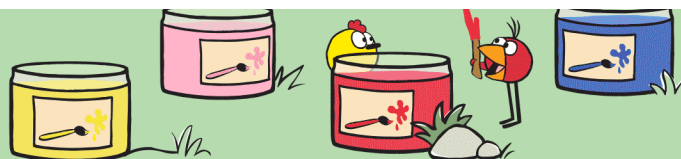




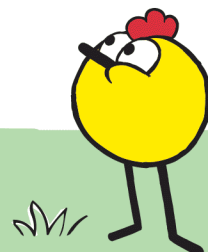
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TRAINING HANDOUTS

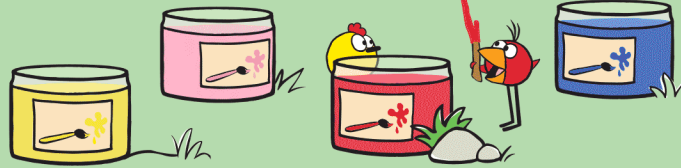
Photocopy these handouts for participants:

- **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)





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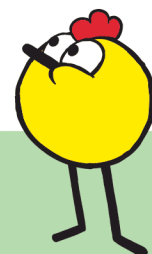
Teaching Strategies Learning Environments

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.
- **Traditional learning centers**, like a science center, library corner, block center, or dramatic play area, can be modified or changed so they serve as color 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 the science of color can be used for **specific guided activities** or opened up for **free exploration**.

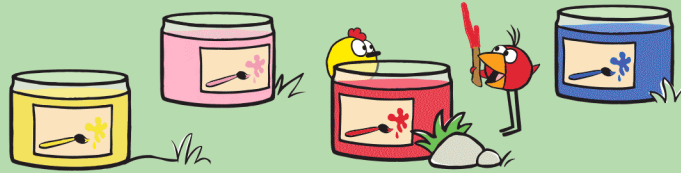
How does a learning environment encourage science exploration?

- **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.





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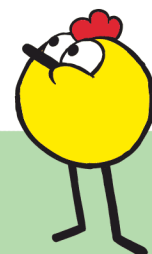


Teaching Strategy: Planning a Learning Environment

Why is planning a learning environment an effective teaching strategy?

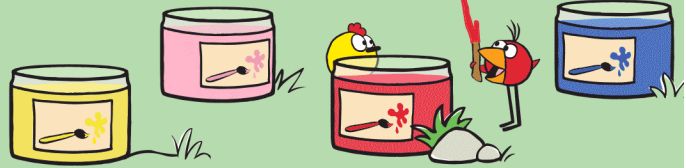
A well-organized, intentionally planned learning environment encourages children to explore with specific materials and learning goals in mind.

- **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 color. 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: If you add paint color samples, buttons, and bottle tops to your block center—which already contains many colorful objects—you’ve turned it into a color-sorting center. A window can become a color and light center, with color paddles and transparencies, and perhaps a hanging prism.
- **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 draw outlines of their hands and use multicultural crayons to match their own skin tones. After the activity, if you leave the crayons and paper out, children can revisit these materials and explore on their own.
- **Work with what you have.** Creating a rich learning environment for exploring colors doesn’t take a lot of additional materials. After all, colors are all around us—every inch of your space holds potential for an adventure with color
- **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:

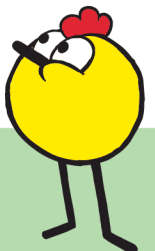
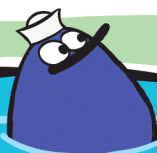




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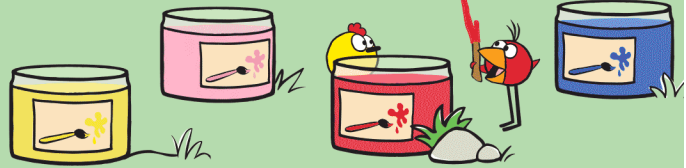


- What do I want children to learn about color?
 - What and how will I engage the children? What are their interests, abilities, and cultural backgrounds?
 - Do I want children to be sitting, standing, or both?
 - Does the activity require a lot of space?
 - Is the activity messy?
 - Will the activity work differently indoors and outdoors?
 - What other props will support the children’s learning about colors?
- **Place materials in accessible locations.**
 - If materials such as paints, food coloring, and water are easily reachable, in appropriate containers, and at the right height, children 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.**
 - Science can get messy. If children are mixing paints or food coloring, spills are inevitable.
 - 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 also increase their sense of responsibility.
 - **Make the most of your outdoor spaces.**
 - Enjoy being outside and observing when you are there. Science is play too!
Example: Children can search for colors in nature or collect green leaves and arrange them from lightest to darkest. You can bring trays with art supplies outside so children can paint what they see.
 - The outdoors is also a great canvas for your more messy adventures.
Example: Children can use chalk, finger paints, food coloring in water, and other drippy substances without worrying about spills.
 - Outdoor activities are also great for children who are kinesthetic learners and need lots of opportunities to move.
Example: You might make the whole playground your learning environment as you say, *I spy something red near the swing set—can you find something red, too?*





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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

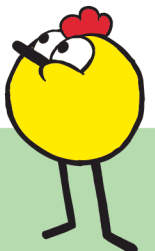
Why is offering choices an effective teaching strategy?

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

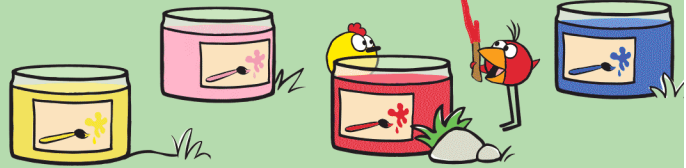
You already have learning centers in your classroom—spaces designed for specific types of exploration. Help children become familiar with what happens there and the different choices available to them. You can use cardboard boxes, rugs, or even chalk to create temporary learning spaces, both indoors 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 color in a variety of ways:

- **Open space:** This learning area (indoors or outside) allows children to move their bodies. Children can play group games like *Red light, Green light* or go on a color hunt.
- **Water area:** The water table is a great place to experiment with food coloring or discover that colors change when wet.
- **Rugs:** This is where children can get comfortable for read-alouds and sorting items by color.
- **Tables:** Tables provide a natural location for spreading out and working on color-related activities.
- **Library area:** In the library area, children can browse through and read color-related books.
- **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 colors and/or spend a few peaceful moments looking through and exploring color transparencies.
- **Sensory area:** The sensory area is ideal for hands-on activities using clay, foam, fabrics, and other textured materials in a variety of colors.





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- **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.

- **To experiment with mixing colors,** you can create one station where children mix paints, and another station where they'll mix colored water, using pipettes or eyedroppers. 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 how mixing paint and mixing colored water are similar and different.
- **For a color sorting station,** be creative in the types of items you set out for sorting: crayons, paint chips, building blocks, small toys, yarn, leaves, pebbles, and twigs. Or set up a sorting station with materials you know children are especially drawn to.
Example: If a child spends the majority of his/her time in the play kitchen, prepare the area with dishes and utensils of different colors to sort.
- You can add variety and focus children's learning by **adding or taking away specific 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 creating different shades of a single color, set out just one color.

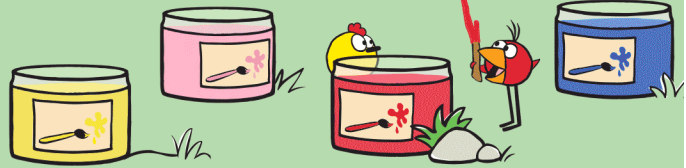
Your Experiences

- 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?





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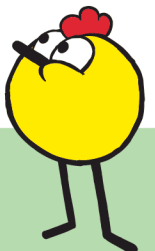
Teaching Strategy: Encouraging Exploration Throughout the Day

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 colors, 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 a guided activity focused on a specific investigation.)

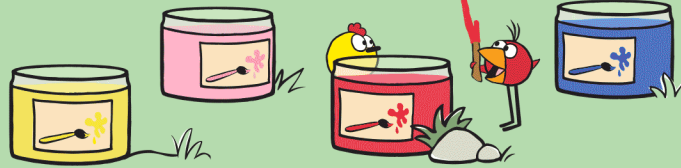
The following strategies will help encourage learning everywhere:

- **Allow lots of free exploration.** This may lead children down new and perhaps unexpected paths, and help them become invested in learning about colors.
Example: You may have a learning center with flashlights and colored water in bottles. One child may decide to experiment by using the flashlight on other objects in the room, testing whether plastic cups or towels let light shine through them the way the bottles do.
- **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: A child notices his shoes are brown and so are his friend's. Take a minute to have all the children report on the color of their shoes. If time allows, make a quick chart to show the results of your impromptu shoe investigation.
- **Integrate color learning throughout the day.** Everyday routines offer an easy way to introduce colors.
Example: During snack time, discuss the colors on each plate. As you line up, do so by the color of children's shirts.
- **Use the whole space as a palette for learning.** Even the walls, doors, and floors around you offer opportunities for learning about color.
Example: Try color explorations that center on the room children are in. Have them hunt for colors on the walls, use colored tape to make patterns on the





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floor, and put colored transparencies over the window to create a collage of color and light.

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?

Additional 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: Plants, Water, Shadows, Ramps, and Sound.

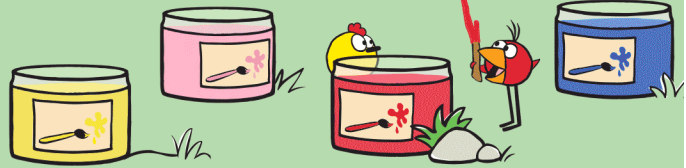
For more videos and information on other topics

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





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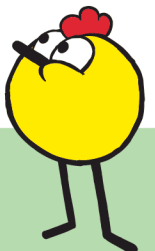
Teaching Strategies Science Talk

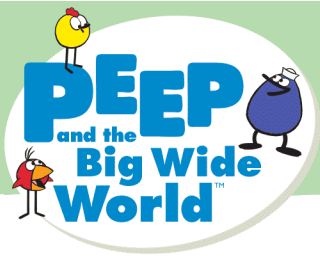
What is Science Talk?

- **Language is crucial to learning and communication** in all subjects. Science is no exception. As children investigate and explore color, they need to talk about their work just the way a scientist 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 mixing those colors will make them change to orange!*
 - These are all green things, but the greens are different.*
 - This looks like blue, but I think it's purple.*
- **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 on outside as children inspect an anthill or crunch leaves.

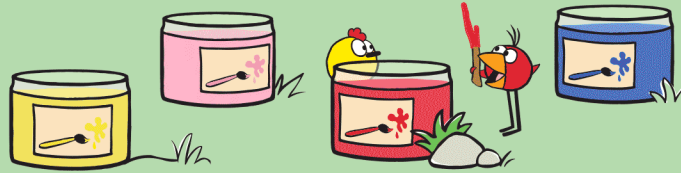
Why is science talk important?

- **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 understanding a science topic—it's a way of understanding the world.





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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, understand, and communicate.
- You also help them build vocabulary and discover the power and importance of words.

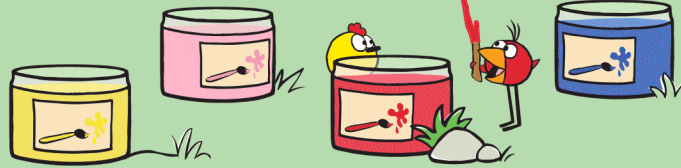
Here are some ways to model science talk while exploring color.

- **Mention colors you notice throughout the day.** Compare and contrast colors and talk about how they remind you of things at home and elsewhere.
Example: *Wow! What a pretty yellow top you're wearing! Look, Nina is wearing yellow, too. Let's compare the two yellows. Would you describe the color of your shirt as the same color as Nina's? No? How do you think they are different?*
- **Let children know what you're wondering about.**
Example: *You might hold up a color as you say, I wonder if this red is darker or lighter than the red on my shoes? How do you think I can figure that out?*
- **Incorporate new words as children do hands-on activities.**
Example: *You might introduce the word shade as you look at the color of twigs. Can you think of a good way to **compare** these two **shades** of brown? How can we tell if these **shades match** each other or if they are **different**? How would you describe this **shade** of brown?*
- **Narrate your actions so children learn to describe aloud what they are doing.** Use action words (such as *observe, compare, change, discover, blend, and mix*) and descriptive words (such as *light, lighter, dark, darker*).
Example: *You might say, I wonder what will happen if I **mix** in a little bit of white paint with the blue paint? Oh, the blue is **changing**, and it's becoming a **lighter** shade. Now it's **light** blue! What would happen if I added even more white? When you investigate more closely, children will be encouraged to do the same.*
- **Use rich, descriptive language.**
Example: *This purple is like the color of the plums we ate. It's a reddish purple. It makes me think of . . .*





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Your Experiences

- Can you share 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.

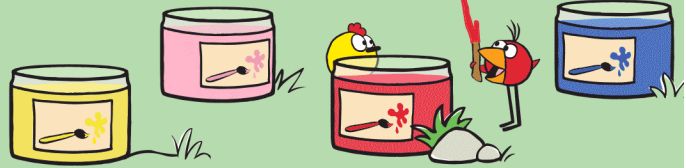
Some examples:

- **How questions:** *How did you make that color? How do you think we can make this color lighter or darker? How do you think this color is like that color? How is it different?*
- **What questions:** *What happened when you added this color to that color? What do you notice when you add a bit of white paint to the color? What do you think will happen to the color if we shine that flashlight on it? What's the difference between these colors?*
- **Do you think . . . questions:** The use of "Do you think . . .," when relevant, encourages children's thinking—instead of focusing on getting the right answer.





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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 color you created?*, you might get more from some children by asking an either/or question: *Would you describe that color as a light blue or a dark blue?* 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?
- Have you noticed a difference 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:

Will mixing blue and yellow make green?

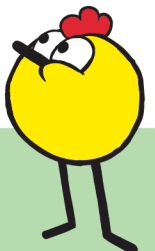
Did you make that lighter shade by adding white paint?

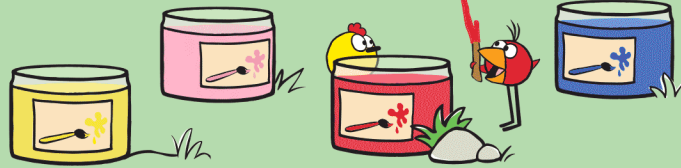
Is this light blue or dark blue?

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.



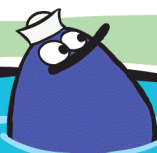


Here are some ways to engage them:

- **Find out what excites children.** Take the time to observe them. Notice their interests and incorporate these interests into your activities.
Example: You might, for instance, begin your color explorations by taking a survey of children's favorite colors. On another day, you might probe a little deeper, asking them to describe what *shade* of their favorite color they like best.
- **Personalize the learning by incorporating children's experiences** into the things you are doing.
Example: You might have children bring in photos of places they've been. You can examine these pictures together, comparing and contrasting the different colors that you see.
- **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.
Example: You can pair children up and present them with a problem that they have to solve together, such as *Can you two make a shade of blue that matches the walls in this room?*
- **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 to become detectives.
Example: Almost any activity can be turned into a mystery. During cleanup time, you might have children solve the mystery of which marker cap goes with which marker.

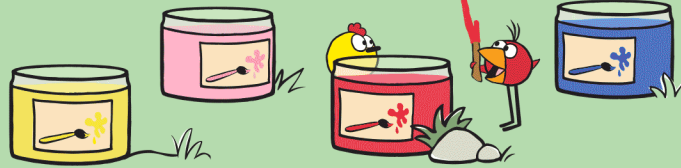
Your Experiences

- 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? 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?





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Additional Resources

For more information on science talk

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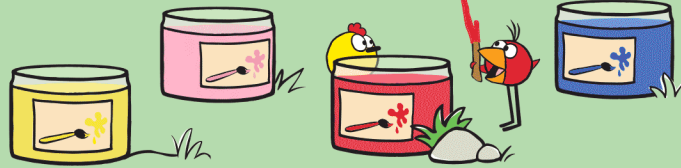
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Teaching Strategies Documentation and Reflection

What Is Documentation and Reflection?

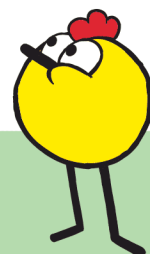
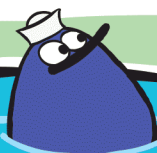
- Documentation is the process of recording experiences.
- Using documentation, children and educators can look back on their experiences during an activity and think more deeply about them.

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

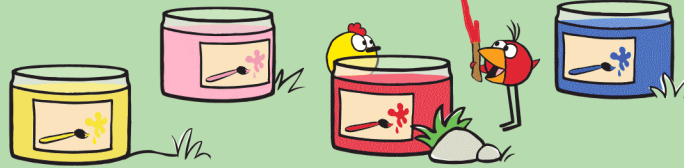
Why is documentation and reflection important?

- **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.





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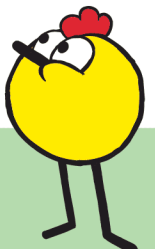


- **It captures the process of scientific inquiry.**
 - Science is a process that includes predictions, testing, questioning, problem solving, experimentation, and sharing ideas. Documentation helps capture the process of scientific inquiry, not just the outcomes.
 - It allows children to see the steps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

Teaching Strategy: Encouraging Children to Create Documentation

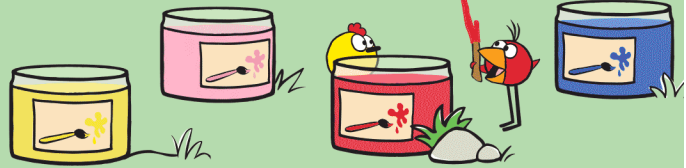
Why is encouraging children to create documentation an effective teaching strategy?

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.





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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, give a child several different shades of green crayons so she can draw all the “green things” that she sees. Back inside, she might order the images from lightest shade to darkest shade. As she draws and discovers, she’ll be comparing and classifying colors and making observations about nature.
- **Charts, graphs, and models** allow children to “see” or visualize their thinking and to compare their results with peers.
Example: Children might create a chart of brown-colored objects they discovered inside, and brown-colored items discovered outside. Then they might look at the chart and decide if there are any similarities or differences between them.
- **Dictating thoughts** for you to transcribe (usually in an abbreviated form) helps children learn about their thought process.
Example: Sit with a child who has sorted items by color and write down the child's words as he talks about how he sorted each set of items. As the child talks, he'll start to become aware of his thinking processes while building language and communication skills.
- **Recording, videotaping, or photographing** a child’s demonstration or explanation gives children perspective on what they have accomplished.
Example: Videotape a demonstration to document how a child goes about comparing the colors of two objects by placing them side by side.

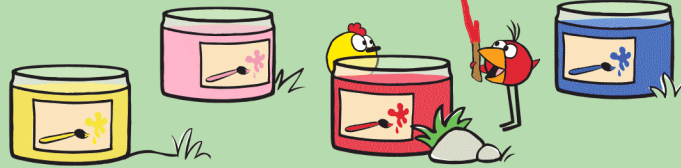
Your Experiences

- 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?





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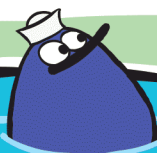
Teaching Strategy: Using Documentation and Reflection as Teaching Tools

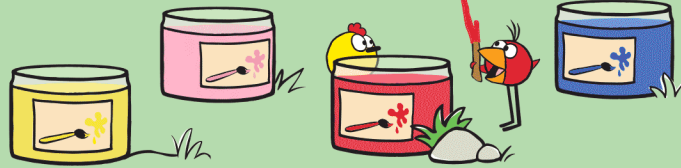
How does using documentation and reflection benefit your teaching?

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.

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 sorting crayon colors, photograph the original pile of crayons, then take photos as children separate them into different piles. The photos can spark a discussion of how each child went about trying to separate and categorize the jumble of colors compared to how others did it.
- **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: Begin a week of exploration with a chart called "Different Shades of the Same Color." At the end of each day, review what is already on the chart and add any new ideas the 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: Videotape children mixing colors and then watch the video as a group, inviting children's comments. The very fact that you've taped their activity shows children 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 color?
- **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 color with their children at home.

Your Experiences

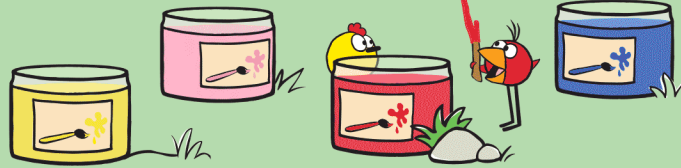
- Do you use cameras, video, or audio recording devices when you document? How has technology helped you? Have you encountered any problems with it?
- Do you use “low-tech” resources, such as written notes, to document learning?
- Have you faced any challenges when documenting children's learning? If 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, and build their communication skills.



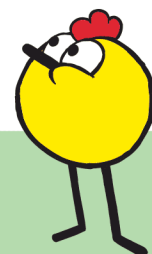


There are many ways to promote reflection:

- **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.
- **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 model they have created and are now displaying.
- **Including parents in reflection**
 - Consider inviting parents to come and observe as children talk about their creations.
Example: Set up a color gallery that children can walk their parents and caregivers through. Encourage children to ask, *Do you have any questions about this picture?* As children explain their work to their parents, they'll be reflecting upon their learning.

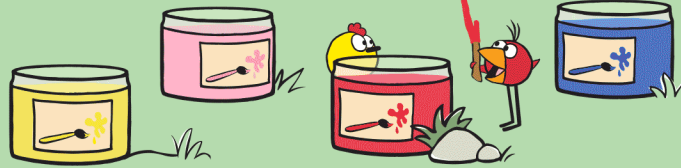
Your Experiences

- What types of documentation seem the easiest to get children to reflect on?
- What's your experience been with guiding group reflection compared to reflecting with children individually?





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Additional Resources

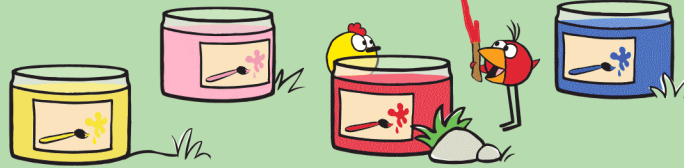
For more information on documentation and reflection

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: Plants, 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.





Teaching Strategies Individualized Instruction

What is Individualized Instruction?

- It's a way of teaching that takes into account each child's unique personality, 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.

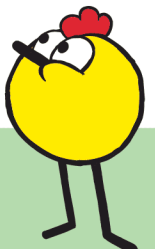
Why is individualized instruction important?

- 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 make them feel valued and competent, more likely to persist in questioning and problem solving, and increase their engagement.

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

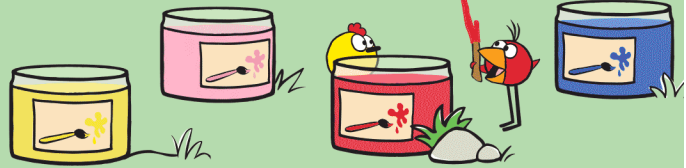
Why is planning for children of different ages and developmental stages an effective teaching strategy?

- 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.





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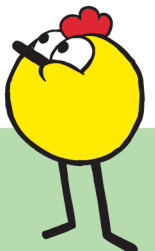


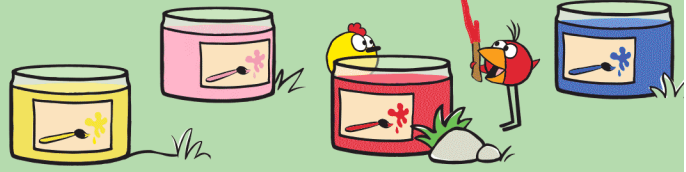
- Even among children of similar ages, not all mature at the same rate. Children who are close in age can be quite different in terms of development. Attention span and interest level will affect their ability to focus.
- We are all different learners with different needs. Young children are just learning 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 an eyedropper or pipette to dilute colored water is fascinating and fun, but younger children may not have the necessary coordination. Instead, have basters or small squirt bottles available so they can still explore independently.





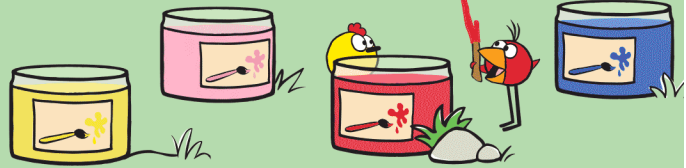
- **Offer independence—or more support.**
 - **More independence.** Some children may finish an activity quickly. Have additional materials and extension activities ready.
Example: If a child easily completes an activity about sorting two colors in an alternating pattern, challenge him/her to make more complex patterns with additional colors.
 - **More support.** Some children may need more guidance and thrive on the support you give them.
Example: If children are not able to create an alternating pattern of two colors, do it with them several times, repeating and pointing to the colors, saying *blue, yellow, blue, yellow . . . what comes next?* For children just learning their colors, you might begin by identifying the colors that you are working with: *This is blue. Can you find something in this room that is also blue?*

- **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 create a color lab where children can take turns mixing colors for one another and then painting with them.
 - **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: When exploring colors, you might put up a large sheet of paper for a mural and invite all the children to paint with colors they have mixed. Together, gather around the mural and discuss the different shades you see and how they were made.





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- **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 classroom?
- 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?

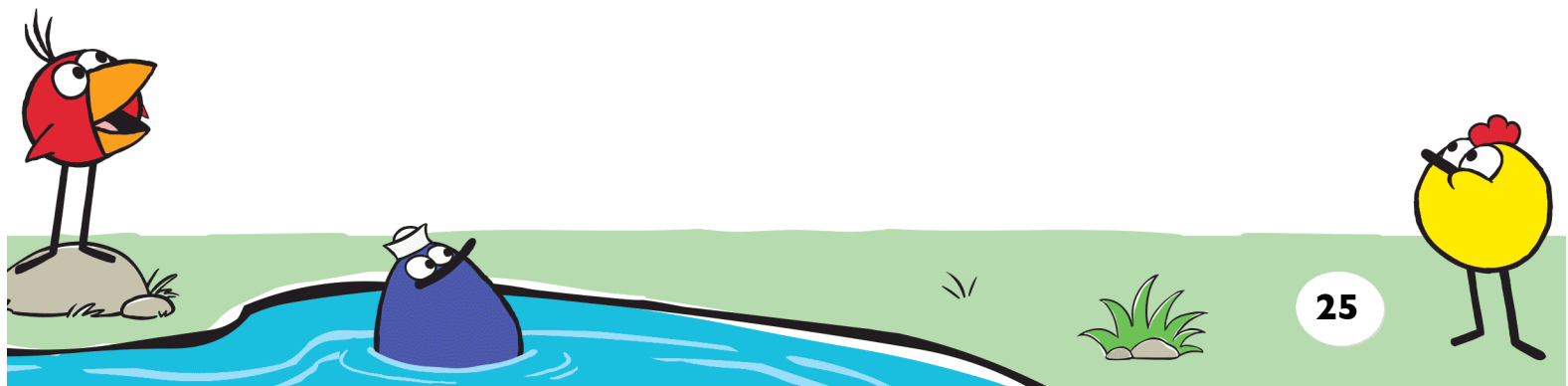
Teaching Strategy: Planning for Children with Different Interests and Learning Styles

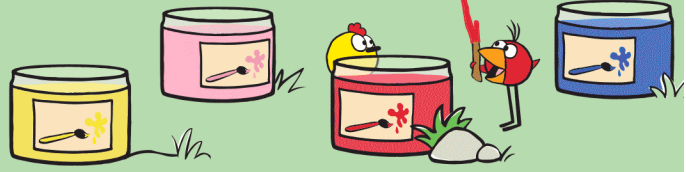
How does planning for children with different interests and learning styles benefit your teaching?

- 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 shape your teaching.

Examples: If you notice that a certain child loves to be outside, you might plan an activity in which the group goes outside to search for certain colors in nature. If a child is uninterested in coloring, suggest that he or she make a collage instead. Color sorting becomes exciting when the child who loves toy cars sorts them by color and shade.

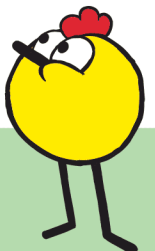
- **Identify learning styles.**

- **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: Traditionally, education favors auditory learners, but with this color science unit, visual learners will naturally flourish. But all learning styles can be addressed whatever the science topic. An auditory learner, for example, may enjoy coming up with creative names for colors and a kinesthetic learner may gravitate toward games like Red light/Green light or enjoy running after bubbles to identify their subtle colors.

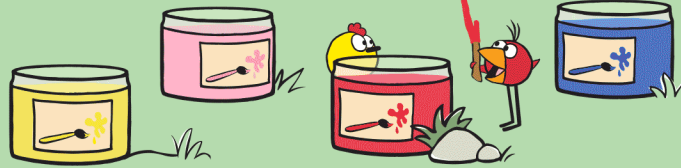
- **Offer Choices.** One effective way to address the unique needs and interests of each child in your program is to devote your learning centers to different aspects of learning.

Example: In one center you might have children looking at books about colors and then creating their own color books. In another you might have children painting and drawing, and in yet another they may spend time sorting items by color or creating patterns out of colored objects.





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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?

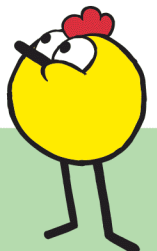
Additional Resources

For more information on individualized instruction

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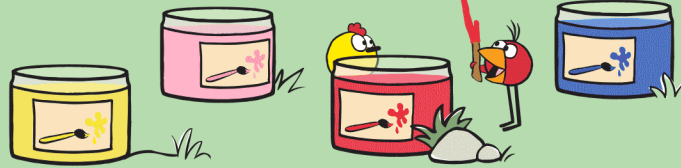
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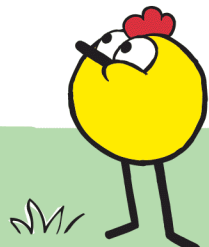


Homework Assignment

- Use the online PEEP Color 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.

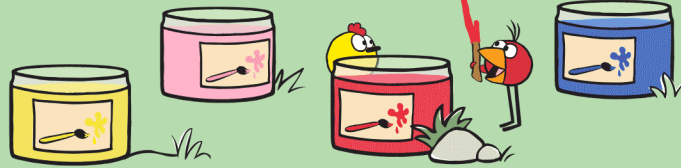
Be prepared to answer these questions:

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?





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Training Evaluation

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?

