

A Little Scientist
Blending Books with Science for 2 to 5 yr olds



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Ideas for Setting Up Easy Science Projects

- 1. Create pictures for the steps to be completed and place pictures on easy to hold, laminated cards for the children. Remember to number each picture in the order the tasks are to be done.**

- 2. Gather all the materials needed to complete the project and place them together in easy to manage containers; some examples are:**
 - a. very small items in Ziploc bags**
 - b. larger items in larger bags or shoe boxes**
 - c. very large items in see through containers**

- 3. Label each item with more pictures and the corresponding words.**

- 4. If there is a corresponding storybook, keep it with the materials**

- 5. Include a questions and possible answers page, as well as potential results of the experiment to have on hand to read with the children**

****Well planned and individualized science projects may take the teacher more time initially to prepare, but for the purpose of allowing young children to complete the task with as little direction or help will be well worth the effort ****

Teachers Can!!!!

- 1. Show videos, TV such as Discovery Channel or Animal Planet, or sites on the Internet to introduce Science to young children.**
- 2. Visit museums, aquariums, or science centers, if possible**
- 3. Interview the children to find out what interests them most and start there; animals, plants, snakes, bugs, water, etc.**
- 4. Allow children to draw pictures of what they know and describe it to you in their own words.**
- 5. Take nature walks around the area if possible, if not, in the facilities own back yard.**
- 6. Watch children as they play and try to spot how they use science concepts to resolve problems, then use this to expand their experiences and their vocabulary to understand what they just “naturally” did.**
- 7. Provide BOOKS!! Fiction, non-fiction, picture books, magazines, as many as possible in a science designated area. Make them easy to reach and use by the children for both science time and any type of play.**
- 8. Bring in experts that deal with science related matters, such as a local park ranger, “mosquito control”, professor from a nearby college who studies rocks and minerals. Ask everyone you know!**
- 9. Allow plenty of time for science projects to give children time to explore, question, listen, observe, etc.**

****To learn more about teaching science, please refer to The National Science Education Standards Book at**

http://www.nap.edu/openbook.php?record_id=4962

The Five “E”s of Teaching Science

Engage- ask questions

Explore- gather together ideas and “evidence”

Explain- Use knowledge gained and observe children to help understanding

Extend- ask more questions, try more ideas, apply knowledge gained to other areas of play

Evaluate-Ask questions to assure children have learned from experience.

****The following science experiment is created for all ages and shows how to use the Five E’s listed above****

Ice Cream Making Lesson

Objectives

1. Students will make ice cream using household items to compare taste to store bought product.
2. Students will observe the chemical reactions taking place when making their own ice cream
3. Students will be able to use terms such as ice, milk, sugar, flavors, and explain the process using their own level of language skills.

Materials

Milk, Cream or half and half, vanilla extract or chocolate syrup, sugar, ice, salt, zip-loc plastic bags (large or small), newspaper.

****Please be sure to determine if children have milk allergies or lactose intolerance****

Experiment continued on next page

Procedure

Blend together ingredients in small bags except for ice. Put several small bags in large bag with ice and shake, rattle, and roll until starts to form creamy substance ****Do this after the question for Engage and Explore have been addressed with children.**

Taste and then taste store bought ice cream

THE FIVE E's used during the ice cream making

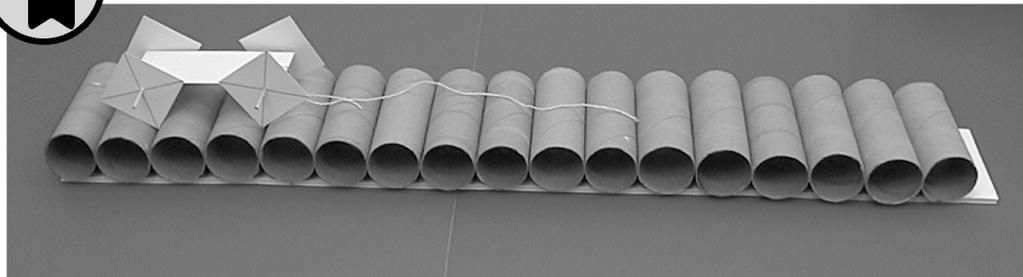
- Engage** Have you ever eaten ice cream? (previous knowledge)
- Describe the taste of ice cream (comprehension)
- Name the ingredients you think ice cream is made from. (knowledge)
- How do you think ice cream is made? (analysis)
- Explore** How do you make ice cream with these ingredients? (synthesis)
- Can you think of several ways to make ice cream? (synthesis)
- Explain** Why the liquid ingredients are turning into ice cream (analysis)
- How long do you think it will take? (knowledge)
- Why do you think we need salt in the ice cream making process? (analysis)
- Elaborate** Is it possible to make different flavors? (application of knowledge)
- Do you think we could make ice cream if we left out one of the ingredients?
(synthesis)
- *Other ideas to elaborate: a field trip to the store to buy ice cream, a trip to Dairy Queen, etc. Allowing the children to make ice cream out of play dough, clay, mud, art materials, etc.****
- Evaluate** Continue to ask questions as children move from making ice cream to other "ice cream" events



Square Wheels

You may not be able to put a square peg in a round hole, but you can make a square wheel roll on a round road.

A square wheel will roll smoothly, with its axle at a constant height, on a surface with properly spaced bumps of the right size and shape.



Materials

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • hot glue gun and glue sticks • about 20 cardboard toilet paper tubes (all approximately the same diameter) • foam core, stiff cardboard, or mat board to serve as a base for the cardboard tubes, about 4 in × 30 in (10 cm × 75 cm) | <ul style="list-style-type: none"> • ruler • poster board or mat board, approximately 8 in × 10 in (20 cm × 25 cm) • pencil or pen • pushpin • scissors | <ul style="list-style-type: none"> • drinking straw • 2 bamboo skewers • paper clip • string, about 12 in (30 cm) |
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Why we Use Books to “DO” Science

1. Develops Vocabulary Words
2. Helps Curiosity, Raises questions towards understanding, leads to more questions
3. Constructs More Meaning and Knowledge
4. Fast- Mapping – a child’s ability to hear a word once or twice and store it for further exploration of meaning in their future.
5. Enhances child’s sense of wonder
6. Word usage and expressions increase
7. Helps improve reading, listening, and language skills

A SHORT LIST OF GREAT BOOKS

Once I knew a Spider

How Ground Hog’s Garden Grew

Butterfly Count

Crawdad Creek

Swimming with Dolphins

Red-Eyed Tree Frog

Gorilla Walk

Gone Again Ptarmigan

If You Should Hear a Honey Guide

Lonesome George the Giant Tortoise

Baby Whale’s Journey

A Comprehensive list of books is published each March in “Science and Children” and is accessed at www.nsta.org These are National Science Teacher’s Association’s Outstanding Science Books for Children

Science Vocabulary Words for Young Children

Objects

Solids

Liquids

Hard

Soft

Classify

Materials

Rocks

Shapes

Mass

Plants

Bodies

Sound

Light

Movement

Earth

Space

Weather

Day

Night

Life cycle

Animals

Cells

Great Websites for More Fun Science

www.madsci.org

www.parenthumor.com/activitycenter/homemadeart/homemadeglue/htm

www.childcarelounge.com/activity/science-experiments.php/

www.heifereducation.org

www.chefsolus.com

www.nourishinteractive.com/free-healthy-recipes/109-happy-face-snack

www.pbskids.org/dragonflytv/scifair

www.stormthecastle.com/how-to-make-a/how-to-make-a-volcano.htm

www.scifun.org

www.exploratorium

Important Informational Websites

www.naeyc.org/about/positions.daptop.asp

www.nap.edu/readingroom/books/nses/html