

Chapter 8 Timely Questions

Questions make up a big part of our daily conversations at school and at home with families and friends. Good questions can promote observations and encourage children to share their ideas. A simple question such as "What do you see happening in the terrarium?" can focus attention on an important process that might be overlooked. A question such as "How are the snails and slugs similar?" stimulates children to compare and contrast the properties of organisms and objects. Questions can be pow-

erful tools for stimulating children to think, describe, and ask questions of their own.

"What kind of animal is shown in this picture?" is a question that requires children to recall a specific piece of information. This narrow kind of question can be useful at the beginning of an activity to get children thinking about a topic that has been interrupted, or as part of a closing discussion to solidify vocabulary. Too often we overuse these "test-like" questions that



require children to recite facts. Consider the following broader question: "What might happen if you put a tiny piece of paper in this spider's web?" This invitation to speculate on spider behavior will stimulate interesting ideas and vocabulary. It has the added benefit of posing a problem that can be tested by the children.

Divergent and Convergent Questions

Questions can be *divergent* or *convergent*. Divergent questions, such as the spider web question, do not have one right answer but provide an opportunity for creativity, guessing, and experimenting. Divergent questions stretch children's thinking.

"What do you think?"

"What did you find out?"

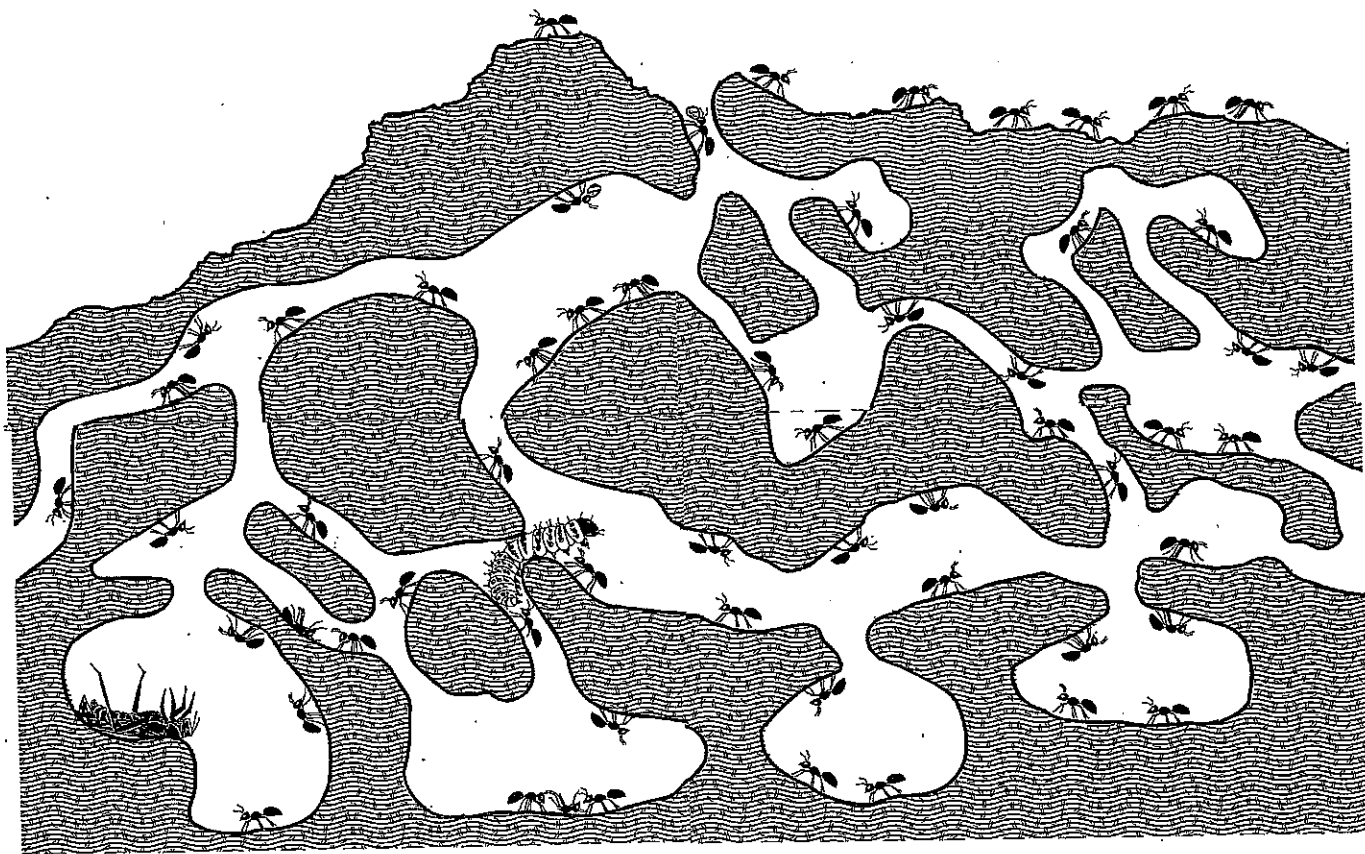
"What might happen if?"

"How can you make this object roll?"

Convergent questions ask for specific information, such as "How many legs does a spider have?" While these questions provide us with feedback on what children recall, when used too often, convergent questions can limit a child's thinking and willingness to guess and experiment.

We gain valuable information by listening to children's responses to questions—their ideas may lead an activity into new and interesting directions! The following are some techniques for using divergent and convergent questions productively.

- Ask questions that require more than a "yes" or "no" response. Compare "Have you seen a ladybug before?" to questions such as "Where have you seen ladybugs?" "What were they doing?" The latter questions invite the child to think about relationships and interactions between living things.
- After you ask a question, give the children time to think before taking responses. Wait a few seconds to give the children time to ponder and formulate their ideas.



- Ask children for their ideas about the subject. With the simple addition of the phrase "What do you think?" a convergent question becomes centered on the child's ideas and predictions rather than on a particular right answer. "What do you think will happen if we put this water in the freezer?" invites discussion in a more friendly way than "What will happen if we put this water in the freezer?"

- Ask questions with more than one answer and questions that promote investigation. This encourages many children to contribute to the discussion.

"What kinds of animals might come to a pond for a drink of water?"

"What do you predict will happen if we let go of this ball at the top of the ramp?"

These divergent questions encourage descriptions, comparisons, and predictions.

- Posters and drawings can become more effective teaching tools when used with a series of questions. Using the poster in *Ant Homes Under the Ground*, here are some convergent questions that could be asked.

"What kinds of jobs are the ants doing?"

"How many ants are walking upside down?"

"What other kinds of animals are in the ant hill?"

"Where is the largest ant?"

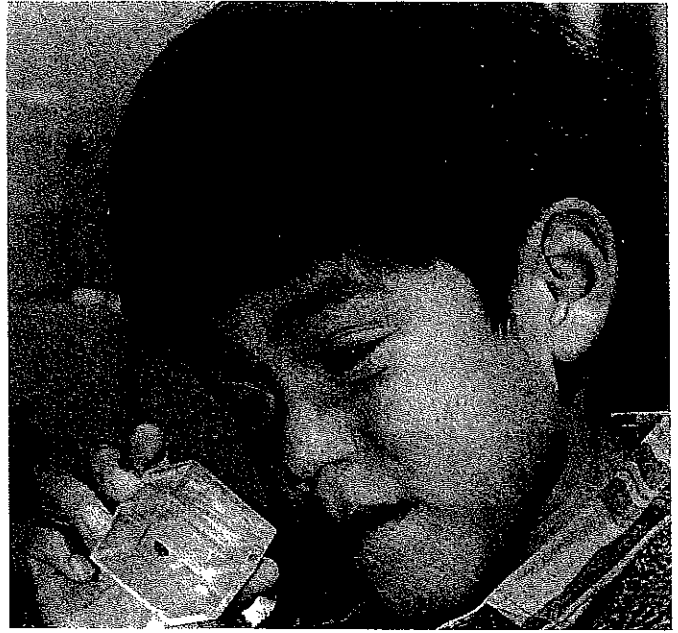
- While children are engaged with investigations, use divergent questions to find out what they are thinking.

"Where have you seen ants?"

"What might cause the ants to change their trail?"

"What might happen if food is put near the ant hill?"

"How do you think ants help the forest?"



Open-Ended Questions

Asking open-ended questions is a wonderful way for many children to respond without hesitation. Most everyone has an opinion when they are asked, "What do you like about ___?" or "Why do you think the worms moved to this end?" Sometimes we need to ask convergent questions that require a specific answer. Frequently children's responses are incorrect! Wrong answers should be acknowledged to support the child in his or her effort to respond. Restating the question may help redirect the child's thinking. "That's a good guess; let's look at all the ants again to find the biggest one."

All answers, correct and incorrect, are an opportunity for adults to evaluate children's understanding and experience with a particular topic or activity. Finding out *why* a question was answered in a certain way may be more important than the response being "right" or "wrong." Encouraging children to explain their reasoning, in cases of both "right" and "wrong" answers can provide important insight into their thinking, help identify misconceptions they may have, as well as help them improve their oral expression and ability to communicate.



Why Is the Sky Blue?

What about children's questions you can't answer? We try to be prepared, but youngsters frequently ask unexpected questions. If the scope of the question goes beyond your experience, tell the children that you don't know, and suggest ways you might find the answer together. Adults should not attempt to be the source of all answers, but instead should help children investigate their own questions. By presenting it as a "let's find out together" venture you are encouraging cooperation and teaching children to be resourceful.

The question "Why is the sky blue?" can be rephrased to promote an investigation. "What are some colors you have seen in the sky?" can be



the starting point for daily observations and descriptions of weather. "What is happening when the sky isn't blue?" becomes an important and observable part of the child's findings. Many homes and schools have plastic prisms hanging in windows. These delightful light separators can become part of the investigation. Eventually "blue sky" will be just one part of a rich and tangible "Sky Study" created by the children.

By avoiding the complex physics explanation of blue sky, you teach children they can find out answers to things they wonder about. If you then decide to read an explanation of blue sky from a science book, present the information in a way that validates their findings as curious and avid young scientists.

Whenever possible, rephrase difficult "why" and "how" questions into ones that can be investigated by the children. Don't try to explain density to youngsters who ask "Why does this float?" Give them lots of different objects to test and ask questions such as:

"Which objects are floaters and which are sinkers?"

"In what ways are floaters and sinkers similar?"

"Can you make a sinker float?"

"Tell me what you know about things that float."

Children who play with and investigate objects in water will not understand and cannot explain the physics of buoyancy—the concept is too abstract. They will however become adept at predicting the behavior of objects in water, and their explanations about why they designed their boats in certain ways will be closely tied to their observations.

We invite you to take a closer look at how you use questions and the nature of children's responses. As you experiment with using questions that are open-ended and accessible to youngsters, you will gain insights into their reasoning.

Please see Resources Related to Questions on page 80 for helpful references on the productive use of questions.