Please Touch!

Sensational Math & Science Activities for Young Children

PLAY POWER™

Playing is Learning!

Math and science happen everywhere and they are interconnected! Discover how to capitalize on those wonder-filled "teachable moments" that happen every day inside and outside your classroom. Children learn math and science concepts best through active, hands-on, minds-on exploration with their senses. Let's explore materials and activities that support children's natural curiosity and sense of wonder about the world we live in.

Math and Science Go Hand in Hand:

Science explorations can enrich children's math skills and concepts through concrete applications, whereas mathematics is used to organize and interpret data collected through observation. ***You can do math without doing science, but you cannot do science without doing math!*** There are fundamental mathematics concepts and skills that are necessary to perform most science investigations. These include counting and determining "how many," comparing, classifying, and measuring. Teachers should purposefully facilitate children's use of mathematics during science activities.

Teacher's Role & Responsibility:

- Let kids handle anything they can safely
- Show your sense of wonder
- Provide tools to stimulate curiosity
- Note connections

Cycle of Learning by Dr. Bruce Perry

Curiosity leads to Exploration
Exploration leads to Discovery
Discovery results in Pleasure
Pleasure leads to Repetition
Repetition results in Mastery
Mastery results in New Skills
New Skills leads to Confidence
Confidence leads to More Exploration

- One-to-one correspondence (each object in a set is counted only once)
- Ability to combine, separate, and name "how many" concrete objects
- Use the names for numbers and associate number words with collections or sets of objects counted

- **Patterns/Algebra**
  - Sort and classify objects
  - Predict what comes next when patterns are extended
  - Recognize, duplicate, and extend simple patterns
- **Geometry**
  - Recognize shapes
  - Describe how shapes are alike and different
  - Match and sort shapes
  - Use words that identify where things are in space (near, far)
  - Use positional words to describe the location of objects (inside, underneath)
- **Measurement**
  - Experience, compare, and use language related to time
  - Use terms to compare the attributes of objects (longer, shorter, heavier)
  - Order a set of objects according to size, weight, and length

Use tools to measure objects.
Order a set of objects according to size, weight, and length

  - Use tools to measure objects
- **Data Analysis/Collection**
  - Collect, organize and describe data
  - Use terms to compare attributes of objects (bigger, smaller, lighter)

Sharron Krull
Teacher ▪ Trainer ▪ Author ▪ Play Guru ▪ Consultant

2831 Lakeview Drive
Santa Cruz, CA 95062

Office: (831) 713-5323
Mobile: (925) 980-8353
Fax: (831) 713-5324

Sharron@SharronKrull.com

www.SharronKrull.com

Playing is Learning!

- according to size, weight, or length
- Solve problems that involve collecting and analyzing data

Components of Science

- **Physical Science**—explore the physical properties of the world by observing and manipulating common objects and materials in the environment—Children should be able to:
  - Describe the properties of objects and materials (e.g. color, size, shape, taste, smell). Explore how things move and change.
  - Show increased understanding of changes in materials and cause-effect relationships
  - Use their senses and tools to gather information, investigate materials, and observe relationships
  - Observe and discuss common properties, differences, and comparisons among objects and materials
- **Life Science**—explore living things, their life cycles, and their habitats—Children should be able to:
  - Identify features of plants and animals that help them live in different habitats
  - Show an understanding that plants and animals need water and food
  - Know that living things go through life cycles (e.g., growth, change)
  - Name some human body parts and know their function
  - Recognize the difference between living organisms and non-living objects
  - Recognize that people have unique features, but are alike in many ways
  - Know that people need food, exercise, and rest to stay healthy
- **Earth Science**—explore the properties of the world around them, notice changes, and make predictions—Children should be able to:
  - Recognize that some events in nature have a repeating pattern (e.g. seasons of the year)
  - Know different types of weather and that weather changes over seasons
  - Show respect for the environment
  - Know vocabulary to describe major features of the sky (e.g., clouds, moon) and earth (e.g., mountain, river)
  - Know that materials can be reused or recycled.

Process of Scientific Inquiry

1. Exhibit *curiosity*, define questions from current knowledge
2. Propose preliminary explanations or *hypotheses*
3. Plan and conduct simple *investigations*
4. Gather evidence from *observation*
5. *Explain* based *on evidence*
6. Consider other explanations
7. *Communicate explanation*

Sharron Krull
Teacher ▪ Trainer ▪ Author ▪ Play Guru ▪ Consultant

2831 Lakeview Drive
Santa Cruz, CA 95062

Office: (831) 713-5323
Mobile: (925) 980-8353
Fax: (831) 713-5324

Sharron@SharronKrull.com

www.SharronKrull.com

Playing is Learning!

SENSATIONAL RECIPES

CLEAN MUD

Ingredients:

3 rolls of toilet paper
1 small bar of Ivory Soap
Water
Borax

Preparation:

1. Unroll 3 rolls of toilet paper into a large plastic container or tub (water table is great!)
2. Cover the toilet paper with water and let soak for 3 days.
3. After 3 days, drain off water. Don't squeeze!
4. Grate with grater (plastic knife works too) 1 small bar of Ivory Soap into the wet drained toilet paper.
5. Add 1 ½ cups powdered borax and stir.
6. Cover and let sit overnight.
7. Let kids knead and knead until it looks almost like whipped cream. Clean Mud is great fun to play in for weeks, if it's kept in an airtight container. You may need to add water periodically. Dispose of Clean Mud in the trash, not down the sink! You can double the recipe if you use a larger container or water table.

HOMEMADE SAND

Ingredients:

4 cups dry used coffee grounds
2 cups cornmeal
1 cup flour
½ cup salt

FLUBBER

Ingredients:

1 cup Elmer's Glue-All
1 cup White School Glue
Water
Borax
Food coloring or Liquid Watercolor (optional)

Preparation:

1. Mix 1 cup of Elmer's Glue-All and 1 cup White School Glue with 1½ cups water in large bowl. (Reduce the water slightly and add food coloring or Liquid Watercolor if you want colored Flubber. Make sure the total liquid equals 1½ cups.)
2. Pour 1/3 cup hot tap water into each of three other small containers or bowls. Add 1 tsp. Borax to each container and stir until the borax dissolves.
3. Pour the water/borax solution from one of the small containers into the large bowl of glue and water.
4. Stir and gather up the Flubber that forms and sticks to the spoon. Knead the Flubber and put it into a gallon size Ziploc bag.
5. Repeat the process with the remaining two containers of borax and water.
6. Store the Flubber in the sealed plastic Ziploc bag at room temperature.

Flubber is reusable and will keep at room temperature (no refrigeration needed) for 3-4 weeks. When you see mold, throw it away and make some more! (First try looking at it under a magnifying glass). Flubber will wash off skin and hair (Mayonnaise is best to get it out of hair) but try to keep the sticky stuff off clothing and carpet. If it does happen to get on clothing or carpet try using white vinegar to remove it.

Sharron Krull
Teacher ▪ Trainer ▪ Author ▪ Play Guru ▪ Consultant

2831 Lakeview Drive
Santa Cruz, CA 95062

Office: (831) 713-5323
Mobile: (925) 980-8353
Fax: (831) 713-5324

Sharron@SharronKrull.com

www.SharronKrull.com