

# A Learning Environment for Science

---

Whether you do them at home or in a class, FAMILY SCIENCE activities are meant to be enjoyed. There is no need for immediate mastery of ideas. There are no tests at the end of the chapters. You and your children can take your time, continue an activity as long as you are interested, try lots of new things, or focus on learning just a few concepts. FAMILY SCIENCE provides a wonderful opportunity to create an environment at home or school that makes science approachable and fun. Here are some ideas to consider as you and your family explore science together.

## **Encourage questions.**

Asking questions is the beginning of self-motivated learning. Questions originate with curiosity, and satisfying our curiosity motivates us. Teach your children how to find answers to their questions: consult library books, surf the Web, or ask teachers or other experts. If you don't know the answers, don't worry. You can look for them along with your children. Sharing in the joy of discovery is a wonderful model for future learning.

One way to encourage children to ask questions is to ask them yourself. Pose questions that are open-ended, not just those with one-word or yes or no answers. Here are some examples:

- *What happened?*
- *What is your prediction?*
- *What should we try next?*
- *What will happen if...?*
- *How is this the same as...or different from...?*

## **Make science a hands-on experience.**

Most children love to do experiments. Handling physical objects, doing laboratory work, and exploring in the field is part of what makes science interesting and fun. Scientific explanations sometimes conflict with the way children suppose things happen or work. Conducting experiments gives them the chance to test and witness

©1999, Foundation for Family Science & Engineering  
This document is intended for single family or one-time, single classroom use only (35 students maximum).  
Please support our nonprofit organization by not distributing this document to others.

evidence that may change their minds. Hands-on experiments allow children to use scientific methods to distinguish facts from opinions and misconceptions.

### **Practice using inquiry skills everyday.**

Observing, comparing, measuring, recording, experimenting, analyzing, communicating, reporting, and formulating questions are all important skills related to inquiry-based learning. You and your children can practice using these skills together. For instance, cooking requires measurement, shopping involves comparison, and sharing the day's events uses communication.

### **Teach problem-solving skills.**

Solving problems is part of everyone's daily life. Teach your children about how you solve problems. Some strategies you might use include: drawing a picture or diagram; writing about the problem; talking it over with a friend; finding an expert to offer advice; breaking the problem down into smaller, more manageable chunks; or brainstorming lists of options. Children who learn to work through problems and explore different solutions become more capable and confident adults.

### **Enjoy the creative side of science.**

Science is a creative endeavor, and creativity can be a motivator, a source of enjoyment and something to share with others. Visualizing, combining objects in new ways, producing new uses for objects, solving problems and puzzles, fantasizing, pretending, dreaming, designing, and producing unusual ideas are all a part of science.

### **Spend time talking and listening to your children.**

Children learn to read, reason, and understand things better when adults read, talk and listen to them. Storytelling, playing games, and daily conversations provide opportunities for learning from and about each other. You can encourage children's language development as you plan science activities together. Using new vocabulary, writing, verbal sharing and drawing pictures will help children explain their thinking and express their feelings in constructive ways.

### **Support and encourage your children as science learners.**

Parents are their children's first and most influential teachers. By showing an interest in science, you'll build a positive attitude about science learning in your children. Many of your children's life-long interests and attitudes emerge in elementary school. Encourage their innate curiosity by providing them with science-related books or magazines, making things together, and helping them demonstrate their own ideas through words, models, pictures, and stories. Encourage your children to participate in extra math, science and computer activities, such as school clubs, fairs, after-school groups, or museum classes.

### **Encourage good study habits.**

Showing interest in your children's homework sends the message that learning is important and you care about their progress. Encourage good study habits by helping them establish a regular time and space for study, allowing time for them to talk about what is happening in school, and checking homework assignments.

### **Use mathematics.**

Science depends on mathematics, and math involves more than just numbers. Math activities include looking at patterns, problem-solving, and knowing when to add, subtract, multiply, or divide. Show your child how you use math every day in practical and creative situations.

### **Demonstrate how science improves the way we live.**

Think of examples around the house that show science and technology in action. Go on a science scavenger hunt at home. As you look at household items, can you identify ways that science, math or technology played a role in their development? From the kitchen refrigerator to the basement furnace to the medicine in your cabinet, help children see how scientific study has led to a world of improvements. Support your children's interest in science and let them know that with proper training they too can help improve the quality of life for all people.

### **Make connections between schooling and career choices.**

Start by telling your children about your work. They will learn more about you and about the contributions you make to your community. Talk with other people about their jobs. Suggest to teachers that parents give school presentations about their occupations. Learn what makes scientists' work different from other jobs and what education they need to do their work. Help your children make informed career decisions by locating career information and sharing it with them.

### **Provide access to tools for learning.**

Calculators, computers, and other tools are useful for organizing information and solving problems. Children who know how to use these tools will be more successful in science and math. If these tools aren't available at home, check with your local library, school or community college to see what's available.

### **Challenge stereotypes about who does science.**

Reading about, meeting and talking with scientists who are women or role models from diverse backgrounds opens doors to new opportunities for many children. It also challenges assumptions children have about cultural and gender-based stereotypes and develops positive attitudes about their ability to be science learners. A positive attitude toward oneself—a "can do" attitude—builds interest and willingness to try new things and increases the persistence and confidence needed for rigorous studies ahead.