

Science Fun for Families

GOOEY GLUE PUTTY

Stretch and squeeze this slightly slimy homemade putty.

You'll need:

- 1 bottle of white school glue, such as Elmer's brand.
- Liquid starch - found in the laundry product section of the store
- A large bowl and spoon for mixing
- Liquid food coloring (optional)

Getting started:

Select a work area where it is OK to make a mess, and consider wearing old play clothes for this activity.

Empty the entire bottle of glue into the bowl. Refill the empty glue bottle with liquid starch and pour into the bowl. Mix well.

Stretch and knead the putty; if it feels sticky, like bubblegum, add a little more starch.

You may also want to mix in a few drops of food coloring.

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COLOR CUBES

Colors mix as these cubes melt!

You'll need:

- Water
- Food coloring: red, yellow, and blue
- Ice cube trays
- White paper (optional)

Getting started:

Fill the ice cube trays with water. Carefully add 3 to 5 drops of food coloring to each compartment of the tray, making some sections yellow, some, blue, and some red. Freeze until solid.

Encourage your child to explore with the tinted ice cubes, moving them about on the sidewalk or on a sheet of white paper as they melt.

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WINDY DAY WALK

Make the most of a blustery day by exploring properties of air together.

You'll need:

- Long pieces of silk ribbon – one for you, and one for each child
- A windy day
- A safe place to walk

Getting started:

Instruct your child to hold tightly to the end of his/her ribbon as you go for a walk on a windy day.

Watch and experiment as the ribbon catches and flutters in the wind.

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BLOWING BUBBLES

Your child will find lots of ways to play with this homemade bubble solution.

You'll need:

- Basic dishwashing soap, such as Joy. Avoid soaps with lotion.
- Glycerin - available at most drug stores - or corn syrup
- Measuring cup and spoons
- Water
- A large bowl or bucket for mixing
- Bubble wands (optional)

Getting started:

Combine 2/3 cup dishwashing liquid, 1 gallon (16 cups) of water, and 2 – 3 tablespoons of corn syrup or glycerin. Mix very gently and enjoy!

COLOR CUBES, continued

Find out more:

- Red, yellow, and blue are called **primary** colors. These can be mixed to make other, **secondary** colors. What secondary colors can your child create as the ice cubes melt?
- Try playing with color cubes in the bathtub.
- Encourage your child to describe his/her experiences with the ice and the changes that occur as the ice melts and colors mix.
- Visit your local library or bookstore to find a storybook about color mixing. Try:
 - *Little Blue and Little Yellow* by Shel Silverstein
 - *Mouse Paint* by Ellen Stoll Walsh
 - *White Rabbit's Color Book* by Alan Baker
- For more frozen fun, try making popsicles or homemade ice cream together.



GOOEY GLUE PUTTY, continued

Find out more:

- Try stretching the putty out and draping it over a cup or plastic toy. What happens?
- Can the putty be cut with children's scissors? What happens when you cut the putty with a cookie cutter? A butter knife?
- Can you make a handprint in putty? A footprint?
- If your child holds a ball of putty in his/her hand and lets it stretch downwards, how many seconds will it take for the putty to reach the floor?
- What words can your child think of to describe the putty?

Putty can be stored for about a week in a plastic zipper bag or old play dough canister.

If putty gets stuck in clothing or carpet, it can be removed with hot water.

BLOWING BUBBLES, continued

Find out more:

- Try different tools for bubble blowing, including:
 - Fly swatters
 - Berry baskets
 - Rounded coat hangers
 - Frozen juice cans with ends removed
- What happens if you try to catch bubbles with dry hands? With wet hands?
- Food coloring can be added for colorful bubbles. Place the tinted solution in a cup or bowl and use a drinking straw to blow a mound of bubbles up over the top of the container. Quickly place a piece of white paper over the bubbles to make a bubble print!

WINDY DAY WALK, continued

Find out more:

- Can you and your child tell which way the wind is blowing? How?
- Wind is invisible. What clues can your child find to prove that air is moving all around? (Hint: look at trees, flags, etc.)
- Does the ribbon still flap and flutter when you take it inside? Why or why not?
- Try blowing bubbles on a windy day.
- For more windy day fun, play with pinwheels or try flying a kite together.
- Consider making a "wind sculpture" by tying ribbons to a tree branch outside a window. Or, make a wind chime together.



A SPECIAL COLLECTION

Children love to hunt for acorn caps, "fossil rocks", snail shells, and other natural treasures. Help your child create a place to store his/her favorite finds.

You'll need:

- A coffee can, shoebox, or other sturdy container
- Materials for decorating, such as stickers, construction paper and/or markers (optional)
- A place for your child to store his/her collection

Getting started:

Explain the idea of a collection to your child; this will be a safe place to store special natural things that he/she might want to look at again later. If desired, create a time and space for your child to decorate the container, and find a safe, special place for it on a shelf or in a closet.

SPROUTING CARROT CAPS

Try some quick and simple gardening on your kitchen counter.

You'll need:

- 3 or 4 whole carrots
- A shallow bowl, such as a cereal bowl
- Pebbles, floral glass, or marbles
- Water
- A sunny windowsill

Getting started:

Cut the carrots 2 to 3 inches from the top, saving the top portion. Fill the bowl with clean pebbles or marbles. Press and wiggle the carrot tops, cut side down, into the bowl until firmly anchored. Slowly add lukewarm water until the cut portions of the carrots are submerged. Place on a sunny windowsill; check daily for growth.

PINECONE BIRD FEEDERS

This easy project will attract hungry birds to your yard.

You'll need:

- Pinecones – 1 per feeder
- Creamy peanut butter or shortening (such as Crisco)
- Bird seed
- Butter knife
- Yarn or string for hanging feeders
- Newspaper or a cookie sheet

Getting started:

Pour birdseed onto the newspaper or cookie sheet. Using a butter knife, Popsicle stick, or fingers, spread peanut butter or shortening in the spaces in the pinecone. Roll the pine cone in bird seed, making sure to cover all sticky areas with seed. Tie a loop of yarn or string to one end of the cone. With your child, select a place to hang the feeder, ideally within easy view of a window.

EXPLORING AFTER DARK

The house is transformed into a strange and wonderful new world as you and your child explore with flashlights.

You'll need:

- Flashlights – one for yourself, and one for each child.

Getting started:

After playing with flashlights for a few minutes, turn off lamps and overhead lights and go exploring around the house! Stay close by until your child gains confidence. (For more timid explorers, or if bedtime makes playing after dark difficult, try exploring in a darkened bathroom.)

Encourage your child to experiment by shining the flashlight on different surfaces, such as mirrors, curtains, and ceiling fans.

CARROT CAPS, continued

Add water as needed every other day or so.

Find out more:

- Use a ruler to keep track of how tall/long your carrot tops grow.
- Take a digital photo every few days as the carrot tops grow. Print the photos for your child to use for sequencing and telling about the experiment.
- What happens if you repeat the experiment again, but without adding water? Or, what happens if you put the bowl of freshly cut carrot caps in a dark kitchen cabinet? Experiments such as these will help your child learn that plants need water and light to grow and thrive.
- Try sprouting a sweet potato, using toothpicks to suspend the potato half in - and half out - of a cup of water. How is the sweet potato plant the same as the carrots? How is it different?



A SPECIAL COLLECTION, continued

Collection tips:

- Most children need patient reminders that the goal is to pick up one – or a few – special objects at a time to add to the collection, rather than filling the container all at once.
- Remember that beauty is in the eye of the beholder. What looks like a chunk of concrete to you may be a treasure to your child!

Find out more:

- Explore a walking trail, dry creek bed, or other natural area together to search for treasures.
- As the collection grows, encourage your child to sort the contents. He/she might put rocks in one pile and acorns in another, or sort pebbles by shape or color. Ice cube trays make excellent sorting trays.
- Help your child write letters to family friends and relatives asking them to mail a small natural treasure from their yard or region.
- Plan a trip to a museum to see other collections.

EXPLORING AFTER DARK, continued

Find out more:

- Drape a light-colored bed sheet over your kitchen table and play underneath. Try turning out the lights and playing in your “tent” with flashlights. Call your child’s attention to shadows on the sheet walls and encourage her to experiment.
- Go for a walk outdoors together after dark.
- When driving in the car at night, talk about the lights that you see – headlights, streetlamps, illuminated signs, etc.
- Make hand shadows together.
- Play shadow tag together on a sunny day. Later, try tracing around your child’s shadow with a piece of chalk and have him/her trace yours.



PINECONE BIRD FEEDERS, continued

Find out more:

- Place a pair of children’s binoculars, a notebook and pencil for sketches, and/or a real or pretend camera near the windowsill to encourage your child to focus on the feeder. A fun pair of pretend binoculars can be made by cutting a paper towel tube in half and taping the halves together.
- Guess how long it will take for all of the birdseed to be eaten. Test your theories by checking the feeder often.
- Check your local library for a bird guide with photos or realistic drawings of North American songbirds. Place the guide near the window for easy reference.
- Try adding other bird feeders, such as hummingbird feeders, to your yard.
- Take a walk together around the neighborhood or at a local state park or nature center to look for more birds.

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TUBES AND TUNNELS

Your child will use these simple materials to experiment with cause and effect, velocity, and angles.

You'll need:

- Paper towel tubes, gift wrap tubes, and/or cardboard mailing tubes, collected over time
- A small ball or toy car
- Masking tape (optional)

Getting started:

Allow your child to experiment freely with the materials, dropping and rolling the ball or car through the tubes. As he/she continues to explore, ask questions about how to make the ball/car roll farther and faster. Try rolling materials through the tubes onto carpet and hard floor. Try joining tubes with tape, propping on books or furniture, etc.

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CUP STRUCTURES

Problem solving skills will blossom as cup towers grow and grow!

You'll need:

- One or more boxes of small paper or plastic cups, such as Dixie brand bathroom cups
- Clear, open floor space or table top for construction

Getting started:

Allow your child to build freely with the cups. After some time, challenge him/her to build the tallest possible structure with the cups. Most children will begin by stacking the cups inside one another in a single, tall stack. As they continue to work, however, many will discover that a much taller structure can be created by turning the cups upside down and stacking them on top of one another.

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PAINTING WITH WATER

Your child will learn about properties of water and evaporation while enjoying this backyard activity.

You'll need:

- Clean paintbrushes – any size will do, but big house paint brushes are especially fun!
- Containers of water
- A warm day and an outdoor place to play

Getting started:

Encourage your child to try painting with water on hard outdoor surfaces, such as fences, sidewalks, tree trunks, and the side of your home. The surfaces will darken when wet, lightening again as they dry. Children can also explore using the brushes in different ways – from long, broad strokes to sudden splatters.

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SCENTED PLAY CLAY

This fruity-scented play dough smells much better than it tastes!

You'll need:

- Unsweetened powdered drink mix, such as Kool-aid powder
- Flour
- Salt
- Cream of tartar
- Vegetable oil
- Water
- A saucepan, a large bowl, and a spoon
- Measuring cup and spoons
- Stovetop

Getting started:

Combine 1 cup flour, 1/4 cup salt, 2 tablespoons cream of tartar, and 1 packet powdered drink mix in pan. Stir to mix dry ingredients. Add 1 cup water and 1 tablespoon vegetable oil, mixing well. (See back.)

CUP STRUCTURES, continued

Find out more:

- Try building a pyramid of cups.
- Try structure building on, under, and around tables or chairs.
- Add pieces of cardboard or other materials to the structure-building area. How do your child's building strategies change?
- Use the cups for measurement. How many cups tall is your child? How many cups long is your couch?
- Try building structures with other household materials, such as playing cards or rods rolled from newspaper and joined with masking tape.



TUBES AND TUNNELS, continued

Find out more:

- Try rolling different types of balls or vehicles through the tunnels. Do some go farther or faster than others?
- Work together to build the longest possible tunnel that the ball/car can roll through without stopping.
- Try constructing a bridge for toy cars.
- Provide a set of PVC pipe and joiners for further exploration with marbles, sand, or water. Foam pipe insulator - found at the hardware store - or pool noodles can also be cut in half lengthwise to make tracks.
- Find a safe outdoor area to experiment with riding toys or a sled on a grassy hill.



SCENTED PLAY CLAY, continued

Cook and stir over medium heat for several minutes. When the mixture forms a ball, remove from heat, cool, and knead until smooth. When not in use, dough will keep best in an air tight container, such as a plastic zipper bag, in the refrigerator.

Find out more:

- Try working with the dough using kitchen gadgets, such as a rolling pin, garlic press, butter knife, potato masher, and a fork.
- Use the dough as "glue" to build Popsicle stick structures.
- Press the dough out flat and make imprints by pressing leaves, seashells, or plastic toys into the dough.
- Talk about how the dough smells. What other things in the kitchen have a strong odor? Try smelling safe substances, such as coffee grounds, vanilla extract, cinnamon, and cocoa powder. Make a chart or list of scents your child likes and those he/she does not like.

PAINTING WITH WATER, continued

Find out more:

- Paint an area – such as a patch of fence or a step – and time how long it takes for the water to dry.
- Encourage your child to notice how water acts differently on different surfaces. Some absorb the water, while others do not.
- Later, indoors, try dribbling water on different kinds of material, such as a washcloth, a paper towel, a piece of aluminum foil, a sponge, a piece of wax paper, a sock, and so on. Which absorb water and which do not? How can your child tell?
- On another warm, sunny day, have fun playing with the garden hose or in a lawn sprinkler together. Notice your child's explorations with water.

