Weather and its Impacts

Essential Question: What are some natural hazards associated with severe weather and how can the impact of these hazards be reduced?

Storm struck? Hurricane season is upon us. Join me to learn how hurricanes are formed, named, and the impacts they have on our environment. In this lesson students will also have a chance to complete an engineering project and test it to see if it is hurricane proof.

- 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.
- 3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
- 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:
Option A:

- Popsicle sticks (30) per student
- Construction paper (1 or 2 sheets per student)
- Play-Doh (1 can divided by 3 students)
- Something for the house foundation
  - ideas could be- aluminum pan (could be costly), styrofoam or paper plate, cardboard
- Leaf Blower or Several Box fans or Hair dryer (not sure this will be powerful enough but could be used as a last resort)
- 5 gallon bucket with water (or whatever you can find to use) *optional
- Masking tape
- Pencil and paper for planning and drawing
Option B

- Students bring three pieces of “CLEAN” trash from home. *Parent letter attached.
- Teacher provides something for house foundation
  - Ideas could be- aluminum pan, styrofoam or paper plate, cardboard
- Leaf Blower or Several Box fans or Last Hair dryer (not sure this will be powerful enough but could be used as a last resort)
- 5 gallon bucket with water (or whatever you can find to use) *optional
- Masking tape
- Pencil and paper for planning and drawing

Lesson Overview:

Students will learn how hurricanes are formed, named, and the impacts they have on our environment. After learning about the engineering design process and brainstorming what components they think will make a hurricane proof house, students will begin engineering their own hurricane proof house. During the testing phase, you can choose to just test with wind (leaf blower or fans) or you can add water surges by lining up their houses along a sidewalk or space of choice and surge their houses with water. Will they hold up or float away? I will take you through the process and students can finish up following our lesson.
Program Connection Information

Please use an external microphone (conference style) rather than the integrated one in the computer for the audio for your class and locate it centrally in the room. It can be difficult for the Greenbush teacher to hear the students using the computer microphone and therefore it reduces the interactive nature of the lesson. It is fine to use the computer webcam for your video source.

All classes will take place using Zoom desktop video. If your building is already set up to use a desktop video application with a computer, simply open a browser and enter https://greenbush.zoom.us/j/5337714346 in the URL space. You may need to download Zoom launcher software (free download) if you don't already have it. This needs to be done in advance of the lesson.

If using a Polycom video conferencing unit (or any legacy type video conferencing unit) to connect to a ZOOM conference, make sure the unit is in "encrypted mode" then dial the following IP on the internet: 162.255.37.11 or 162.255.36.11 and once connected, they will ask for a MEETING ID: enter 533 771 4346 (for Sheila at Science Center).

It’s always a good idea to touch base with your district technology facilitator prior to your program to make sure all systems/equipment are in place and operational and that there aren’t any firewalls in place that might prevent you from connecting to Zoom.

Once you connect, you will enter a Zoom waiting room. Your Greenbush teacher will admit you into the final meeting room.

If you have questions, please call Sheila Sandford at Greenbush, 620-724-6281, or email at sheila.sandford@greenbush.org (best method of contact).
The Engineering Design Process

1. Ask: Define the problem.

2. Imagine: Brainstorm possible solutions.

3. Plan: Think! Sketch! Label!

4. Create: Make a prototype.

5. Improve: How can you modify your design to make it better?

6. Test: Do a trial run.

7. Share:

Greenbush
Southeast Kansas Education Service Center
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Parents,

Our class is participating in a virtual science program with teaching staff from Greenbush. As part of that learning experience, students will be completing a project using the Engineering Design Process to design/create a house that can withstand the effects of a hurricane. For this project, students will need some recycled materials. Students should bring 3 items max! Items could include plastic containers, empty boxes, empty can, small pop bottle, etc. Please ensure that all items are completely clean/sanitized! Due to COVID we will not be sharing items, so your student will use what he/she brings to school! Please send materials to school by the following date: ________________.

Thank you!