Grades: 3rd  
Subjects: Geography  
Time required: 3 class periods  
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OVERVIEW  
Students will investigate historical maps of the same or similar geographical areas to deepen their knowledge of map features and functions. Students will also explore the visual differences between maps with different functions and the visual differences between maps made using more advanced technology and maps made using older forms of technology.  

UNDERSTANDING GOAL  
Students will use maps proficiently to gain information about a geographical area and will discuss some variables that impact the maps visual appearance.  

INVESTIGATIVE QUESTION  
How do time, technology, and author’s purpose affect the way maps look?  

OBJECTIVES  
Session One – Introduction  
Given historical maps, students will  
- collaboratively identify physical features.  
- collaboratively compare and contrast differences in maps from different periods and created for different purposes.  
- develop and discuss possible contributing factors in map development that led to observed discrepancies.  
- independently write a 1 paragraph essay comparing and contrasting 2 maps from the seminar.  

Session Two – Creation & Peer-Assessment  
Given a historical map and teacher feedback, students will  
- collaborate with a group to create a 5 question assessment and answer key to assess a peer group over cardinal directions, map scales, legends, and map function.  
- independently answer 4/5 questions correctly.  
- provide feedback on the assessment questions and ask clarifying questions.  

Session Three – Review and Assessment  
Given a historical map, students will independently answer 8/10 map analysis questions.  

Nord America mit Benützung der neuesten und zuverlässigsten Quellen und Hülfsmittel, [1805]
CURRICULUM STANDARDS

TN State Standards

Geography
- 3.02 Use cardinal directions, intermediate directions, map scales, legends, and grids to locate major cities in Tennessee and the U.S.
- 3.04 Examine major physical features on globes and maps, including: Basin, Bay, Canal, Canyon, Delta, Desert, Gulf, Island, Isthmus, Mountain, Ocean, Peninsula, Plain, Plateau, River, Sea, Strait, Stream, Valley
- 3.05 Use different types of maps (e.g., political, physical, population, resource, and climate), graphs, and charts to interpret geographic information.

English Language Arts
- 3.RI.KID.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as a basis for the answers.
- 3.RI.KID.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.

Science
3.ETS1: Engineering Design
1) Design a solution to a real-world problem that includes specified criteria for constraints.
2) Apply evidence or research to support a design solution.
3.ETS2: Links Among Engineering, Technology, Science, and Society
1) Identify and demonstrate how technology can be used for different purposes.

MATERIALS
- teacher computer/projector
- digital copies of all primary resources
- enlarged/poster-sized copies of workshop maps (alternatives to poster-size copies are suggested in the “Prior to Lesson” step of the procedures)
- assessment document (class set in color) pgs. 7—10

RESOURCES

Teacher Modeling Images
- Nord America mit Benützung der neuesten und zuverlaessigsten Quellen und Hülfsmittel
- United States presidential election 2012, results by state, November 6, 2012
- United States presidential election 2012, results by county, November 6, 2012
- United States coal resources map
- United States

Workshop Images
- National Park Service recreational map of Tennessee
- A map of the state of Tennessee taken from survey
- Tennessee
- The new naval and military map of the United States
- United States presidential election 2008, results by county, November 6, 2008
- Map of the rebellion, as it was in 1861 and as it is in 1864

United States presidential election 2008, results by county, November 6, 2008.
RESOURCES
Assessment Images
- United States uranium resources map
- Standard atlas of Custer County, Nebraska: including a plat book of the villages, cities and townships of the county, map of the state, United States and world, patrons directory, reference business directory and departments devoted to general information, analysis of the system of U.S. land surveys, digest of the system of civil government, etc., etc. (Image 22: United States Map)

See also from above, National Park Service recreational map of Tennessee, United States, and United States presidential election 2012, results by state, November 6, 2012.

PROCEDURE

| Prior to Lesson | Pull up all modeling and practice resources on separate tabs in your internet browser with the computer connected to the projector. If possible, print all practice resources as large, color posters and laminate to increase durability. Another possibility is using the special print feature, if available, of printing the map as a puzzle over several pages. It allows students to see details close-up, and it’s also fun to put together. If unable to print larger posters, either print color copies of each practice image as large as possible in sets of 5 and acquire a class set of magnifying glasses, or reserve a computer lab or laptop cart. Bookmarking the links on the computers may expedite student navigation of the Library of Congress Web site. Group students into 5 or 6 groups, and assign group roles. Print a class set of the assessment document either all in color or with pages 1 and 3 in color and 2 and 4 in grayscale. If color printing is unavailable project the maps from pages 1 and 3 on the board in color for student reference. |
| Back-ground Knowledge | Students should already be introduced to cardinal directions, legends, and map scales prior to the lesson. If students are not familiar with primary sources, set aside time to discuss the primary and secondary sources and their added value to understanding the past. |
| Day 1 Step 1 Introduction and Map Rotation | Using a map students are familiar with, like one commonly displayed on the wall, review cardinal directions, legends, and map scales with students. Why does a map maker, or cartographer include these features on the map? What information can be gained by understanding these map features when you see them? What misunderstandings might a map reader have when these features are missing? Show a map without a key and see if students deepen their responses. Show a map upside down or a map from the Southern Hemisphere that places the South Pole at the top and discuss how north does not need to be at the top of the map for the map to be accurate. |
| Step 2: | Tell students that this week you will be stretching what they have previously learned about maps and how they are used to communicate information by investigating different maps from the history of North America, the United States, and Tennessee. Tell students that, in addition to learning how maps can show more than just physical location, the class will also explore the impact of time and technology on the visual appearance of a map. Ask investigative question: How do time, technology, and author’s purpose affect the way maps look? Prompt students to discuss the question in groups or pairs and make hypotheses to answer the question. Students volunteer answers. Follow-up point: Who is the author of a map? What are some reasons that people make maps? Define these reasons as “author’s purpose” and explain that students will get to learn about other reasons authors make maps as they work through the activities in the unit. |
### Step 3
Review primary sources. Project [Nord America mit Benützung der neuesten and zuverlässigsten Quellen und Hülftsmittel](#). Tell students that the class will be using primary sources to explore the investigative question. How might primary sources like this map be useful in answering the investigative question? Accept student responses, and then, explain that the class will be using maps like this one to research how maps are impacted by time, technology, and author’s purpose. Share the date, name, and author of this map. Ask students what they notice about the map? Ask clarifying questions (If they notice the coloring, do they noticed that it was painted on after the map was printed?). Ask what technology or resources they think the author may have had or not had available when he made it in 1805. How would that impact the making of the map? Compare the northern coastline of North America on this map with another map or globe in your room. What might be factors that led to the differences? Ask if the students would like to zoom in on any specific areas of the map. Zoom in on the key and then use that information to read the map. What do they notice about the map now? What do they think was the author’s purpose? Introduce and define the term political map.

### Step 4
Leave the [*Nord America*](#) tab open, but now project the [United States presidential election 2012, results by state, November 6, 2012](#). Tell students that this is also a political map because it shows the boundaries of different states and the U.S.A. Tell students that it also has another purpose. Prompt students to examine the map and determine the author’s purpose and map year. Expect students to provide text evidence for their answer. Prompt students to identify the map title, scale, legend, and additional information. Discuss the information provided in these map features. Ask, who might be the intended audience? How might this information be used? How is this information limited? What does it not tell the audience? Ask 2-5 questions that can be answered using the map. Ask students to provide 2-5 reasonable questions that cannot be answered using this map (Example: What is the longest river in Missouri? Why did Mitt Romney not get enough votes to win in New York? etc.). Compare and contrast this map with [*Nord America*](#) map. Determine how many years separate the making of one and the making of another. What technology do we know was invented within that time frame? What are some political changes that happened in that time frame? How are the differences between the maps results of time, technology, and author’s purpose?

* Time allowing, students may also compare them by county and by state 2012 election maps to discuss how the county map would be more useful to subsequent candidates than the state election map.

### Step 5
Project [United States coal resources map](#). This is the last map we will look at during today’s lesson. Tell students the date and author of the map. Repeat inquiry process from Step 4. Introduce the term: resource map. Prompt students to explain the difference in author’s purpose between political and resource maps.

### Step 6
Tell students that maps can show many more things than election results, political boundaries, and resources. Ask the class to brainstorm a list of other content that cartographers can communicate using maps. Scribe responses on an anchor chart or a board.

### Step 7
Project [NASA image of North America](#). Introduce to class as a satellite image. Explain satellites briefly and how they are one of the most significant developments in technology to impact cartography. Ask what the main idea of this image is. Open Google Maps and plot a course between the school and a common field trip location. Explain that maps like those on Google Earth or Google Maps and other GPS platforms are all generated by several satellites working at the same time. What is the purpose of those maps? Discuss students’ thoughts on why satellites have been so impactful to map making.
<table>
<thead>
<tr>
<th>Step 8</th>
<th>Students are dismissed to their desks to journal about the ways they think satellites have improved cartography. Journal entries should be at least 1 paragraph and include the words: satellites, technology, and cartography and descriptions of how map making would be limited before satellites.</th>
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<tr>
<td>Day 2 — Step 1 Creation &amp; Peer Assessment</td>
<td>Prompt students to silently reflect on the different maps from session one to remember previous content. Students silently read through their paragraphs from the day before also to prepare for session two. Prompt students to read their paragraphs to a partner. Review investigative question: How do time, technology, and author’s purpose affect the way maps look?</td>
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<tr>
<td>Step 2</td>
<td>Explain to students that they will be working in groups today to analyze a primary source map and create an assessment with which to quiz their peers on map skills. Divide students into groups, and assign roles. Suggested roles include leader, recorder, teacher ambassador, and peer ambassador. The teacher ambassador’s role is to be the groups’ liaison to the teacher if the group has a procedural question. The peer ambassador will be the student chiefly responsible for answering clarifying questions from other teams when team assessments are traded. Display the questions: What is this a map of? What is the main idea of the map/What was the author’s purpose? Where is north on the map? Where is the map key? Where is legend? What questions could be answered with this map? What questions could not be answered with this map? Prompt group leaders to ask these questions to their group first when the maps are passed out. Leaders should only answer the questions for their groups if the other members are unable to provide the correct answer. Pass out maps: National Park Service recreational map of Tennessee; A map of the state of Tennessee taken from survey; Tennessee: The new naval and military map of the United States; United States presidential election 2008, results by county, November 6, 2008; Map of the rebellion, as it was in 1861 and as it is in 1864. Each group should have a different map. Students examine the maps using the guiding questions. Circulate and provide support where needed. Map Differentiation for Group Work: More challenging maps: Tennessee &amp; Map of the rebellion Intermediate maps: A map of the state of Tennessee taken from survey &amp; The new naval and military map of the United States Less challenging maps: National Park Service recreational map of Tennessee &amp; United States presidential election 2008</td>
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<td>Step 3</td>
<td>Prompt student groups to begin brainstorming their own questions for their quiz as they complete step two. Groups should first list as many questions as they can think of before going back and choosing the five best questions to include in their assessments. Once the assessment is built, students take their own assessment to check for quality and then revise and edit their assessment. Student recorders neatly copy their assessments and trade with other completed groups. Circulate and provide support where needed.</td>
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<td>Step 4</td>
<td>The student liaison is responsible for presenting the assessment to another group, reading through the questions and answering the other group’s clarifying questions. Once the other group has completed the assessment, the student liaison will walk through all correct answers with them.</td>
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<td>Step 5</td>
<td>Groups exchange feedback with one another, and recorders document all feedback, positive and constructive, on their original assessment form to be turned in. As groups receive feedback, they should only listen and record without comment. This may need to be modeled for groups that have not participated in the feedback process previously.</td>
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<tr>
<td>Step 6</td>
<td>Early finishers may repeat steps four and five with other completed groups. If less time remains, early finishers may journal about the map analysis and assessment making process. What were steps that were challenging for their group? What steps were completed most easily? How might their participation in a group next time be different in light of his or her reflection this time?</td>
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<td>Step 7</td>
<td>Review investigative question. How has the class’s thinking changed now that students have seen a greater variety of maps? What did students notice about the maps they worked with today that surprised them or stood out the most?</td>
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<tr>
<td>Day 3</td>
<td>Go through the student-made assessments from the day before and highlight 1-3 questions from each group’s assessment to use for review before the summative assessment. Pull up each of the maps from the previous session on teacher computer for projecting.</td>
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<tr>
<td>Step 1</td>
<td>Review investigative question: How do time, technology, and author’s purpose affect the way maps look? Review for summative assessment by bringing up each map from the previous day and asking 1-3 pre-selected questions. Students who made or took the given assessment should not answer the questions but allow other students. Prompt students to provide evidence for their answers and discuss process.</td>
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<tr>
<td>Step 2</td>
<td>Pass out assessment (pgs. 7-10) for evaluation of student learning.</td>
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### Evaluation

Use the assessment as a check for understanding of lesson content at the end of the session three. The assessment will assess map analysis skills and critical thinking. Total assessment value: 10 points.

**Suggested Differentiation Options for Assessment:**

**More support:**
- Reduce number of overall questions by eliminating questions 4, 6b, and 9.
- Reduce the required number of items in multiple-choice questions.
- Reduce the number of true/false items.
- Read aloud.
- Scribe the student’s oral reflection for them.
- Provide additional prompts.

**Less support:**
- Change question 5 from true/false to fill in the blank by replacing these words from the three prompts with blanks, respectively: Democratic, Republican, and same.
- New directions: Complete each sentence with the word that makes each statement true.

### Extensions

- Unused images can be used during reading centers as an extended learning opportunity.
- In class or in collaboration with the art teacher, prompt students to create their own maps of spaces from their own lives. Maps should include titles, legends, and a compass rose. To further extend student learning, students can be prompted to write about their maps, describing their purpose, how they might be used, and the tools they used to make the map.
- Students can research the tools used to make maps throughout history and build a timeline showing the development of map-making technology throughout time. Students can write accompanying research papers.
- Invite students to bring maps from home to share or make quizzes for their peers.
- Challenge students to make treasure maps of the playground. Once completed, students can hide a school supply in the final destination. If other students are able to use the map to find the “treasure” the map-maker wins.
How do time, technology, and author’s purpose affect the way maps look?

“I can analyze historical maps to correctly answer 8/10 assessment questions.”

Directions: Read the description, and look at the map below. Then answer questions 1 and 2.

Uranium is a natural resource found in the United States and elsewhere in the world. Although it has other uses, uranium is mostly commonly known as a metal used by scientists and engineers to power nuclear power plants and construct nuclear weapons for the military. Uranium is primarily obtained through mining.

United States Uranium Resources Map [1978]

Circle the best answer below.

1. The information provided in this map would be most useful for_________.
   a. studying different landforms found in the U.S.
   b. studying the state capitals.
   c. researching which area of the U.S. contains the most uranium deposits.

Answer in a complete sentence.

2. Pretend you are the C.E.O. of a major uranium mining company, and the company has the opportunity to expand into Alaska or Hawaii. In which of those two states should you expand into? Explain why.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Directions: Examine the two maps below. Pay close attention to the date that each one was published. Then answer questions 3 and 5.

MAP OF THE UNITED STATES – Published 1904

3. The United States of America continued to expand during the 1900s. What two new states were added to the U.S. between the time when the first map was published in 1904 and when the second was published in 2000?

__________________________________  __________________________________

MAP OF THE UNITED STATES – Published 2000

4. The U.S. flag is sometimes called “the stars and stripes” because it has a white star for every state in the U.S. and a stripe for the original thirteen colonies that fought for independence against Great Britain. Using this knowledge and your answer to question 3, how must the U.S. flag also have changed between years 1904 and 2000?

__________________________________  __________________________________

__________________________________  __________________________________

__________________________________  __________________________________

__________________________________  __________________________________
Directions: Examine the map below. Then answer questions 5-7.

Election maps show how people or states voted in an election. The map below show which candidate won each state during the 2012 presidential election. Different states are worth different number of points depending on how many people live there. Whichever candidate receives the most points becomes the next president. In 2012, the winning candidate was Barack Obama.

5. Circle the T for true or F for false to show whether each statement is true or false.
   T  F  Tennessee voted for the Democratic candidate.
   T  F  Texas was the southernmost state to vote for the Republican candidate.
   T  F  The west coast states all voted for the same candidate.

6. Use the map to complete the following:
   a) Write the names of any two states that voted for the Democratic candidate in 2012.
      ____________________________________________________________
      ____________________________________________________________

   b) Write the names of any two states that voted for the Republican candidate in 2012.
      ____________________________________________________________
      ____________________________________________________________

7. Use complete sentences to explain why Alaska and Hawaii are shown separately from the other 48 states.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
Directions: Use the map below to answer questions 8 and 9.

8. If you left Nashville and were traveling toward the largest national park in the state, which direction would you be traveling to get there?

   ____________________________

9. Write your own question that can be answered using information only from this map. Then, write the answer to your own question.

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

10. Reflection: Answer the investigative question using complete sentences. Your answer should include an example of how time, technology, and author’s purpose each affect the way a map looks.

    How do time, technology, and author’s purpose affect the way maps look?

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
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