



The Importance of Science in Preschool Classrooms

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Overview

Many early childhood teachers are hesitant to provide engaging scientific activities in a preschool setting, often because they are not confident in their ability to do so, and have had unpleasant science education experiences of their own. With this, preschool children are not given the chance to use their natural behaviors to explore and discover the world around them. Providing them with hands-on opportunities to experience science in the classroom gives children a foundation for learning skills they use in everyday life. Ms. Brittany's afternoon preschool class in Bath County participated in a variety of life, physical, and earth/space science activities over the course of three weeks. These activities were used to give the children science experiences within their classroom, and to see the effect they had on their science involvement throughout and after the time period.

Rationale for Preschool Science

- Through science, children are discovering that they can learn through their own actions. Therefore, science in the early years provides a foundation for learning skills that children will use in everyday life.
- Teaching science in preschool can help the children further develop prediction, identification, comparison, cause and effect and discussion skills.
- Science in preschool can improve vocabulary and teach the children new words.
- Children are natural scientists; they are biologically prepared to learn about the world around them.
- Children build a foundation of scientific inquiry skills and an interest in the subject during early childhood, so it is important to provide them with opportunities to actively participate in hands-on science learning experiences.
- Science in the early years is hoped to help children develop natural curiosity about the world; broaden their thinking skills, problem solving, and decision making; and expanding their knowledge of the world.
- Jerome Bruner believed that learning is an active process, so providing the children with engaging science activities stimulates this learning through exploration and discovery.
- According to Piaget, preschoolers are still in the pre-operational cognitive development stage, without the ability to conserve and reverse operations. Scientific activities utilizing senses promote their understanding based on how things are seen or perceived in order to facilitate their beginning cognition of representational thought.

Physical Sciences



Expanding Ivory Soap

Science Standard 1: Benchmark 1.2 (Investigates simple concepts)
Science Standard 1: Benchmark 1.5 (Makes and verifies predictions based on past experiences)

Children were invited over in to the Discovery area to examine the Ivory Soap. They were able to feel, smell, and talk about it with their friends. Children were asked to predict what would happen to the soap if it were heated up in the microwave. When they saw the results, they were encouraged to examine the soap again and talk about the changes and also what remained the same.



Magnetic Flower Garden

Science Standard 1: Benchmark 1.2 (Identifies objects that influence or affect other objects)
Science Standard 1: Benchmark 1.5 (Draws conclusions based on proved and disproved predictions)

The children used magnetic wands to "color" pictures made of plastic freezer bags and pipe cleaners cut up into small pieces. After playing for a few minutes, the children briefly discussed how the pipe cleaners moved along in the bag. The children then explored the magnetic properties of other classroom objects and made predictions about whether each object was magnetic or nonmagnetic. The children then tested the objects to see if their predictions were correct.

Earth/Space Sciences



Nature Sun Catchers

Science Standard 1: Benchmark 1.1 (Explores features of the environment through manipulation)
Science Standard 1: Benchmark 1.3 (Uses a variety of tools to explore the environment)

The children made Sun Catchers with paper plates, contact paper, and a variety of items from nature: four leaf clovers, purple clovers, dandelions, and grass. The children pressed the nature items of their choice onto the sticky side of contact paper, and pressed another piece on top. They then held their sun catchers up to the sunlight to see the colors brighten up, and briefly discussed how the sunlight affected the color of the items.



Chia Pets

Science Standard 1: Benchmark 1.3 (Uses standard tools to explore the environment)

The children made their own Chia Pets using a stocking, soil, grass seed, googly eyes, and pipe cleaners, and monitored the changes over the course of one week. Children stimulated their knowledge of cause and effect through exploring how the sun, water, and soil made the grass seeds grow. The children documented how the Chia Pets were made, as well as the changes they experienced over the week in their own personal booklets.



Life Sciences



Brush Up!

Science Standard 1: Benchmark 1.5 (Draws conclusions based on proved and disproved predictions)
Science Standard 1: Benchmark 1.2 (Identifies objects that influence or affect other objects)

The children participated in an experiment with white hard-boiled eggs, Coke, and toothpaste that was conducted over the course of three days. The children made predictions about the effects of the Coke on the eggs, and then they cleaned them with toothpaste and toothbrushes.



Growing Indian Corn

Science Standard 1: Benchmark 1.1 (Explores features of the environment through manipulation)
Science Standard 1: Benchmark 1.2 (Investigates simple concepts)
Science Standard 1: Benchmark 1.5 (Makes and verifies predictions based on past experiences)

The children planted Indian corn seeds in a clear water bottle and observed the seeds sprout and grow over the course of three weeks. They made predictions on what would happen when the seeds were provided with soil, water, and sunlight, and they learned about the growth process of corn, the environment in which they grow, and the food they eat.

Conclusion

Children enjoyed the series of science activities, which resulted in increased interests in science. The teacher noticed that the children were visiting the science center more often during and after the time period the science activities were being implemented. The children asked questions and demonstrated curiosity about activities and their finished products, and showed increased knowledge of the science concepts by utilizing some questions and procedures they learned from previous activities. Children who previously struggled with expressive and/or receptive language showed improvement throughout the activities by becoming actively involved and communicating more with the teachers and her peers. Overall, the children were able to enhance their curiosity about the world around them, broaden their vocabulary and communicative abilities, and build a foundation for skills in everyday life, which supports Early Childhood Science Standard "Demonstrates scientific ways of thinking and working (with wonder and curiosity)."

Acknowledgements/References

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Bearded Dragon

Science Standard 1: Benchmark 1.2 (Investigates simple concepts)

Children observed a Bearded Dragon, Oscar, and noticed how and when it moved. A KWL Chart was used to document what they knew, wanted to know, and then what they learned from their experiences. Children used math and literacy skills to apply their new knowledge about the animal by measuring how long Oscar is compared to other objects, and by drawing him on an art easel.