



# Get Ready to Teach Science!

## Early Science



### Approach to Early Science

Young children are natural scientists! They are curious and eager to explore their surroundings to develop ideas about the world around them. Early Science with *Nico & Nor*® was designed to provide young children with playful and meaningful opportunities to learn science.

The program was developed collaboratively by curriculum and media designers, preschool teachers, families, and researchers. This helped create activities and resources that are playful, interesting to young children, and relevant to their everyday lives. Plus, it helped create activities that can feasibly be done at home and school.

The program is aligned to current **preschool** and **elementary science** frameworks. Rather than promoting science as isolated facts, the program invites children to learn about science ideas and concepts by **doing science** (or engaging in science practices). It currently consists of three units (each focused on a core idea): plant growth, force and motion, and light and shadow. In each unit children develop understanding of core ideas by engaging in the following science practices. (Note: these practices don't need to happen in particular order and are all interrelated).



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## Science Practices



### Posing Questions

Questions are great starting points for investigations. Some questions allow children to explore things they wonder about and others focus directly on answering a testable question. Posing testable questions may be hard for young children and require support, scaffolding, and modeling.



### Making Predictions

With support, children can learn to make predictions based on evidence (and later revisit their predictions after engaging in observation and experimentation).



### Observing, Comparing, and Sorting

Observing is one way through which children can engage in investigation. To observe, children use their senses to notice and describe characteristics of objects, events, and phenomena. As they observe, children can also learn to compare (notice what is similar), contrast (notice what is different), and sort (create groups based on specific characteristics).



### Experimenting

Conducting experiments is another way in which children engage in investigation. Controlled experiments allow children to isolate variables to understand cross-cutting concepts like cause and effect.



### Recording and Analyzing Data

Documenting observations (through drawings, writing, photographs and/or video) and recording data using tables or graphs can help children identify patterns and refine their ideas and understanding of science ideas.



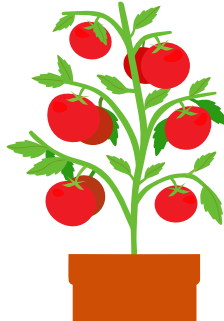
### Constructing Explanations

As children analyze and interpret data, they engage in sense-making and start to construct explanations based on evidence.



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## Science Talk



Early Science with *Nico & Nor* activities and resources also include support for teachers and caregivers to promote “**science talk**”. Adults play key roles facilitating science conversations by inviting and helping children explain their thinking, as well as listen to, respond to, and build on the ideas of others—all practices that real scientists do every day. In the program’s activities/lessons, you’ll notice sample prompts to help children:

### Share, expand, and clarify their ideas

Invite children to share and explain their ideas with you and their peers. This can include rephrasing children’s ideas, and asking them to clarify their thinking.

- “*What do you mean when you say \_\_\_?*”
- “*Can you give an example?*”
- “*So, are you saying (rephrase)?*” Leave time for the child to agree or disagree. “*Can you use other words to explain that?*”

### Provide explanations

Ask children for evidence or reasoning to support their idea. You can even challenge an idea or suggest a counter-example!

- “*Why do you think \_\_\_?*”
- “*How do you know \_\_\_?*”
- “*Can you think of an example where it may not work this way?*”



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### Listen carefully to one another

Prepare children to engage in group conversations by modeling careful listening and asking children to rephrase or repeat what a peer said.

- *“Let’s listen to what Maria has to say.”*
- *“Did you hear Sonya’s idea? She said (restate).”*
- *“Can you tell us what you think Maria just said, but use your own words to explain?”*

### Evaluate or expand on peers’ ideas

Ask children to explain or add on to someone’s idea. You can also ask them if they agree or disagree, and why.

- *“Who wants to add something to Simon’s idea?”*
- *“What do you think about what Daniela said? Do you think that will happen?”*
- *“Does anyone have a different idea?”*

### Use science vocabulary

Model the use of vocabulary associated with science concepts and practices.

- *“Who would like to share an ‘observation’? Who can share what an apple looks and feels like?”*
- *“Can someone tell me what a ‘root’ is?”*
- *“How can we ‘investigate’ to find out \_\_\_?”*

