



Creating Animal Experiments in Space

Suggested Grade Level 6

Objective	Design and document an experiment involving animals to be conducted in outer space. Use your imagination to predict the outcomes and write a description of those results.
Materials	<ul style="list-style-type: none"> • AVMA poster • Internet access

<p>Procedure</p> <p>National Standards:</p> <p>Language Arts</p> <ul style="list-style-type: none"> • Research data • Creative writing <p>Science</p> <ul style="list-style-type: none"> • Scientific inquiry • Structure and function of living things 	<ul style="list-style-type: none"> • The teacher begins by reviewing the steps in the scientific method (<i>Make Observations, Develop a Hypothesis, Design an Experiment, Conduct the Experiment, Gather Data from Observations, Analyze Data, Reach a Conclusion, Publish the Results</i>) and shares an actual experiment done by students in the previous school year. If students have already worked with those steps, then some of those past experiences should be incorporated into this discussion. • The teacher leads discussion on why these steps ensure accurate research and the problems that can result from scientists not following all the steps. The teacher shares this description of an experiment: <p style="text-align: center;">ANIMAL BONE GROWTH SPACE EXPERIMENT</p> <p>When animal bones develop on Earth where gravity is a factor, they normally increase simultaneously in length, diameter, and mass. These three growth characteristics give bones their strength. During space flight, in the absence of gravity, animal studies with laboratory rats revealed that certain bones appear to grow in length at about the same rate as on Earth. However, the diameter of the “space bone” is slightly smaller and the structure of the bone is different from the same bones in the same animal species on Earth.</p> • In teams of two, students develop a hypothesis for an animal in space experiment using as many facts as they can from the rat example. Pretending that unlimited funds are available, the teams are told to brainstorm realistic possibilities and write up the plan including those simulated facts and following the steps in the scientific method. • Each team presents their plan and the class critiques how well it met the criteria of the scientific method. A grading scale of 1-4 may be used to help assess how well each step was implemented.
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Ideas to extend this lesson	Discuss “gravity” and how it affects people and animals on Earth and in space. Design an experiment about what it would take for animals to readjust to gravity after returning from months in the weightless environment of outer space. <i>What is your hypothesis? What information can you find about the process that astronauts go through in readjusting to Earth’s gravity? How would the adjustment be the same or different for an animal?</i>
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