

# Using Language during Science Activities

In science activities with young children, we follow a simplified four-step cycle of scientific reasoning. This format is repeated daily as each new activity is introduced. As children internalize the format, it becomes an automatic and powerful guide for problem solving in many situations, not just science activities. The forms of language use associated with each of the four components of the cycle of scientific reasoning are described below.

## Ask and reflect

The cycle of inquiry begins with questions: “I wonder what would happen if . . . ?” “I wonder why . . . ?”

Most young children are curious about the world around them, but many have not had much experience asking questions. They may need adult modeling and support for a while, but they will quickly learn how to ask open-ended questions.

Whether a teacher or child has provided a question, once it is on the table it is time to reflect on what is already known that might relate to the question. This is an opportunity for children to think and then to translate their thoughts into language.

It might also be appropriate to read aloud one or more books to learn more about the topic. Listening to the teacher read aloud provides children with the opportunity to create mental representations or knowledge from linguistic input. Children enjoy being read to under almost any circumstance, but listening comprehension is greatly facilitated when they have specific questions.

## Plan and predict

When children have a question and have considered what related information they already know, it is time to plan how to address the question. When we see people act, we usually don’t know whether or not they have a plan and are following it. This is because planning usually takes place silently.

To learn how to plan, children need to see other people planning. It is important that teachers show children their planning process. The teacher can elicit a plan from children with careful questioning or can

propose plans herself for the children to evaluate. Again, this process involves translating back and forth between linguistic representations and mental representations.

After a plan has been formulated, children need to make predictions about what the outcome will be. Different children will have different predictions. The teacher should elicit these predictions in a way that helps children think carefully but that does not make them worry about whether or not they are correct.

One of the most important functions of language is *displaced reference*, the ability to use language to refer to things that are in the future or past or that are in other locations. Planning and predicting both involve displaced reference. Practice in this type of language increases children’s discourse competence.

## Act and observe

Finally, it is time to put a plan into action. This is the hands-on part that children enjoy so much. After a plan has been carried out, children can observe the results of the action and compare what actually happened to their predictions. Again, there are opportunities for expressive language (describing what happened, describing the match between prediction and finding) and for receptive language (listening to other participants’ descriptions). Children learn to make and evaluate explanations.

## Report and reflect

Sharing observations with others is an important part of the scientific cycle. There are many different types of reports. To share and display their findings, children can tell someone, dictate text (individually or as a group), draw or make a chart or graph, or even put on a skit or create a song. All these forms of reporting involve authentic language and literacy opportunities. The reflections at the end of the cycle are likely to set the stage for reflections at the beginning of the next day’s activity.

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