

CHAPTER 12

How Can Rivers Be Managed to **Decrease Conflict** Between Groups?

National Geographic Society

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HOW CAN RIVERS BE MANAGED TO DECREASE CONFLICT BETWEEN GROUPS?

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C3 Disciplinary Focus Geography	C3 Inquiry Focus Using disciplinary concepts to evaluate evidence and construct arguments	Content Topic Conflict over river resources
<p>C3 Focus Indicators</p> <p>D1: Explain how the relationship between supporting questions and compelling questions is mutually reinforcing. (D1.4.6-8)</p> <p>D2: Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions, and changes in their environmental characteristics. (D2.Geo.2.6-8)</p> <p>D3: Evaluate the credibility of a source by determining its relevance and intended use. (D3.2.6-8)</p> <p>D4: Construct arguments using claims and evidence from multiple sources, while acknowledging the strengths and limitations of the arguments. (D4.1.6-8)</p> <p><i>This lesson can also be adapted for use in Grades 9-12 to achieve the comparable C3 objectives for that grade level.</i></p>		
Grade Level 6–8 and higher	Resources Resources cited in chapter; National Geographic Education website	Time Required 2–4 class periods

Introduction and Connections to the C3 Framework

Geography is defined as a study of places and the relationships between people and their environments. Geography seeks to understand where things are found, why they are there, and how they develop and change over time. Yet equipping today's students with the skills, knowledge, and perspectives they need to be responsible and effective citizens calls for educational experiences that go beyond “knowing” geography to “doing” geography.

The goal of teaching geography is to equip students with the knowledge, skills, and perspectives to “do” geography. Reaching this goal requires that students learn how to use geographic thinking and information to make well-reasoned decisions and to solve personal and community problems. Many valuable applications of K-12 geography education lie beyond the classroom walls. Geographic education enables students to use geographic perspectives, knowledge, and skills to engage in ethical action with regard to self, other people, other species, and Earth's diverse cultures and natural environments. Geography connects students to world events, problems, and decisions throughout their lives.*

— **Geography For Life: National Geography Standards, Second Edition**

The ideas presented in this chapter provide teachers with tools to support sound geographic education—encompassing students' understanding of the complex world and their roles in it. Through a scenario involving conflict over rights to river resources, students frame supporting questions from a teacher-generated compelling question. Then, they analyze the key issues and stakeholder perspectives impacting the critical decisions in a conflict and formulate conclusions that they share and evaluate with their peers. Finally, they identify a current issue related to a conflict over rivers and follow an inquiry path that culminates in students explaining the issue and presenting their conclusions.

This chapter offers two options regarding content for investigation. You can use a case or topic that relates to your community or curriculum or you can use the case in “Conflict on the Danube,” a lesson available in the National Geographic unit, *Beyond Borders* (see pages 126–127), for which further information is available on the National Geographic Education website. The overall theme of this teacher-tested unit is using maps to understand borders and their impacts in Europe. The materials are designed to help middle school students use maps to think about how borders intersect physical and human geographical features and how those intersections can lead to cooperation and/or conflict. They can also be used, with suitable modifications, at the high school level.

* S. Heffron and R. Downs, eds., *Geography for Life: National Geography Standards, Second Edition* (Washington, DC: Geography Education National Implementation Project, 2012). The text quoted is on the copyright page of the book.

Inquiry Arc

Dimension 1: Developing Questions and Planning Inquiries

A key component for inquiry in all disciplines is the framing of compelling questions; however, it is a skill that is difficult for students of any age. Depending on your students' prior knowledge or familiarity with questioning skills, it is important to begin with an activity on developing good questions. To set the stage for the activities to come, what follows is a scenario of conflicts over rivers.

POSE THE FOLLOWING SCENARIO TO STUDENTS:

Two communities are located on a large river. Community A is upstream from Community B. The river is used as a source of drinking water, for irrigating agricultural crops, and for providing water to livestock. It also provides the communities with recreational outlets, a relatively small food supply from fishing, and electric power from a dam located upstream from Community A. Recently, as a result of decreased water flow from the dam, citizens of both communities have expressed concern about who owns the river—about which community has the greater right to use the river and its resources. Leaders of the communities have taken their concerns to their state representative in the legislature asking for her help in settling the conflict.

Ask students what they know about the river and the situation from this scenario. Take responses from students until you're confident the main points of the issue are understood.

Then write the following question on the board: *How can rivers be managed to decrease conflict and increase cooperation between groups?* Tell students that this is an example of a compelling question—a question that addresses big ideas about an issue or concept. Explain that a compelling question is a broad and interesting question that makes you want to learn more—to ask more questions.

Ask students to work in small groups to locate a specific river that is relevant given your teaching needs. You might use the Danube River and study the conflict over “Rivers and the Gabčíkovo-Nagymaros Project” content (see page 127). Students should customize the compelling question, given the river they identified. For example, if they are focusing on the “Rivers and the Gabčíkovo-Nagymaros Project” the resulting compelling question could be, *How can the Danube river be managed to decrease conflict and increase cooperation between groups?*

Compelling questions cannot be answered easily; they need supporting questions to provide direction for further investigation. Supporting questions help students get more information to answer the compelling question. Students may need some examples of good supporting questions. Some supporting questions that follow from the scenario

above might include, How do Community A and Community B compare in size? How might the size of the communities impact the conflict? What impact does the upstream dam have on the river and the resources it provides? What does it mean to “manage” a river?

When discussing issues related to rights, students at the middle school level will often bring up concepts of fairness and sharing things equally. They may not think about the different factors that can impact the situation, such as community sizes, other sources of water for the community, or environmental impacts. Prompt students to think about some of these factors, especially if they are having trouble coming up with questions. Remind students that good supporting questions will not be “yes” or “no” questions or questions that encourage short or single-word answers; they will be open-ended questions that require more thinking and some research.

It is important for students to recognize that, as stated in C3 Indicator D1.4.6-8, compelling and supporting questions reinforce one another. The compelling question informs the inquiry and leads to supporting questions that address what students need to find out. The supporting questions are built from and refer back to the compelling question and make it possible to seek and find answers to the compelling question.

Explain to students that in this activity they have identified some questions about key ideas in geography. As you transition into the next activity, tell students that they will explore concepts related to conflict over rivers. Ask students to keep their compelling question in mind as they work through the next activity.

Dimension 2: Connections to Disciplinary Tools and Concepts

Building geographic skills around key ideas in the discipline is critical to developing geoliterate students. The use of maps and other representations helps students explain the interconnections and relationships between places, regions, the physical features of places, and the people who live there. (C3 Indicator D2.Geo.2.6-8) Using a large map that features rivers, ask students to identify physical features they see. Have them name the rivers they see on the map. Ask: Why are rivers important physical features? What is the role of rivers in determining borders? Brainstorm possible reasons for rivers to be a source of conflict between nations. List students’ ideas and use the list to discuss positive and negative aspects of sharing resources like rivers.

EXTENSION ACTIVITY

Conflict on the Danube

Provide students with copies of the Gabčíkovo-Nagymaros Project information on page 127 and have them locate maps of the region. Have students read the passage independently or in pairs, noting unfamiliar words in the reading or questions they have. As they read, students should refer to the maps to identify the locations, borders, and drainage basins mentioned. Make sure all students have a good understanding of the concepts presented in the reading—the chronology of events in the dam conflict, the positions of the countries impacted by the project and resulting conflict, and the environmental impact of the project before moving on.

- Divide the class into small groups and have each group work together to discuss and answer the following questions.
- Locate the area of the Gabčíkovo-Nagymaros Project on a map of the Danube River including the Gabčíkovo Dam. Which countries are upstream of the project? Which countries are downstream?
- The Gabčíkovo Dam and diversion canal moved more than 80 percent of the water from the Danube River out of its original course. How would this affect the people living along the original course of the river?

Have students take on the roles of stakeholders in the Gabčíkovo-Nagymaros conflict. Assign each group only one of the questions below. Tell students that their goal is to attempt to solve the conflict and to present their point of view to the International Court of Justice (the class). If possible, have students conduct additional research on the dam and its impacts before they present their answers, including creating a chart of positive versus negative effects on the aspect of the dam they explored. Have a volunteer from each group present the group's ideas to the class, supporting the ideas 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.

1. Imagine it is 1977. You are the Hungarian and Czechoslovakian negotiators who agreed on the Gabčíkovo-Nagymaros Project. Why will this project help improve life in your countries, and why is it an example of international cooperation that other countries should follow? Include an explanation of the physical geography and the economic and political situation of the area.
2. Imagine you are representatives of Germany, Bulgaria, and Romania—three other countries along the Danube River. What are your concerns about this project? Are you in favor or opposed? What practical solutions can you suggest?
3. Imagine yourself in the role of an international environmental organization. You want to represent the rights of nature—the plants and animals living in and around the Danube. If you don't take human considerations into account, how does the way you look at the problem change? What do you suggest as the best solution?

Engage students at this point in a discussion of how the general compelling question (How can rivers be managed to decrease conflict and increase cooperation between groups?) applies to investigation of their conflict.

Your discussion should lead students to recognize that rivers are often sources of conflict, whether that conflict revolves around issues of rights to the river's resources, the role of rivers as borders, concerns over environmental impacts of activities taking place on or near rivers, or any number of other issues.

This discussion will help students as they transition to research on the conflict they identified in their compelling question.

A River in Conflict: Rivers and the Gabčíkovo-Nagymaros Project

Rivers meet a variety of human needs: freshwater for drinking, hydroelectricity to power factories and homes, irrigation for crops, transportation for freight and people, and habitats for plants and animals. Rivers also often mark borders between countries. This can lead to power struggles between neighboring countries that both want to control a river for economic, environmental, and political reasons.

The Danube River forms part of the border between the countries of Slovakia and Hungary. This river is an example of the complications and conflicts that occur when countries share a river. The source of the Danube is in the mountains of Germany. Its size alone makes the Danube River vital to the ecology and economy of Central Europe.

The area along the border between Slovakia and Hungary is a large floodplain—an ecosystem full of biological diversity, where frequent flooding washes nutrient-rich silt over the land, feeding forests and cropland, and serving as a feeding and resting place for migratory birds. The wetlands are critical because they serve as natural filters, cleaning pollution from upstream out of the water.

Part of the floodplain between Hungary and Slovakia is called Szigetköz. This area is home to small farms, forests, and about 5,000 species of plants and animals. Underneath the area is a large freshwater reservoir that needs the filtration of the wetlands above it to keep it clean. In 1977, Hungary and what was then the country of Czechoslovakia agreed to build a system of dams and canals in the Szigetköz area. This would come to be known as the Gabčíkovo-Nagymaros Project, named for the towns at each end of the dam system. The decision to build this system of dams and canals led to a major international conflict that is still not resolved over forty years later.

In the twentieth century, many countries were searching for ways to modernize and bring electricity, industry, and a higher standard of living to their people. One of the ways they tried to improve people's lives was by harnessing rivers with large dams. This could produce hydroelectric power, provide jobs, and help stop damaging floods. These kinds of projects are still built today, but much more cautiously. It was discovered that along with electricity, jobs, and flood control came lots of environmental and political problems.

The Gabčíkovo-Nagymaros Project was agreed on in 1977. It was abandoned by the Hungarian government in the early 1980s because of worries about its

environmental impact and financial problems. The Czechoslovakians finished their side of the project—the Gabčíkovo dam, or Cunova dam, in 1992. In 1993, the country of Czechoslovakia split into two: the Czech Republic and Slovakia. Slovakia took control of the area. The dam pushed more than 80 percent of the flow of the Danube out of its main riverbed and into a canal on the Slovak side of the river. This led to a huge drop in the Danube's water flow below the dam. The dam and canal system created several problems that upset the Hungarians:

- Fish populations declined as much as 80 percent due to lower water levels.
- Other animals and plants, including rare birds, have lost their natural habitat.
- Pesticides, fertilizers, and industrial pollution are concentrated and trapped behind the dam.
- The level of freshwater reservoir underneath the Szigetköz area dropped and became contaminated with the trapped pollution.
- Farmers on the Hungarian side lost access to water for irrigating their crops because the river sank to such low levels.

Hungarians were also upset about the economic impact. Slovakia received all the money from ships that used the canals and all the electricity the hydroelectric plant produced because Slovaks had built and controlled the dam and canal. Hungarians who were living in Slovakia complained they were being squeezed into a small bit of land between the canal and the old riverbed. And the Hungarian government said that, in effect, a new border was being created between the two countries that gave Slovakia more control over the river and its resources.

But Slovakia's government believed it had acted according to the original agreement between the two countries. It believed that the Hungarians' problems stemmed from the fact that they had not followed through in building the rest of the project. Slovakia's government pointed out that the Szigetköz region escaped disaster during massive flooding along the Danube in 2002 because of the flood control provided by the dams and canal.

The two countries decided to ask international organizations, including the International Court of Justice, to help them resolve their disagreement. But the countries are still in conflict after years of meetings.

Note: More resources for this activity can be found in the National Geographic lesson titled "Conflict on the Danube" at <http://www.natgeoed.org/river-conflict>.

Dimension 3: Evaluating Sources and Using Evidence



The next step in the inquiry arc calls for students to work with sources toward formulating a conclusion or an argument. Before students begin their research, ask them to list potential types of sources they might look for. Make sure they come up with several different types, which may include news articles, journal articles, and reference material such as encyclopedia entries, websites, and infographics or data sets. Encourage students to think beyond the Internet to sources that may be available in print form in the school or public library, as well as from experts in the community. Also, make sure students gather sources that provide different perspectives on the issue.

Engage students in a discussion about what to look for in the sources. Along the way, students need to evaluate the credibility and validity of sources. (C3 Indicator D3.2.6-8) In general, students should be able to evaluate sources using questions like these:

- Who is the author or creator of the information, and is that person or group an expert in the issue or are they simply expressing an opinion without the background knowledge to support it?
- When was the information/source created? Is the information recent (in the last few years) or is it old?
- Is the information biased? Clues to bias include language that is trying to persuade rather than provide information. Make sure students understand that although they will be formulating arguments or opinions about their issue, they should look for sources that give them solid background information and are not simply opinion pieces.

You should also provide students with a few questions to help them evaluate a source's appropriateness or usefulness to their inquiry.

- What information does the source give you? Is the information in-depth enough?
- Does it provide the information you need?
- Can you understand the information? Is the language too technical or difficult to understand?
- Can you use the information in this source?

Students may tend to collect too many sources in an attempt to cover all aspects of the issue. Having too many sources may muddy the process for students, and may take students off course in their research. Encourage students to find a few really good sources that cover multiple points of view and give them the information they need to answer the questions they have formulated. It is important for students to be as focused as possible in their research, therefore making the critical evaluation of sources very important.



When you are satisfied that students have enough good sources, have them use the information to formulate conclusions about the issue. Their conclusions should provide solutions that relate to their compelling questions. Remind students that they need to support their conclusions with evidence from their research. Students need to be able to explain:

- why they think the way they do about the issue;
- what information has guided them to their conclusion;
- where they found the information, and
- why they think it is valid.



The ultimate goal is to convince the audience, in this case you and the class, that their conclusions are sound.

Dimension 4: Communicating Conclusions and Taking Informed Action

The critical final step in the inquiry process gives students an opportunity to share their conclusions with others. There are many possible methods and media available to accomplish this, and decisions about how students will communicate conclusions depend largely on time and resources. No matter which method is used, students must present their conclusions backed up with evidence from their research (C3 Indicator D4.1.6-8). Some of the evidence can be reinforced with visual aids, if appropriate, such as simple text slides, photographs, diagrams or charts, or maps.

An interesting option is to have students draw a map of the impact areas that would help show their solutions or conclusions. The impact map would need to outline the watersheds impacted, the populations that get water from the river, the populations that use the river for recreation, the natural areas and native species that rely on the natural flow of water, and other impact areas pertinent to the issue.

Students should be prepared to answer questions during or after their presentations. They should be able to discuss the various sides to the issue they are presenting and tell why they came to their conclusions. Likewise, the class should be prepared to ask good questions—questions that call for the presenting students to clarify points and defend their conclusions, as necessary.

About National Geographic

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