Hydrology: Teacher Tips & Helpful Hints

N.C.S.S: ESS.8.2 Understand the hydrosphere including freshwater, estuarine, ocean systems.
ESS.8.3 Understand the reciprocal relationship between the hydrosphere and humans.

- The activity is broken up into three different parts:
  - **Part 1: Properties of Water** (ESS.8.2.1)
  - **Part 2: Water Filtration** (ESS.8.3.1, ESS.8.3.2)
  - **Part 3: Flinkers** (ESS.8.2.1, ESS.8.2.2)

Part 1: Properties of Water

- This activity focuses on cohesion, adhesion, surface tension, and capillary action.
- Students will need vegetable oil for part 1.
- For part 1, students have a penny, pipette, and napkin for each liquid.
- For part 2, the water will crawl until all cups are at an equal level.
- There is a ***Properties of Water: Student Activity Sheet*** available.
- There is a ***Properties of Water: Google Slide Deck*** available.

Part 2: Water Filtration

- Students will use the filtered water from part 1 for part 2.
- Demonstrate how to place the filters into the cup.
- Part 3 can be used as a hook for water filtration in the ground.
- Part 4 can be used as a hook for the water treatment process.
- There is a ***Water Filtration: Student Activity Sheet*** available.
- There is a ***Water Filtration: Google Slide Deck*** available.

Part 3: Flinkers

- This activity focuses on density.
- Students will need salt.
- Part 1 can also be used to teach buoyancy.
- For part 3 and 4, demonstrate to students how to pour gently down the side of the cup.
- Part 3 can be used as a hook to teach about estuaries.
- Parts 3 and 4 show two concepts, salinity and temperature, that help drive ocean currents.
- An extension for part 4 is to have students place more salt into the ice-cold water. When they do this and then pour gently, they will see that the saltiest, coldest water goes to the bottom, creating three layers in the cup.
- There is a ***Flinkers: Student Activity Sheet*** available.
- There is a ***Flinkers: Google Slide Deck*** available.

N.C.S.S Clarifying Objectives

- ESS.8.2.1 Use models to explain the structure of the hydrosphere including: water distribution on earth, local river basins, estuaries, and water availability.
- ESS.8.2.2 Use models to explain how temperature and salinity drive major ocean currents and how these currents impact climate, ecosystems, and the distribution of nutrients, minerals, dissolved gases, and life forms.
- ESS.8.3.1 Analyze and interpret data to predict the safety and potability of water supplies in North Carolina based on physical and biological factors, including: temperature, dissolved oxygen, pH, nitrates and phosphates, turbidity, and bio-indicators.
- ESS.8.3.2 Engage in argument from evidence to explain that the good health of humans and the environment requires: monitoring of the hydrosphere, water quality standards, methods of water treatment, maintaining safe water quality, and stewardship.