NATIONAL MUSEUM OF THE UNITED STATES AIR FORCE™

Drag, Parachutes, and the Candy Bomber

Students will learn about drag through the use of parachutes as well as understand real life applications through historical lessons.

LESSON PLAN (L)

Learning Objectives

The students will

- Learn about the humanitarian effort known as the Berlin Airlift, including the special story of US Air Force pilot Gail Halvorsen
- Learn about parachutes and the effects of drag on a falling object
- Understand real world applications of parachutes

Purpose

Students will learn about drag by learning about an historic humanitarian effort and building a simple parachute to recreate one of its missions. Students will learn about the Berlin Airlift and the Candy Bomber to understand the importance of humanitarian aid and parachute logistics.

Humanitarian airlift efforts have always been a key component and top priority for the Air Force, and these missions have made an extremely positive impact on the lives of countless individuals around the world. For example, in June 1948, the Soviet Union decided to block all roads, railways and rivers going into the city of Berlin (which was still in ruins after World War II). The United States, Britain and France agreed to join forces to keep West Berliners supplied with coal and food, and above all, to keep them free from Soviet rule. The Berlin Airlift, nicknamed "Operation Vittles'" lasted for fifteen straight months, and nearly 2.3 million tons of supplies (4.6 billion pounds) were flown into Berlin during 277,000 flights (there was one flight every three minutes). While this incredible humanitarian effort was occurring, a young Air Force Lieutenant, Gail Halvorsen, became a hero to the people of West Berlin, and he was known by the children there as Uncle Wiggly Wings or the 'Candy Bomber'. He would fly over and 'wiggle his airplane's wings' so the children would know it it was him. Then he would drop small parachutes down to them with candy attached.

Grade Level: 2 – 3

Ohio Learning Standards/Social Studies (2018)

Grade 2:

History Strand: Historical Thinking & Skills and *Heritage*

2. Change over time shown

3. Science and technology change daily life

4. Biographies show how peoples have shaped the world

Government Strand: Civic Participation & Skills and *Rules & Laws*

10. Respect for the rights of self and others

11. Groups are accountable for choices they make

12. There are different rules and laws

Grade 3:

Geography Strand: Spatial Thinking & Skills and *Human Systems*

4. Physical and political maps

6. Evidence of positive & negative human mods

7. Systems of transportation and communication

Civic Participation and Skills and *Rules and Laws*

9. Members of local communities

10. Individuals make the community a better place

Ohio Learning Standards/Science (2018)

Expectation of Learning

Nature of Science

Earth and Space Science

2.ESS.1: Air and Atmosphere

Physical Science

2.PS.1: Forces

3.PS.1: Air is made of matter

Materials Required:

- One paper napkin per student/team
- Four sections of string per parachute, each 12 inches in length
- Four small pieces of cellophane tape for securing the strings to the napkin
- One jumbo paper clip per student
- One miniature-size candy bar per parachute

Procedures:

A. Warm-Up

1. Teachers should review the information contained within the "Intro/Background" section and decide what information is good to discuss with students.

2. Teachers should prepare the class for the activity by preparing the string and other materials.

B. Activity

1. Make the parachute (see page 6 for pictures):

   a. Open the napkin completely

   b. Place a section of string on one of the corners, so that the end extends onto the napkin about half an inch

   c. Secure the string to the corner with tape (hint: it will stay in place better if you curve the end of the string a bit before securing)

   d. Repeat with the other three sides of the napkin

   e. Carefully gather the four string ends and ensure that they are of equal length by lifting the napkin slightly off of the work surface (a balanced, symmetric parachute always flies/descends better)

   f. Thread the four string ends through a large paperclip and tie them into a single knot

2. Have the students stand by their desks and have them test-drop their parachutes

3. If there is a location with a balcony or other elevated area, you may wish to have your students individually test their parachutes under your direct supervision (make sure there are no persons in the proximity of the drop zone, etc.)

4. Have students drop their parachutes a second and a third time, with an additional paperclip added for more weight/mass each time

5. Your students should then attach a miniature-sized candy bar to the clip and drop it three more times

6. You may wish to have your students observe and record descent times during the first, second and third drops of their parachutes.

7. A simple chart to record data might include: student's name, drop number and time aloft

8. Have students discuss what happens (and why) when more weight is added to their parachute

Assessment/Evaluation
The students should be evaluated on their class participation, listening skills and ability to follow verbal instructions.

Resources/References

Berlin Airlift:
https://www.history.com/topics/cold-war/berlin-airlift
https://history.state.gov/milestones/1945-1952/berlin-airlift
https://history.state.gov/milestones/1945-1952/berlin-airlift

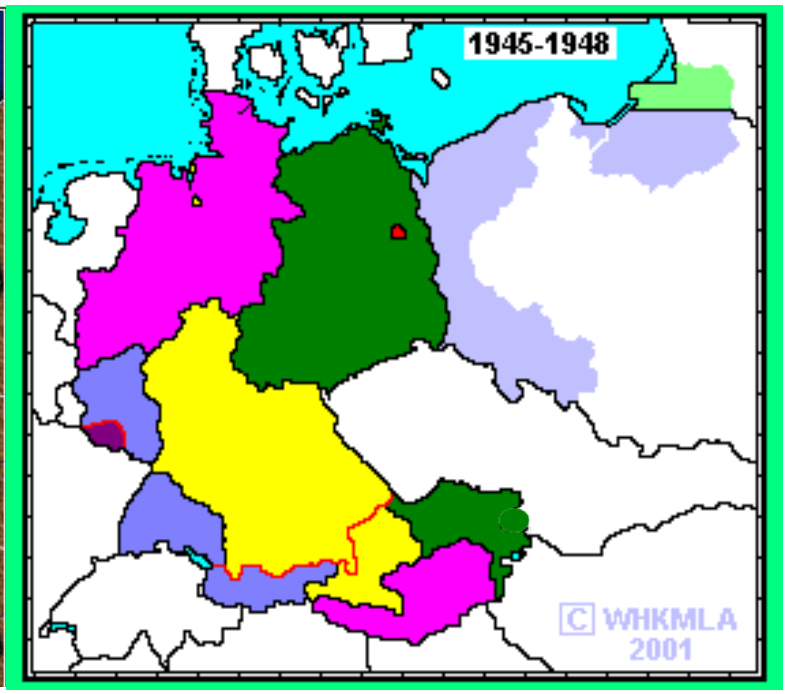
Candy Bomber:
https://www.smithsonianmag.com/smart-news/sweet-story-berlin-candy-bomber-180965156/
https://www.churchofjesuschrist.org/study/new-era/1977/12/the-candy-bomber?lang=eng

National Museum of the United States Air Force:
https://www.af.mil/News/Article-Display/Article/1634294/candy-bomber-delivered-chocolate-hope-to-berlin/
https://www.af.mil/News/Article-Display/Article/2004950/chance-encounter-at-ata-reveals-impact-of-berlin-candy-bomber/ https://www.af.mil/News/Article-Display/Article/2004950/chance-encounter-at-ata-reveals-impact-of-berlin-candy-bomber/

Paper Parachute:
https://study.com/academy/lesson/how-to-make-a-paper-parachute-experiment.html

Photos for Extra Description

INSERT SHOWS GERMANY'S LOCATION; MAIN DRAWING SHOWS AIR CORRIDORS (NORTHERN ONE IS 160 MILES LONG; SOUTHERN ONE IS 290 MILES LONG; CEN- TRAL ONE IS THE ONLY OUTGOING ONE).



THE GREEN ZONES ARE SOVIET UNION TERRITORY WITH RED DOT REPRESENTING BERLIN; LAVENDER AREAS ARE THE BRITISH ZONES; PURPLE SHOWS THE FRENCH TERRITORY; YELLOW REPRESENTS THE ZONE FOR THE UNITED STATES OF AMERICA.

AIR FORCE PILOT GAIL HALVORSEN, WHO BECAME A HERO TO THE CHILDREN OF WEST BERLIN.

CLOSE VIEW OF EAST AND WEST BERLIN WITH DESIGNATED ALLIED SECTORS.

West Berlin children playing Berlin Airlift!

Uncle Wiggly Wings flying over awaiting children!

Parachute Instruction Pictures