Family Science Workshop

Starting Them Early: Science Learning in Pre-K & Early Elementary

November 20, 2008

Workshop Presenters:

Anne Gurnee and Mia Jackson
Foundation for Family Science
www.familyscience.org

Exploration Place

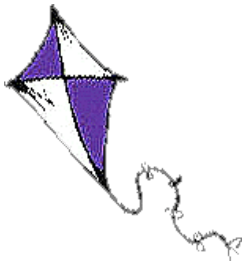
"The new research shows that babies and young children know and learn more about the world than we could ever have imagined. They think, draw conclusions, make predictions, look for explanations, and even do experiments."

***The Scientist in the Crib**, Gropnik, Meltzoff and Kuhl, 2000*

Garden State Discovery Museum

"I do not accept an America where elementary school kids are only getting an average of twenty-five minutes of science each day when we know that over 80% of the fastest -growing jobs require a knowledge base in math and science."

Senator Barack Obama, November 2007



Value of Early Childhood Science Exploration

"Lifelong scientific literacy begins with attitudes and values established in the earliest years."

National Science Education Standards, 1996

"With carefully selected materials and thoughtful guidance, children's explorations will encourage them to observe more closely, develop new ideas about the world, and build a foundation of experiences and ideas on which to construct later understanding."

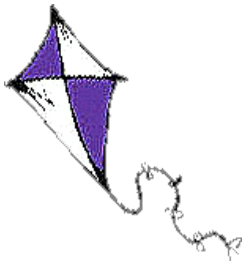
Chalufour and Worth

The Young Scientist Series, 2003

Early Childhood Development
Core Concepts for Science Learning

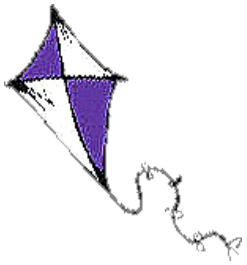
1. Human development is shaped by a dynamic and continuous interaction between biology and experience.
2. The growth of self regulation is a cornerstone of early childhood development
3. Children are active participants in their own development, reflecting the intrinsic human drive to explore and master one's environment.
4. Human relationships are the building blocks of healthy development.
5. The course of development can be altered in early childhood by effective interventions.

Adapted from: Neurons to Neighborhoods:
The Science of Early Childhood Development
National Research Council, 2000



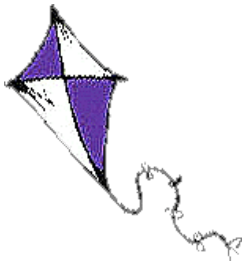
Important Assumptions About Early Childhood Science Learning

- All children are naturally curious and can successfully engage in developmentally appropriate scientific inquiry.
- The best science content draws from a child's own experiences, interests, and questions about the world they live in.
- Children learn from each other, and discussion, expression, reflection and illustration help build their language of science exploration.
- The richer and more varied a learner's environment is, the richer and more varied the child's learning experience will be.
- Care givers and teachers can use particular strategies, materials, and environmental resources to encourage and support early childhood science learning. They don't have to be science "experts" to do this!
- Parents also play a critical role in their young child's science learning by modeling exploration, encouraging inquiry and building the child's confidence as a learner.



"We know that by the time students enter seventh grade, more than half say they are not interested in science. Our challenge is to teach science in a way that students can't lose interest."

Dr. Gerald Wheeler, NSTA Executive Director, 1997

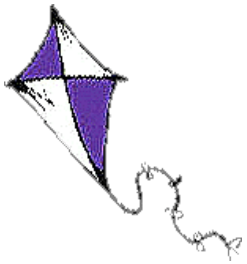


Science in the Early Years

Foster Natural Curiosity

- Children are natural explorers
- All territory is new and uncharted to them
- Ask questions about their surroundings and phenomena
- Allow experimentation
- Alert children to using many senses

Virginia Discovery Museum

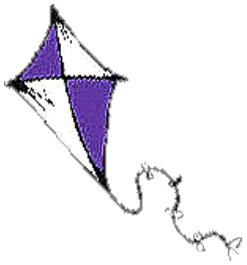


Science in the Early Years

Make it Meaningful and Relevant

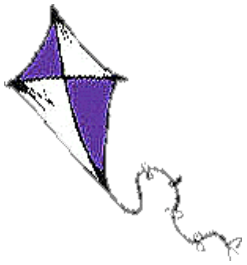
- Best content comes from children's own experiences
- Integrate science with literature, music, math, even lunch time
- One area of learning provides jumping off point for another area of learning

Santa Fe Children's Museum



"Using inquiry-based science, by its very nature, requires the use of language, mathematics, and social skills. A science program will not detract from learning of these basic skills. Rather, a science program will provide the meaningful context in which these skills can be learned best."

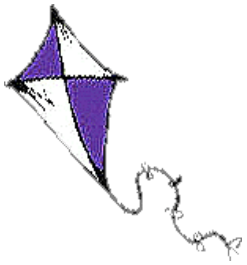
Worth and Grollman
Worms, Shadows and Whirlpools:
Science in the Early Childhood Classroom, 2003



Science in the Early Years

Set the Stage

- Provide the right materials
  - Observation tools: magnifiers, monoculars, bug boxes, etc.
  - Exploration tools: critter containers, insect nets, touch socks, etc.
  - Common, approachable tools/objects



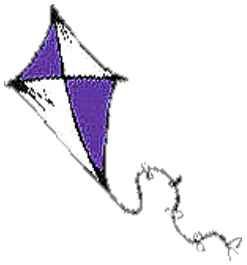
Science in the Early Years

Set the Stage

- Books & literature
  - High-quality children's literature with science themes
  - High-quality children's field guides/picture books with engaging pictures

- Allowing time for exploratory play and experimentation

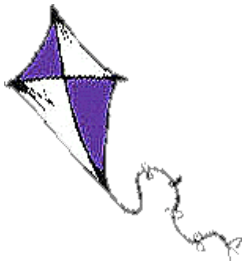
Betty Brinn Children's Museum



Science in the Early Years

Use a Variety of Methods

- Hands-on a must; engage all the senses
- Whole body whenever possible
- Introduce basic science skills: observing, measuring, sorting, comparing, estimating, etc.
- Use music, poetry, outdoors, everyday life!



Science in the Early Years

Involve the Family

- Inform parents about what science is happening at school
- Send home ideas for family connections
- Give children activities they can only do at home

The Children's Museum of Houston

"The teaching role of family members is unique and vital. They, not classroom teachers, have the only continuous opportunity to guide a child's intellectual growth."

Science Experiences for the Early Childhood Years
Harlan and Rivkin, 2004

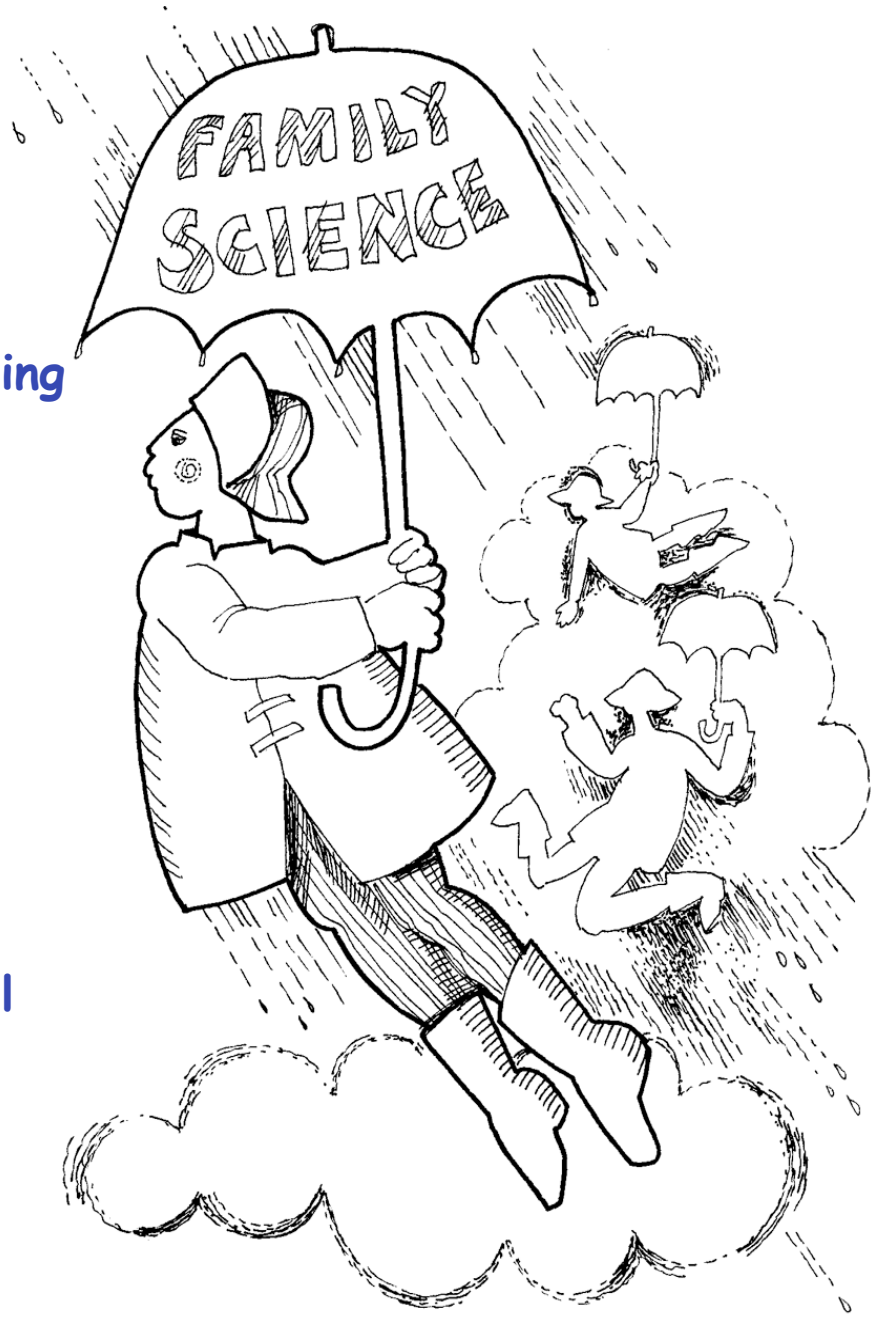
Family Science Workshops and Ice Cream Social

Starting Them Early: Science Learning In Pre-K & Early Elementary
12:30pm – 1:30pm

Effectively Engaging Parents In Science Learning
2:00m – 3:00pm

It's All In The Family: Hosting A Family Science Event In Your School
3:30pm – 4:30pm

Ice Cream Social
4:30pm – 6:00pm



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Full Slide Set Available at:
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