

Explore the St Johns River Lesson Plan

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

Lesson Summary:

- Students will read a selection introducing them to the flow and geography of the St. Johns River.
- Students will respond to FCAT-type questions or prompts in Reading, Writing, and Math.

Time Allotted: One instructional period for the Website Exploration, one period for the FCAT-Friendly Activities.

Grade Level: Middle

Performance Objectives

Language Arts

LA.6.1.6.3 The student will] Use context clues to determine meanings of unfamiliar words.

LA.6.1.7.3 The student will] Determine the main idea or essential message in grade-level text through inferring, paraphrasing, summarizing, and identifying relevant details.

LA.6.4.3.1 The student will] write persuasive text (e.g., advertisement, speech, essay, public service announcement) that establishes and develops a controlling idea, using appropriate supporting arguments and detailed evidence.

LA.6.4.3.2 The student will] include persuasive techniques (e.g., word choice, repetition, emotional appeal, hyperbole, appeal to authority, celebrity endorsement).

Math

MA.8.A.6.1 Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.

MA.7.A.3.2 Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.

MA.D.1.3.1 Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems. (MA.7.G.4.4) The student describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.

MA.6.S.6.1 Determine the measures of central tendency (mean, median, and mode) and variability (range) for a given set of data.

MA.6.S.6.2 Select and analyze the measures of central tendency or variability to represent, describe, analyze and/or summarize a data set for the purposes of answering questions appropriately.

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Water Atlas Curriculum Lesson 25 – FCAT Supplement

Topic Summary: The St. Johns River is a 310-mile waterway that begins as tiny streams and slow-moving swampy waters in Brevard and Indian River Counties. These waters flow northward and gradually become a single distinct river. As the river meanders further north, its fresh waters mix with salt water flowing in from the ocean. The St. Johns River ends its winding journey in Duval County as its now-brackish waters empty into the Atlantic Ocean. The St. Johns River is very slow-flowing due to the minimal changes in elevation along its path. The volume of water flowing through the St. Johns is measured in cubic feet per second. (One cubic foot = 7.48 gallons.) Prolonged droughts can decrease a river's flow since rainfall affects the amount of water in the river.

Procedure:

1. Preview this FCAT-Friendly activity. Print copies for your students.
2. Preview the Orange County Water Atlas.
 - a. Use the Water Resources Search to find the St. Johns River, and review the main (overview) page.
 - b. Click on the tab for water level and flow. Check out the two-year graph and use the links to review the "Learn More" pages.
 - c. To download flow or water level data, click on a "Download this Data" link and follow the instructions to save the data to an Excel spreadsheet file on your computer. Using downloaded data, you can compare recent flow and water level data with the data in the FCAT activity below.
 - d. You can use the same procedure to download water quality and rainfall data, using the data download tool.
3. Lead your students through the exploration above, or print instructions 2a–2d as a student guide for independent or small group exploration.
4. Using the information learned in the FCAT practice and the Water Atlas, lead a class discussion about the unique nature of the St. Johns River.
5. Ask students to download rainfall and water level data to answer the question, "Is there a relationship between rainfall and water level?"

Materials:

- Computer with internet access

Key Vocabulary:

Watershed

An area of land that collects, stores, and transports precipitation (rainfall and snow melt). It may include any or all of the following: streams, lakes, reservoirs, aquifers, estuaries, and wetlands. Another name for a watershed is a basin.

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Upstream

In the opposite direction of natural water flow, for example, from the bottom of a hill to the top, or from the mouth of a river to its source.

Downstream

In the same direction as natural water flow, for example, from the top of a hill to the bottom, or from the source of a river to its mouth.

Answer Key:

Reading

1. c. LA.A.2.3.1, Bloom's Taxonomy Level One
2. a. LA.A.1.3.2, Bloom's Taxonomy Level One
3. d. LA.A.2.3.1, Bloom's Taxonomy Level Two
4. Use the rubric for Short Response Reading Questions – 2 points
LA.A.2.3.1, Bloom's Taxonomy Level One

Example of a Top-Score Response:

Rainfall and salinity are related to each other because during a drought, there's less fresh rainwater available to dilute the brackish waters of the St. Johns River. This increases salinity. When plenty of rain falls, the brackish waters become more diluted, so salinity decreases.

Writing

For All – Use the rubric for Florida Writes! – 6 points

1. LA.8.4.2
2. LA.8.4.2
3. LA.8.4.2
4. LA.8.4.2

Math

1. b. MA.6.A.1.3
2. a. MA.6.A.5.1, MA.7.A.5.1
3. b. MA.7.A.3.1, MA.8.A.6.1
4. MA.6.S.6.a, MA.7.S.6.2

Use the rubric for Short Response Math Questions – 2 points

Example of a Top-Score Response:

2003 had slightly higher average water levels at 3.67 vs. 3.46 for 2002.

Add the 12 monthly values for each year, then divide by 12 to get these answers.

5. MA.6.A.3.1, M.A.8.1.1

Use the rubric for Extended Response Math Questions – 4 points

Example of a Top-Score Response:

This graph shows that the volume of water flowing through the St. Johns River in Seminole County generally increases during the late summer, peaking in September. If only one year's data were included, the reader might think that the changes during the summer were unusual

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or special. By including both years, the reader can see that this change is probably a regular annual shift in flow.

Author: Kelley G. Weitzel, created for the Seminole County Water Atlas. Adapted 2011 for the Orange County Water Atlas.