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

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Grade Level	8
Duration	1-2 class periods

National Standards	AZ Standards	Arizona Social Science Standards
GEOGRAPHY **Element 1: The World in Spatial Terms** 1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information **Element 4: Human Systems** 13. How the forces of cooperation and conflict among people influence the division and control of Earth's surface **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.	**ELA** **Writing** **Production and Distribution of Writing** 8.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **Language** 8.L.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression. **SCIENCE** U1: Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised. U2: The knowledge produced by science is used in engineering and technologies to solve problems and/or create products. U3: Applications of science often have both positive and negative ethical, social, economic, and/or political implications.	**GEOGRAPHY** **The use of geographic representations and tools helps individuals understand their world.** 8.G1.1 Use geographic tools and representations to analyze historical and modern political and economic issues and events. Key tools and representations such as maps, globes, aerial and other photos, remotely sensed images, tables, graphs, and geospatial technology **Examining human population and movement helps individuals understand past, present, and future conditions on Earth's surface.** 8.G3.1 Evaluate the impact of economic, political, and social decisions that have caused conflict or promoted cooperation throughout time. **HISTORY** **Cycles of conflict and cooperation have shaped relations among people, places, and environments.** 8.H2.2 Investigate how conflict can be both unifying and divisive both domestically and internationally. 8.H2.3 Explain how geographic and environmental factors shaped communities and how competition over resources have affected government policies. **Economic, political, and religious ideas and institutions have influenced history and continue to shape the modern world.** 8.H3.1 Explain how and why prevailing civil, social, religious, and political movements changed the United States during the 20th and 21st centuries.

SIOP Elements

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

Preparation	Scaffolding	Grouping Option
Adapting content **Linking to background** **Linking to past learning** Strategies used	**Modeling** Guided practice **Independent practice** Comprehensive input	**Whole class** **Small groups** Partners Independent
Integrating Processes	**Application**	**Assessment**
Reading Writing Speaking **Listening**	**Hands on** Meaningful **Linked to objectives** **Promotes engagement**	**Individual** **Group** **Written** Oral

Arizona English Language Proficiency Standards

Grade 6-8
Basic
Listening and Reading
Standard 1 By the end of each language proficiency level, an English learner can construct meaning from oral presentations and literary and informational text through grade appropriate listening, reading, and viewing.
B-1: determine the central idea or theme and explain how they are supported by using some text evidence.
B-2: recount specific details and information in a variety of texts.
Speaking and Writing
Standard 4 By the end of each language proficiency level, an English learner can construct grade appropriate oral and written claims and support them with reasoning and evidence.
B-1: construct a claim about a topic or text.
B-2: supply a reason that supports the opinion and is based on some textual evidence.
B-3 use grade appropriate words and phrases.
B-4: provide a concluding statement to an opinion.
Listening, Speaking, Reading, and Writing
Standard 6 By the end of each language proficiency level, an English learner can participate in grade-appropriate oral and written exchanges of information, ideas, and analyses, responding to peer, audience, or reader comments and questions.
B-1: participate in discussions about familiar topics and texts.
B-2: participate in written exchanges about familiar topics and texts.
B-5: contribute relevant information and evidence to collaborative oral and written discussions.

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

- Student Worksheet
- The Scientist Story (Teacher Part 1)
- Student Part
- Teacher Part 2
- What Happened Next??? Student Reading
- Engineering Design Model
- Vocabulary Cards
- Vocabulary Test and Answer Key
- Video clip of Apollo 13 engineers (3.03 min) https://www.youtube.com/watch?v=C3J1AO9z0tA
- Engineering lab http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/OTM_Touchdown.html for exact instructions and amounts.
- 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. 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, distribute or project the Student Part and instruct students to read it. **(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 the class into the concept of a Cold War. Discuss the definition of the Cold War and have students write it on their worksheet. **(Integrating Processes: Listening)**

d. Spend a few minutes discussing that rockets were the way of the future in space exploration and for fighting conflicts. This is why having rocket scientists was so important. Share information from the entry on Wikipedia about the Space Age which includes short biographies on a few of the prominent rocket scientists and a timeline of space exploration. https://en.m.wikipedia.org/wiki/Space_Age

e. Discuss Apollo 13 as the 7th manned mission in the Apollo program and the difficulties that took place. https://en.wikipedia.org/wiki/Apollo_13 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. https://www.youtube.com/watch?v=C3J1AO9z0tA 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. Show students the bag of the marshmallows and other supplies and the Engineering Design Model worksheet. 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.
- "Astronauts" must stay in the cup
- Cup must be upright
- Nothing can be built above the cup.
- Everything must be built from the base of the cup down. **(Application: Hands on)**
- All other materials may be used as desired.
- You will have one minute to brainstorm, one minute to sketch, and three minutes to build. Then all capsules will be tested**.**

Divide students into groups of 4. **(Grouping: Small Groups)**

d. Distribute the Engineering Design Model worksheet to all students in the group. Have them work together to 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 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 groups 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 groups 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 groups to the **"Create"** part of 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? (Assessment: Individual, Written)**

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.
- 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

Social Science and ELA
The Student Worksheet can be graded for accuracy and completeness. A score of 80% or higher would be considered mastery.

The Vocabulary Test can be graded to measure language acquisition. A score of 80% or higher would be considered mastery.

The writing assignment can be graded with the 6 Traits Writing Rubric in the area of Ideas and Organization. A score of 4 or higher on the rubric would be considered mastery.

Science
The Engineering Design Model worksheet can be graded for accuracy and completeness. A score of 80% or higher would be considered mastery.

Extensions

Students can research current efforts in space exploration or use of rockets focusing on the newest technologies.

Students can research the human side of space exploration by creating a report on an astronaut.

Students can write how the Cold War was based on fear and conflict between the U.S. and the Soviet Union/Communism. Has this conflict turned into international cooperation in exploring space?

Sources

Video clip of Apollo 13 engineers (3.03 min)
https://www.youtube.com/watch?v=C3J1AO9z0tA
Engineering lab
http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/OTM_Touchdown.html
Timeline of Space Age
https://en.m.wikipedia.org/wiki/Space_Age
Apollo 13 as the 7th manned mission in the Apollo
https://en.wikipedia.org/wiki/Apollo_13