Cloudy with a Chance of Science! Week 3: Grades K-2

Day 3: A Shelter for Peep - Plan & Create

Teacher/Parent Background

Weather is the combination of sunlight, wind, snow or rain and temperature in a particular region and time. Weather has positive and negative impacts on living things. Scientists and engineers study weather and its effects in order to design, test and refine solutions to protect humans from severe weather conditions.

Overview

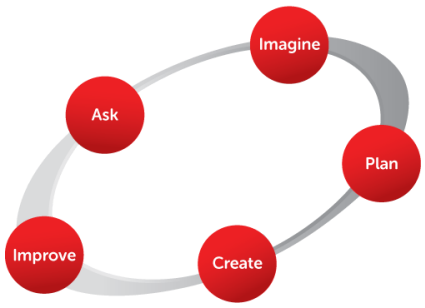
In this activity, young learners will apply their understanding of weather and engineering concepts to plan and build a shelter for Peep that keeps him and his friends safe, comfortable and dry during a storm.

Related Standards

- **Analyze patterns** in weather conditions of various regions of the world and **design, test and refine solutions** to protect humans from severe weather conditions.

Key Terms

- weather - a mix of sunlight and clouds, wind, precipitation and temperature happening in a certain place at a certain time
- precipitation - any form of water that falls to Earth's surface such as rain, snow, hail and sleet
- engineers - people who design and/or build things to solve problems
- engineering design process - a set of steps engineers use to propose solutions to problems



Engineering Design Process

- blueprint - a design plan
- shelter - a place that protects you from bad weather or danger

Materials List

- crayons/pencils
- *Imagine* handout from Day 2
- building materials (tape, scissors, glue, etc.)
- shelter supplies (popsicle sticks, straws, cardboard, paper, pipe cleaners, cardboard tubes, empty containers, etc.)

Activity Description

1. Revisit the student's shelter plans on the *Imagine* handout. Briefly review his/her ideas and then discuss which plan his/she thinks is best.
    - You have two different blueprints for your shelter. You can only build one. Which one do you want to build? Why?
        - The student's decision could be based on style, types of or quantities of materials available, building space available, etc. There is no wrong answer to this question.
2. Provide the student with time, space, materials and adult support (as needed) to create his/her shelter based on his/her selected plan.
    - Reminder you can:
        - build only what you drew (i.e., If the plan shows a rectangular structure, then the structure should resemble a rectangle).
        - use only the materials labeled in the plan (i.e., if the side of the shelter is labeled as popsicle sticks then straws or other material cannot be used).
        - build for _____ minutes (time allotment is flexible to your schedule/student's attention span).

Closure

Once the student has finished creating or the allotted time has elapsed, provide the student with time to test the shelter. Assist him/her in recording the results (i.e., video record using a phone, record on paper, etc.) Then discuss successes and struggles that he/she experienced during the Create stage of the engineering design process:

- Did Peep, Chirp and Quack fit in your shelter? How well?
- What part(s) of creating your design did you find easy? Why?
- What part(s) of creating your design did you find difficult? Why?
- What did you most enjoy about creating your shelter? Why?
- What was your least favorite part about building your shelter? Why?
- If you had more time/materials/space, what would you do next?

- Were there any materials you wish you had but didn't? Why?
- What advice would you give another student who is trying to design and create a shelter?

Before wrapping up the lesson, be sure to remind the student that he/she will have the opportunity to complete the next stage of the engineering design process tomorrow - improve. It may be difficult for the student to "walk away" from the challenge at this point. He/she will probably want to test more and begin improvements right away. Try to avoid this as it is important to provide time for the student to reflect on his/her plan, the results of his/her test and possible improvements.

Extension

Teach Engineering - Which Roof is Tops?

When you look around your neighborhood, what do the roofs look like? What if you lived in an area with a different climate, how might that affect the style of roofs that you see? Through this introductory engineering activity, students consider the advantages of different roof shapes for different climates or situations. During a demo, they observe and discuss what happens when a "snow load" (sifted cups of flour) is placed on three different model roof shapes.