HOS PROGRAM CYCLE

MCCPTA-EPI Hands On Science (HOS) is a science enrichment program for children from pre-kindergarten (age 4) through sixth grade. The three-year cycle of these classes is described briefly in the next pages. The classes are offered in rotation so that children can continually participate without repeating.

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Opinions expressed are those of the authors and not necessarily those of the Foundation

CYCLE YEAR 1: STRUCTURE AND CHANGE

FALL - Anatomy

Pre-K

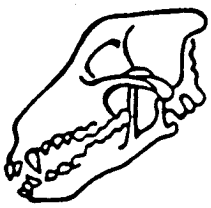
Two Feet, Four Feet

Webs, toes, hoofs and more. What do feet do for us? How do dog footprints compare to cat footprints? Which birds hop and which birds walk? Children will compare footprints to the body structure and habitat of these animals and create a footprint book.

Grades K-1

Featured Creatures

Look at the "hide and seek" of camouflage. Do experiments with wool, cotton and hide samples. Compare movement, self protection and bone structure as they relate to outer animal shapes, through projects, games and explorations.



Grades 2-3

Jaws and Claws

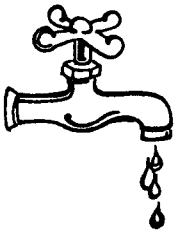
Sharks, alligators, eagles, bears and even people-- everybody's got to eat! How do teeth and beaks give us clues to an animal's diet? What stains and cleans tooth enamel? Take home a real shark's tooth, a plastic eagle talon and more.

Grades 4-6

Clue Club

Can you curl your tongue? How's your reaction time? What's inside the mystery owl pellet? Make connections from your box of bones. How do various embryo pictures compare? How do you find and compare the clues of life on earth?

WINTER - Chemistry



Pre-K

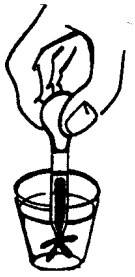
Water Chemical Magic

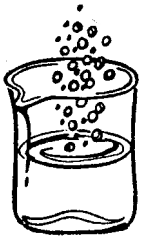
Our most common chemical is the beginning of chemistry for our youngest group. They will compare water absorption properties, make soap balls and lemon hair rinse. They will mix, explore, experiment and measure H_2O as you never thought possible.

Grades K-1

Chemistry Detectives

Experiment with mixtures, solutions, acids and bases. Learn how to waft. Make glue from milk. Concoct scented soap balls, bath salts and ink. Help solve the gold paper caper. Children become science sleuths with safe, common substances.





Grades 2-3

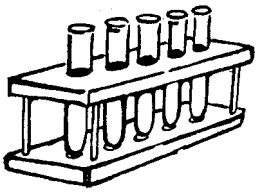
Chemistry Creations

Your kitchen has a full laboratory complete with equipment and chemicals. How can you use chemical reactions to identify unknowns? Learn how to safely mix and measure to enjoy the magic of changing colors, liberating gases, and analyzing various antacids.

Grades 4-6

Your Own Mini-Lab

Set up a mini-lab by making your own test tube rack as basic equipment. Make cheese, glue, play putty and more. Test for viscosity, solubility, acid/base reactions with safe stuff only. Use your skills to have fun with results.



SPRING – Earth Science

Pre-K

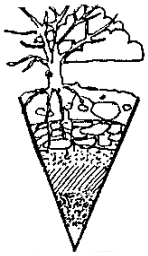
What's Up?

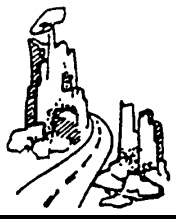
What are some signs of erosion? What are parts of flowers? Compare seeds from various plants. What role do insects play? Observe and chart weather patterns over eight weeks. Play games, make models and do projects to explore springtime changes.

Grades K-1

Layers

The clouds above and the earth below with so much in between! Make a model of "earth layers" and life on a log. Experiment with porosity. How do different layers around us look, feel and test out? Can you make sand from a rock? What layers do you leave?





Grades 2-3

Rocky Road

Rocks that sparkle, rocks that float. Make your own crystals. Learn to test what you find. How are rocks formed and where do they go over time? Use gemstones to make a piece of jewelry. Geology is fun as you join this class and start your own collection.

Grades 4-6

Terra Quest

What can your amber samples tell you about life on earth? How does your biodot compare to your thermometer? Simulate the effects of acid rain and toxic waste on the environment. Make your own simple instruments to look at the earth, wind and sky.

CYCLE YEAR 2: SCIENCE PATTERNS

FALL – Physics of Color and Light

Pre-K

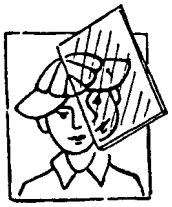
Under the Rainbow

Explore visual differences in shape, color and design through projects and experiments. What patterns can you make? Can you make a square bubble? Can you weave a web like a spider? Can you mix a green, like grass, or the purple of a sunset?

Grades K-1

Optrix

Tickle your vision with "Kool Aid" chromatography. Prepare and compare your skin print patterns. How many colors do you find in bubbles? Take a look at animal eyes to see how they compare to yours. Play with the world of color and light.



Grades 2-3

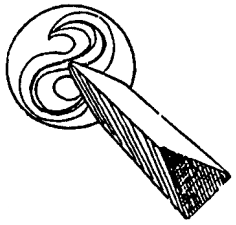
Illusions

Can you believe what you see? Your eyes CAN be fooled. Make your own pattern changing spinning top. Learn how to make straight lines curve without bending them. Turn mirrors, colors, paper and string into magic tricks from science experiments.

Grades 4-6

Kaleidoscope

Perception deceptions! Explore zippy zoetropes and whirligigs. Play with anamorphic drawings, mirrors and magnifications. Tinker with tessellations and construct your own kaleidoscope. All this and the great paper clip caper, too!



WINTER – Architecture and Engineering

Pre-K

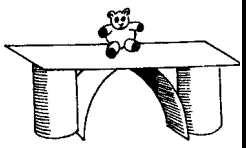
Mother Goose Construction Company

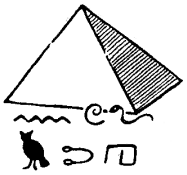
From *The Three Little Pigs, London Bridge and Billy Goat's Gruff,* our youngest scientists will take a scientific look at children's literature. Why do *Jack and Jill* roll down the hill instead of up? Which building techniques make the strongest *London Bridge*?

Grades K-1

Dive Into Dimensions

Seek new dimensions with finger traps and rapper snappers. Change circles to cylinders, squares to cubes and triangles to tetrahedrons. Catch a bull by the horn and race a snail down a ramp. Building the strongest bridge and the tallest tower will stretch your imagination.





Grades 2-3

Towers & Tales

Your adventures will take you across a bridge, down a river in a boat and into the land of the pyramids. Make a wheel decoder to send and receive secret messages. Build and use an abacus. Untangle the mysteries of scytales and Egyptian hieroglyphics.

Grades 4-6

Behind the Magic

Tickle your brain with teasers, puzzles, tricks and games. Explore topology, geodesics, balance and three-dimensional designs. Your friends will think that some of these activities are magic but you will unlock the science secrets.

SPRING – Physics of Sound and Flight

Pre-K

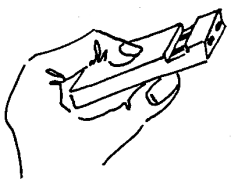
Here's to Ears

Snap, clap, click and stomp to this session about the natural rhythms and patterns in sound. Make a mystery sound game and a "quacker." Make and use a variety of multi-cultural musical instruments while exploring sounds using different materials.

Grades K-1

Buzzers and Boomerangs

Toot tunes on test tubes. Shake, rattle and roll to the beat of a hum-buzzer whizzer. Make and sail straw jets, boomerangs and gliders. Make a mystery sound game. Play with waves and rhythms to explore concepts of vibration.



Grades 2-3

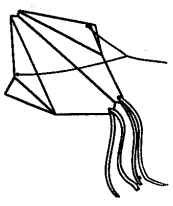
Air-O-Dynamics

What makes a whistle, whistle? Make your own to find out. Produce sound effects with a thunder clapper. Construct and fly helicopters, parachutes and kites. Activities both indoors and out will inspire high flying inquisitiveness.

Grades 4-6

Oscillations

What's got rhythm? Can you see sound? Just how will a pendulum create the swinging-est art? Can body rhythms change the color of your biodot? Buzz the hummer. Get a lift with paper airplanes and bright kites! Grab science on a spring breeze.



CYCLE YEAR 3: ENERGY

FALL – Natural, Non-solar Energy

Pre-K

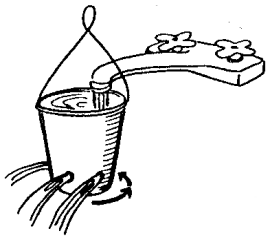
Water, Water Everywhere

Look at the physical properties of water. What floats? What sinks? When is water not a liquid? What's a meniscus? Explore surface tension, solutions and erosion. Count how many drops of water a sponge will absorb and dissolve a capsule to reveal a surprise.

Grades K-1

Motion Commotion

What energy makes the jumping bug jump and that toy boat zip across the water? How can particles dance in a static tube? What keeps a paper towel dry under water? Balance a gravity fighter and make a cellophane fish curl. You'll be really attracted to magnetism.



Grades 2-3

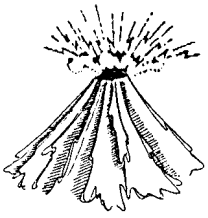
Action Attraction

You're in the power seat. Control your "springer." Turn a full cup of water upside down without a spill. Have you ever used static electricity to separate salt and pepper? Use water power to spin a turbine. Go with the flow of air pressure.

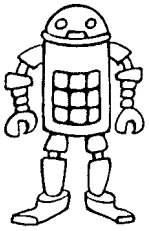
Grades 4-6

Earth Power

Take home samples of volcanic rocks and ash after modeling a volcano and watching it blow. Find your own real microfossils. Move continents on your tectonocycle. Will you help save the earth from strip mining? Or an oil spill? Where's your power?



WINTER – Mechanical Energy



Pre-K

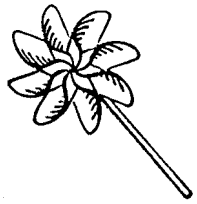
Machinery in Me

How is your body like a machine? How do backbones help you bend? What do your muscles do? Rib cages resemble bird cages; jaws are hinges and the heart is a pump. Play games, sing songs and do projects that emphasize how your body parts work together.

Grades K-1

Spinners

What does friction have to do with how quickly a marble or button races through a maze? How is a spinner like a wheel and axle? How does the size of a wheel change the distance it covers? Sing a song of friction. Join us for lots of "well-rounded fun."



Grades 2-3

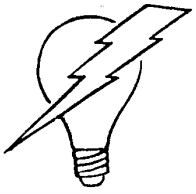
The Toymaker

How can you make a pulley to send messages? Jiggle a bear up a string if you're so inclined. How far can you send a cotton ball with your catapult? Construct toys and games using simple materials to explore wheels, levers, wedges, inclined planes, pulleys and screws.

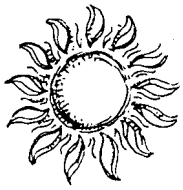
Grades 4-6

Bright Ideas

Be an inventor! Make your own version of a flashlight, an electric circuitry game, a simple motor, a steady hand tester and Jefferson's cipher. Try your hand at copper plating and a device that looks as if it's defying gravity. Use your talents in the science of inventing.



SPRING – Solar Energy



Pre-K

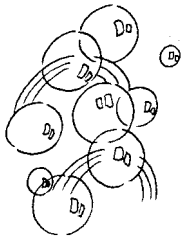
Here Comes the Sun

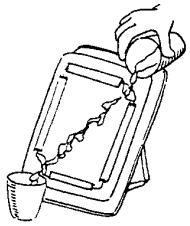
How do we make shadows and rainbows? Can you make a rainbow bounce? Can you see a rainbow in bubbles? How can you use the sun and special paper to make prints? Which colors heat up most quickly in the sun? What things can we do to help keep us safe?

Grades K-1

Bubbles to Rainbows

Create your own sun print pictures with light sensitive paper. How does a sundial work? Put on a food chain puppet show. Find rainbows in your very own sun bouncer. How can you make your ultraviolet beads change colors? Check out the heat keepers.





Grades 2-3

Hot Stuff

Split light with your own crystal prism and rainbow glasses. Use shadows to tell time. Dehydrate food and heat water with the sun's help. Use your thermometer to see which material heats up most quickly. Will your plant respond phototrophically through a maze?

Grades 4-6

Solarific

Fracture sun light through a crystal and spectroscope. Create solar art with sun print paper and explore the world through your periscope. Use the sun to see how fast the earth spins. Prepare for star gazing with a constellation finder and luminosity tester.