Roll Up Your Sleeves with Hands-On Science

Developmental Studies Center
www.devstu.org

Developmental Studies Center
- Non-Profit, Based in Oakland, CA
- Working in after-school settings since 1995
- Mission Driven

A Commitment to the Whole Child
- ACADEMIC Achievement
- SOCIAL Skills
- ETHICAL Development
- EMOTIONAL Well-Being

Our Goals for Today
- Discuss what science should look like after school
- Experience some science experiments
- Discuss ways to experience science after school
- Have fun!
A Question

What do you remember about learning science as a kid?

Important Scientific Strategies

- Forming hypotheses
- Experimenting
- Observing
- Measuring
- Inferring
- Predicting
- Asking questions
- Classifying
- Communicating

Experience Hands-On Science

EXPERIENCE 1:

- Present several sessions that build to allow children to go deeper with a single concept

EXPERIENCE 2:

- Present a single experiment to give children an introduction to a concept
Experiments

- Beach Science (Earth surface changes over time)
- Investigating Beach Buckets
- Comparing Different Sands
- Looking Closely at Sand
- Keeping Trash off the Beach
- Cups of Mystery (properties of objects)
  - What is in the cups?
- Jumping Pepper (static electricity)
  - Make pepper jump without touching it!

Experience 1

Present several sessions that build to allow children to go deeper with a single concept.

Beach Science
Session 1

Investigating Beach Buckets

Question of the day:
What is sand made of?

Learning Goal for the Children:
Earth's surface changes over time.

Session 2

Comparing Different Sands

Question of the day:
How are sands the same and different?

Learning Goal for the Children:
Earth's surface changes over time.

Session 3

Looking Closely at Sand

Question of the day:
What can you find out by looking closely at sand?

Learning Goal for the Children:
Earth's surface changes over time.

Summary of the Activity:
Children go in pairs to learning stations to learn more about their sands. They learn what a sand grain's size, color, and shape can tell them about how old it is, what it's made of, and even what the waves may be like on the beach where that sand was found.
Session 4

Keeping Trash Off the Beach

Question of the day:
How do things that don’t belong on the beach get there?

Learning Goal for the Children:
Earth’s surface changes over time.

Summary of the Activity:
Children use a container of water as a model ocean. An upside down cup represents an island. Different colors of food coloring placed in various parts of the ocean represent trash, and an ice cube causes currents to move in the water. The children map the trash’s movements in their model oceans.

Experience 2

Present a single experiment to give children experience with a concept.

Jumping Pepper/Cups of Mystery

- Start at your table. Work in pairs to complete the experiment.
- Once everyone has completed the experiment, discuss
  - what scientific strategies you used
  - how you would modify it for different ages
  - what changes you would make
- When instructed, go to the next table and repeat
"Hear Here"

*Cups of Mystery*

*What's going on?*
You hear sounds when vibrations get inside your ears and stimulate your nerves to send electrical signals to your brain.

"Dramatic Static"

*Jumping Pepper*

*What's going on?*
The plastic that you rubbed on your hair is made of tiny particles called atoms. Atoms are made of even tinier particles called electrons, protons, and neutrons. These subatomic particles make the pepper jump, make clothes stick together in the dryer and make lightning flash.

**Important Scientific Strategies**

- Forming hypotheses
- Experimenting
- Observing
- Measuring
- Inferring
- Predicting
- Asking questions
- Classifying
- Communicating
Discuss the Experience

- What did you like about this experience?
- What would you change if you were doing it with children?
- What are some other ways you could integrate science into your program?

For More Information

For more information, visit our website at www.devstu.org