



ANGELA RUSS –AYON

DOLLAR STORE STEM!

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STEAM is based on the idea of educating students in five specific disciplines — science, technology, engineering, art, and mathematics, embracing teaching skills and subjects in a way that resembles real life. It's child's play!

We have so many facts at our fingertips on smart phones and computers, that education is no longer about memorizing facts. The process of the scientific method involves hypothesizing, making predictions, thinking logically, experimenting to test the hypothesis, and observing the results. Children need to learn how to explore, evaluate information, integrate, think critically, work together, and problem solve.

Young children are naturally curious, observant, and develop their own understanding of science over time - based on their life experiences. They build upon concepts they already know and have been exposed to, scaffolding from new knowledge gained, and practicing science skills every single day. Always start with the basics and build on from there. Adults can't just assume children already know.

GUIDING THE JOURNEY TO DISCOVERY...

- Provide age-appropriate tools for children to use: ruler, scale, magnifying glass, measuring cups, beaker, tweezers, gloves, binoculars, camera, reference books, funnels, sifters, buckets, clear containers for observing, recording implements, thermometer, Petri dish, lab coats, helmets, vests, aprons, etc.
- Encourage children to make discoveries on their own: to predict, to question, to ponder, to use their senses, to experiment over and over again.
- Give children time to process questions you ask and information they uncover. Allow them to come to their own conclusions.
- Describe actions using scientific terms.
- Read stories and display books with pictures that support actions and experiments.
- Sing songs and read books about the subjects.
- Help children make connections to real-life.
- Ask open-ended questions that present an alternative to the actions children take to help them articulate their decision-making process.

PROVIDING INSTRUCTIONAL SUPPORT

Ask open-ended questions, questions that cannot be answered with one word, such as yes, no, 5, or yellow.

- "How did you decide to...?" "Why did you...?"
- "What if you...?" "Tell me about...?"
- "How else could you...?" "Why do you think...?"
- "How are they alike/different?" "How can you tell...?"
- "What might happen if...?" "How do you/did you...?"

Don't expect to know the answers you will receive, and don't ask questions you already know the answers to. Discover how children arrive at their conclusions by asking for explanations. Begin by praising attempts. Make real-life connections.

- Use whole sentences - not fragments.
- Use a variety of words in simple phrasing.
- Phrase and re-phrase questions until children understand what you are asking.
- Build on what children say by affirming, encouraging, and then fishing with more open-ended questions.

EMBED SCIENTIFIC CONCEPTS throughout each day using terms and expressions that give children more exposure to the language of science. Do your homework. Prepare a word wall, use flash cards, and display signs at science stations with related terms along and a written purpose to help teachers and aides remember content.

EXAMPLES OF EARTH SCIENCE

All fields of natural science related to the planet Earth – geography, geology, ecology i.e.:

- Day and night: Moon, night sky, stars, sun, sunrise, sunset.
- Effects of the sun on different objects and people
- Shadow chasing, measuring, marking, use to build
- Weather: sunny, rain, snow, hail, wind, ice, shade
- Clouds and formations
- Terrain: mountains, valleys, desert, grass, plants, flat lands
- Dirt and soil exploration and discovery: mud, compost, sand, clay
- Solids vs liquids (sand is a solid)
- Water: oceans, lakes, rivers / flow on ramps, pouring, mixing, condensation, evaporation, freezing
- Changing seasons: temperature changes, cause and effect
- Rocks: sedimentary, metamorphic, igneous
- Observation of rocks: shapes, color, crystals, streaks, hardness, cleavage and cracks, luster
- Colors of the rainbow
- Destructive weather: tornadoes, hurricanes, floods, earthquakes
- Taking care of the Earth: litter, recycling
- Fossils
- Gravity

EXAMPLES OF LIFE SCIENCE - PLANTS AND ANIMALS:

A Natural science - The study of life and organisms; i.e.:

- Living things
- The human body / 5 senses
- Health / nutrition / germs / diseases
- Lifecycles of animals, insects, plants
- Parent and baby animals
- Comparing leaves / pinecones / trees / bark / flowers
- Flowers: water, xylem, petals, symmetry, scent, etc.
- Earthworm, meal worm, and other insect observation
- Collecting ants / observing an ant farm
- Collecting caterpillars / observing transformation to butterfly
- Spider webs and ways of hunting
- Fish and sea creature observation
- Characteristics of animals and insects
 - Movement of animals and insects: feet, fins, skin, wings, etc.
 - Animal and insect sounds / habitats / features (hair, fur, feathers, skin, scales, etc.)
 - Location of habitats: underground, in trees, in water, etc.
 - Food sources and hierarchy of animals and insects (survival of the fittest)
 - Sleep and movement patterns: day, no sleep, nocturnal, etc.
 - Survival skills: hiding, camouflage, webs, etc.
- Animals: wild versus tame / farm / pets

- Human use of animal and plant products
- Metamorphosis and physical changes over time
- Eggs and birth
- Growing root vegetables in clear glass with water
- Plant a seed or an edible garden
- Examine fruits & veggies: pumpkins, oranges, shucking corn, etc.

EXAMPLES OF LIFE SCIENCE – HUMAN BODY

- How body parts are used
- Movement, heart rate, perspiration
- Meditation and mindfulness
- Keeping teeth and gums healthy
- Purpose of doctors and dentists
- Parts of the body
- Five senses
- Motor skills
- Balance

EXAMPLES OF PHYSICAL SCIENCE

A Natural science – the study of nonliving materials; explains and predicts nature's phenomena - physics, chemistry, astronomy, math & statistics, i.e.:

- Ways to measure time (timer, routine, sundial, clock, hourglass)
- Force and motion
- Cause and effect
- Magnetic attraction (WARNING!)
- Ice freezing and melting
- Sponges and water absorption
- Archways & Bridges
- Magnification
- Simple machines
 - Lift with a lever
 - Pulley
 - Wedge
 - Wheel and axle
 - Inclined plane / ramp
 - Screws, nuts, bolts
- Gravity
- Sink or float
- Static electricity
- Battery electricity
- Liquid vs solid
- Classifying / Sorting
- Weight and balance
- Temperature changes
- Light and dark: ways to make light, eyes adjust to the dark, light reflection off mirrors and metal, create shadows, filters, explore different colors of light

INTERESTING SCIENTIFIC ACTIVITIES:

- Turn the lights out in the kitchen
- Practice folding napkins into shapes
- Mix food coloring in whip cream
- Make a puzzle out of a cereal box
- Freeze flower, seeds, leaves, etc. in ice
- Demonstrate and use kitchen tools
- Conduct water experiments with oil, powders, paints
- Conduct liquid experiments with vinegar, soda
- Make a sensory bin using pasta, beans, rice, seeds
- Run water & other liquids through coffee filters
- Use the salad spinner
- Squeeze water out of sponges
- Test water absorption into sponges, napkins, foil, a baggie, etc.
- Rub was on an egg before painting
- Use egg cartons for sorting and number games
- Transfer water from container to container
- Make home-made Playdoh
- Tread cereal through dry spaghetti
- Make 2D & 3D shapes out of popsicle sticks, straws, pasta
- Make a catapult out of popsicle sticks
- Build bridges, enclosures, or frames out of popsicle sticks
- Press paper into liquid watercolor
- Make Johnny Cakes with Jiffy Mix - measure, mix, and heat.
- Build the tallest tower out of things found in the kitchen

- Use weekly food ads to make a food pyramid or go on a healthy food hunt
- Make shapes and construct things out of straws, Popsicle sticks, Playdoh, cups, chopsticks, paper plates, cans, `etc.
- Sound-sation: identify different sounds
- Smell spices, fruits, and veggies
- Make a paper plate wind spinner
- Blowing and popping bubbles using dish soap
- Examine a bug in a jar
- Blow and suck with straws or condiment bottles
- Scavenger Hunt with clues
- Stuff lids into slits on plastic containers
- Stuff pasta into colander holes
- Sort different shapes and colors of pasta
- Strain powders with a colander
- Stamp paint with cookie cutters
- Use cookie cutters to cut shapes into sandwiches
- Lace through paper towel rolls
- Slide bands onto paper towel rolls
- Build ramps out of paper towel rolls or recycled bottles
- Lace and weave through oven grates or paper plates
- Use cups to build, sort items, make games
- Grow lettuce or celery from the stalk sitting in water
- Dig in and examine dirt
- Start a compost heap
- Plant a seed and measure growth
- Use the senses to examine plants, fruits, and veggies
- Compare and contrast different fruits and veggies
- Experiment with growth using sun vs. darkness
- Experiment with growth with different light sources
- Experiment with growth using water vs. no water
- Compare and contrast fresh vs decaying plants
- Harvest crops for dining
- Examine insects in the garden
- Set a flower or celery in die to see how water travels in plants

MUSIC REFERENCE LIST:

- ♪ "Follow the Leader" CD: "Smart Moves 3"
(Directionality, prepositions, opposites, conceptualization)
- ♪ "I'm Growing" CD: "Smart & Yummy 1" (life cycle of plant)
- ♪ "Where They Go" CD: "Smart Songs 2" (Identify parts of home)
- 📖 "Fruits & Veggies Row by Row" ISBN: 978-0-9987090-3-1
(Picture book about planting a garden)
- 📖 "We Eat Food That's Fresh" ISBN-13: 978-099870900-0
(Picture book about serving fruits and veggies in different ways)
English & Spanish versions

***Thank you for listening,
and welcome to the CLUB!***

