Mapping the Chesapeake Bay, Past to Present

Students work in small groups to compare the content and purposes of a variety of Chesapeake Bay maps. Students also identify human and/or physical characteristics shown on each map.

GRADES
4 - 9

SUBJECTS
Biology, Ecology, Earth Science, Geography, Human Geography, Physical Geography, Social Studies, U.S. History

CONTENTS
8 Links, 2 PDFs

OVERVIEW

Students work in small groups to compare the content and purposes of a variety of Chesapeake Bay maps. Students also identify human and/or physical characteristics shown on each map.

For the complete activity with media resources, visit:
http://www.nationalgeographic.org/activity/mapping-chesapeake-bay-past-present/

DIRECTIONS

1. Discuss the meaning and purpose of maps.

Access students’ prior knowledge of maps and their purpose with a discussion. Ask questions such as: What is a map? In what ways do you or people you know use maps? In what situations is a map useful? Record student ideas on the board. Talk about how a map is a representation...
of reality as the cartographer sees it, and the cartographer selects what is important to include on the map. It is a visual summary of data gathered. Refer to the encyclopedia entry for map. Have students find out the parts of a map and the two broad categories: general reference maps and thematic maps.

2. **Discuss the concept of a watershed.**

Find out what students know about the Chesapeake Bay watershed by having a discussion while projecting the Satellite Image of the Chesapeake Bay Watershed web page. First, ask: *Is this a map? Why or why not?* This image was taken from space via satellite. Its state lines and watershed borders were most likely drawn by cartographers. Current technology has greatly expanded possibilities for representing reality through maps and images.

Ask students to describe visual characteristics of this area of land, such as areas of vegetation, mountains, rivers, and lakes. Point to the white outlines of the watershed, explaining that water flows from all areas within the line toward the Chesapeake Bay. Ask: *What are some human characteristics of this map?* (Humans created the state borders; lakes may be the result of dams.) *What physical characteristics does this map show?* (Jagged outlines of the watershed, areas of vegetation, rivers, the shapes of mountain chains, mouths of rivers.)

3. **Analyze the collection of Chesapeake Bay maps, past to present.**

Working in pairs at computers, have students compare the content and purposes of six different Chesapeake Bay maps, recording their findings on the Mapping the Chesapeake Bay, Past to Present worksheet. You can begin by doing one of the maps together. Model zooming in and out, panning, and making the map full screen.

4. **Discuss the collection.**

Have a class discussion, jotting correct answers on the board or on a screen if you are able to project the worksheet. Have different pairs present their findings. Next, discuss students’ opinions about these maps. Ask: *Looking at the maps as a collection, which maps do you think*
are most useful to you as a citizen of the Chesapeake Bay watershed? Students will have different answers based on their interests and may have ideas about drawbacks of certain maps over others. Discuss any new insights gained from looking at these maps individually and as a group.

5. Consider how use of a digital, interactive map might be different.

Give students a small demonstration of the Chesapeake Bay FieldScope map or Google Earth focusing on the Chesapeake Bay watershed region. Write or discuss as a class: How might use of an online, digital, interactive map differ from use of the maps we just studied to learn about the Chesapeake Bay region? What additional information do you think you could get from an interactive map? (Answers will vary; ideas may include that the first maps are static, but a dynamic online map enables viewing of different layers of information, searching, zooming in more closely with satellite images, use of pop-up windows to view the data at different points.)

Tip

Help students analyze what the cartographer knew when creating these maps, how the data might have been gathered, and what data were missing or intentionally left out. This can lead students to identify themselves as potential contributors to a mapped data set.

Modification

If time is an issue, the maps could be split so that student groups could each analyze one or two maps, then present their findings to each other, filling in the chart together.

Informal Assessment

Move around the room to monitor students while they analyze the maps, asking questions to assess their understanding. Use the Mapping the Chesapeake Bay, Past to Present answer key to check student work.

Extending the Learning

Both of the John Smith maps and the Sea Level and Climate Change map could be used to extend the activity because they tell amazing stories about the Chesapeake Bay past and present. Focus on one or more of them in greater depth. For example, with the John Smith
1612 map, longitude is different, the orientation of the map is unusual, the dates are unclear, and the design is in another style than present-day maps. This map is a great lesson on cartography as well as the characteristics of the region 400 years ago.

OBJECTIVES

Subjects & Disciplines

- Biology
  - Ecology
- Earth Science
- Geography
  - Human Geography
  - Physical Geography
- Social Studies
  - U.S. History

Learning Objectives

Students will:

- Analyze while zooming and panning a variety of maps
- Compare the content and purposes of different Chesapeake Bay maps
- Describe human and physical characteristics of the maps past and present
- Describe the advantages of an online, interactive map

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Hands-on learning

Skills Summary
This activity targets the following skills:

- 21st Century Student Outcomes
  - Learning and Innovation Skills
    - Communication and Collaboration
- Critical Thinking Skills
  - Analyzing
  - Applying
  - Understanding
- Geographic Skills
  - Analyzing Geographic Information

**National Standards, Principles, and Practices**

**NATIONAL COUNCIL FOR SOCIAL STUDIES CURRICULUM STANDARDS**

- **Theme 3:**
  People, Places, and Environments

**NATIONAL GEOGRAPHY STANDARDS**

- **Standard 18:**
  How to apply geography to interpret the present and plan for the future.
- **Standard 3:**
  How to analyze the spatial organization of people, places, and environments on Earth's surface
- **Standard 4:**
  The physical and human characteristics of places
- **Standard 5:**
  That people create regions to interpret Earth's complexity

**NATIONAL SCIENCE EDUCATION STANDARDS**

- **(5-8) Standard D-1:**
  Structure of the earth system
• (5-8) Standard F-5:
  Science and technology in society
• (5-8) Standard G-1:
  Science as a human endeavor

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS
& LITERACY

• Reading Standards for Informational Text 6-12:
  Key Ideas and Details, RI.7.2
• Reading Standards for Informational Text 6-12:
  Key Ideas and Details, RI.9-10.2
• Reading Standards for Informational Text 6-12:
  Key Ideas and Details, RI.6.2
• Reading Standards for Informational Text 6-12:
  Key Ideas and Details, RI.8.2
• Reading Standards for Informational Text K-5:
  Key Ideas and Details, RI.4.2
• Reading Standards for Informational Text K-5:
  Key Ideas and Details, RI.5.2

Preparation

What You’ll Need

MATERIALS YOU PROVIDE

• Pencils, pens

REQUIRED TECHNOLOGY

• Internet Access: Required
• Tech Setup: 1 computer per small group
• Plug-Ins: Flash

PHYSICAL SPACE

• Classroom
• Computer lab
GROUPING

- Large-group instruction

BACKGROUND & VOCABULARY

Background Information

A map is a symbolic representation of selected characteristics of a place, usually drawn on a flat surface. Maps present information about the world in a simple, visual way. They show sizes and shapes of countries, locations of features, and distances between places. Maps can show distributions of things over the Earth.

Cartographers make many different types of maps, which can be divided into two broad categories: general reference maps and thematic maps.

General reference maps show general geographic information about an area, including the locations of cities, boundaries, roads, mountains, rivers, and coastlines. Government agencies such as the U.S. Geological Survey (USGS) make some general reference maps. Many are topographic maps, meaning they show changes in elevation. Such a representation of hills and valleys in an area can be useful to everyone from hikers trying to choose a route to engineers trying to determine where to build highways and dams.

Thematic maps display distributions, or patterns, over Earth’s surface. They emphasize one theme, or topic. These themes can include information about people, other organisms, or the land. Examples include crop production, people’s average income, where different languages are spoken, or average annual rainfall.

Prior Knowledge

Recommended Prior Activities
Vocabulary

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of Speech</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>cartographer</td>
<td>noun</td>
<td>person who makes maps.</td>
</tr>
<tr>
<td>general reference map</td>
<td>noun</td>
<td>map that displays general geographic facts about an area.</td>
</tr>
<tr>
<td>hydrogeomorphic</td>
<td>adjective</td>
<td>relating to the study of landforms and the processes that shape them,</td>
</tr>
<tr>
<td>map</td>
<td>noun</td>
<td>including how water shapes land and landforms affect the flow of water.</td>
</tr>
<tr>
<td>thematic map</td>
<td>noun</td>
<td>representation of data on a specific topic for a specific area.</td>
</tr>
<tr>
<td>watershed</td>
<td>noun</td>
<td>entire river system or an area drained by a river and its tributaries.</td>
</tr>
</tbody>
</table>

For Further Exploration

Books

- Common Core English Language Arts and Geography Connections

Websites

- Chesapeake Bay FieldScope 2.0

FUNDER

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