

Explore the St. Johns River Lesson Plan

Students learn about the St. Johns River and practice for the FCAT.

Lesson Summary: Students learn about the history, hydrology, and ecology of the St. Johns River while practicing for the FCAT. They examine elevation and flow data from one or two stations on the St. Johns in Orange County, graph it, and use it to look for relationships between elevation and flow. They read some background information about the St. Johns River and answer FCAT-type questions in reading, writing, and math.

Grade Level: Middle (Grades 6th—8th)

Time Allotted: 3 periods of about 50 minutes each

Performance Objectives

References are to the Next Generation Sunshine State Standards (2007).

Math

MA.7.S.6.1 Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.

Big Idea 3: Analyze and summarize data sets.

Language Arts

LA.7.2.2.2 The student will use information from the text to state the main idea and/or provide relevant details.

LA.7.4.2.2 The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information

LA.7.3.1 The student will use prewriting strategies to generate ideas and formulate a plan.

LA.7.4.2 The student develops and demonstrates expository writing that provides information related to real-world tasks.

LA.7.4.3 The student develops and demonstrates persuasive writing that is used for the purpose of influencing the reader.

LA.7.6.2 The student uses a systematic process for the collection, processing, and presentation of information.

Prior Knowledge

Some familiarity with data and graphing.

Topic Overview

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The St. Johns River is unique among Florida rivers in that it flows south to north, emptying into the Atlantic Ocean near Jacksonville. This great river originates in an extensive marsh system in southeast Florida. Tidally influenced for much of its length, it has always been an important source for commerce, from the time steamships used it to transport goods until today. Water quality in the St. Johns has deteriorated as its watershed has become more populated and its filtering marshes have been drained to make way for agriculture. Restoration efforts by the St. Johns River Watershed and Army Corps of Engineers, and advocacy by groups like the St. Johns Riverkeeper have been instrumental in improving water quality and ecosystem health.

Key Vocabulary

Brackish

Slightly salty, as in a mix of fresh water and sea water that occurs in coastal bays and rivers.

Elevation

In relation to rivers, this is a measure of the level of the water above sea level. Rivers are classified in various flood stages as their elevation rises.

Salinity

The relative concentration of salts, usually sodium chloride, in a given water sample.

Tidal

Influenced by the ebb and flow of ocean water, as are many coastal rivers and streams.

Materials

- Computers with internet access
- Graph paper

Resources

Belleville, Bill. 2001. *River of Lakes: A Journey on Florida's St. Johns River*. Athens, GA: University of Georgia Press.

Cabell, James Branch, and Alfred Jackson Hanna. 1943. *The St. Johns; A Parade of Diversities (Rivers of America series)*. Illustrated by Doris Lee. New York, Toronto: Farrar & Rinehart.

McCarthy, Kevin. 2004. *St. Johns River Guidebook*. Sarasota: Pineapple Press.

[St. Johns Riverkeeper](#) (website). Accessed June 2011.

[The River Returns: Stories of the Great St. Johns](#) (website). Accessed June 2011.

[Tour & History of the St. Johns River](#) (web page). Accessed June 2011

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Procedure

Engage/Elicit

Ask students what it means to go “up the stream” but “down the map.” Have each of them write a paragraph attempting to explain what this might mean, and where in Florida it might occur.

Form students into groups of three or four and have them discuss their explanations, prior to reading the online materials.

Explore & Explain

Direct students to read and explore the ***Tour & History of the St. Johns River*** resource, produced by the St. Johns River Water Management District. Information from the site will be covered in the FCAT-friendly questions in the handout. Have students write another paragraph explaining the meaning of upstream/down map after they have read about the St. Johns.

Extension #1

Direct students to the Orange County Water Atlas **Data Download and Graphing** tool; they will use it to graph elevation and flow data for the river. There are two stations on the St. Johns in Orange County with water flow data – one near Christmas and one near Cocoa. Have students download the data for one of those stations as follows by making the following selections:

- Step 1: Surface Water Hydrology
- Step 2: Water Atlas, Water Body Name, Date Range
- Step 3: Orange County Water Atlas, St. Johns River (Orange), Last 10 years
- Step 4: St. Johns River near Christmas –or– St. Johns River near Cocoa; selected station data
- Step 5: Graph or Download Data

(Sample graphs are at the end of the Lesson Plan)

Students may use the tool to graph the elevation data and flow data, or download it and manipulate it and make their own graphs using spreadsheet software such as Microsoft Excel (if your school has it) or LibreOffice Calc (free).

Ask the students if they believe there is a relationship between elevation and flow, and how they might find out.

Hint 1 – Students can download the data to a spreadsheet, and use it to look more closely for relationships at specific times where both data sets overlap.

Hint 2 – Students can compare the graphs of elevation and flow for the same dates.

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Extension 2 (optional)

Beginning in the 1900s, great swaths of the St. Johns River's floodplain were drained to make way for agricultural and urban uses, eventually claiming more than 70 percent of the marshland that served as a filter for water entering the river system. This also has occurred in many other places in Florida.

Have students investigate the benefits of marshes and the process by which they improve environmental quality. Different students may choose to explore different functions of the marsh ecosystem, and report what they have learned to the class. Benefits of marshes that may provide topics: surface water filtration, storage of floodwater, benefits to wildlife, prevention of erosion, ability to sequester carbon, etc. Students may wish to create a series of maps showing the extent and location of marshes at different points in the St. Johns River's history. They may wish to compare and contrast freshwater and tidal marshes, or visit a marsh area and prepare an inventory of the species they find there.

Exchange/Evaluate

1. Examine their first and second paragraphs about upstream and down map.
2. Observe, assist and evaluate as they work with the data and graphs in the first extension.
3. Grade their research method and writing on the optional second extension.
4. Have them do the FCAT-friendly reading, writing and math questions below.

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