**“Critical Thinking about Maps and Mapmaking”**

**9th Grade; Earth Science; a 5-day unit**

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**2019**

**Overview**

This curriculum uses maps and mapmaking to galvanize critical thinking about authorship, bias, power, and perspective. The New York State Earth Science Regents Exam places a heavy emphasis on reading and interpreting the various maps, tables, charts and diagrams contained in the [Earth Science Reference Table](http://www.p12.nysed.gov/assessment/reftable/earthscience-rt/esrt2011-engr.pdf). Map-reading skills are critical, and in building to a mastery of these skills, I would like to front load our work with creative explorations of mapping, a critical analysis of authorship in mapmaking, and a study of native maps. We will also explore the concepts of ‘space vs. place’ and ‘community and land’ vs. ‘citizen and government’. Students will compare and contrast the maps of settler colonialism with Native maps to make inferences and draw conclusions about belief systems and relationships with land. Finally, in order to facilitate learning and analysis around indigenous connections to landscape, we will use food as the vehicle to understand how culture emanates from landscape, and to consider what is lost within community when that connection is ruptured.

**Essential understandings**

*Maps have specific perspectives, purposes, and agendas.*

*Culture is inherently attached to landscape.*

*Memory is affected by emotion and is distinctly associated with time and place.*

*Native cultures, traditions, and food histories were attacked through racist ideologies and colonial practices.*

**Common Core Standards (ELA standards for reading, speaking and listening)**

*CCSS.ELA-LITERACY.RI.9-10.6*

*Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.*

[*CCSS.ELA-LITERACY.SL.9-10.1*](http://www.corestandards.org/ELA-Literacy/SL/9-10/1/)

*Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.*

[*CCSS.ELA-LITERACY.SL.9-10.2*](http://www.corestandards.org/ELA-Literacy/SL/9-10/2/)

*Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.*

[*CCSS.ELA-LITERACY.SL.9-10.1.C*](http://www.corestandards.org/ELA-Literacy/SL/9-10/1/c/)

*Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.*

**Lesson Outline**

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| **DAY 1**  **PULLING FOR BACKGROUND KNOWLEDGE AND UNDERSTANDING AROUND MAPS**   1. **Collaborative Brainstorm: With Which Types of Maps are you Familiar? Where Have You Seen Them?**   *Potential responses:*   * *Subway maps* * *New York City maps of the boroughs* * *Weather maps* * *Google maps*  1. **Consensus Definition: So What is a Map?**   *After this brainstorming session, students will work in groups to write a working definition of what a map is. Potential responses include concepts of representation, features, scale, landforms, directions, compass, streets, keys/indices, and more. Working definitions are to be shared and discussed.*   1. **Think-Out-Loud: What is This Map Representing?**   *Students are shown multiple maps, moving from familiar to abstract representations. Discussion is structured around what each map is attempting to communicate. Guiding questions for each map: what is this map representing? Who do you think made it? Why? What questions do you have?*   * Political Maps   + [2016 Presidential Election Map](https://www.nytimes.com/elections/2016/results/president)     - Potential group activity: Have students break up into groups to examine different representations of the 2016 voter results from [*Is the US Leaning Red or Blue? It all Depends on Your Map (Wired)*](https://www.wired.com/story/is-us-leaning-red-or-blue-election-maps/)and come to conclusions about what each map indicates about voting trends in the US. Help students to arrive at conclusions.   + [1917 French Propaganda Map (portraying Prussia as an octopus)](https://upload.wikimedia.org/wikipedia/commons/e/e4/Maurice_Neumont%2C_War_is_the_National_Industry_of_Prussia%2C_1917%2C_Cornell_CUL_PJM_1185_01.jpg) * Weather maps   + [National Weather Service Surface Maps](https://www.weather.gov/oun/sfcmaps)   + [Precipitation Map of the US](https://upload.wikimedia.org/wikipedia/commons/d/d3/Average_precipitation_in_the_lower_48_states_of_the_USA.png) * Road maps   + Physical examples you might have on hand.   + [“Negro Motorist Green Book”](https://www.history.com/news/the-green-book-the-black-travelers-guide-to-jim-crow-america) * [Topographic maps](https://www.khanacademy.org/math/multivariable-calculus/thinking-about-multivariable-function/ways-to-represent-multivariable-functions/a/contour-maps) (Khan Academy example 4: Literal Topographic Maps) * [Spread of deadly diseases](https://i.redd.it/q9jh5cwedqw11.png) (compare to trade route maps) * [Textile map of India and Pakistan](https://mymodernmet.com/pakistan-india-embroidery-map/) * [Obama presidential portrait](https://www.smithsonianmag.com/smithsonian-institution/obamas-official-portrait-flowers-cultivated-from-past-180968200/) (the flowers represent where he lived and his heritage; ask students: would you consider this a map?)  1. **Text Analysis:** [***Politics and Cartography: The Power of Deception through Distortion***](https://www.carnegiecouncil.org/publications/ethics_online/politics-and-cartography-the-power-of-deception-through-distortion) ***(The Carnegie Council for Ethics in International Affairs).*** Students will read and annotate the following excerpt from the text and then have a discussion around the following questions. *Why is it critical to scrutinize maps? If we don’t question authorship and agenda in mapmaking, what are the potential consequences? How are agendas, bias, and cultural context addresses, amplified or ignored in the maps we have looked at together as a class?*   *“Cartography is a powerful instrument of national policy, one that governments can use to influence peoples' beliefs and affect international affairs. With the simple stroke of a pen—or click of a mouse—the entire meaning of a map can change. These political distortions are far more worrisome than unavoidable geographic distortions, in that cartographers have introduced deception into the process for political purposes. Mapmakers can enlarge their own nations, pronounce wealth, or enhance power. The opposite is also true: they can make enemies appear small, exaggerate poverty, and marginalize unfavorable people, cultures, and countries. Maps are not intrinsically bad; they are just inherently distortions of the truth, with errors coming from reducing three dimensions into two or from deceptively-infused bias used to achieve political advantage. Users must therefore be aware of the product they are consuming. People must scrutinize the maps they use because the stories maps tell are powerful, but they are never completely true.”*   1. **Exit Slip: Revisit definitions of maps**   Based on our explorations, what needs to be added to our working definitions of maps? |
| **DAY 2**  **PERSONAL MAP HISTORIES**   1. **Engagement Activity: Geoguessr**   Students will engage with [geoguessr](https://geoguessr.com/maps/world) to look at landscapes/cityscapes around the world. They’ll use clues—such as, what language do you see on signs? How do we tell if an area is rural or urban? What side of the road are the cars driving on?—to make guesses about where in the world they are. This is an engagement activity intended to spark thinking around cartography and clues that lead us to draw inferences. *Teaching point: this is a fruitful moment to review observation vs. inference (example: I see that there are palm trees and a shoreline, so I infer that this is a tropical environment like the Dominican Republic).*   1. **Individual Activity: Autobiographical Mapping**   How would you capture your own relationships with New York City (or Brooklyn)? What places would you include, and why? What stories do you associate with each place? Why do such stories stay in your memory? Using mixed media, students will create their own memoryscape maps of the city where they live. *Teaching point: if you are a teacher in another city or in a rural town, feel free to adapt the exploration of place as is appropriate.*   1. **Group Work: Recalling a Common Experience**   Select a common experience (the first day of school, a field day, a field trip, etc.) and have students work in groups to write a short account of the experience, drawing from everyone’s memory bank.   1. **Mini-Lesson: Memory in the Brain**   Students will view “Memory” (Episode 1 of the Netflix series [*The Mind Explained*](https://www.vox.com/2019/9/12/20861728/the-mind-explained-netflix-vox)*)* to explore how place and memory are connected. **The hippocampus, the part of our brain responsible for processing long term memory and emotional responses, contains cells that are uniquely specific to time and place.** That means that although memories are flexible (they are rewritten, distorted, and unreliable, such as we see in eyewitness testimony in court proceedings), they are often anchored in emotion and place. Explore the studies done of memories of 9/11. Consider how they might be just as unreliable as daily recent memory. Have groups probe their own common experience from the previous activity to discuss holes and disagreements.   1. **Gallery Walk**   Students will participate in a gallery walk of their memoryscapes, moving around the classroom, using post it notes to leave reactions or questions on their peer’s maps.   1. **Exit Slip**   Discuss or have students write a written reflection: How does what we have learned about brain functioning and the way memory works connect to your personal memoryscape map? |
| **DAYS 3-4**  **TEXTUAL ANALYSIS: INTERPRETING NATIVE MAPS**   1. **Noticings/Wonderings Chart**   In groups, students complete a KLW chart for [Aaron Carapella’s *Tribal Nations Map*](https://www.npr.org/sections/codeswitch/2014/06/24/323665644/the-map-of-native-american-tribes-youve-never-seen-before)  *Vocabulary: autonym* (Wiktionary: “A name used by a group or category of people to refer to themselves or their language, as opposed to a name given to them by other groups.”) Discuss how the tribal nations map distinguishes between names that groups of people ascribe to themselves, versus names that are imposed by others.   1. **Discussion around Mapping Indigenous Territories**   Using Aaron Carapella’s map as our guiding resource, jigsaw a discussion using the following questions: *what are some challenges you believe surround the process of mapping indigenous territories? What defines a nation, and how are borders created? How do maps hold bias? In what ways do maps serve as colonial artifacts?* After holding a discussion about how information (and its representation in the form of maps) can be used to dispossess and control, have students explore the [Native Lands Interactive Map](https://native-land.ca/). Use the map to input various Brooklyn addresses (the school’s, home addresses, or various New York landmarks). Using the tool, students will be guided to links to learn about the Lenape and Canarsie peoples. In groups, students will engage with the [Question Formulation Technique](https://rightquestion.org/what-is-the-qft/) to brainstorm, establish, refine, and prioritize their own questions for investigation before and while using the aggregated and linked resources to explore the past and present of these nations. *Teaching point: once again, feel free to replace the Brooklyn and New York emphasis with another place and the tribal nations there.*   1. **Map exploration:** [**Ac ko mok ki’s map of the 200,000 square miles of the upper Missouri country**](https://www.ndstudies.gov/gr8/content/unit-ii-time-transformation-1201-1860/section-2-indian-maps-louisiana)   Students will use the [I2 strategy](https://media.bscs.org/icans/Icans_I2_SE.pdf)to investigate this indigenous map that was copied by Peter Fidler, a surveyor for the Hudson’s Bay Fur Company who was from Ac ko mok ki of the Blackfoot nation.  Observations to scaffold: *how is distance measured (bottom left corner)? What geographical features do you notice? Can you identify the directions of the map using the Rocky Mountains as an anchor point? What do the keys indicate (villages, names, numbers of tipis)? Consider the story of the map: the map was transcribed by a white man and was most likely conveyed to him through a drawing done from memory. What does this indicate about Ac ko mok ki’s deep knowledge and his relationship to a considerable territory?*  Further Resource: [How Different Cultures Understand Time](https://www.businessinsider.com/how-different-cultures-understand-time-2014-5) (Business Insider)   1. **Exit Ticket: Quote Examination**   Read the quote below and annotate for language of orientation. What does this quote tell us about the cardinal directions in the Lakota tradition? *Teaching point: go over the meaning of cardinal directions if this is a new vocabulary term for students.*  *“They say a long time ago that the woman in white first appeared to us (painting by Paul Goble), came to us with the order of prayer. We orient ourselves to the west, then move north, south, east, then perhaps to the sky and the earth - it’s calling all of creation. 7th direction - the story of the human heart, we saw the 7th direction is in the human heart. Suffice it to say that Lakota people don’t get lost, if we know where we are. We don’t get lost in life.” -Dakota Goodhouse*  *Further resources:* [*The Four Directions*](http://aktalakota.stjo.org/site/News2?page=NewsArticle&id=8593) (Akta Lakota Museum and Cultural Center and St. Joseph's Indian School); [PBS video](https://www.pbslearningmedia.org/resource/69dfd470-4133-4f46-a184-68bf2e809410/dakota-goodhouse-interview-question-3/) about Dakota Goodhouse (Standing Rock Sioux) |
| **DAY 5**  **CULTURE EMANATES FROM THE LAND**  In this lesson, students will share their own cultural connections with food, in order to begin to explore how memory, food, and culture are all deeply intertwined. Using personal memory as an inroad, students will explore traditional and modern native food traditions to better understand how indigenous cultures were and are deeply connected to land, and how in a very tangible way, food is the most elemental connector of people to landscape. This lesson offers significant opportunities for exploring landscape as a holder of cultural memory.   1. **Turn and Talk: Food Memories**   In pairs or triads, students will discuss powerful food memories that they have. *Prompting*  *questions: who makes the best food in your family? What is it? Is there a food you eat on*  *special occasions? What is it, and why is it special to you?*   1. **Focused Reading: *Our People Have Always Been Here*, Roberta Conner**   Using a “stations” setup of small groups, students will independently read excerpts from Bobbie Conner’s essay, annotating her references to food (and/or landscape). After this independent reading, groups will share their findings and thoughts with each other and then with the whole class. The following quotes will be highlighted for a whole-class discussion:   1. *Abundance is the standard in our culture, rather than scarcity...We have learned through the ages to be prepared to care for others, including visitors from distant places.* 2. *This reverence for the ancient covenant between our people and salmon, for example, resulted in the ethic that one should never take all of anything in harvest. Always leave some fish to pass upriver, roots and berries for the other species who eat them.* 3. *Our indigenous diet was lean, rich, and diverse, and our people were physically active and athletic (characteristics that became especially significant when compared to today’s diabetes-inducing nutrition and lifestyle).* 4. *[M]embers of the expedition ate, according to scholarly estimates, nine pounds of meat per man per day…. While we did not consume dogs, and would only consume horse meat in a rare circumstance, the Corps members preferred these meats to salmon.*   Extension activity: watch the [Interview with Bobbie Conner, published by the Confluence Project](http://www.confluenceproject.org/library-post/bobbie-conner-intestinal-fortitude/) and discuss: why are the Cayuse, Nez Perce, and Umatilla not more angry about their treatment by settlers over the years? What frightens Bobbie Conner today?   1. **The New Native American Cuisine**   **“We're the oldest cultures on this land, but in many ways we have the youngest cuisine.”**  Students will view [Why You MUST Try Native American Cuisine | AJ+](https://www.youtube.com/watch?v=fe52rEPQSuU) which provides an accessible historical framework for adolescents to investigate indigenous food histories from Chef Lois Ellen Frank (the pre-contact period, the European invasion, Government-Issue, and the New Native America). *Probing questions: how did displacement from land result in a loss of cultural knowledge and cultural resources? Consider the* [*stages of genocide*](https://i.redd.it/h49unfbcm8611.jpg)*: where does the Long Walk fit into this framework?*  Further resources: [Dine Food Sovereignty](https://www.dinecollege.edu/wp-content/uploads/2018/04/dpi-food-sovereignty-report.pdf) , [Toasted Sister Podcast (Radio about Native American Food)](https://toastedsisterpodcast.com/); and perhaps, an indigenous point of view concerning fry bread, “Death by Fried Bread.” |