Lesson 5: *We Choose Space!*

**Design of a lifetime**

**Standard:** Investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition.

**Objective:** Students will investigate and understand how organisms depend on and compete for biotic and abiotic factors in an ecosystem by studying International Space Station experiments.

**Procedures:**

1. Class discussion – Review the parts of an investigation with students including: identifying the problem, independent and dependent variables, abiotic and biotic factors, and results.

2. Independent practice – Students should use [http://www.nasa.gov/mission_pages/station/research/experiments/Expedition.html](http://www.nasa.gov/mission_pages/station/research/experiments/Expedition.html) to research and summarize at least 2 investigations that have been conducted on the International Space Station. Students should fill out the worksheet associated with their research.

**Assessment** – Students will complete a verbal design project
Name __________________________________________________________________________

Directions: Use http://www.nasa.gov/mission_pages/station/research/experiments/Expedition.html to research experiments that have been conducted on the International Space Station. You must identify the parts of 3 experiments.

Name of experiment: _______________________________________________________________________

Problem: ______________________________________________________________________________

Dependent Variable: ______________________________________________________________________

Independent Variable: _____________________________________________________________________

Biotic Factors: __________________________________________________________________________

Abiotic Factors: __________________________________________________________________________

Results: ________________________________________________________________________________

Name of experiment: _______________________________________________________________________

Problem: ______________________________________________________________________________

Dependent Variable: ______________________________________________________________________

Independent Variable: _____________________________________________________________________

Biotic Factors: __________________________________________________________________________

Abiotic Factors: __________________________________________________________________________

Results: ________________________________________________________________________________

Name of experiment: _______________________________________________________________________

Problem: ______________________________________________________________________________

Dependent Variable: ______________________________________________________________________

Independent Variable: _____________________________________________________________________

Biotic Factors: __________________________________________________________________________

Abiotic Factors: __________________________________________________________________________

Results: ________________________________________________________________________________
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Now that you have learned about the parts of an experiment and how organisms and populations depend on and may compete for biotic and abiotic factors, I would like you to use your imagination to design an experiment to be conducted on the International Space Station. You are only designing an experiment: you are not actually going to conduct the experiment. With that in mind, you may investigate anything that you can possibly dream of. Please use this page as a rough draft to identify all the proper portions of an experiment. Your final proposal must be typed and turned in.

Total 25 points- 15 for content and originality, 10 for proper scientific design

Title of Experiment: __________________________________________________________

Problem: ________________________________________________________________

Materials: ________________________________________________________________

Hypothesis: ______________________________________________________________

Procedures: ______________________________________________________________

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