



Science: It's a Girl Thing!

Science: It's a Girl Thing!

Fun science activities for girls and their grown-ups who like to wonder, question, & experiment, because science is important for all of us.

Science: It's a Girl Thing! is an early childhood science program with activities designed for parents and children to do together. It was developed by the Educational Equity Center at AED and is based on their award-winning Playtime is Science program, which was created with funding by the National Science Foundation, DeWitt Wallace-Reader's Digest Fund, and Toyota USA Foundation. The Science: It's a Girl Thing! booklet and activity cards are distributed free of charge through a grant from the National Science Foundation.

(Recommended for girls ages 4-8.)



Your young daughter is growing up in a world where competency in science, math, and technology are essential for her future education and career choices. Hard as it may be to make the connection between your four, five, or seven-year-old and the grown-up person she will become, it is an important connection to make. Early childhood is the right time to start your daughter on a road that says, “I can do this” and “Science is for me.”

Science: It's a Girl Thing! was created to let girls, and their parents, know that science is, indeed for them. The activities illustrate that science and opportunities for discovery are all around us. When you walk to the store and notice the different shapes that make up the sidewalk, the windows, the doors, the fences – that’s science. When you bake a cake — mixing and dissolving ingredients, measuring out substances, turning liquids into solids at high temperatures — that’s chemistry and physics. When you put together the coffee maker, program your iPod, mix with an eggbeater – that’s technology.

If you’ve ever looked at an everyday object and asked, “How?” or “Why?” you’ve taken your first step into the world of science. You don’t need a degree in physics in order to teach your child how to observe, how to explore, how to solve problems through trial and error — all of which are a fundamental part of science.

Science: It's a Girl Thing! builds on everyday science that you, as a parent, already know. The activities provide the time and space to question and wonder. And, just as children are natural scientists, parents are natural teachers. And that’s important. Research shows that students whose parents participate in their education achieve more, and have better attitudes towards school.

You can incorporate science and scientific thinking into fun, everyday activities using inexpensive and recyclable items found in almost every home — cooking oil, plastic bottles, empty boxes, and old socks. The activities reinforce the connection between play and science learning. Remember, play involves problem solving, creative thinking, and decision making. Plus, as they play, children are building other skills such as cooperative learning, language and vocabulary development, large and small motor skills, and social-emotional growth. That’s why it is so important to bring playful science experiences into your daughter’s life.



Each of the ten activities in **Science: It's a Girl Thing!** create physical science experiences that use inexpensive materials commonly found in most homes. Designed around children's natural play activities, the hands-on, minds-on experiments involve things like pouring, sorting, categorizing, measuring, and constructing, which provide a strong foundation for understanding more complex concepts later on. They are great activities for a rainy Saturday or Sunday.

Each activity is laid out like a recipe card and indicates the specific skills the activity develops, how much time to allow, what materials are needed, step-by-step activity instructions, how to expand the activity for different ages, and modifications for children with disabilities.

Creating a Mystery Bottle

Anyone who has ever watched a drop of oil floating in a glass of water knows that oil and water simply don't mix. Children doing this activity may be discovering this for the first time. Mystery bottles are a fascinating concoction of vegetable oil, water, and food coloring in recycled clear plastic bottles. When the liquids are poured into the bottles, they form a colorful combination of layers with tinted water — red, blue, yellow, or any other color on the bottom, and the oil on the top.

Children observe and experiment with the bottles to discover that, no matter what you do, the liquids inside will eventually separate, demonstrating first hand that some liquids just can't mix, and that oil is less dense than water.

Discovering How It Works

When we think of the word "tinkering" we usually associate it with a boy. We all have cartoon images in our heads of a boy who has taken apart an important family machine and is frantically trying to get it back together. Laugh as we may, that curious child is learning how things work, taking a risk, and problem solving about how to get it back together. Girls need to "tinker" too, but typically don't have the same opportunities to do so. By assembling or disassembling these simple machines, you and your daughter will have a fun, hands-on experience with tinkering, technology, and the use of tools.



Building with Wonderful Junk

Building can help develop crucial spatial-relations, cognitive, cooperative, and social skills. And Building with Wonderful Junk shows that you don't need expensive blocks or kits to enjoy the fun. Using trashables, such as cardboard cartons, cereal boxes, paper towel rollers, empty milk containers, and other found materials, children work together to create sturdy structures that can stand on their own. There's a lot of room for creativity and learning about balance, weight, gravity, and symmetry.

Making and Using Sieves

What child doesn't like playing with water and sand? In this activity, experimenting with water offers opportunities for children to observe the physical properties of this liquid – the way it splashes and flows, how it sounds, how it looks, how it takes the shape of whatever container it's in. Sand, as another medium, extends opportunities to observe and compare.

To aid in their investigation, children make their own scientific tools — sieves — and then have time to experiment with them, exploring the many ways they interact with both water and sand.

Making and Tossing Bean Bags

Bean bags are an excellent way to help children develop hand-eye coordination, spatial relationships, and estimation skills,

In this activity, children make their own bean bags out of clean old socks, rubber bands, and, of course, beans – sorting and measuring different sizes, colors, and shapes. Then they draw their own targets, being as creative as they like, and practice tossing their bean bags at them.

Oobleck: Solid or Liquid?

Can something be both a liquid and a solid? With cornstarch, water, and food coloring, children explore the properties of a discrepant substance (one that has the properties of both a solid and a liquid) named for a magic mixture in a Dr. Seuss book. During this fun, tactile activity, children practice and develop observation and comparison skills.



Looking at How Liquids Move

Children squeeze a few drops of food coloring into a mixture of water and cornstarch. What happens? Where does the color travel? Can they affect its movement?

In this activity, children learn about surface tension as they observe what happens to drops of food coloring in water; blow through straws to effect the flow; and extend the experiment by adding a drop of liquid detergent, which breaks the surface tension, dispersing the liquid in an exciting display.

Sink and Float

Why do some objects stay on top of the water and other sink to the bottom? Why can some things, including people, do both?

In this activity, children have a chance to test everyday objects to see what happens when each is placed in (or on) water. Then children can try their hands at making items that floated before, sink, or sinking items float. Their natural fascination with water will add to the investigation of this important science concept.

Bubble Science

Bubbles inspire wonder in children of all ages — the way they seem to float along, the way they reflect rainbows, the way they suddenly disappear.

During this activity, children create their own bubble makers and create their own varieties of bubbles, experiencing the concepts of cohesion and surface tension.

Ramps, Force, and Motion

Many children are familiar with the use of ramps. They may know people who use wheelchairs, have seen movers use ramps as they empty their vans, and have even built ramps of their own with blocks or boxes. This activity extends understanding about ramps through an experiment about speed, momentum, and distance. Children conduct and experiment with inclines of different heights, then compare and record their discovery.

