Early Childhood STEM
Nature Math

Description

Build early math skills in your local park!

- Age: 2-6
- Time: 10-30 minutes

Learning Objectives

- Children will practice counting, sorting, and creating patterns with objects they collect from outside.

Vocabulary

- Observation: a piece of information that you see, hear, smell, taste, or feel.

Materials

- Something to collect materials in: a paper bag, a recycled egg carton, a plastic bin, etc.

Safety Precaution

- Only gather materials from uncontaminated sources, and choose an area with little trash for children to accidentally pick up. Consider bringing hand sanitizer or soap and water for after the activity.

Implementation

Introduction

Every day can be an opportunity to practice early math and critical thinking skills! Plan a trip to the park with your children. One good idea to help engage your children in the planning process is to pull up a map of your neighborhood and show the children which route you will walk or drive to get to the park, pointing out landmarks they can look for along the way. Tell children that today we are going to make "observations" (something we learn from looking, feeling, smelling, hearing, or tasting).

Procedure

1. Once you arrive at the park, ask your children to take a moment and make *observations*. Remind them that is a "hands-on" activity, but not a "mouth-on" activity so we shouldn't be putting anything into our mouths, and we'll save our tasting observations for snack time.
    a. What do you hear? See? Smell? Feel?
2. Give each child a container to collect materials from the park. Start all together and practice making observations about the items the adult collects.
    a. For example: pick up a rock. Ask: what color is it? What shape is it? What does it feel like? Rough or smooth?
3. Let children work alone, or in small groups, to collect their materials, approximately 10 minutes, depending on your group.
4. Come back together and start to sort your materials. Ask children how they would like to group their items: By size? By color? By feel? By smell? By weight? Introduce descriptive words like big, round, rough, small, shallow, flat, crooked, and heavy.
5. After they have sorted, ask prompting questions (see below). Then, have them re-categorize their materials based on a different characteristic.

Questions to Prompt Inquiry

1. Is this item the same or different from this one?
2. Which item is bigger? Smaller? Smoother? Rougher?
3. How many items are in this group?
4. How many items are in this group if I take away two? Add one? Etc.
5. What shapes do you see?

Conclusion

Once you return from the park, talk with your children about what they observed. What was their favorite part? Did anything surprise them? Is there anything in the room that was similar to things they observed in the park?

Tips and Suggestions

Activity Extensions

- Use the items you collected to engineer something new
    - Can you build a nest for a bird? What does the nest need to have? If you were a bird, what would you want to be in your nest?
    - Try to use your materials to build the tallest tower you can. Which materials are the strongest? Which materials are the weakest?
    - Create an art project or mosaic

Adapting to Home/Classroom/Public space

Want to use this activity in a different way? Here are ways to expand this:

- Try this exercise with items in your kitchen/bathroom/garage; math can be found anywhere!

Learn More!

a. Links to learn more: https://greatergood.berkeley.edu/article/item/six_ways_nature_helps_children_learn
b. Reading recommendations:
    a. Counting Wildflowers by Bruce McMillan
    b. Ricky, the Rock That Couldn't Roll by Jason I. Miletsky