Weather Watch

Group Activity: Science - Lesson 2 - Making Lightning

Objective:
In this activity, students are engaged in answering a scientific inquiry by using logic-based evidence, observation, and prediction to report formulated explanations linked to scientific knowledge.

Materials:
- Aluminum pie pan
- Wool fabric (1 small piece)
- Styrofoam plate
- Pencil with a new eraser
- Thumbtack

Duration: 30 minutes

Preparation:
1. Set up a demonstration table in the front of room visible to all students. Make sure it is as level as possible.
2. Place your materials on the demonstration table.

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Activity Script:
We recommend using the following verbal cues as you model each step.

1. **"Today we're going to do a science experiment to make a mini lightning bolt!"**
   [Discuss that lightning is an act of nature, and ask students if they've ever seen lightning outside. Talk about how today you're going to use laws of physics to create lightning inside.]

2. **"What is lightning made of?"**
   [Prompt students to talk about lightning using sensory language. Explain that lightning is electricity and ask students if they've ever been "shocked" when they've touched something with static electricity. Explain that for this experiment, you'll be making a spark using static electricity.]

3. **"Our first step is to prepare our experiment's materials."**
   [Push the thumbtack through the center of the aluminum pie pan, from the bottom. Push the eraser end of the pencil into the thumbtack.]

4. **"Next we're going to create some electricity."**
   [Put the styrofoam plate upside down on a table. Quickly rub the bottom of the styrofoam plate with the wool for a couple of minutes. Pick up the aluminum pie pan using the pencil as a handle and place it on top of the upside-down styrofoam plate that has been rubbed with wool.]

5. **"Are you ready to see some mini lightning? I need a student to turn off the light when I say, 'Now.'"**
   [Touch the aluminum pie pan with your finger. You should feel a shock. If you don't feel anything, try rubbing the styrofoam plate again.]

6. **"Now!"**
   [Once you feel the shock, try it again, turning the lights out before you touch the pan again. You should see a spark. Repeat experiment to ensure all students see the spark.]

- For learners who would benefit from a more detailed explanation of this exercise, explain the following scientific principle:
  - This activity is an example of static electricity. Lightning happens when negative charges (electrons) in the bottom of the clouds (or, in this experiment, your finger) are attracted to the positive charges (protons) in the ground (or, in this experiment, the aluminum pie pan). The resulting spark it a mini lightning bolt.