

Hurricane!

NCSCOS Requirement

Grade 2

COMPETENCY GOAL 2: The learner will build an understanding of the changes in weather.

Objectives

2.01 Describe weather by measurable quantities:

- Temperature.
- Wind direction.
- Wind speed.
- Precipitation.

2.02 Assess weather changes from day to day and over the seasons.

Grade 5

COMPETENCY GOAL 4: The learner will build an understanding of weather and climate.

Objectives

4.01 Analyze the water cycle:

- Evaporation.
- Condensation.
- Precipitation.
- Ground water.

4.02 Analyze the formation of clouds and their relation to weather systems.

4.03 Relate global atmospheric movement patterns to local weather.

4.04 Compile weather data to establish climate trends.

4.05 Evaluate oceans' effect on weather and climate.

Grades 2-5: Strands - Science as Inquiry; Science and Technology

Purpose: Students will become aware that human decisions about where they build houses and communities may be flawed and result in substantial damage and cost. Hurricanes are a fact of life along the eastern seaboard of the United States. After a 30 year lull, the rate of hurricane formation has increased and is expected to stay high for the next thirty years. Unfortunately, the quiet of the last 30 years encouraged people to build and build and BUILD along the coastline. These structures are constantly threatened by hurricanes. Better construction methods can help reduce the damage but who should pay?

The challenge: Build the tallest structure that will withstand a minor, moderate and major hurricane, each for 30 seconds.

Materials:

[Design Brief](#)

craft sticks

straws

pipe cleaners

clay

index cards

paper clips

tape

Testing Station

table fan

meter stick

small figures, such as lego people to be the happy homeowners

Specifications: students can use can only use these materials

10 craft sticks

5 pipe cleaners

10 straws

1 lump of clay

5 pieces of card stock or index cards

1 piece of tape as long as a forearm

10 paper clips

- The house must have a roof and four walls. They don't have to be solid but you must be able to see that they exist.

- The house must be large enough for our model people to stand in.
- Students must be able to bring the house to the testing station.

Procedure:

Students will work in teams of 3. Encourage them to try out their designs as they proceed. Create a testing station by marking off an area about 50 cm in front of a fan. Use the “low” setting to mimic a minor hurricane, “medium” to mimic a moderate hurricane and “high” to mimic a major one. If a design withstands the 3 30-second wind tests, encourage them to build it taller.

After each test, students will record the results on the back of the design brief. They should analyze and fix whatever problems arise until they have a house that will withstand all three tests.

Additional challenges (increase challenge for age group): Mimic a “storm surge” by placing the structures in a shallow pan of water for the wind test. Mimic rain by spraying water on the structure during the wind test.

Wrap up:

Discuss results with students. What strategies worked? What strategies did not work? How could the houses be made more secure? What else could be done to mitigate storm damage?

As a last discussion question, ask students whether they think additional development should be allowed on the coast if it means that the state’s taxpayers have to continue to pick up the tab for repairs. Also discuss the ongoing movement of beaches as a natural landform process.