board with photos, charts, and drawings that children can show their caregivers and talk about when it's pick-up time.
 - Create a portfolio for children that shows evidence of their growth and learning over time.
 - Strengthen the home/school connection by encouraging parents to explore plants with their children at home.

Your Experiences

- Do you use cameras, video, or audio recording devices when you document? How has technology helped you? Have you encountered any problems with it?
- In what ways do you use “low-tech” resources, such as written notes, to document learning?
- Have you faced any challenges when documenting children’s learning? If so, what were they?
- What benefits of documentation have you noticed?

Teaching Strategy: Reflecting Together

Why is reflecting together an effective teaching strategy?

After children document their work, it's essential they reflect on it: that's where much of their understanding about what they experienced takes place. As you reflect together, you strengthen children's reasoning abilities, help them consider others' perspectives, build their communication skills, and learn to better understand their thinking and learning.





There are many ways to promote reflection:

- **Children sharing ideas**
 - Have a child present her documentation in a group and encourage the others to ask questions or comment on something they find interesting.
 - An engaged and receptive audience will make the child who is presenting feel excited and proud to be showing his work, and more confident in expressing ideas and conclusions.
 - The audience also benefits by working on their ability to listen and sustain attention, and by developing social skills in taking turns.
 - Group reflection encourages children to consider new perspectives.
 - Children may become inspired to try something new next time.

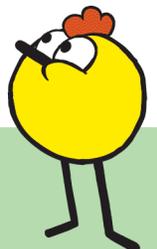
- **One-on-one conversations**
 - Not all children will want to share their reflections in a group.
 - Conversations with you during or after a child has created documentation gives you the chance to explore with a child on his or her own terms.

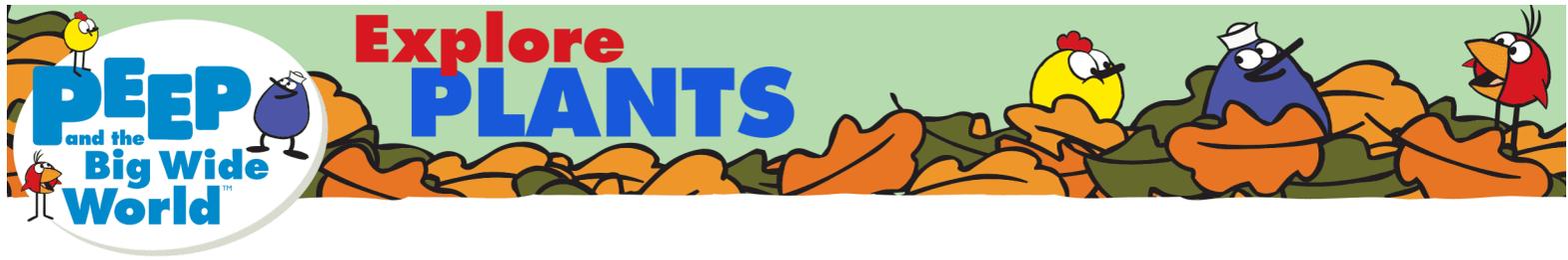
- **Displaying documentation**
 - Post on bulletin boards, poster board, or a tri-fold board.
 - Create a “save it” shelf, where children keep their creations, or a class album full of photos, children's drawings, and children's words.
Example: Use a post-it note or index card to write what they have to say about a plant they have grown and are now displaying.

- **Including parents in reflection**
 - Consider inviting parents to come and observe as children talk about their creations.
Example: You might even invite parents to come and observe as children talk about the plants they are growing. You could create a class garden and have children give their parents and caregivers a tour. Encourage children to ask the adults, *Do you have any questions about this plant?* As children respond to their families' questions, they'll be reflecting upon their learning.

Your Experiences

- What types of documentation have you found most effective for helping children to reflect?
- How would you compare guiding group reflection and reflecting with children individually? Any success stories to share?





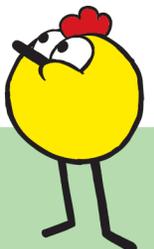
More Resources

For more information on documentation and reflection

There are additional Teaching Strategy PDFs on the PEEP Web site along with instructional videos. These illustrate documentation and reflection related to the other PEEP science units: Color, Water, Shadows, Ramps, and Sound.

For more videos and information on other topics

In addition, the Web site offers Teaching Strategies and videos on other professional development topics: Learning Environments, Individualized Instruction, and Science Talk.





Explore PLANTS



Facilitator's Guide Individualized Instruction

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.
- With an awareness of children's differences, an educator can plan learning centers and activities, offer instructions or explanations, and encourage children to express their ideas and experiences in a way that's effective and appropriate.

Why is individualized instruction important?

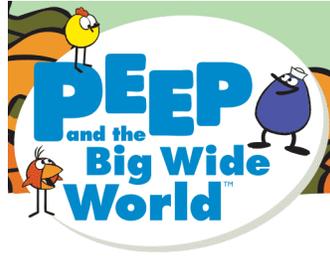
- Responding to children's varied needs, experiences, and interests is critical to teaching.
- Science is well suited to individualized instruction because it offers children the chance to explore in hands-on ways at their own level.
- By carefully observing children, educators can plan a wide variety of activities that address a range of skills and learning goals.
- Recognizing children's unique learning abilities, interests, strengths, and challenges will increase their engagement, help them to think and learn, and make them feel valued and competent. Children who are recognized in this way are more likely to persist in questioning and problem solving.

Teaching Strategy: Planning for Children of Different Ages and Developmental Stages

Why is planning for children of different ages and developmental stages an effective teaching strategy?

- Preschool classrooms may have children who have recently transitioned from toddlers to those who are ready for kindergarten in the same room. It can be a challenge to offer group activities that work for children at widely different developmental stages.





Explore PLANTS

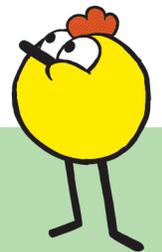


- Even among children of similar ages, not all mature at the same rate. Children who are close in age can be quite different in terms of development. Attention span and interest level will affect their ability to focus.
- We are all different learners with different needs. Young children are just learning how to learn and be students. It's important to make sure their earliest learning moments are positive and as customized for them as we can make them. Every learner has a current level of ability and then a level where he/she can be comfortably pushed. It is your job as a teacher to find that zone for students and help them get to *their* next level.

Some ways to take age and development into account:

Note: The following uses “older children” and “younger children” as a very basic description of ability, not necessarily age. There will be the occasional three-year-old who can accomplish tasks at the “older child” level and an almost five-year-old who may fit the “younger child” description better. You know your group and what their level of development is.

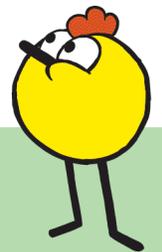
- **Explain the same concept in different ways.**
 - For some children, a simple explanation will be sufficient. For other children, you will need to ask many questions to gauge their understanding.
 - Even children who quickly grasped the concept can benefit from hearing different explanations and watching demonstrations.
 - You can encourage peer-to-peer learning—having children explain concepts to each other.
 - The more ways you explore an idea with children, the more likely they will be able to understand and remember it.
- **Adjust the materials.** During science explorations, children need to be “hands-on,” regardless of their current stage of motor skills development. **Example:** Using a spray bottle is exciting and fun, but younger children may not have the necessary coordination. Instead, have younger children use a salt or pepper shaker filled with water to “make it rain” on the seed. To avoid overwatering, just put a small amount of water in the container.





- **Offer independence—or more support.**
 - **More independence.** Some children may finish an activity quickly. Have additional materials and extension activities ready.
Example: If a child easily measures the circumference of the trunk of a tree, challenge him or her to measure other trees. Encourage the child to make predictions about whether the circumference of a second tree is bigger or smaller than the initial tree. After measuring, what did they discover? Which tree had a larger circumference?
 - **More support.** Some children may need more guidance and thrive on the support you give them.
Example: If children are not yet able to plant their own seeds, do it with 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.
Example: You might have children work together to measure plant height. The older child can measure the plant with a string or strip of paper, while the younger child draws a line with a marker to mark the height of the plant. The older child can then switch roles with the younger child.
 - **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.
Example: Try taking everyone on a leaf hunt where children attempt to match a leaf with the tree that it came from. Children can work together looking for clues and sharing their observations.
 - **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.
 -





Your Experiences

- What are some of the differences you notice among the children in your program?
- How have you adapted activities to meet the needs of children who are at different levels of development? What have been your greatest successes? What has been a struggle?
- What are some ways you make learning experiences engaging for all students in your classroom?

Teaching Strategy:

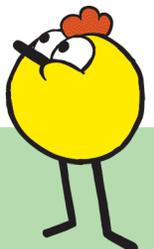
Planning for Children with Different Interests and Learning Styles

How does planning for children with different interests and learning styles benefit your teaching?

- When children are given opportunities to follow their own interests and learn in their own ways, their engagement and sense of personal investment in the learning deepens.
- An educator's awareness of children's passions, motivations, temperament, strengths, and weaknesses can significantly affect how a child learns and grows.

Some ways to address children's different interests and learning styles:

- **Get to know each child.** Engage with children to learn their interests, strengths, and weaknesses. The best way to do this is to observe children in action.
 - **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.
Examples: If you notice that a certain child loves to be outside, you might plan an activity in which the group goes on an outdoor plant hunt and searches for plants in unusual places—growing out of a wall, for example, or in the cracks of a sidewalk. If a child is uninterested in sorting seeds, you might have him or her create a collage out of them.

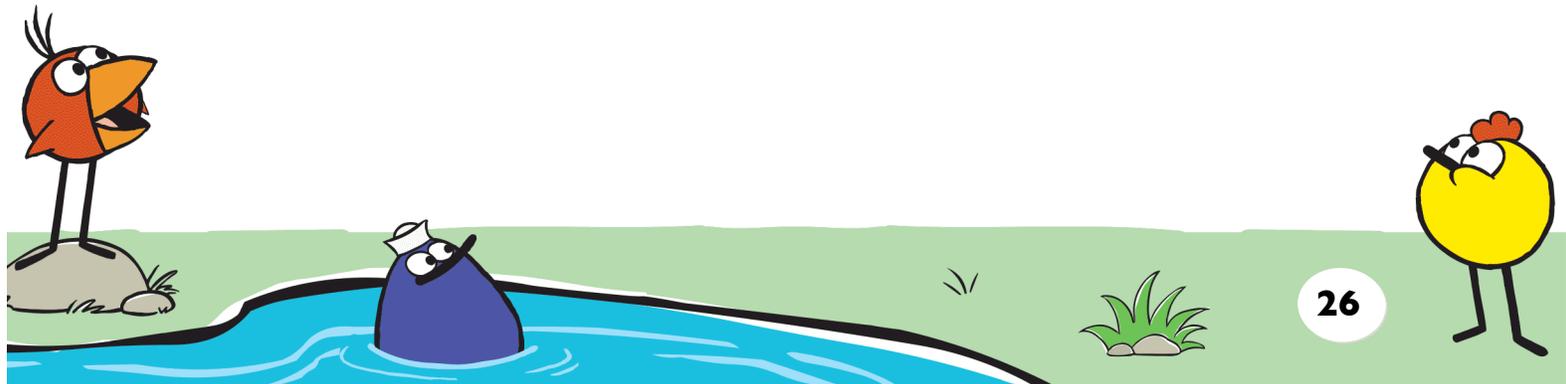


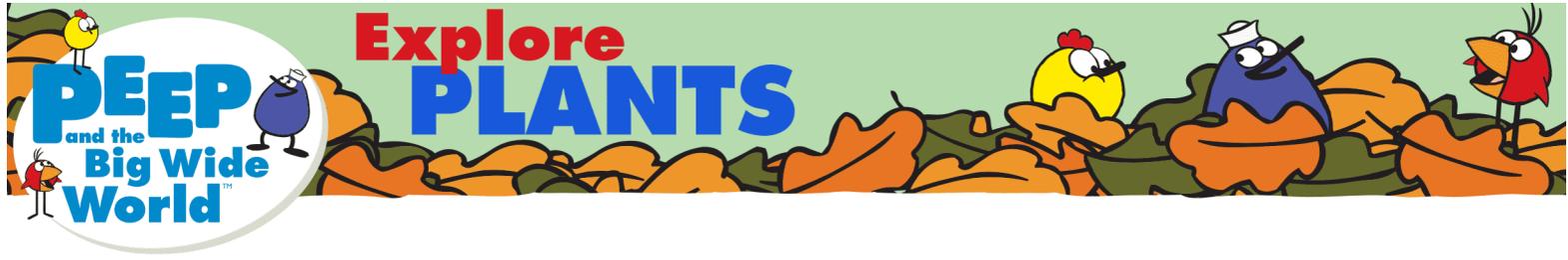


- **Identify learning styles.**
 - **Most children have particular styles of learning they respond to best;** they may gravitate toward visual, auditory, or kinesthetic learning. Over time, you will become familiar with whether children prefer to learn by hearing, looking, moving, or a combination of these sensory aptitudes.
 - **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 an idea is presented, the more likely children are to understand and retain the idea.
Example: All learning styles can be addressed no matter what the science topic. An auditory learner, for example, may enjoy hearing the names of different plants, flowers, fruits, and vegetables, while a visual learner might enjoy looking through a plant field guide.
- **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.
Example: For example, in one center children can plant seeds and in another they can create art projects with plants. In yet another center they can look through plant books or even grow their own pretend garden in dramatic play.

Your Experiences

- What strategies do you have for getting to know individual children in your classroom? 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?
- What are some challenges you have faced when trying to offer many choices to the children in your classroom?
- What are some unique activities that have come out of children's interests?





More Resources

For more information on individualized instruction

There are additional Teaching Strategy PDFs on the PEEP Web site along with instructional videos. These illustrate individualized instruction related to the other PEEP science units: Color, Water, Shadows, Ramps, and Sound.

For more videos and information on other topics

In addition, the Web site offers Teaching Strategies and videos on other professional development topics: Learning Environments, Documentation and Reflection, and Science Talk.



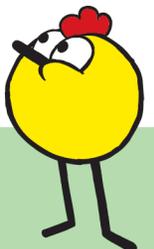


Homework Assignment

- Use the online PEEP Plants curriculum to choose **one guided activity** to do with children OR set up **one learning center** for children to explore freely: www.peepandthebigwideworld.com/educators
- 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.

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 from Science Talk?
3. What was the most satisfying part of leading the guided activity or setting up your learning center? What was challenging?





Explore PLANTS



Thanks for your participation. Please share your impressions below.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Did the presenter identify learning goals at the beginning of the training?					
Were the learning goals met?					
Did the training meet your needs and expectations?					
Was there time for discussion and questions and answers?					
Was the presenter knowledgeable?					
Was the training organized and easy to follow?					
Will you be able to apply what you learned?					

What was most helpful about this training? Why was it helpful?

