



## PUZZLE: BUILD A WEATHER STATION THAT CAN BE USED TO TRACK WEATHER

**STANDARDS & CONNECTIONS:** NGSS.3-5-ETSI, NGSS.MS-ETSI, NGSS.MS-LS2-5, NGSS.5-LS2-1

**SUGGESTED MATERIALS:** Cardboard, paper, colored markers/pencils, glue, tape, streamers, empty plastic water bottle, ruler, skewer sticks

**BACKGROUND:** “Weather is the air temperature, cloud cover, precipitation, wind, moisture content, and air pressure at any particular time in any particular place.”<sup>i</sup> Climate is the average weather pattern of a certain place over time. Meteorologists make observations and develop predictions on future weather called forecasts. Weather plays a critical role in agriculture. Farmers and ranchers check the weather daily to help guide their decisions. Good weather can dictate when farmers can plant, whether or not livestock get pneumonia, and many other implications.<sup>ii</sup>

**1. IDENTIFY:** Share the background information with the students, then share the puzzle to be solved. Determine constraints (e.g., time allotted, space, materials provided, etc.) and divide students into small groups.

**2. IMAGINE:** Ask a series of questions to help students brainstorm solutions to the puzzle. Encourage students to list all ideas – don’t hold back! Before moving on, make sure each group selects a solution that fits within the constraints.

- Ask: *How can you solve this puzzle? Which of your ideas can you build a prototype for given the constraints?*

**3. DESIGN:** Students diagram the prototype, identify the materials needed to build the prototype, and write out the steps to take. Students describe the expected outcomes.

- Ask: *What steps will you take to create your solution? What do you expect your solution to look like and be able to do?*

**4. CREATE:** Students follow their design plan and build their prototypes. Monitor their progress and remind them about how much time they have.

**5. TEST & IMPROVE:** Students evaluate their creation and compare it with the expected outcomes. Students seek areas of improvement and make changes where needed.

**6. SHARE:** Students share their solution to the puzzle and communicate lessons learned.

- Ask: *What was your biggest takeaway? What would you do differently?*

**ADDITIONAL RESOURCES:** For more background information on this topic, please visit [www.purpleplow.org](http://www.purpleplow.org).



Have students take their weather stations home to track and compare weather over time.

<sup>i</sup> National Oceanic and Atmospheric Administration. (n.d.). *Weather and climate basics*. Retrieved from [https://oceanservice.noaa.gov/education/pd/oceans\\_weather\\_climate/weather\\_and\\_climate\\_basics.html](https://oceanservice.noaa.gov/education/pd/oceans_weather_climate/weather_and_climate_basics.html)

<sup>ii</sup> Center for Science Education. (n.d.). *Weather: The basics*. Retrieved from: <https://scied.ucar.edu/shortcontent/weather>