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Science, Technology and Problem Solving
Children's Engineering
Problem Based Learning Activity

Title of the activity:

A Blanket for Porcupine

Where did the problem come from?

"Animals Should Definitely not Wear Clothing" by Judi Barrett

What is the problem?

Porcupine is cold and needs something to keep him warm, but his spines or quills keep breaking through the material of his clothing.

How should the problem be solved?

Make something for porcupine that will keep him warm and not break from the porcupine quills.

What materials are needed to solve the problem?

Construction paper
Scissors
Yarn
Aluminum foil
Wax paper
Tape
Glue
Popsicle sticks
Felt material cloth

Saran wrap
Cardboard from shoeboxes
Crayons
Markers
Plastic bags
Clay
Tissue paper
Gift-wrap

How will the solution be tested?

The teacher will make a pretend porcupine out of a pointy bristle brush for the students to see if their solution will keep the porcupine warm and the quills will not break through.

The students will test their solution by wrapping it around the pointy bristle brush that was kept in a refrigerator so that it could be cold when the children tested the solution on it to make it warm.

Early Childhood Education Program Expectations: Standards of Quality

Social/Emotional Development

Expectation 6: Children exhibit attending and focusing skills.

Preschool Learning Outcomes: Attends to task for an average of 15 minutes.

Application: The students will work for 20 minutes on something that will keep porcupine warm and that porcupine's quills will not break through.

Creative Arts

Expectation 4: Children develop awareness and appreciation for visual arts (e.g., painting, sculpting, and drawing)

Preschool Learning Outcomes: Emphasize the importance of the art process by employing open-ended process-oriented activities (e.g., the teacher provides children with watercolor paint, paper and brushes and encourages them to paint rather than having everyone make a dinosaur puppet with the same materials).

Application: The children will use different materials to create something unique to keep porcupine warm and that porcupine's quills will not break, that is different than the solutions of their classmates.

Health Safety and Physical Education

Expectation 5: Children develop competence and confidence in activities requiring fine motor skills.

Preschool Learning Outcomes: Demonstrates an increase in fine motor skills (e.g., hand movements that require control, dexterity and eye-hand coordination).

Application: The children will be using materials, like scissors that require the use of fine motor skills to make something to keep porcupine warm that porcupine's quills will not break through.

Language Arts Literacy

Expectation 1: Children listen with understanding to environmental, sounds, directions and conversations.

Preschool Learning Outcomes: Follows oral directions that involve several actions.

Application: The children will listen to the story, then follow the teacher's directions to use the materials provided and create something that will keep porcupine warm and that porcupine's quills will not break through.

Mathematics

Expectation 3: Children understand patterns, relationships and classification.

Preschool Learning Outcomes: Seriates objects according to various properties including size, number, length, heaviness, texture (rough to smooth) or loudness.

Application: The students will classify the materials provided by the teacher according to various properties like texture in order to create something that will keep porcupine warm and that porcupine's quills will not break through.

Science

Expectation 1: Children develop inquiry skills, including problem solving and decision-making.

Preschool Learning Outcomes: Answers questions or tests predictions using simple experiments or research media (e.g., cracking a nut to look inside, putting a toy car in water to determine whether it sinks or using a book or web site to find out about different types of leaves).

Application: The children will predict that the materials they used to make the solution will keep porcupine warm and porcupine's quills will not break through it.

Social Studies

Expectation 3: children become contributing active members of the classroom community.

Preschool Learning Outcomes: Works together (e.g., pair, triads and small groups) to complete projects and activities.

Application: The children will work together in groups to collaboratively create something that will keep porcupine warm and that porcupine's quills will not break through.

World Languages

Expectation 1: Children know that many others may use different languages (including sign) to communicate and will express simple greetings, words and phrases in a language other than their own.

Preschool Learning Outcomes: Says simple greetings, words and phrases in a language other than his/her own.

Application: The children will use their native language (Spanish) to tell their classmates how to say the names of the materials used and the words porcupine and quills as they work collaboratively in their groups.