NATIONAL GEOGRAPHIC

RESOURCE LIBRARY
ACTIVITY : 2 HRS

Rivers and the Gabčíkovo-Nagymaros Project

Students read about a project to dam the Danube River for hydroelectric power and flood control, and the conflicts that surround the project. Then students take on stakeholder roles and imagine they will present their point of view about how the conflict can be solved to the International Court of Justice. They present to their classmates.

GRADES

6 - 8

SUBJECTS

English Language Arts, Geography, Human Geography, Physical Geography

CONTENTS

5 PDFs, 1 Link

OVERVIEW

Students read about a project to dam the Danube River for hydroelectric power and flood control, and the conflicts that surround the project. Then students take on stakeholder roles and imagine they will present their point of view about how the conflict can be solved to the International Court of Justice. They present to their classmates.

For the complete activity with media resources, visit:
http://www.nationalgeographic.org/activity/rivers-and-the-gabcikovo-nagymaros-project/

DIRECTIONS

1. Discuss the importance of rivers.

Display the Physical Map of Europe. Have students identify physical features they observe. Ask: *Why might rivers be important physical features? Do you think a river would make a good country border? Why or why not?* As a class, brainstorm possible reasons for rivers to be a source of conflict between nations. List students' ideas on the board. Then use the list to discuss positive and negative aspects of sharing resources like rivers.

2. Have students read about a project to dam the Danube River.

Distribute copies of the handout The Gabčíkovo-Nagymaros Project (pronunciation: gob-CHET-ko-vo NAHJ-mo-ra) and the maps The Danube River Including the Gabčíkovo Dam and Major Drainage Basins in Europe to each student. Have students read the passage independently or in pairs, taking note of new vocabulary words and/or any questions they have based on the reading. As they read, students should refer to the maps to identify the locations, borders, and drainage basins mentioned. Project the provided MapMaker Interactive map of the Gabčíkovo Dam at the front of the room and zoom in to locations not shown on the hard copy map. Rotate around the room, providing support to students who wrote questions or identified sections or terms they did not understand.

3. Create a timeline of events.

Provide students with a visual of the chronology of the dam project conflict. Draw a timeline on the board and ask students to help complete it with a title, dates, events in the dam project's history.

4. Have small groups discuss the reading and answer questions.

Divide the class into small groups of approximately four students. Distribute one copy of the worksheet Solving the Gabčíkovo-Nagymaros Conflict to each group. Have each group reread the passage together and complete Part 1 of the worksheet. Review the answers. Then ask:

- *Where is the Danube River in relation to the country borders in the area?*
- *Based on the borders, who should control the river? Why?*
- *Why would countries downstream from the dam care about the project? Countries upstream? Should they be allowed to help make decisions about the dams? Explain.*

5. Have groups take on stakeholder roles.

Assign each group only one of the questions in Part 2 of the worksheet. Ask students to be prepared to present their ideas to the class. Provide support, as needed. If possible, have students conduct additional research on the dam and its impacts before they present their answers to the rest of the class, including creating a chart of positive versus negative effects on the aspect of the dam that they explored.

6. Have groups present their ideas to the class.

Invite a volunteer from each group to present their group's ideas to the class, supporting them with facts from the reading. Allow time for classmates to ask the presenting group questions and for the presenting group to defend and/or debate their position. If time allows, encourage groups to make posters to illustrate their positions.

Modification

Have students use the Cornell Note Taking method with the reading passage. Click here to find and download a blank Cornell Note Taking worksheet.

Modification

If possible, start the activity by discussing local water issues and usage, so students can make connections between your local area and the area of the Danube River Basin.

Modification

If students need additional background information on rivers, read aloud the NG Education rivers encyclopedic entry, pp. 1-3, as a class.

Informal Assessment

Write the guiding question on the board and have students write 2-3 paragraphs in response, using any of the information on positive versus negative effects from the class discussion in Step 6 to support their viewpoints.

Extending the Learning

Use the BBC video "Glacier Melt Changes Italian Border," which describes how the border between Italy and Switzerland is being redrawn due to climate change, to introduce and discuss the concept of a moveable border.

OBJECTIVES

Subjects & Disciplines

- English Language Arts
  Geography
  - Human Geography
  - Physical Geography

Learning Objectives

Students will:

- describe a case study of a dam and explain its impacts on several countries along the Danube River
- analyze environmental, political, and other issues that surround the building and maintenance of dams on shared rivers

Teaching Approach

- Learning-for-use

Teaching Methods

- Brainstorming
- Cooperative learning
- Discussions
- Reading
- Visual instruction

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
  - Learning and Innovation Skills
    - Communication and Collaboration
    - Critical Thinking and Problem Solving
- Critical Thinking Skills
  - Analyzing
  - Understanding
- Geographic Skills
  - Acquiring Geographic Information
  - Analyzing Geographic Information
  - Answering Geographic Questions

National Standards, Principles, and Practices

NATIONAL COUNCIL FOR SOCIAL STUDIES CURRICULUM STANDARDS

• **Theme 2:**
Time, Continuity, and Change
• **Theme 3:**
People, Places, and Environments
• **Theme 8:**
Science, Technology, and Society

NATIONAL GEOGRAPHY STANDARDS

• **Standard 1:**
How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information
• **Standard 13:**

How the forces of cooperation and conflict among people influence the division and control of Earth's surface

- **Standard 14:**

How human actions modify the physical environment

ISTE STANDARDS FOR STUDENTS (ISTE STANDARDS*S)

- **Standard 2:**

Communication and Collaboration

- **Standard 4:**

Critical Thinking, Problem Solving, and Decision Making

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Pencils
- Pens

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction
- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

Rivers have long been sources of transportation, food, and water. Today, the world's rivers contain a vast network of levees, dams, and locks to control water and harness its potential. Students' misconceptions often include thinking that all rivers flow from the north to the south. In fact, river flow is entirely dependent upon the gradient of the riverbed. Thus, rivers move from high (upstream) to low (downstream). Rivers are dynamic, or constantly changing. The flow of a river, and the amount of water in a river, changes. The form or shape of a river also changes. Rivers shift their course naturally, but sometimes people deliberately change the shape or course of a river in order to prevent flooding or harness hydroelectric power, such as on the Danube River. The Danube River is the second longest river in Europe after the Volga River in Russia. Its source lies in the Black Forest mountains of western Germany; it flows for approximately 2,850 kilometers (1,770 miles) to its mouth at the Black Sea. The Danube has approximately 300 tributaries. The river basin covers about 47,000 square kilometers (18,000 square miles). Most of the major river basins of Europe exist within more than one country. Along its course, the Danube passes through nine countries: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Bulgaria, Romania, and Ukraine. The Danube River has had a critical role in the history of Europe, as it has been used as a boundary, a trade route, a source of hydroelectric power, a source of residential water, and a major economic influence.

Slovakia, or the Slovak Republic, is a country in central Europe. It is landlocked, or surrounded only by land and bordered by Poland to the north, Ukraine to the east, Hungary to the south, and Austria to the southwest. What is now Slovakia was ruled by the country of Hungary from the 11th century until the end of World War I in 1918. Slovakia drains mainly southward into the Danube River system. Hungary, or the Republic of Hungary, is also a landlocked country in central Europe. Hungary shares a border to the north with Slovakia, to the northeast with Ukraine, to the east with Romania, and to the south with Serbia and Croatia, to the southwest with Slovenia, and to the west with Austria. Hungary lies within the drainage basin of the Danube River, which is the longest river in Hungary. In 1977, the (then) Czechoslovak and Hungarian governments signed an agreement to build a hydroelectric dam on the Danube southeast of Bratislava at Gabčíkovo and Nagymaros. The project called for the diversion of the Danube and the construction of dams to be built by each of the governments. In 1989, Hungary withdrew from the Nagymaros project because of environmental and other concerns. Environmental and human impacts of dams include negative effects on rivers systems, such as: holding back sediments leading to downstream erosion and loss of soil nutrients; hydrological effects such as changes to overall volume and water quality; changes to flooding cycles, which affects plants and animals; and displaced populations. Slovakia completed the project on its own, which led to a dispute between the two countries that persisted into the 21st century.

Prior Knowledge

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Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
border	*noun*	natural or artificial line separating two pieces of land.
canal	*noun*	artificial waterway.
capital	*noun*	city where a region's government is located.
coast	*noun*	edge of land along the sea or other large body of water.
conflict	*noun*	a disagreement or fight, usually over ideas or procedures.
country	*noun*	geographic territory with a distinct name, flag, population, boundaries, and government.
crop	*noun*	agricultural produce.
dam	*noun*	structure built across a river or other waterway to control the flow of water.
downstream	*noun*	in the direction of a flow, toward its end.
drainage basin	*noun*	an entire river system or an area drained by a river and its tributaries. Also called a watershed.
economy	*noun*	system of production, distribution, and consumption of goods and services.
ecosystem	*noun*	community and interactions of living and nonliving things in an area.
environment	*noun*	conditions that surround and influence an organism or community.
flood	*noun*	overflow of a body of water onto land.
flood plain	*noun*	flat area alongside a stream or river that is subject to flooding.
freshwater	*noun*	water that is not salty.
habitat	*noun*	environment where an organism lives throughout the year or for shorter periods of time.
hydroelectric power	*noun*	usable energy generated by moving water converted to electricity.
location	*noun*	position of a particular point on the surface of the Earth.

Term	Part of Speech	Definition
nation	*noun*	political unit made of people who share a common territory.
physical features	*noun*	naturally occurring geographic characteristics.
pollution	*noun*	introduction of harmful materials into the environment.
region	*noun*	any area on Earth with one or more common characteristics. Regions are the basic units of geography.
reservoir	*noun*	natural or man-made lake.
river	*noun*	large stream of flowing fresh water.
silt	*noun*	small sediment particles.
transportation	*noun*	movement of people or goods from one place to another.
tributary	*noun*	stream that feeds, or flows, into a larger stream.
upstream	*adjective*	toward an elevated part of a flow of fluid, or place where the fluid passed earlier.
wetland	*noun*	area of land covered by shallow water or saturated by water.

For Further Exploration

Articles & Profiles

- National Geographic Education: Europe—Physical Geography
- National Geographic Education: Europe—Resources

Maps

- NG MapMaker 1-Page Map: Europe
- Europe MapMaker Kit
- NG MapMaker Interactive: Europe

Websites

- National Geographic Education: National Teacher Leadership Academy (NTLA)

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