GENERATIONGENIUS
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LESSON PLAN

EXTREME WEATHER SOLUTIONS

GRADES 3-5

SUMMARY

Students identify and explore extreme weather events most likely to occur in their area. Students explore cause and effect relationships between natural extreme events and the problems they can cause humans. They explore ways humans can reduce the impact of some natural hazards. Finally, students build a device that reduces the impact of extreme weather and then debate the merits of that solution.

DURATION

Two 45-minute lessons

PRE-ASSESSMENT QUESTIONS

Please see Discussion Questions located under the video. These can be discussed as a group or answered individually in student science notebooks.

MATERIALS

- Video, photos, newspaper articles, etc. related to a recent local extreme weather event
- Science notebooks
- Pencils

DIY Activity

- Styrofoam cooler
- Frozen water bottles
- Plastic 90 degree angled tube
- Small household fan
- Marker
- Serrated steak knife
- Tape (optional)
- Streamers (optional)

ENGAGE

Choose an extreme weather event that is most likely to occur where you live. This may be the same as one of the hazards addressed in the video, or something else, like hail. Show students a video or photo or recount a story from the same weather event. Explain that this lesson will focus on extreme weather events and engineering ways to reduce the impact from them.

EXPLORE

Ask students to recall the event introduced in the Engage portion of the lesson. Ask them, could this event have been prevented? How? Facilitate a short group discussion about ways the weather event might have been prevented. This discussion should lead students to realize that weather events are natural processes and humans cannot control them. Students may mention things they have done or could do to *lessen the impact of extreme weather events* during this conversation. Make a note if they do. These ideas will be useful examples in the second part of the activity.

Now that the group has established that humans can't eliminate natural hazards, explain that they will focus on solutions that help make these events less problematic. Divide the class into small groups or pairs. Within these groups students should use their science notebooks to create a list of things they know about, use, have seen, or think would work to lessen the impact of the extreme weather event discussed earlier.

EXPLAIN

Follow this exercise by sharing and holding a discussion as a group. Create a master table on the board that helps students recognize which of their ideas and examples fall into the category of feasible engineering solutions, and which fall into the category of trying to control the weather.

WATCH THE GENERATION GENIUS EXTREME WEATHER SOLUTIONS VIDEO AS A GROUP to see examples of solutions to a variety of extreme weather events. Then facilitate a conversation using the Discussion Questions.

ELABORATE

Use the DIY Activity to create your own classroom air conditioner just like Zoe's from the video. When it is up and running, allow students to observe it and think about the following question:

Does this air conditioner design reduce the impact of a heat wave? Yes or no? Why or why not? Students should lead, with your facilitation, a debate about the merits of this solution to the problem—what works? What doesn't? What is the evidence that it works or does not? How could the design be improved? Can you think of a better solution?

EVALUATE

Students should choose an extreme weather event and write a short paragraph about how cause and effect relationships can be identified both between the natural hazard and its impact, and also between an engineered solution and how it lessens the impact of the natural hazard on humans. For example, a tornado can cause a lot of damage and even loss of lives. However, walls made of materials designed to survive high winds can lead to (cause) humans to be protected and survive during tornado events.

EXTENSIONS

Identify an extreme weather event somewhere in the country or the rest of the world as you are studying this topic and follow the story. Look for evidence of engineered solutions that are lessening the impact of the natural hazard.