

Integrated Stem Lesson Plan

Star Treff

4th Grade

Standards:

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Materials needed:

Dixie Cups

Pencils(Large)

Push pins

Straws

Hole puncher

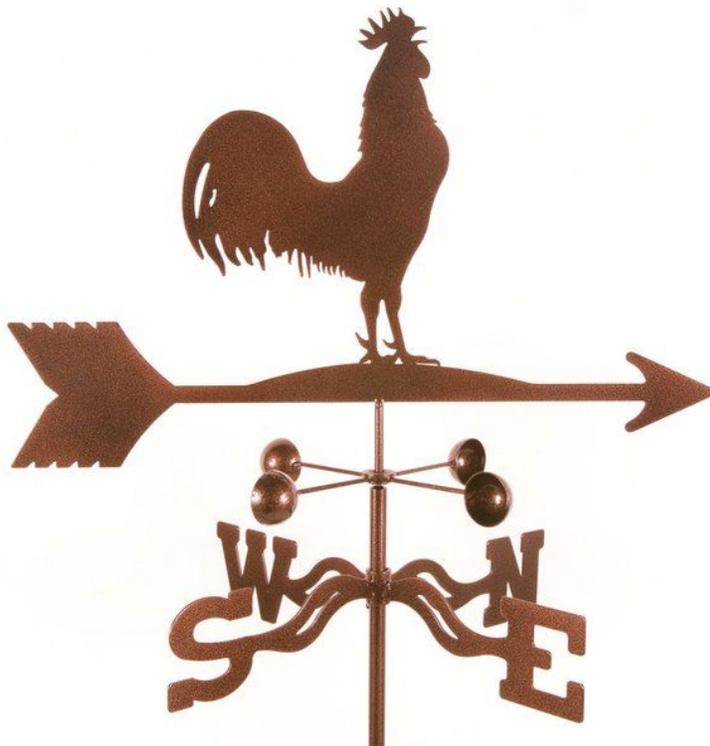
Coffee filters

String

Plastic spiders

Engage: Phenomena





<https://www.theguardian.com/world/video/2015/may/18/australia-where-the-rain-is-sometimes-made-of-spiders-video-report>

Ask students: What do you see and what questions do you have?

Discuss:Patterns,Structures, and functions

Our thinking so far: Poster whole class: Discuss what they think we are going to be investigating. Ask them about the Weather vane and what the cups under the weather vane are?

Explore:The kids will explore hands-on activity.Show the model of the anemometer with dixie cups. They will make an Anemometer and Spider parachutes. They will begin by making an initial design on paper of both the Anemometer and the spider parachute.<https://www.youtube.com/watch?v=mX2gBc-ugf8>



Explain: They must be able to explain what they are making and how it functions in their journals. Give the students the formula for Anemometer: 10 turns per minute means the **wind speed** is about one mile per hour.

Elaborate: They must be able to explain their thinking now. Look at the data and what can you tell about wind speed?

Go to http://www.weatherwizkids.com/?page_id=72 read about wind and the wind questions that others have had in the past.

Evaluate: The students will use their anemometer to measure how windy it is outside. They will measure how far their spiders flew. They will analyze their data and discuss why some parachutes travel further than others. They will also talk about what modifications they would make if they were to do this project again. I.E.-maybe make them out of baggies or shopping bags, instead of coffee filters.

As a class: Go back to the phenomena and talk about how spiders use wind velocity to help them travel as babies

Extension Activity:

Students will look up Vincent Van Gogh's, "Starry Night." They will then draw/paint a picture incorporating wind inspired art from this painting.