

Lesson Plan

NEUROHEADWAY

Neuroscience Into Education

Hot air balloon, Airship, Hang glider and Parachuting

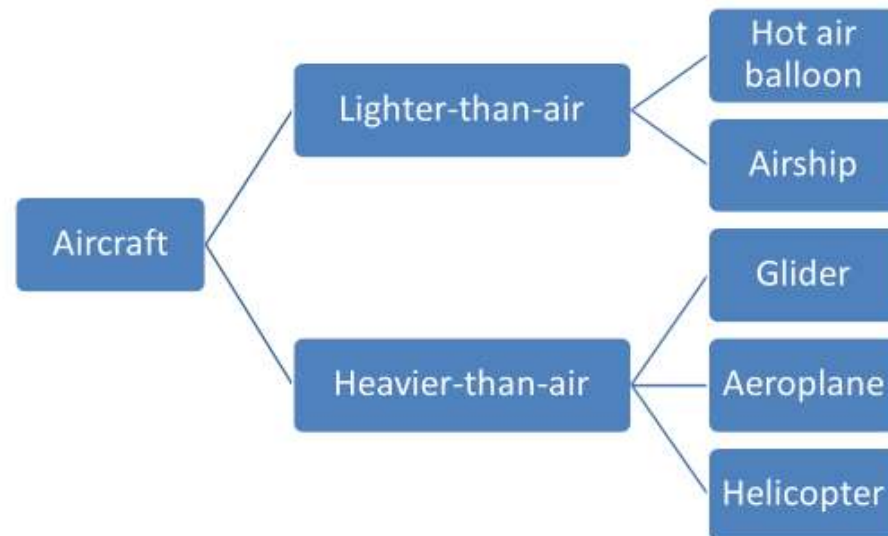
Lesson objective	Introduction	Main activity	Reflection	Success criteria
Introduction to the lesson	Explain to children that they will learn about hot air balloons, Hot air balloons are in the lighter than air aircraft category. In this lesson they will learn how a hot air balloon flies, how a pilot flies the hot air balloon and why a hot air balloon is able to go up into the air.			
Give an overview of the main components of a hot air balloon. LO: What are the main components of a hot air balloon? LO: Why does a hot air balloon go up into the air (float).	Ask children what they know about a hot air balloon Go over PowerPoint presentation explaining the main components of the hot air balloon. Introduce the main components of a hot air balloon; basket, envelope, burner. Introduce the concept of hot air and that hot air rises (lighter). This hot air is used to lift the balloon.	This section has four activities: A. Connect the dots. B. Maze. C. Name the object. D. Colour drawing.	Review the main components of a hot air balloon	I know and can identify the main components of a hot air balloon. I understand that warm air rises and causes a hot air balloon to float

Give an overview of the main components of an airship LO: Name and distinguish different components of an Airship	Ask children what they know about an airship. Go over PowerPoint presentation introducing an airship and the main components of an airship and how it is used.	This section has three activities: A. Colour drawing. B. Connect the dots. C. Rebus + crossword.	Review the main components of an airship.	I know the main components of an Airship. I can name how an airship is used.
Give an overview of the main components of a hang glider LO: Name and distinguish different components of a hang glider LO: Know what a thermal is and how it is used by a hang glider.	Ask children what they know about a hang glider. Go over PowerPoint presentation introducing a hang glider and its main components. Explain and show what hot air and thermals can do for a hang glider.	This section has three activities: A. Fold a hang glider. B. Name the object. C. Finish the sentence cross word.	Identify and name the main components of a hang glider. Understand the way thermals are used by hang gliders.	I know and can identify the main components of a hang glider. I know what a thermal is and how it is used by hang gliders.
Give an overview of parachuting. LO: Know how a parachute is controlled.	Ask children what they know about parachuting. Go over PowerPoint presentation introducing parachuting they way it is	This section has three activities: A. Drawing – make a colour drawing.	Explain the way a parachute is controlled. Identify and name the different	I know how a parachute is controlled. I can name different application of a parachute.

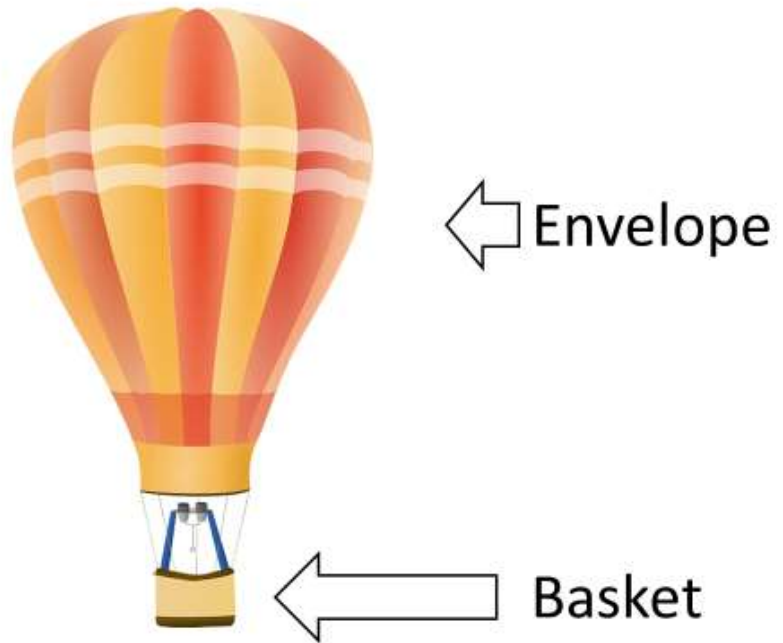
LO: Name different applications where a parachute is used.	controlled and how a parachute is used in different applications.	B. Find your way through the maze – Land safely. C. Make your own parachute – based on a historical drawing from DaVinci, a parachute out of paper.	applications of a parachute	
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Power point Example

Aircraft - Balloon



Hot air balloon

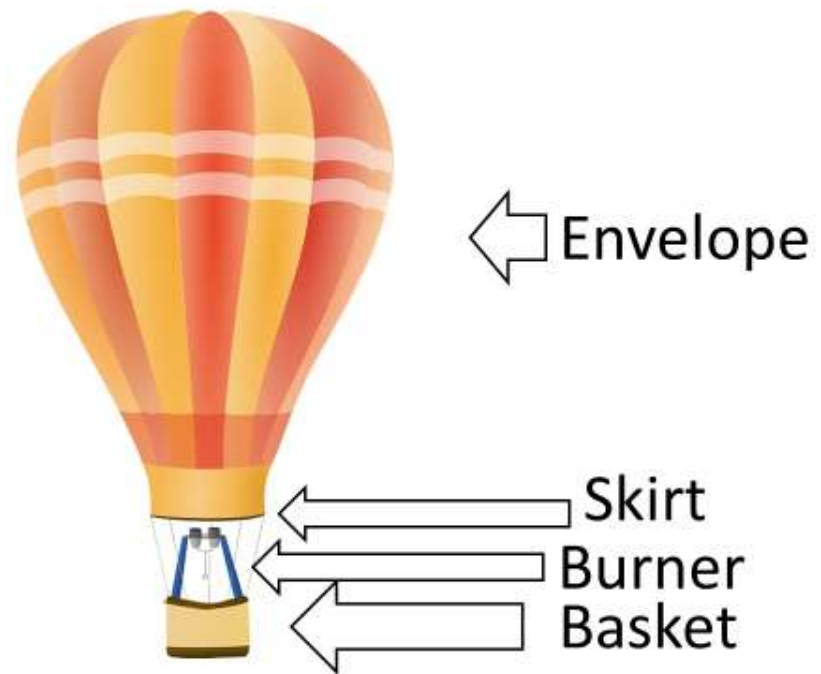


How does a hot air balloon fly?



Warm air rises.

Hot air balloon



The burner



Teachers Evaluation and Handouts

Hot air balloon, Airship, Hang glider and Parachuting

This module:

- discusses the main components of a hot air balloon.
- discusses the main components of an airship.
- discusses the main components of a hang glider.
- discusses what a parachute is and what it is used for.

At the end of this module, students:

- will be able to distinguish the main components of a hot air balloon.
- will be able to distinguish the main components of an airship.
- will be able to distinguish the main components of a hang glider.
- will know that warm air rises and what thermals are.
- will know the different applications of a parachute.

Available activities in this lesson:

- Slide 18 - Hot air balloon
 - A. Connect the dots.
 - B. Maze.
 - C. Name the object.
 - D. Colour drawing.
- Slide 28 - Airship:
 - A. Colour drawing.
 - B. Connect the dots.
 - C. Rebus + crossword.
- Slide 43 - Hang glider:
 - A. Fold a hang glider.

B. Name the object.

C. Finish the sentence cross word.

- Slide 60 - Parachuting:

A. Colour drawing.

B. Find your way through the maze.

C. Make your own parachute.

Introduction to a hot air balloon

Learning Objective 1: Name and distinguish different components of a hot air balloon.

Background information

A hot air balloon is a lighter-than-air aircraft consisting of a 'bag', called an envelope, which contains heated air. Suspended beneath is a (wicker) basket which carries passengers and a source of heat, in most cases an open flame caused by burning liquid propane. The heated air inside the envelope makes it buoyant since it has a lower density than the colder air outside the envelope. This section will explain the different components of a hot air balloon. Furthermore, the reason why hot air balloons float will be explained.

Slides

Slide 1. Introduce the topic of the lesson. Explain that in this lesson, they will learn about hot air balloons. Ask if the children know what a hot air balloon is [0,5 minute].

Slide 2. Introduction: hot air balloon. Just like an aeroplane a hot air balloon is it is part of the aircraft family. An aeroplane is a heavier-than-air aircraft; a balloon is a lighter-than-air aircraft. It means that for flying a gas is used. This is unlike aeroplanes which have wings [0,5 minute].

Slide 3. Explanation: main components of a hot air balloon. This is a hot air balloon. On the bottom, it has a basket where people can stand in (passengers and the pilot). Above the basket is a balloon or envelope. The envelope is the part which provides lift (to go up into the air). The envelope is made of light fabric and can have many shapes. Now how does a balloon fly? Do you know why it goes up into the air? [1 minute]

Slide 4. Explanation: how does a hot air balloon fly? A hot air balloon flies because warm air rises. When it is cold, the heater in the classroom is on to heat up the classroom. Have you ever felt the airflow around the heater? When you put your hand above the heater (be careful, the HOT surface can injure you) you can feel warm air rising. If you put your hand below the heater, you feel cold air. The difference might be small, but the heater heats up the air around it and warm air rises. This principle is also used in a 'hot air balloon' [1,5 minutes].

Slide 5. Explanation Hot air balloon components. Above the basket and below the envelope, a burner is located. The burner is like a big flame which heats up the air around it. This is similar to a candle. The burner heats up the air inside the balloon. Above the

burner and below the envelope is a skirt which is made of fire resistant material. Because the burner is very hot, a skirt protects the envelope, you don't want it to catch fire [1 minute].

Slide 6. Explanation: The burner. Here you can see a picture of a burner. The burner fuel is gas cylinders, which are in the basket. The gas is flammable and just like a stove it heats up the air around it [0,5 minute].

Slide 7. Explanation: Getting the balloon ready. In order to fly a balloon, you have to get the balloon ready. You unroll the envelope and put the basket on the side. With the burner you heat the air inside the envelope [0,5 minute].