



Civil Air Patrol's ACE Program

Animals in Space Grade 3 Academic Lesson #6

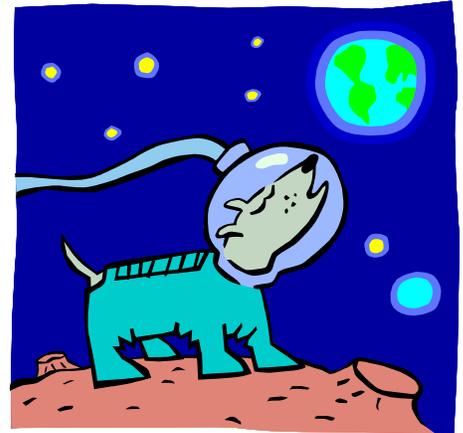
Topic: animals, sequencing (science, language arts)

Lesson Reference: modified lesson from NASA Explores

Length of Lesson: 40 minutes

Objectives:

- Students will identify animals that have flown in space.
- Students will explain why animals have flown in space.
- Students will place events in order.



National Science Standards:

- 3-LS4-3-Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- 3-LS4-4-Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

CCSS ELA:

- RI.3.1-Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2-Determine the main idea of a text; recount the key details and explain how they support the main idea.
- RI.3.10-By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently.

Background Information: (from NASA Explores)

Animals have been used in space research. Many animals have traveled to space. We often use animals to test products now to make sure they're safe for humans or to see how people may respond to different things. In the 1950s and 1960s, the Russians and Americans sent dogs and monkeys into space in prototype craft that ultimately developed into what humans used for the manned missions to the moon. We needed to know how living creatures would respond to the different environment in space. In 1957, a Russian dog named Laika was sent aboard the second Sputnik satellite. This launch proved that living animals could survive in space, and further hastened the race between the United States and the Soviet Union to send manned craft into orbit around Earth, and ultimately to the Moon.

Many shuttle missions carried scientific experiments involving animals, from rats and mice to bees and jellyfish. The ISS also conducts experiments of this type. The experiments are used to test the effects of microgravity and other conditions in space on how animals behave, grow, and reproduce in this altered environment. Taking animals into space requires special considerations. NASA maintains the highest standards for the humane care and treatment of its laboratory animals. In addition to complying with all applicable regulations and guidelines, the agency has internal policies that govern the care and use of research animals for all activities, including activities at foreign institutions.

In this lesson, students will identify different animals that have been launched into space and place them in chronological order.

Materials:

- copies of "Animals in Orbit"
- copies of "Space Mission Events" for each student
- glue or paste
- scissors
- paper or construction paper
- Teachers may need a free account with [ReadWorks](#) in order to meet the ELA standards attached to this lesson. The article "Animals in Space" (attached) can be used to support the ELA standards primarily. The article below is for supplemental instruction.
- Supplemental Article - "Rocket Ships"

Lesson Presentation:

1. Write the following terms on the board: orbit, gravity, astronaut, Russia, recovery, and Skylab. Discuss the definitions. (In 1973, Skylab was the first U.S. space station. A space station is a "home" or "workplace" in space.) Ask students if they have an idea what today's topic is based on the vocabulary words.
2. Distribute and read aloud the article, "Animals in Orbit." If time is an issue, you may want to read the article aloud and have students follow along.
3. After reading, discuss why animals were sent into space.
4. Tell students that they will learn more about animals and humans that have gone into space by placing some space missions in order. Tell students to take out five sheets of paper (or give students some construction paper). Also, have them take out their glue/paste and scissors.
5. Distribute the "Space Mission Events" sheets.
6. Provide directions for the students by telling them that they are to cut out the mission event cards, place them in the order in which they occurred, and then glue them in order across their papers. Ask students what they will need to know in order to place the mission cards in order. Remind students that they have to look at more than just the year. They need to look at the month and date too!

7. Have students complete the task. Monitor and assist students as needed.

Summarization:

(Once students have finished, you may collect the students' work for a grade.) Go over the answers by placing the events in order on the board.

Discuss the students' thoughts and ideas regarding the mission events. Ask students what animals would be better suited for space than others and why. Animals that live in water would have a harder time living in space, because the water in which they need to live would float. How would some animals adapt to space and the differences that living in space would cause to their habitats? How does sending animals before us into new places help us? How else do animals help us learn or work to keep us safe (military dogs, search and rescue animals)?

Character Connection: Ask students to think about how we have to adapt to different environments and different people. Remind students that in life, we have to adapt often to be successful. You wouldn't wear your bathing suit to school to learn! You wouldn't take a backpack full of books and homework to the beach to swim!

Assessment:

- teacher observation
- student pages displaying mission events in order

Additional activity ideas to enrich and extend the primary lesson (optional):

- Lead students in a discussion that allows them to explore their feelings on sending animals into space. Ask students to explain why they think sending animals into space was a good or bad idea, especially since scientists couldn't be sure what would happen to them. You may remind students that NOT all of the animals made it back to earth alive, such as Laika (pronounced "like uh"). Make a list of "Pros" and "Cons" on the board to document student thoughts to the question, "Should we send animals into space?"
- Make a classroom timeline displaying the mission event cards. Explain to the class that a timeline shows the sequence, or order of events. Display the timeline on the wall or the board. Have the class call the dates out as you point to them (1950, 1955, 1960, 1965, etc.). Tell the class that they will help place the mission event cards in the correct position on the timeline. Monitor to ensure cards are placed correctly on the classroom timeline.
- Have students use their mission cards to complete the worksheet "Mission Events."

- Have students design a postage stamp commemorating the flight of one of the animals.

Associated Literature and Websites:

- [*Pupniks: The Story of Two Dogs in Space* by S. Ruth Lubka](#) (Amazon)
- [*Animals in Orbit, Monkeynauts & Other Pioneers in Space* by Katherine M. Marko](#) (Amazon)
- [*Curious George Gets a Medal* by H.A. Rey](#) (video reading)
- Learn more about animals in space
["A Brief History of Animals in Space"](#)
["Top 25 Space Firsts"](#)
["A Brief History of Animals in Space" \(print-friendly version\)](#)
- Article about Laika: ["Laika the Dog & the First Animals in Space"](#)
- Watch a video of ["Jumping Spider, Nefertiti, Onboard the International Space Station"](#)
- [Full story of Ham, the Astro Chimp](#) (full video of the first chimp in space)
- [Ham the Astro Chimp](#) (short clip of the first chimp in space)



Can fish swim in orbit? Do bees make honey in space? NASA hopes to find out by taking animals into space.

NASA wants to know what the body does in less **gravity**. Many tests can be done on people while they work in space. Some tests on people get in the way of their work. That is why NASA wants to use animals.

Animals would only go when they were needed. NASA likes to use computer models or **astronauts**. Only animals will work for some tests. People would not want to eat the same thing each day. But, animals don't mind! NASA can test how that will make them feel in space.

In the past, no one knew if people could stay alive on a trip to space. So, animals were used to find out. In 1948, a monkey named Albert flew in a V2 **rocket**. In 1957, a dog was sent into orbit. This let us know that people could stay alive on a trip to space. In 1973, several mice were sent up to the **Skylab**. They were used to check the animals' body clocks.



Which animals go into space? It's based on the **science** to be done in the test and what the animals need to live. Snails, fish, and mice are just a few that have gone on the shuttle.

Animals in space need special things. Everything floats in space. Mice cages have wire all around so they can grip with their feet. Food and water bottles have to be changed to keep them from floating.

Do animals like living in space? There are lots of rules when they go in space. NASA makes sure they take very good care of them.

*Courtesy of NASA's Space Operations Mission Directorate
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LAIKA

First Living Animal to Orbit Earth



Launch Date:
November 3, 1957

Country launched from:
Russia

Capsule Name:
Sputnik 2

HAM

First Chimpanzee In Space



Launch Date:
January 31, 1961

Country Launched
From: USA

Rocket Name:
Redstone

ALAN SHEPARD

First American Man In Space



Launch Date: May 5, 1961

Country Launched From:
USA

Capsule Name: Freedom 7



Baker

Country Launched from:
USA

Rocket Name: Jupiter

Launch Date: May 28, 1959

First Successful Recovery



Able



Capsule Name: Vostok

Country Launched From:
Russia

Launch Date:
April 12, 1961

First Human In Space

YURI GAGARIN

ARABELLA

First Spider In Space



Launch Date:
July 28, 1973

Country Launched
From: USA

Name Of Space Station:
Skylab



First Animal To Go To Space Twice

SAM

Launch Date:
December 4, 1959

Country Launched From:
USA

Rocket Name:
Little Joe

ENOS

First Chimpanzee To Orbit The Earth



Launch Date:
December 21, 1961

Country Launched
From: USA

Rocket Name:
Atlas



First American Man To Orbit The Earth

JOHN GLENN

Launch Date: February 20, 1962

Country Launched From:
USA

Capsule Name: Friendship 7

Number of Orbits: 3

BELKA & STRELKA

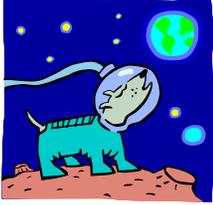
First Safe Recovery Of Dogs From Space



Launch Date:
August 19, 1960

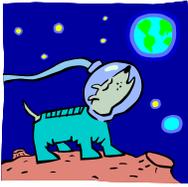
Country Launched From:
Russia

Capsule Name: Sputnik 5



1. What was the name of the first living dog to orbit Earth? _____
2. From what country was the first living dog to orbit Earth? _____
3. What animals were the first to go into space and return to Earth alive? (In other words, they were the first animals ever to be successfully recovered.) Circle the correct answer below.
A. Dogs B. Monkeys C. Spiders
4. Who was the first human in space? _____
5. From what country was the first man in space? _____
6. Who was the first American man in space? _____
7. When did the first American man go into space? _____
8. Who was the first American man to orbit Earth? _____
9. What was the name of John Glenn's capsule? _____
10. What was the name of the rocket that launched Sam into space?

11. What was the name of the first spider in space? _____
(She actually spun a web in space!)
12. How many orbits did John Glenn make around the Earth? _____
13. Did Belka and Strelka's trip to space happen BEFORE OR AFTER Yuri Gagarin's? _____
14. Would you want to send a pet that belonged to you into space? Why or why not?



1. What was the name of the first living dog to orbit Earth? Laika
2. From what country was the first living dog to orbit Earth? Russia
3. What animals were the first to go into space and be rescued alive back on earth? (In other words, they were the first animals ever to be successfully recovered.) Circle the correct answer below.
A. Dogs **B. Monkeys** C. Spiders
4. Who was the first human in space? Yuri Gagarin
5. From what country was the first man in space? Russia
6. Who was the first American man in space? Alan Shepard
7. When did the first American man go into space? May 5, 1961
8. Who was the first American man to orbit Earth? John Glenn
9. What was the name of John Glenn's capsule? Friendship 7
10. What was the name of the rocket that launched Sam into space?
Little Joe
11. What was the name of the first spider in space? Arabella
(She actually spun a web in space!)
12. How many orbits did John Glenn make around the earth? 3
13. Did Belka and Strelka's trip to space happen BEFORE OR AFTER Yuri Gagarin's? BEFORE
14. Would you want to send your pet into space? Why or why not?
Answers will vary.

