River Exploration

ESSENTIAL QUESTION: How can you determine the health of a river system?

OBJECTIVES: Students will
- Collect data from water chemistry analysis and biodiversity count of vertebrates on the Hillsborough River
- Explain how water chemistry is an indicator of the health of a river

STANDARDS:
- SC.6.N.1.2: Explain why scientific investigations should be replicable.
- SC.6.N.1.4: Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.

SAFETY:	**MATERIALS NEEDED:**
- Lifejackets secured and worn at all times - Students remain seated - Space students to balance boat - One student entering boat at a time	- Dissolved oxygen kit - pH strips - Phosphate/Nitrate strips - Thermometer (2) - Secchi Disk - Investigation sheet - Bird ID water testing graphics

ENGAGE: Why is the health of the Hillsborough River important to our community? Discuss with your bench mates.

Vocabulary:
- **Dissolved Oxygen:**
- pH:
- Phosphate:
- Nitrate:
- **Ecosystem:** a biological community of interacting organisms with their physical environment

EXPLORE:
- Students complete river investigation data sheet (one student can be in charge of recording data)
- One bench of students can conduct each of the following water quality tests with teacher guidance (pH, nitrate, dissolved oxygen, phosphate).
- Test air and water temperature with thermometers
- Use Secchi disk to check visibility and depth

EVALUATE:
- Students can explain why or why not the Hillsborough River is healthy based on their observations and data collection of water quality tests and additional tests.

EXTENSIONS:
- Personal stories
- History/facts of the Hillsborough river and surrounding rivers
- Discussing water sources in other parts of the world

H.O.T. QUESTIONS:
- would the pH level affect biotic factors?
- How does the depth of the river affect the wading birds?
- What are some adaptations riverine animals need to survive?
- Why are multiple samples necessary when collecting data?