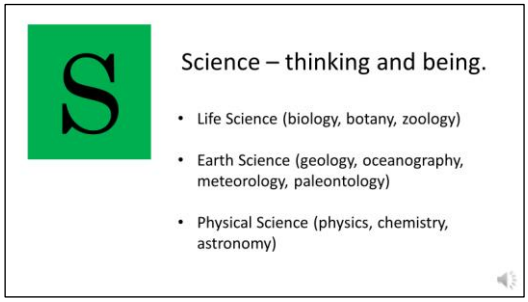
STEAM Activities for Preschoolers

Incorporating STEAM into each day – Each day is a STEAM challenge just waiting to happen!

Being with a provocation. Provocations are thoughtful suggestions made by the educator to extend the ideas of the children. Educators provide intriguing materials, media, and ideas to encourage children's sense of wonder. Use provocations to draw out interests and encourage them to think more deeply about what they are interested in.

For hundreds of provocations at your fingertips, check out the Mr. Rogers episode list: Every episode is an example of a provocation: https://en.wikipedia.org/wiki/Mister_Rogers%27_Neighborhood



Life Science - Understanding and caring for animals, plants, and people

- Raising monarchs, classroom pets
- Creating a bird feeding area outside the breakfast window
- Exploring bugs and other critters in the yard, having various habitat logs, stumps, or mats, observing webs, ant colonies
- Identifying and comparing plants, and weeds in the yard or neighborhood
- Planting, tending, and harvesting produce using a children's garden area, trellis, raised bed, or pots
- Identifying living and non-living things
- Learning about our own functions – brain, muscles, bones, nerves, breathing, circulation, various scratches, and stories of other injuries…
- Discussing germs, bacteria

Life Science Activities: https://www.teachpreschoolscience.com/life-science-plants-and-animals.html and https://www.teachpreschoolscience.com/life-science-people-index.html

Earth Science – Learning about the earth and sky

- Exploring with rocks, sticks, trees, water, dirt, sand
- Exploring shadows, reflections, prisms and rainbows
- Identifying and charting weather patterns and events: rain, snow, fog, storms, sun, heat, cold, hail
- Experimenting with wind
- Exploring seasons and seasonal changes
- Identifying clouds
- Caring for the earth: Earth Day and Arbor Day activities
- Creating sundials to tell time outside

♦ On a sunny day, take a piece of white paper outside and trace the shadow of a favorite toy or object onto the paper to outline the shadow. Leave the object and the paper outside and come back a few hours later. Has the shadow moved or is it still in the same place? How does it look different? What caused it to move?

- ♦ Encourage each child to choose a natural item on a nature walk (leaf, rock, stick, flower, etc.). Sit outside using a clipboard and pencil or bring the item inside and have them draw the item. Talk about shape, texture, colors, and weight of the object, and notice the little details like lines and bumps. Wonder about how the item got to that place and what it's purpose could be.

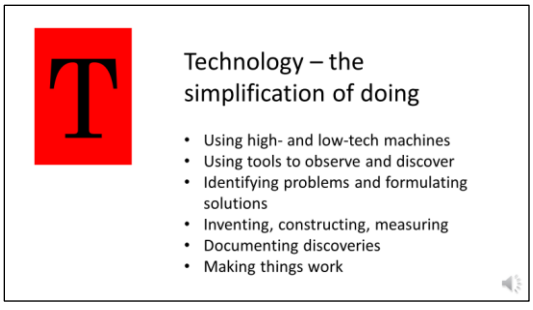
Earth Science Activities: https://www.teachpreschoolscience.com/earth-and-sky-science-index.html

Physical Science – Learning about non-living, natural things

- Discussing and learning about planets, stars, constellations, solar systems, galaxies
- Experimenting with movement/kinetic energy: gravity, movement, and friction (fast and slow), heavy and light
  - Paper airplanes, ramps, throwing, kicking, bating, using catapults
  - https://inspirationlaboratories.com/k-is-for-kinetic-energy/
- Mixing colors
- Recording temperature
- Sink and float experiments
- Exploring with magnets
- Identifying and experimenting with sound
- Simple chemistry activities: Google for more ideas
  - Cooking and baking
  - Volcanos – baking soda and vinegar with food coloring
  - Elephant toothpaste
  - Magic Milk
  - Egg osmosis : https://www.youtube.com/watch?v=SrON0nEEWmo

- ♦ Invite the children to move and imitate elements of the outdoor environment – twirl like a snowflake, float like a leaf, melt like a snowman, fly like a bird, crawl like a caterpillar.

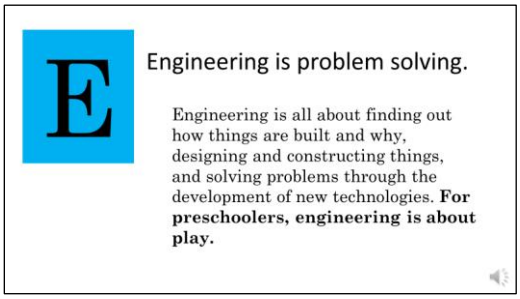
Physical Science Activities: https://www.brighthorizons.com/family-resources/physics-for-kids-everyday-play#buoyancy2 and https://www.teachpreschoolscience.com/physical-science-index.html



Technology – the use of knowledge to create products or tools to make tasks easier

- Explore using tools to discover, create, and problem solve: magnifying glasses, petri dishes, binoculars, writing, drawing, coloring painting utensils, clipboards, measurement tools, microscopes, hammers, screwdrivers…
- Experiment with the six simple machines:
  - The wheel and axle – vehicles, gears
  - The lever – your arm, teeter-totters, catapults, wheelbarrows, scissors, mops, brooms, shovels, baseball bats, golf clubs, boat oars, fishing rods, toilet bowl handle…
  - The inclined plane – slide, hills, ramps, gutters, stairs

- The pulley – elevators, exercise machines, https://www.123homeschool4me.com/teach-your-child-to-engineer-their-own_21/
- The screw – More than just a screw! The grooves on a peanut butter jar, baby bottle or any other kind of jar or bottle lid, the end of light bulbs, water faucets and hoses
- The wedge – Pull things apart: shovel, knife, axe, saw, scissors, your teeth. Hold things together: a staple, pins and tacks, nails, doorstops, zipper

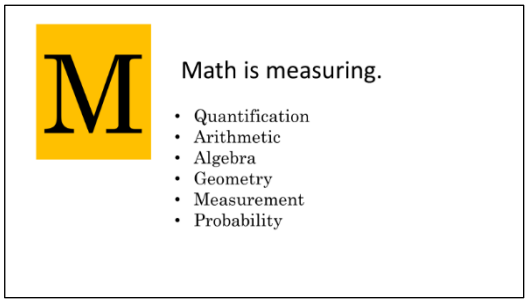


Engineering – the process of problem solving.

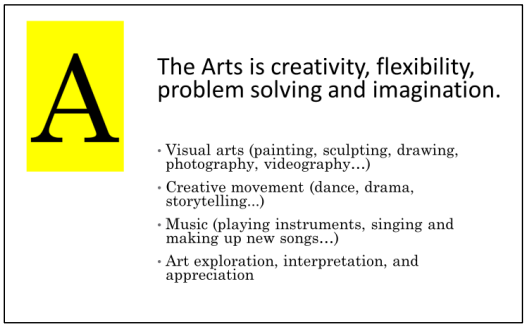
- Organic activities of construction, destruction, and reconstruction.
- Creating various building structures like homes, barns, shelters, nests, rockets, roads
- Balancing towers, bridges, ramps
- Building with blocks of all shapes, sizes, shapes, and textures – legos, duplos, magnatiles, Lincoln Logs, Tinker Toys, unit blocks, mirror and rainbow blocks, arches, wood cookies and pies
- Using loose parts to create, design, transport, and build
- Observe or encourage the design process:

Ask—to identify the problem and others' solutions
Imagine—to brainstorm and select a solution to test
Plan—to specify the design and materials
Create—to make and test a model
Improve—to ask how the design can be even better and start the cycle again

Growing in STEM: Engineering Practices in Preschool
https://www.naeyc.org/resources/pubs/yc/sep2018/design-process-engineering-preschool



- Exploring with different ways to count – tally marks, sorting groups, skip counting, graphs, charts, estimation jars
- Using measurement tools – ruler, balance and digital scales, tap measure, yard stick
- Dice games
- Making 3-D designs and geometric shapes using toothpicks, or wooden skewers and marshmallows or clay
- Creating, identifying, and extending patterns
- Exploring shapes and volume
- Sensory experience – clapping and stomping along with the beat to a favorite song, searching for number or drawing them in sand, any and all cooking activities, scooping and measuring water, counting beads to make a necklace or bracelet, make scented playdough to roll, count, and measure.



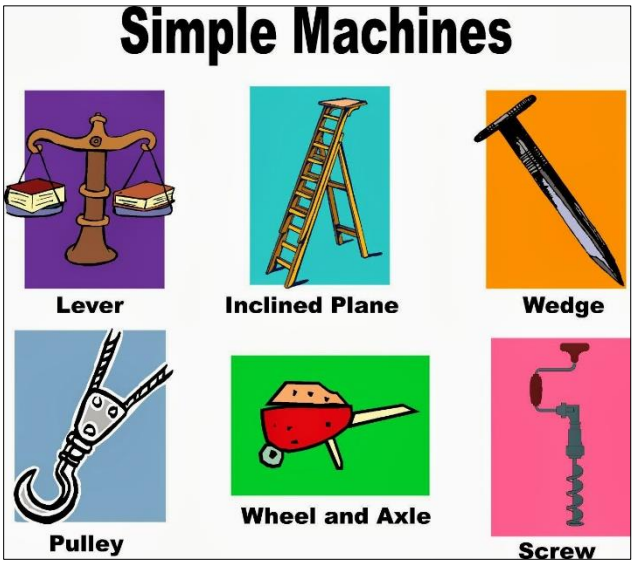
The Arts - developing creativity, flexibility, problem solving and imagination.

- Visual arts, creative movement, and music.
- Photography, videography,
- Dance, dramatic play and storytelling, painting, sculpting, singing, composing music, playing instruments

"Artistic development thrives when children have the freedom to explore without being pressured to demonstrate a specific skill or make a particular product." (Epstein 2014) Luke – not inspired.

Art exploration can also be used to help children develop observation skills – present a piece of art to children and invite wonder…how does this make you feel? What colors and textures do you see? What does this remind you of? What does it sound like to you?
https://sproutsupplies.com/blog/steam-the-importance-of-art-in-stem-education/

STEAM STARTER KIT & LOOSE PARTS - The only limit is your imagination (and safety regulations and considerations!)
Blocks in all shapes, sizes, and textures
Wood cookies and pies
Ramps and balls (wool balls for inside play!)
Magnets, magnatiles
Slides, planks, and boards
Funnels, pipes, elbows, and tubes
Strainers, muffin tins, relish trays with dividers
Vehicles with wheels
Gears
Wheels and tires
2x4s in manageable lengths
Balancing and digital scales
Tape measures, rulers, yard sticks
A sunny window
Pipe cleaners, string, Different kinds of tape
Modeling clay, playdough, goop, slime



Reclaimed and recycled materials:

- Natural materials in the environment – leaves, pinecones, rocks, sticks, branches, logs, dirt, grass, water
- Wood: planks, blocks, cork, plywood, popsicle sticks
- Textured materials: explore with sandpaper, carpet samples, different textures of fabric
- Food containers and bottles: Parmesan cheese shakers, peanut butter jars, sour cream/cottage cheese/yogurt containers, etc – great parent involvement activity to bring items that children can use to pour and measure, explore bugs found in the yard, transport, and to use for storing and building.