

Airline Carry-On Luggage

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Airline Carry-On Luggage

Teacher Edition

You and your students will be taking a trip to the tropical rainforests of South America. Because of new airline safety regulations, the process of loading the students onto the plane will be very slow. To reduce time, your students must design and build luggage that fits within the standard size requirements for most airlines. Your students must research the size requirements, design pieces of soft luggage, build their luggage, and evaluate their luggage. Student handouts are provided for each step.

Integration Idea

This lesson can easily be integrated into a geography lesson. The students could travel to a location they are currently studying. Along with designing and building luggage, the students can determine what they will need to pack. Students can pack their luggage with outfits, artifacts or anything else relevant to the area of their study. A mock-up airport or airline can be created. Once the students reach their final destination, a simulated environment may be created, representing the culture of that area.



Correlation to Standards for Technological Literacy

Standard 9: Students will develop an understanding of engineering design.

Correlation to Pennsylvania Academic Standards for Science and Technology

3.2.4.D Recognize and use the technological design process to solve problems.

- **Recognize and explain basic problems.**
- **Identify possible solutions and their course of action.**
- **Try a solution.**
- **Describe a solution, identify its impacts and modify if necessary.**



Grade Level 3rd – 4th

Recommended supplies for the teacher:

- Find or build a box with the inner dimensions equal to the outer dimensions of the luggage.
- Student Handouts
- Recommended Materials
 - Found Materials, Cardboard, Duct tape, Poster Board, Crayons, Markers, Masking tape, Glue, Wood strips, Dowel rods, Balsa wood, etc.



Criteria:

- Must fit within specified requirements
- Must be functional
- Must be constructed with provided materials or found materials





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Students will:

- Students will research the size requirements for carry-on luggage.
 - Current airline carry-on luggage size requirements for most airlines are 22" x 14" x 9".

Resources for updated size requirements

- http://www.thesavvytraveller.com/tools/2before_you_go/luggage/airline_requirements.htm
- <http://www.knownworld.com/faqs.html>
- <http://www.tripbags.com/bags101/airline.htm>
- <http://www.tenba.com/airline.htm>

- List the size requirements of their carry-on luggage. (Refer to student handout one)
- Define in paragraph form their design problem. (Refer to student handout two)
- Brainstorm design ideas individually. (Refer to student handout two)
- Select their best design.
- Design and draw their luggage with approximate dimensions. (Refer to student handout three)
- Construct their luggage design. (The material can be found materials or materials provided by the teacher.)
- Measure their luggage and record the measurements.
- Test luggage's fit within the size requirements. (Made or found box with inner dimension equal with outer dimension of the luggage's size requirement.)
- Evaluate their design and the designs of others, and list problems with their luggage. (Refer to handout 4)
- List improvement for their luggage. (Refer to handout 4)

	Unsatisfactory 1	Satisfactory 2	Excellent 3
Size requirements (Handout 1)	Student did not research size requirements for carry-on luggage.	Student researched size requirements, but did not find information.	Student researched size requirements and completed handout one.
Define problem (Handout 2)	Student did not define the problem.	Student defined his or her design problem, with 4 or more grammatical errors.	Student defined his or her design problem with 3 or less grammatical errors.
Brainstormed designs (Handout 2)	Student did not brainstorm ideas or draw possible designs.	Student brainstormed ideas, and drew 3 or less possible designs.	Student brainstormed ideas, and drew 4 possible designs.
Detailed drawing (Handout 3)	Student did not complete a detailed drawing.	Student completed drawing, but did not include dimensions.	Student completed drawing and included dimensions.
Measuring luggage (Handout 3)	Student did not measure his or her luggage.	Student measured luggage but incorrectly.	Student measured luggage correctly.
Project evaluation list (Handout 4)	Student did not evaluate their project and list problems.	Student evaluated project with 3 or more grammatical errors.	Student evaluated project with 2 or less grammatical errors.
Improvement list (Handout 4)	Student did not list improvements.	Student listed improvements with 3 or more grammatical errors.	Student listed improvements with 2 or less grammatical errors.



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Background

- Measuring Lesson
 - Students will practice measuring
 - Students will measure their luggage.
 - Students will list their luggage's dimensions.
- Engineering Design Process (student worksheet)
 - Students will define their problem.
 - Students will brainstorm ideas.
 - Students will choose the best solutions.
 - Students will draw their designs.
 - Students will build their designs.
 - Students will evaluate their designs.
 - Students will suggest improvements for their luggage.
- Geography lesson
 - Integration of other content material.
- Scenarios
 - Student may simulate an airport situation. They may act out the basic operations of an airport.

Discussion Questions



1. Why are size requirements important for an airline to operate successfully?
2. Why do you have to plan and design something before you build it?
3. Why is one piece of luggage better than the others?
4. What do you think we should pack for our trip to South America?

Additional Activities

Because of new airline safety regulations certain items can not be taken onto a plane. Students may research items that they can and can not take onto a plane. Then they may apply their new knowledge to an on-line airline safety games.

<http://www.tc.gc.ca/Youth/menu.htm>



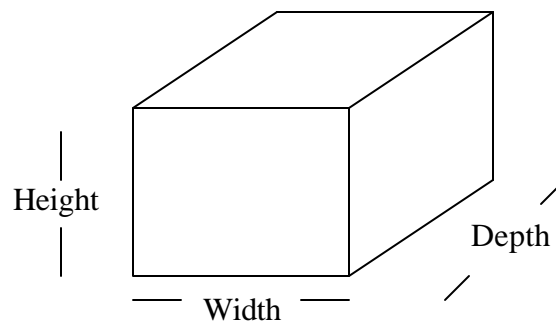
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When people travel on airplanes, they carry their clothes and other personal items in luggage. When a person arrives at an airport, they wait to check-in their luggage. After the luggage is checked-in the airline workers load the luggage into storage areas on the plane.

To reduce wasted time, some people carry their luggage onto the airplane. The luggage people carry onto the plane is called carry-on luggage.

Because the area inside of an airplane is very small, the airline has created size requirements for carry-on luggage.

Directions: You will be taking an airplane trip to the tropical rainforests of South America. Because of airline safety regulations, your carry-on luggage must fit within special size requirements. Your job is to design and build a piece of carry-on luggage that fits within the size requirements of most airlines.



**Step One : Research carry -on luggage size requirements for one airline.
List your finding below.**

Airline Name: _____

Height: _____

Width: _____

Depth: _____



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Step Two: Define your design problem in your own words:

A faint, light-colored sketch of an airplane fuselage is overlaid on the horizontal lines. It shows the side profile of the aircraft, including the windows, wings, and tail section.

Step Three: What do you want your carry-on luggage to look like? Brainstorm four different ideas. Draw your luggage designs in the boxes below.

A large, empty rectangular box with a black border, intended for drawing a luggage design.A large, empty rectangular box with a black border, intended for drawing a luggage design.A large, empty rectangular box with a black border, intended for drawing a luggage design.A large, empty rectangular box with a black border, intended for drawing a luggage design.



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Step Four: Draw your final carry-on luggage design. Make sure to include dimensions.

Step Five: Build your piece of carry-on luggage.

Step Six: Measure your piece of carry-on luggage. List the height, width, and depth below.

Height: _____

Width: _____

Depth: _____



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Step Seven: What was wrong with your carry-on luggage? Did your luggage look like your design? List your answers below.

Step Eight: How can you improve your luggage design?
