Education and Research: Testing Hypotheses

Don't Drink the Water

Jill King – EARTH Satellite 2016 - Beaufort

Summary

Using Drone technology, students will identify the path a drop of water travels through NC water basins. They will explain the effects of water pollution over time and develop strategies to decrease pollution in the river systems.

Key Concepts

NGSS Standards: (see checklist)

MS-ETS1 Engineering Design

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.

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

ESS2.C: The Roles of Water in Earth's Surface Processes

North Carolina Essential Standards for Science:

8.E.1 - Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.

8.E.1.1 - Explain the structure of the hydrosphere including:

• Local river basin and water availability

8.E.1.3 - 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 • Bio-indicators

Objectives

Include clear, measurable statements of what students will be able to do, such as:

- ***Observe*** changes to the rivers over time.
- ***Identify rivers and river basins in NC***
- ***Demonstrate*** knowledge of water travels and ability to read line graphs
- ***Research effects of pollution on freshwater systems***
- ***Communicate*** results through informal assessment

Materials

- Drone Technology Data
- Printed maps of North Carolina River Basins

Procedure

1. Students will identify and name major rivers in North Carolina.
2. Students will trace the path of each river to its origin and color with colored pencils.
3. Students will determine which water basin a drop of water would travel. Describe the areas through which this water passes
4. Students will use historical data from Google Earth to measure changes in rivers over time.
5. Students will use water quality data from NC Ferry System to observe changes over time in NC rivers.
6. Students will research the effects of pollution on freshwater systems.
7. Students will generate solutions for improving water quality in NC Rivers.

Assessment

- **Students will produce a colored map to demonstrate river basins.**
- Assessment should be directly related to the lesson objectives will include questioning strategies related to river basins.
- Students will develop solutions to improve water quality.
- ***Assessment rubrics: 1-4 students rate their understanding of river basins***

Additional Resources

Please list any Web sites, books, publications, or other resources that would be helpful for teachers or students preparing for this lesson.

Ferrymon.com
Google Earth