

## GRADE 3 SCIENCE EXPLORATIONS TO DO AT HOME

One of the three core principals of [Each Child, Our Future](#), Ohio's strategic plan for education, is partnerships. The plan recognizes the collaboration between teachers and parents as the most important partnership. This document provides activities for students to complete in a home environment, allowing parents to be more closely involved in each child's mastery of science concepts. The investigations are written for a home setting using limited resources and are specifically targeted to each of [Ohio's Learning Standards for Science](#).

The resources listed in this document are provided to enhance planning, instruction and learning about science. They are not mandatory. Local districts are responsible for establishing the local curriculum and identifying appropriate instructional resources. The at-home projects are intended to provide activities that can be used by teachers to assign as homework or share with parents to supplement classroom instruction. Teachers should feel free to adapt the activities to align with the local curriculum. The projects are designed with the intent that technology is not necessary; although in many cases, the activities could be extended with additional components. When possible, data can be shared in small groups or with the entire class, analyzed and discussed to deepen understandings that students uncover during these activities.

It is important to build a strong foundation in science in the early elementary years so students are prepared for understanding more complex material in the intermediate and middle grades. It is equally important to continue students' science instruction by offering more advanced courses at the high school level. This allows students to be better prepared to compete for admission to college or other postsecondary programs, as well as for increasingly technical jobs. Advanced science courses in high schools also help produce a more scientifically literate public.

### 3.ESS.1 Earth's nonliving resources have specific properties.

**Outside option:** Dig up soil from several different locations in your yard or local area. Design a way to see which soil allows water to pass through most quickly. Carefully record your observations. Determine whether there is a certain type of soil that water passes through most easily.

**Inside option:** Learn about the Grand Canyon or another famous rock formation. Watch a documentary about the area. Call a neighbor or relative who has visited the feature and have him or her tell you about the rocks he or she saw. Does that person know how the rock formation formed? What was most impressive about it? If you have internet, research online to find the types of rocks exposed in the feature. What sort of environment was present when the rocks formed? Research how the feature formed. Was rock eroded? Did a glacier move rock? Look up videos online and take a virtual field trip to your rock feature.

### 3.ESS.2 Earth's resources can be used for energy.

**Outside option:** Construct a windmill out of materials found around the house and yard. Design a way for your windmill to perform work, such as move an object. You may want a parent or older sibling to help. Be sure you have a parent's permission. Write a paragraph explaining how your windmill works.

**Inside option:** Ask an adult to help you investigate the sources of energy in your home. Find out how the electricity in your area is produced. Do you use natural gas to heat or cook? What about propane? Charcoal? Wood? Sunlight coming through windows and skylights? Determine whether each of the sources of energy used in your house is renewable or nonrenewable? Think about the pros and cons of each and their environmental impact.

**3.ESS.3 Some of Earth's resources are limited.**

**Outside option:** Observe the local area for sources of pollution. Are fields being fertilized or lawns being treated with chemicals? Has trash fallen out of trash cans or dumpsters? Is there evidence of fluids that have dripped from cars, trucks or tractors? Are there industries in the area emitting chemicals into the air or dumping waste water? Is there runoff from construction sites? Do you see evidence of trash in local streams? Choose one local problem and develop a plan that would decrease the pollution.

**Inside option:** Conduct an audit of water use in your home. Track how many times the toilet is flushed, how long the shower runs, how many baths are taken, how long sinks are running to brush teeth and other activities, how much water is used for cooking, washing dishes, watering plants/gardens, filling swimming pools and other activities. Design a way to measure how much is used in each case. For example, time how long it takes for the sink or shower to run one gallon of water. Use your research to determine the easiest way for your family to conserve water resources.

**3.PS.1 All objects and substances in the natural world are composed of matter.**

**Outside option:** Design a way to keep a chocolate bar from melting in a hot car. Test your design on a sunny day. Think of a way to improve your design. Retest. Continue until you have your best solution. Keep a design journal with labeled sketches of each model, along with measurements and notes from each trial.

**Inside option:** Design a device to measure the mass of objects using a nontraditional unit such as number of paperclips. Use your balance to measure the mass of several objects.

**3.PS.2 Matter exists in different states, each of which has different properties.**

**Outside option:** Make a water cycle model to show water evaporating and condensing. Place a clear container or bowl over a smaller container that is filled with water. Place it in the sun. Make observations throughout the day. Sketch or take pictures to document changes in this system. What evidence do you have that water is evaporating or condensing?

**Inside option:** Make sure an adult approves the solids and liquids you choose for this investigation. Investigate melting and freezing for various household liquids. Freeze common kitchen liquids such as dish soap, syrup, cooking oil, etc. Which ones freeze in your home freezer? If one doesn't freeze, research how cold it would need to get to become a solid. Investigate solids to see which ones melt. Some suggestions to try are butter, chocolate, sugar, marshmallows, bacon grease, candles, crayons, glass and metal. You can think of others. **Be sure to get adult help if you are using a flame or heat source.** Do some solids melt at lower temperatures than others? For things that don't melt, look up how hot they would need to get to melt. For each of your substances, compare the solid form with the liquid form. How was the solid form the same as the liquid form? How were they different?

**3.PS.3 Heat, electrical energy, light, sound and magnetic energy are forms of energy.**

**Outside option:** Design a device that uses energy from the sun to cook a hotdog. Test your design. Draw a sketch of your design. Explain the purpose of each part of your hotdog cooker. You may want to get adult help.

**Inside option:** Get containers of cold and warm water. Squirt a small drop of food coloring in each one and watch what happens. Write a paragraph describing the differences between the cold and warm water.

**3.LS.1 Offspring resemble their parents and each other.**

**Outside option:** Watch for animals or evidence of animals in your environment. You may need to check very carefully. Try to discover ways humans are changing the behaviors of animals. Are animals living in human-constructed locations (sidewalk cracks, under decks), eating food provided by humans (bird feeder, trash can, compost) or behaving differently than they would in the wild? Keep a journal of animals and their behaviors. Make observations over several weeks. Has anything changed? Predict why and explain your reasoning.

**Inside option:** Examine the people in your household. Make a list of the traits that are shared by every human. Which traits vary from human to human? Choose another species, such as a dog or other pet. List the traits all dogs have in common and the traits that change from dog to dog.

**3.LS.2 Individuals of the same kind of organism differ in their inherited traits. These differences give some individuals an advantage in surviving and/or reproducing.**

**Outside option:** Observe a group of plants or animals of the same kind (squirrels, earthworms, dogs, dandelions, pine trees). What characteristics (physical traits and behaviors) do all in the group have in common? What things vary from individual to individual? What is the function of each part of the organism? Try to determine how the different characteristics help the organism survive in its environment.

**Inside option:** Investigate the role of teeth. Look in a mirror and examine the teeth in your mouth. Are they all the same? Record your observations and ideas about why some teeth look different. Next experiment with food. Try eating a variety of foods (meat, vegetables, sandwiches, pudding). Decide on a good way to organize your data. Pay careful attention to how you chew each food. Which foods need which teeth? What does the tooth do to the food (tear it, grind it, mash it)? Look for relationships between the shape (structure) of teeth and type of food they help chew.

Extra idea: If you or anyone in your house loses a baby tooth, have a parent wash it thoroughly and then examine its structure. Which types of food needed this tooth?

**3.LS.3 Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.**

**Outside option:** Investigate the life cycle of a dandelion or other plant. Begin with seeds from the dandelion. They appear after the yellow flower is gone; the gray ball of fluff you like to blow on is the seeds. Plant the seeds. You might want to sprout some in a baggie with wet paper towels too so that you can see how they first start to develop. Make observations each day. When do they first start to come out of the soil? What parts of the plant form first? Take photos or make sketches of the plant as it develops. How long does it take to develop a flower? What happens to the flower as the seeds are developing. How long does it take for a dandelion to reproduce? Can the same plant reproduce more than once? If you took pictures, use them to make a time lapse video.

**Inside option:** Make a life cycle flip book. Draw a series of about 20 pictures on small pieces of paper or index cards. It should show the life cycle of a plant or animal. Make the pictures start with a seed or birth of the organism. Show each stage the organism goes through. Be sure to vary the size of the pictures as the organism gets bigger. Place them in order and attach one edge of the papers. Now you can flip through your book and watch the organism grow and develop.