The Cold War: It’s Not Rocket Science, or Is It???

Author
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Grade Level
8
Duration
1-2 class periods

National Standards
GEOGRAPHY STANDARDS
Element One: The World in Spatial Terms
1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

NEXT GENERATION OF SCIENCE STANDARDS
MS. Engineering Design
MS ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

Common Core Standards
ELA COMMON CORE
Reading Standards for 6-8 for Literacy in History/Social Studies
Key Ideas and Details
6-8.RH.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.

6-8.RH.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Other Arizona Standards
SOCIAL STUDIES STANDARD
Strand 1: American History
Concept 4: Postwar United States
PO 2 Describe the impact of the Cold War on the United States (c: Space Race)

Strand 4 Geography Concept 1: The World in Spatial Terms
PO2. Identify purposes and differences of maps, globes, aerial photographs, charts, and satellite images.

SCIENCE STANDARD
Strand 2: History and Nature of Science
Concept 2: Understand how science is a process for generating knowledge.
PO2 Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.

SIOP Elements

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MESA COMMUNITY COLLEGE
Education Studies Department
Teachers of Language Learners Learning Community (TLLC)

ARIZONA GEOGRAPHIC ALLIANCE
The Cold War: It isn't rocket science, or is it??

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TESOL Standard(s)

ESL: English for Content
Through The Use Of ESL Methodologies, The Student Will:
EFC-C. Compose in a variety of forms.
C1. Use Math, Social Studies, and Science target vocabulary
EFC-D. Communicate clearly using math, science, and social studies target vocabulary.
D2. Participate in small and large groups.
D3. Communicate through role-playing.

Arizona English Language Proficiency Standards
Stage IV
Reading
The student will analyze text for expression, enjoyment, and response to other related content areas.
Standard 3: The student will read with fluency and accuracy. The student will demonstrate fluency and accuracy by:
B-1: reading aloud passages from unfamiliar text, observing phrasing, punctuation and expression

Overview

The time of the Cold War is like ancient history to today’s students. They do not understand how historical events (WWII and post war) and technological advances (rocketry, Space Race) changed the thinking of the time and still influences some of our political and personal decisions today.

Purpose

In this lesson, students will understand events leading to the Space Race between the U.S. and Russia through a story about a group of WWII scientists and the creation of a timeline. Students will also role play how critical engineering decisions can affect history.

Key Vocabulary

Cold War: being hostile but not actually fighting
Space Race: competition between Russia and the U.S. for controlling space
Sputnik: first man-made satellite to orbit the earth
Satellite: a device designed to orbit the earth or another planet

Materials
The Cold War: It Isn’t Rocket Science, or Is It??

- Student Worksheet (Vocabulary, Connections, Map Reading, Timeline Activity) and Answer Key
- The Scientist Story (Teacher Part 1, Student, Teacher Part 2)
- Student Reading
- Vocabulary Cards
- Vocabulary Test and Answer Key
- National Geographic Timeline Website
  http://science.nationalgeographic.com/science/space/space-exploration-timeline/?rptregcta=reg_free_np&rptregcampaign=20131016_rw_membership_r1p_us_ot_w#close-modal
- Video clip of Apollo 13 engineers
  http://www.youtube.com/watch?v=5giXXW_UdAM
- WWII interactive map of war years (online)
  http://www.worldology.com/Europe/world_war_2_imap.htm
- Engineering lab
- Cups
- Straws
- Cardboard or Cardstock (4" X 5")
- Index cards
- Tape
- Rubber Bands
- Scissors
- Marshmallows (both large and mini)

Objectives

The student will be able to:

1. Define key terms
2. Follow engineering design to create a solution with a time limit.
3. Role play engineering under pressure
4. Identify differences on two historical maps (pre and post WWII)

Procedures

Prerequisites. Students should have some knowledge of World War II and the Cold War.

Engage:

a. Describe to students that everyone is connected. We are connected by where we live, by what we do, and by our history. Events in history have brought us together and our country to where it is today. Every person has some connection to every other person. (Preparation: Linking to Background, Linking to past learning)

b. Distribute the Student Worksheet. Explain to students that you will give them two minutes to pair with someone next to them and try to find all the things that connect them to each other. They should write a simple word in the box on their worksheet that says “connections” for each connection they find. For instance: If they both play football they would write “football” on their sheet. Set a timer and start. Give a warning at 1 minute and 30 seconds. (Grouping Option: Small groups)

c. Determine the pair with the most connections and have them tell three connections they found. Make this quick. Don’t spend too much time on this part. Optional: You may want to offer a small prize for the most connections.

Explore:

a. Talk again about connections and how events in history have changed the course of our lives. Sometimes big events like WWII change the world. Look at the maps on your worksheet. One is before WWII and the other is after WWII. Compare them and take two minutes to circle the places on the map that changed during the war (wait for 2 minutes while they look and circle the map borders that changed). Raise your hand and tell me a few things you noticed. (Application: Linked to objectives, promotes engagement)

b. Show the interactive map online. Explain that as the war progressed, the boundaries changed constantly. Explain that by the end of the war, the map looked like their second map and that some countries were completely absorbed into a different country. (Application: Meaningful)

c. Explain that big events such as wars have major impacts but sometimes it is just little events that can have a big impact. Tell them that today you will share a story, just a small event that also changed the course of history after the war. (Preparation: Linking to background)

Explain:

a. Read (or tell) the Teacher Part 1 of the scientist story. When you get to the end instruct students to read the student part of the story to decide what happened next. (Integrating Processes: Listening, Reading)

b. Open up class discussion about what they read and look at the map for possible routes for the scientists in this story. Have students draw a possible route on the map. (Grouping: Whole Class)
c. Read (or tell) Teacher Part 2 to wrap up the story and lead into the timeline activity. Discuss the definition of the Cold War and have students write it on their worksheet.  

(Integrating Processes: Listening)
d. Use the timeline from the National Geographic website to talk about the beginnings of the Cold War and the Space Race. As you go through the timeline, touch on main events and have students write them in the timeline boxes on their worksheet. Note: This timeline goes beyond the lesson. You should end this lesson with Apollo 13 on the timeline. This is also where the student worksheet ends. Discuss the definitions of Sputnik, Space Race, and satellite and add these to the definitions section of the worksheet.

(Scaffolding: Guided Practice)
e. Discuss Apollo 13 and the difficulties that took place. Tell the students that engineers at NASA faced many challenges to solve problems that were occurring. It was up to them to bring the astronauts home safely. Remember, these engineers knew these astronauts personally. They knew their families. It was up to them to save the lives of these astronauts, and sometimes, they had to work and think under a lot of pressure.

(Integrating Processes: Listening)
f. Show the video clip of Apollo 13. This shows a clip from the movie that shows engineers working under pressure when peoples’ lives depended upon it. (Scaffolding: Modeling)

Elaborate:
a. Explain to students that now it is their turn to think under pressure. They will have their own pair of astronauts to save. These astronauts have lost some of their equipment to land on the moon. They have to use what is left to safely land on the moon without falling out of the capsule.

(Scaffolding: Modeling)
b. Tell students that the two large marshmallows in their bag are astronauts, the cup is the capsule that they are in and the rest of the materials are for them to use as they will. (Application: Hands on)

c. Explain the criteria for the lab. You must devise a way to safely land the “astronauts” on the moon without them coming out of the cup. Whatever they build will be dropped from shoulder level to the ground. The impact must be soft enough that the astronauts don’t fly out.
1. “Astronauts” must stay in the cup
2. Cup must be upright
3. Nothing can be built above the cup. Everything must be built from the base of the cup down. (Application: Hands on)
4. All other materials may be used as desired.

5. Students will have one minute to brainstorm, one minute to sketch, and three minutes to build. Then all capsules will be tested. (Grouping: Small Groups)

d. Refer students to the engineering design part of their Student Worksheet. Have them write something in the “Ask” portion such as “How will I build a structure from materials I am given to keep the “astronauts” in their capsules?” (Assessment: Group)
e. Give each group of 4 students the materials in the lab bag. (Materials and directions can be found at the link for the NASA engineering activity). Instruct them to feel free to look at the materials, but they cannot open the bag until directed. (Scaffolding: Independent practice)
f. Refer students to the “Imagine” part of their worksheet. Tell them they will only have one minute to brainstorm ideas and that they should list them there. Set a timer (or watch the clock) and give students one minute to brainstorm ideas. After one minute, move to the next step. (Scaffolding: Independent practice)
d. Refer students to the “Plan” part of their worksheet. Tell them they will now have only one minute to draw a sketch of what they plan to do. Set the timer and stop them after one minute.
e. Refer students to the “Create” part of the their worksheet. Ask for any questions and make sure students understand, then say, “You may begin!” Set the timer for three minutes. Remind them periodically that they may change the course of history and they must save the lives of these astronauts! Call out remaining time every 30 seconds or so (Application: Promotes engagement)

e. Have groups orally share their success or failure of saving the “astronauts.” Have groups that were successful describe their capsule designs. Give students one minute to fill in the “Improve” section of the worksheet.

Evaluate:
The worksheet will assess most of the standards during the lesson. Follow up assessment will be in the form of a writing assignment with this prompt:

How did geography play a role in the story about the scientists?

Answers can include:

- Fact that Russian owned territory on the Baltic made it possible for Allied soldiers to enter Germany.
- These scientists could not have been far from the Baltic coast or the soldiers would have been discovered.
- The scientists went back to the lab to get the research papers shows how close the lab was to the Russian held territory.
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• The Russians then capture the returning scientists as they traveled through their territory.
• After the war, the separation of the two competing nations made this more likely to be a cold war since traveling large distances to physically attach each other would be difficult.
• However the distance could be minimized with missiles—hence a space race.

Assessment

Students will score:
• 80% or higher on the Student Worksheet to be considered mastery.
• 4 or higher on the 6 Traits Writing Rubric in the area of Ideas and Organization on the writing assignment to be considered mastery.
• 80% or higher on the Vocabulary Test to be considered mastery.

Extensions

1. Further explore the interactive map for WWII and read the reading that goes with it.
2. Cover the entire NASA timeline
3. Do one or more of the other NASA/Design Squad challenges in the Moon Educator’s Guide on the NASA site.
4. Write an essay as described above to assess understanding.

Sources

Engineering Lab from the NASA site: http://www.nasa.gov/audience/foreducators/topn
y/materials/listbytype/OTM_Touchdown.html

Interactive Map for WWII: http://www.worldology.com/Europe/world_war_2_i
map.htm

National Geographic Space Timeline: http://science.nationalgeographic.com/science/spa
ce/space-exploration-timeline/?rptregcta=reg_free_np&rptregcampaign=20131016_rw_membership_r1p_us_ot_w#close-modal

Video clip of Apollo 13 engineers http://www.youtube.com/watch?v=5giXXW_UdaM