



New Mexico and the World

Curriculum Resources for New Mexico Teachers



HYDROVIA: TO DIG OR NOT TO DIG!

I want my students to discover what the Hydrovia project is, how it relates to or can affect the Pantanal region of Brazil, and discuss in a debate format the pro's and con's of this project.

PREREQUISITES: Ability to access the internet and research information related to the Hydrovia project. Understanding of a debate format with rules for participation and required information.

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Grade Level: 5-12

Area: Language Arts; Science

Strand(s): Science II; Language Arts II

NM Benchmark(s): SCIENCE

Strand II: The Content of Science

Standard II (Life Science): Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

Benchmark I: Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.

Benchmark I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.

Science and Society

LANGUAGE ARTS

Strand: Writing and Speaking for Expression Content

Standard II: Students will communicate effectively through speaking and writing.

Benchmark II-A: Use speaking as an interpersonal communication tool

Length:

of Students:

Learning Objectives: Research the Hydrovia project using the internet
Discover the overall purpose of the Hydrovia project

Learn about the scope of the project, who and what will be affected by the channeling of the Parana River and some of its tributaries

Discuss the project as viewed from the economic, environmental, cultural, and other aspects as it may affect the future of the Pantanal

Introduction:

The Paraguay-Paraná Hidrovia is a project to promote and oversee the development of a commercial waterway linking the five countries in the La Plata Basin countries (Argentina, Bolivia, Brazil, Paraguay, and Uruguay) by ensuring year-round navigational transport of minerals and agricultural products (primarily soybeans) from landlocked regions to major markets along the Atlantic coast.

The goal is to transform the meandering river into a deepened channel, navigable for barges up to 2.8 meter drafts during the low-water months. Presently, the river allows much smaller barge transport. This proposed 3,440 km long navigational transport artery through the Pantanal has been compared to large-scale hydrological works in other regions to provide an understanding of its potential impact.

Hydrovia's goal is to expand exports of soybeans, timber, iron ore, and other commodities from the interior of the continent. Hydrovia proponents site the economic benefits. Opponents fear the environmental impact, especially at the waterway's end in the region of the Pantanal. Some 150,000 indigenous people live in the river regions. "We don't have any jobs or money to buy medicine. Maybe the new waterway will create more jobs in the region," says Celso Zayala, a chief of the Enxet tribe in Pt. Colon, Paraguay.

Materials:

Procedures:

Use the attached introduction to introduce the Hydrovia project to students. Ask open ended questions as the information is given to interest the students in discovering more about the issues involved in making a decision that affects many individuals, communities, and countries. Students will be assigned to a debate team, but not until the debate is scheduled, with the requirement that each student will research all possible aspects, finding pro's and con's for each of the arguments found in their research.

Background Info:

**References-
Resources:**

<http://www.irn.org/programs/hidrovia/>
http://news.nationalgeographic.com/news/2003/07/0731_030731_tvhidrovia.html
<http://www.geocities.com/RainForest/1820/hidrovia.htm>
<http://www.news.harvard.edu/gazette/1996/04.11/BridgingTrouble.html>
<http://www.earthsky.com/shows/earthcare/showsmore.php?t=20020202&s=s&h=Wetlands>

<http://www.irn.org/programs/hidrovia/dredging990217.html>
http://web.idrc.ca/en/ev-26522-201-1-DO_TOPIC.html
<http://www.agr.gc.ca/mad-dam/e/bulletine/v15e/v15n04e.htm>
map: [http://encarta.msn.com/map_701516030/Paraguay_\(river\).html](http://encarta.msn.com/map_701516030/Paraguay_(river).html)
<http://www.extension.iastate.edu/agdm/articles/others/McVeyNov00.html>
debate rubric: <http://712educators.about.com/cs/rubrics/1/blrubricdebate.htm>

Student Activities: EXTENDED ACTIVITIES: Students will write a paper summarizing their research and using information from their research and the classroom debate the student will finalize his/her position on the future of the Hydrovia project.

Assessment: Students will be assessed using a debate rubric to measure competency of material.

Following is a rubric to use for debates. You can complete this on your own, but I usually have my 'audience' members fill one out too.
Rate each category on a scale of one to ten and count all ten evenly for a total of 100 points.

Debate Rubric

Name/Date/Period:

Subject of Debate:

Pro or Con (Circle one) Which Side Won:

Criteria:

Each criterion is worth up to 10 points. There are 10 criteria for a possible total of a maximum 100 points)

- 1) Appearance of Team (Professionally dressed.)
- 2) Opening statements were well organized.
- 3) Team members addressed remarks to the audience.
- 4) Opening statements were not read from cards.
- 5) Both team members participated equally in opening statement.
- 6) Students spoke loud enough to be heard.
- 7) Rebuttal was specific to arguments made in the opposing team's opening statement.
- 8) Both team members participated equally in the rebuttal.
- 9) Answers to audience questions were well thought out.
- 10) Respect was shown throughout the debate for the opposing team.

(No name calling, interruptions, etc.)

**Technology
Integration:**

Accommodations:

Review Questions:

Related Careers: Hydrology, Agricultural, Civil, Environmental, Hydraulic, Irrigation, and Sanitary Other fields may include: Mathematics, Statistics, Geology, Physics, Computer Science, Chemistry, and Biology.
With background in: Economics, Public Finance, Environmental Law, and/or Government Policy.

Career Education:

Hints and Tips:

Lesson Evaluation: