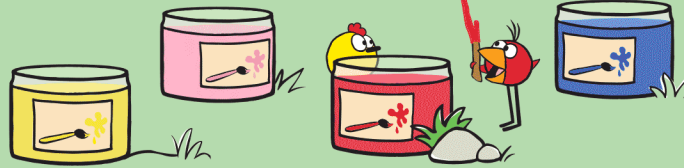




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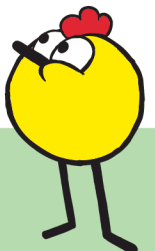
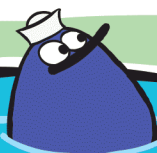
Teaching Strategies Science Talk

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.

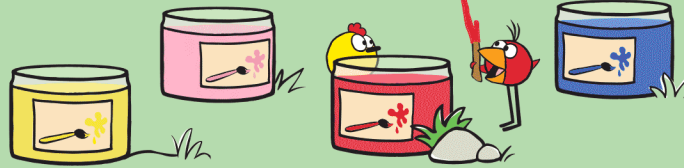
Why is science talk important?

- **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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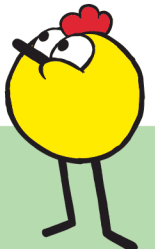
Teaching Strategy: Modeling Science Talk

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.

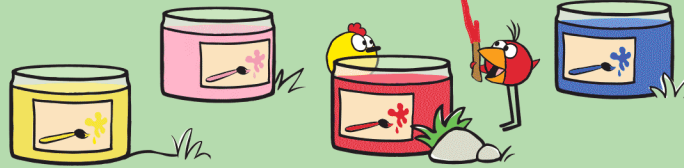
Here are some ways to model science talk while exploring color.

- **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?

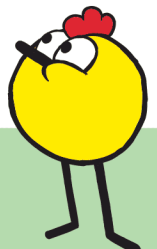
- An open-ended question is one that usually can't be answered with just one or two words, or with a simple *yes* or *no*. They are phrased in a way that encourages children to explain and expand upon their thoughts.
- As children answer open-ended questions, they build expressive language skills, reflect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

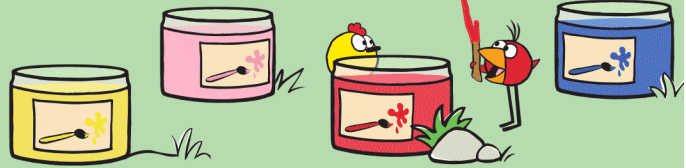
Some examples:

- **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?

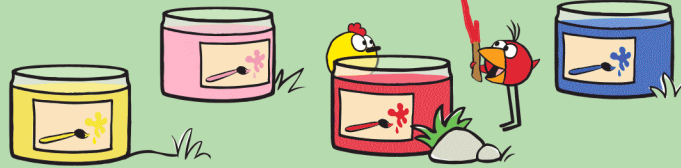
Is this light blue or dark blue?

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.



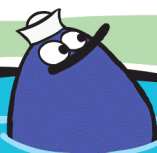


Here are some ways to engage them:

- **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.

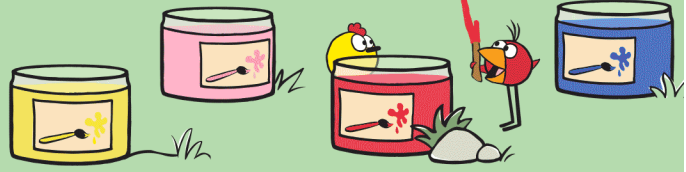
Your Experiences

- 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

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: 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 Documentation and Reflection.

