

Hands-On Science for After School



Developmental Studies Center
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Developmental Studies Center

- **Non-profit based in Oakland, CA**
- **Working with after school since 1995**
- **Mission-driven**

A COMMITMENT TO THE WHOLE CHILD

ACADEMIC Achievement

SOCIAL Skills

ETHICAL Development

EMOTIONAL Well-being



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Workshop Goals

- Discuss what science should look like after school
- Experience some science experiments
- Discuss ways to experience science after school
- Have fun!



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A question

What do you want to see children doing during your K-6 after school science program?



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The Scientific Strategies

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



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Experiments

- **Blowing with Bubbles**
Make piles domes and wiggly piles of bubbles!
- **Black Magic**
Discover the secret colors hidden in black marker!
- **Fabulous Foam Flyer**
Have fun with flying!
- **Jumping Pepper**
Make pepper jump without touching it!



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Experience

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



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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?



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“Blowing, Bouncing, Bursting Bubbles”

Building with Bubbles

What’s going on?

A bubble in a cluster with other bubbles makes use of neighboring bubbles to minimize its own surface area.

“It’s Colorific”

Black Magic

What is going on?

Chromatography—a gas or liquid (water) flows through a stationary substance (coffee filter). Since different ingredients in a mixture are carried along at different rates, they end up in different places. By examining where all of the ingredients ended up, scientists can figure out what was combined to make the mixture.



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“Rings, Wings, and Other Flying Things”

Fabulous Foam Flyer

What is going on?

Like all planes, gravity is pulling it down, but at the same time, air helps hold it up.



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“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.



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The Exploratorium

- Since 1969
- Founded by Fran Oppenheimer
- More than 650 exhibits
- Hands-on museum of science, art, and human perception in San Francisco, CA
- Well-known for innovative science exhibits



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The Science Explorer

Based on Research

- Correlated with National Science Educational Standards

Inquiry-based learning

- Learn-by-doing approach

Designed for After School Leaders

- Designed specifically for out-of-school time

Easy to Implement

- Materials included



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Goals of The Science Explorer

- *To encourage children's invention, curiosity, and eagerness to explore*
- *To introduce children to the scientific approach by helping them develop problem solving and critical thinking skills*
- *To be engaging and fun!*



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Themes

- Blowing, Bouncing, Bursting Bubbles
- It's Colorific
- Seeing Isn't Believing
- Rings, Wings, and Other Flying Things
- Dramatic Static
- Marvelous Music and Astounding Sounds
- Hear Here!
- Mysterious Mixtures



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For more information

www.devstu.org



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