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| **Lesson 1:** Introduction to PBL |

**Problem Statement:**

The city of **Bothell** needs help! In the event of a natural disaster (e.g., earthquake, fire, flood, land/mudslides, and storms), power goes out, methods of communication and transportation are often lost or damaged, medical care is needed, and basic survival resources need to be maintained and distributed to those in the disaster area. Often, resources are low or have been damaged/contaminated. Your goal is to aid the community in the event of a disaster, with each group in charge of an area within the city affected by the disaster. Groups will identify two problems that can occur within a city grid, then develop a physical solution (build/repair) or a conceptual solution to a problem in future lessons.

**Learning Objectives: Students will…**

* **Discuss** recent catastrophic events and the effects of these events on people, property, and people’s day-to-day routine..
* **Describe** how catastrophic events affect local populations.

**Lesson Standards (NGSS, CCSS, CTE):**

* **MS-ESS3-2.** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

**Materials:**

* Introduction presentation
* **Optional:**  News articles about recent catastrophic events
* Weather Events Sound bite files or videos (example: <http://goo.gl/Qi1dbS>)

**Lesson Preparation:**

* Create an introduction presentation (see “Disaster Strikes - Introduction” google slides presentation). This presentation should have the following components:
  + Brainstorm starter - What do you think a catastrophic event is?
  + Define - What is a catastrophic event?
  + Pictures/Videos - Different catastrophic events (local vs. global)
  + Personal Experiences - What are weather events that you have experienced? Were these events “catastrophic”?

**Time Required:**

**15-25 minutes**

**Grouping of students for instruction:**

* Students will be in their “anchor groups”, which is their assigned seating. These groups are based on prior performance in order to scaffold each group to have a strong leader, strong academic performer, and a social individual. Each group should have 3-4 individuals.

(TEACHER SPECIFIC) Brainstorm What Students Know/Need to Know from prior lessons:

* “Weather” can be described as the current condition of the atmosphere. As such, weather can change from day to day, or within a single day.
* Temperature, humidity, wind, cloudiness, and precipitation are all pieces in describing weather.
* Washington state experiences a variety of weather conditions from day to day and from location to location.

**LESSON PROCEDURE:**

* Students will brainstorm what they think a catastrophic event is. This can be done as a “talk and turn” with table partners, or a small group discussion. As a class, define what is required of a “catastrophic event”.
* Students will then view different catastrophic *weather* events, using pictures, videos, or news articles. After each event, provide students a discussion question or allow them to respond to the videos with things they noticed during the catastrophic event. Pick one or two of the catastrophic events where students can turn & talk.
  + **Lesson Notes:**  In our presentation, we used the "heavy precipitation" as the turn & talk time. Students compared/contrasted features in the video with Washington state. We also discussed after the "high winds" video. This discussion brought up engineering design flaws. Videos produced a high level of student engagement.
* Students will then discuss their experiences with catastrophic weather events and the effects of weather events (recent power outages, road blocks, etc.)
  + **Lesson Notes:**  In discussing personal experiences, students shared out experiences in Washington state, but also from other areas they had visited or lived as well as things they had seen in other videos.

**Accommodations:**

All presented materials will be given in an easily readable font. All presentation materials will be font 24 or higher. Students with vision issues will be seated near to the board or have printed materials. All materials have sentence starters/instructions.