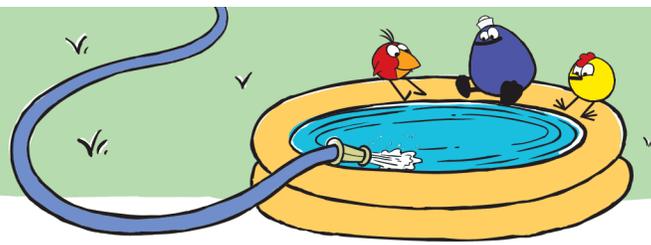


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Teaching Strategies Science Talk

What is Science Talk?

- **Language is crucial to learning and communication** in all subjects. Science is no exception. As children investigate and explore water, 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 pushed two water drops really close together and made a bigger drop.*
 - This ball floated but this one sank.*
 - I think I can make the water jump if I stomp in the puddle.*
- **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 a walk outside as children inspect an anthill or crunch leaves.

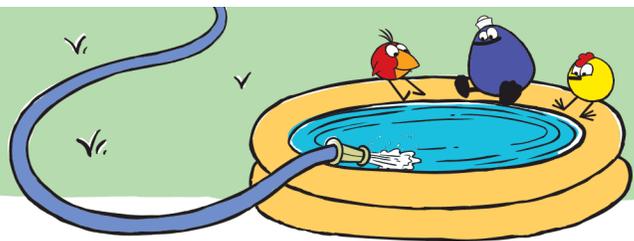
Why is science talk important?

- **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 communicating—it is part of how we think and learn about the world.





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Teaching Strategy: Modeling Science Talk

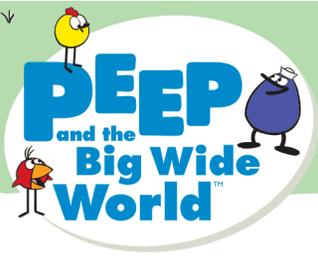
Why is modeling science talk an effective teaching strategy?

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

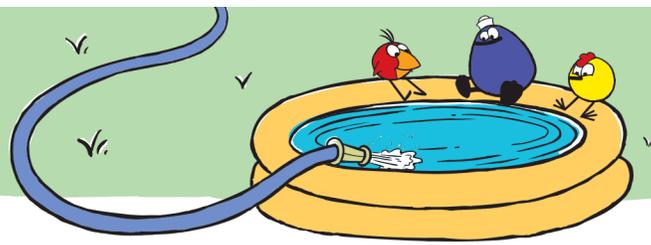
Here are some ways to model science talk while exploring water.

- **Compare and contrast the different ways that water moves.**
Example: *Look, the water in that puddle is staying still but the water on the hill is flowing down. I wonder if we could make the water in the puddle move? How do you think we can make the water in the puddle move?*
- **Let children know what you're wondering about.**
Example: You might hold up a rock and ask, *Do you think this rock will sink or float in water? How can we find out?*
- **Incorporate new words as children do hands-on activities.**
Example: You might introduce the word *flowing* as you observe water moving down a stream or waterway. *Look, the water is flowing down the stream. Where else have you seen flowing water? Do you think we can make this water stop flowing? How?*
- **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 *more, less, fast, slow*.
Example: You might say, *I wonder what will happen if I put this empty cup in the rain. I wonder if there will be water in the cup when I check back later today. I wonder if the cup will be full.* When you investigate more closely, children will be encouraged to do the same.
- **Use rich, descriptive language.**
Example: *Look! The water is moving quickly down our waterway. It reminds me of a rushing river.*





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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.

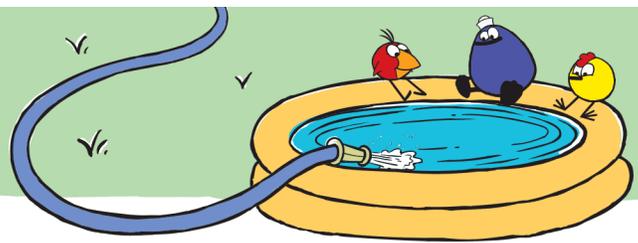
Some examples:

- **How questions:** *How do you think we can stop this water from flowing? How can we help this boat to float? How is this waterway different from that waterway?*
- **What questions:** *What do you notice about this waterway? What's different about it from that one over there? What do you think would happen if we jump into this puddle? What do you think would be a good way to make a dam?*
- **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 is going to happen to this ball when I drop it into that bucket of water? How do you think we can make this water flow faster?*





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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 make a dam? Will this item float?* You might get more from some children by asking an either/or question: *Do you think this item will sink or float? 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:
 - *Is this going to float?*
 - *When you poured the water on the soil, was it absorbed?*
 - *Is this water flowing fast or slow?*

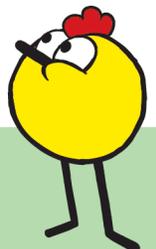
Teaching Strategy: Encouraging Science Talk Among Children

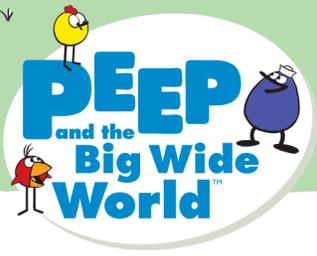
How does encouraging science talk among children benefit your teaching?

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.

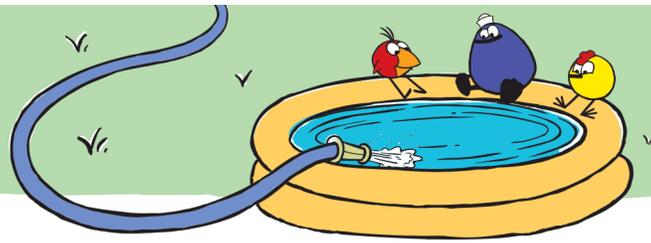
Here are some ways to engage them:

- **Find out what excites children.** Take the time to observe them. Notice their interests and incorporate these interests into your activities.
Example: Begin your water explorations by asking children what they know about water. Then ask, *What do you want to know about water?* Develop activities that aim to investigate and answer some of their questions.





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- **Personalize the learning by incorporating children's experiences** into the things you are doing.
Example: You might have children bring in objects from home to test in a sink/float experiment. You might have children tell rain stories about things they have done on rainy days. Put these stories together in a rainy day book.
- **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 ask them to plan out their waterway. They can draw pictures and even create a model as they talk about how their waterway will work.
- **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 "find out."
Example: Create a "touch and feel" box where children can close their eyes and grab an object. Based on how it feels they can predict whether this object will sink or float. Then they can open their eyes and test it out.

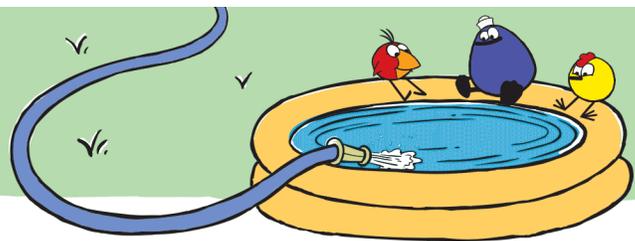
Your Experiences

- 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?





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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, Plants, 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.

