

Content Area Lesson Ideas

Math:

- Use measurement data or pH testing data to compare numbers with decimals. **Math 4.3a, c**
- Use measurement wheels in Dan Daniels Park (available from Danville Parks and Recreation). **Math 4.7a**
- Measurement conversion: Calculate how long an otter length is (non-standard measure) and convert to feet/inches and meters/centimeters. This can also be done for levels of flood stages, the distance on the Dan River the otters traveled (miles to feet, kilometers to meters, etc.). **Math 4.7a, b**
- Research the liquid volume and the speed of flow of the Dan River when it is at normal levels and when it is flooding. **Math 4.8 a, b**
- Calculate flow rate (cubic feet/second) of the Dan River; compare a gallon of water to a basketball. **Math 4.8 a,b**
- Track elapsed time during the story using a timeline or chart. **Math 4.9**
- Geometry: perpendicular and parallel lines—the Dan River bridges. **Math 4.10b**
- Study how math is used in predicting and measuring the weather. **Math 4.9, 4.13, 4.14**
- Graph the possible water level of the Dan River as it flooded (can use actual flood data from previous floods). **Math 4.14**
- Use various types of graphs (bar, line, etc.) to chart information or events in the story (e.g., a line graph with water level gauge readings; usgs.gov—NOA site that has historic flood data). **Math 4.14**

Science:

- What are the different types of otters? Compare and contrast North American River Otters and Sea Otters. **Science 4.5a**
- What adaptations do river otters have that make rivers and the land nearby their ideal habitat? (webbed feet, thick coat, ability to hold breath under water for long periods of time, etc.) **Science 4.5a**
- Create diagrams, models, or mobiles to illustrate various food webs or chains associated with the Dan River. **Science 4.5b, c**
- Participate in the *Catfish in the Classroom* program through Danville Parks and Recreation. **Science 4.5b, f**
- Who are producers, consumers, and decomposers in the Dan River ecosystem? **Science 4.5c, e**
- Weather—What sort of weather conditions lead to river flooding? How is flash flooding different from other types? How is weather measured? (Connect to math) **Science 4.6a, b, c**

- Study the water quality of the Dan River: Water temperature, dissolved oxygen and pH, how they affect river life. Conduct testing at various points along the Dan River (can also connect with math). How does flooding affect dissolved oxygen and pH levels? (Danville Parks and Recreation or the Danville Science Center may be able to assist with this testing.) **Science 4.9a**
- What is the water cycle and why is this important to the Dan River? **Science 4.9a**
- Research the habitat of river otters, beavers, great blue herons, and other wildlife dependent on the Dan River. **Science 4.5d, 4.9a, b**
- Describe the various ecosystems in and along the Dan River. (Dan River Basin Association has materials and possible guest speakers) **Science 4.5b, c, 4.9a, b, d**
- What are human influences on rivers? How has the Dan River been influenced by humans in good and bad ways? (fabric dyes, coal ash spill, riverwalk, recreation, fishing) **Science 4.5f, 4.9a, b**
- How does flooding affect a river, its banks, the surrounding land, the plants and trees, and wildlife? (sediment, erosion, displacement of wildlife) **Science 4.6a, 4.9a, b, d**
- Research ways ordinary people can care for the Dan River. What can children do? Create a service project that would help the Dan River. **Science 4.5f, 4.9a**
- Research the ways in which the Dan River is an important water resource (drinking water, irrigation source, recreation, habitat for fish, plants, and other wildlife). **Science 4.4d, 4.5b, c, d, f, 4.9a, b, d**

Virginia Studies

- Collect various types of maps of Danville and the Dan River, including historical maps. Study characteristics of maps (scale, compass rose, map key, etc.). **Virginia Studies 1a, c, i**
- Study the Dan River Atlas. What is an atlas? What sorts of information could you find in this atlas? **Virginia Studies 1a, i, 2b,**
- What is the difference between a river and a canal? When and why were canals built along the Dan River? **Virginia Studies 1a, d, g, i**
- How was the City of Danville founded? How was this connected to the Dan River? **Virginia Studies 1a, b, f, i**
- How did the Dan River get its name? **Virginia Studies 1a, d, g**
- How did the tobacco and textile industries affect Danville? How did they affect the Dan River? **Virginia Studies 1a, b, d, e, g, h, i, 9a, 10b, c**
- Study the batteau. Create models of this type of boat. How was the Dan River modified to make river transportation easier? **Virginia Studies 1a, b, i**
- Make a photo collage of historic floods of the Dan River. **Virginia Studies 1a, c, i**
- Explore the beginning and the end of the Dan River. What Virginia (and North Carolina) regions does it travel through (Mountain, Piedmont)? **Virginia Studies 2b**

- What Native Americans lived near the Dan River? What happened to them? (The Monaccan Tribe...what might you find if you did an archeological dig near Danville? What would the artifacts of this tribe look like?) **Virginia Studies 2e, f, g**
- How was Danville involved in the Civil War? (The Dan River transported materials and supplies for the war; Danville was the capital city of the Confederacy for about a week at the end of the war.) **Virginia Studies 7a, b**

Language Arts:

- Point of view: Discuss and write scenes from differing points of view (Momma, the humans, the other animal characters). **ELA 4.1b, 4.2d, 4.5h, 4.7**
- Vocabulary: Make a dictionary of all the vocabulary words in the story; teach guide words, alphabetical order. **ELA 4.4a, c, e**
- Utilize the glossary on the *Dan River Twins* website. **ELA 4.4c**
- Grammar: prefixes/suffixes **ELA 4.4b**
- Verbs—List all the action verbs in the story; discuss importance of verbs in effective writing. **ELA 4.4d, 4.5b**
- Fiction vs. non-fiction (story and non-fiction Fun Facts) **ELA 4.5, 4.6**
- Comparison/contrast: fiction vs. non-fiction, different animals in the story, personality of the characters, changes in the characters over time, setting at various points along the Dan River. **ELA 4.5f, h, 4.6 f**
- Explore author’s purpose (the story—to entertain; non-fiction elements—to inform) **ELA 4.5a, 4.6c**
- Graphic organizers: compare/contrast, sequencing, story elements, character traits **ELA 4.5, 4.6 (varies, depending on graphic organizer)**
- Explore different text features in the non-fiction Fun Facts **ELA 4.6a**
- Functional texts: Collect local flyers, maps to read and interpret **ELA 4.6a, 4.9b**
- Write a persuasive letter (to the local newspaper, city council, etc.) about preserving the health of the Dan River **ELA 4.7, 4.8**
- Write friendly letter to a friend or family member about the Dan River **ELA 4.7, 4.8**
- Journal (see separate section of Teaching Guide with questions in journal format) **ELA 4.5h, i, j, k, 4.7**
- Write the next chapter the *Dan River Twins* saga. **ELA 4.7, 4.8**

Other Ideas:

- Field trip: Visit all the places in the story that the otters traveled. Go on your own, or contact the Danville Parks and Recreation Department for additional field trip options and ideas.

- Other field trip ideas: the Danville Water Treatment Plant (will also do classroom visits), the Danville Science Museum (water quality or Dan River wildlife focus)
- Invite speakers from the Danville Historical Society, the Danville Foundation, the Danville Science Center, or the Dan River Basin Association to come to your classroom.
- Dan River Stewards: Students develop a service project related to the Dan River.
- Students work with local community groups to advocate for the Dan River (Dan River Basin Association, Danville Foundation, Danville Science Center, etc.)