Climate Change and the Fertile Crescent -- Is It Still Fertile?

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Level: 7th Grade Social Studies. Time Allotment: 53 Minutes.

Introduction: The Middle East--and within it the Fertile Crescent. Cradle of Civilization. This region gave rise to Middle Eastern civilizations more than 8,000 years ago. Plant and animal domestication, irrigation and new tools launched an agricultural revolution that transformed roaming hunter-gathers into a socially complex, permanent society.

Consider: But today, is there still a Fertile Crescent? Was a crippling drought from 2009-2012 in northern Syria a single event or part of pattern? We will explore area climate data and discuss possible effects.

Geographic Connections: Related to Global Cultural Themes:

D2.Geo.2.6-8. 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.6.3-5. Describe how environmental and cultural characteristics influence population distribution in specific places or regions.

D2.Geo.5.3-5. Explain how the cultural and environmental characteristics of places change over time.

Vocabulary: Weather, Climate, Climate Change, Fertile Crescent, Cradle of Civilization, Rain-fed agriculture, Anthropogenic Climate Change, Habitat Tracking, Tell Leilan.

Content Standards:

CCSS.ELA-LITERACY.RH.6-8.4: Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

CCSS.ELA-LITERACY.RH.6-8.7: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Essential (Compelling) Question: Is the Fertile Crescent still fertile? What are the consequences to the local population and how does that affect the world?

Placement of Lesson within Broader Curriculum/Context: This lesson falls in the middle of the 12 week Middle East Unit. It will serve as a transition lesson between Mesopotamia and the "Modern" Middle East. Outcome of the lesson will also influence our continuing study of Current Events from the region.

Learner Background: Students will be familiar with area geography. They will have completed a "Mapping the Middle East" project that required students to draw an 11 X 17 map of the area using the grid transfer method. Students drew political boundaries and geographical features. The assignment also included a series of questions based on information from the map.

Objectives for Lesson: After completing the lesson, the student will be able to use climate change vocabulary; identify regions in the Middle East; recognize data from climate studies; and summarize data and information from the lesson; record his/her understanding of the problem by creating an image.

Integration of 21st century skills: iPad use is a critical part of the lesson. While working in pairs, students will collaborate using the Google Earth Pro application on their device. Using this information, they will think critically and analyze real world images from the Middle East. Students will analyze, consult and present their finding to the class.

Assessment: Formative Assessment: "Greetings from the _____ Crescent."

> Working with their original partner, students will be given a piece of paper and asked to create, write and draw a post card called, "Greetings from the _____ Crescent!" Students will fill in the blank with an appropriate adjective and asked to respond, "Is the Fertile Crescent still fertile?" Students will write a 250-300 paragraph based on the lesson and graded on creativity, use of vocabulary and evidence. Students will also be given a hard copy of the Micro talk as a reference. Assignment is due the next meeting and findings will be presented to the entire class.

Materials/Resources: Students will use their copies of their Middle East map project – maps drawn several weeks earlier. Using school-assigned iPads, students will download and use Google Earth Pro. Instructor will mirror the activity with iPad on the class Smart Board Students will be given coordinates and locate northern Syria and identify the Fertile Crescent to see a bird's eye view of the region.

Lesson Development/Instructional Strategies

CLIMATE CHANGE IN TODAY'S WORLD: IS THE FERTILE CRESCENT STILL FERTILE?

I. (3 min) Visual: Show maps of the Middle East.
   a. For our purposes, the term Middle East is the area from Afghanistan to Egypt.

   b. Ask entire class: What do we see? Where is it?

   c. Follow up question: Within that area-- where is the Fertile Crescent? Why is it called the Fertile Crescent? What makes the Crescent Fertile? Do you think the Crescent always been fertile? Is the Crescent still fertile today?

   d. Transition to Micro-talk: In order to better answer these questions, we need a bit of background and vocabulary.

II. (5 min) Micro-talk: 3-5 minutes. Explain vocabulary: weather, climate and climate change. Review rain-fed agriculture, irrigated agriculture. Explain that the area has experienced climate change and abandonment thousands of years ago. Transition to present: examine a graphs and scientific research from UMass Amherst about temperature. Exit questions about climate change in the area today.

   Transition: How can we find our own evidence from here? Using our iPads, let us observe the area.

III. (15 min) Explain activity: Explore a part of the Fertile Crescent, northern Syria, using Google Earth Pro on iPads. (Alternative: use Google Earth Pro on an interactive white board) Tell students that in this activity they will observe the current topography and level of farming today. Explain that we will look at a "bird's-eye view" of the area and note what we see.

   a. Students will then be placed in mixed ability pairs. (Assignments will be posted before class.) One student will use their Ipad while the other will keep notes on what they see. Students will be given specific coordinates to enter. (Students will have had time to download the app and find their house in a previous session so no time will be lost). Students will be asked to note the level of green and browns in that part of the word. Write observations. Ask students to share observations with the class.

Transition to next activity: Ask students to think about what happens to the population when there is no rain. Where do they go? How do they react? Let us find out:

IV. (15 min) Closing activity: Variation of Rising Tides Activity.

a. Barren Crescent: Needed: 2 large green colored pieces of butcher block paper. Divide the class into two groups. Making sure there is enough room for all of the class to stand on one or the other piece of the paper. Tell the students they are people who live and depend on the Fertile Crescent and they are living and farming on the fertile area. Imagine there is a drought. Ask students to step off the paper. Then fold the paper by ¼ and ask the class to stand on it. What do they experience? Ask the class to stand back and fold each piece of paper in half. Ask student again to try and stand on the paper. Fold paper in quarters. How many students are left on the paper? Ask students what are they struggling to do? What happens to those who are depending on the Fertile Crescent? What are their options?

b. (15 minutes) Exit questions and Formative Assessment:
"Greetings from the _____ Crescent."

Students return to their original pair partner. They will be given a piece of paper and asked to create, write and draw a post card, "Greetings from the _____ Crescent!" Students will fill in the blank with an appropriate adjective and asked to respond, "Is the Fertile Crescent still fertile?" Students will be graded on creativity, use of vocabulary and evidence. Observations will be shared with the class. Students will also be given a hard copy of the Micro talk. Assignment will be submitted the following day and presented to the entire class.