



## **Design Tool 5.2: Sample Lessons to Analyze**

*Directions for teachers:* Use these sample lessons, along with Design Tool 5.1: *STEM Lesson Specifications* to read and discuss these lessons with other teachers, clarify STEM basics, and become savvier in selecting STEM lessons.

### **Sample Lesson 1: Growing Crops for a Lunar Biosphere**

NASA engineers announce that in the future they will establish a lunar biosphere to support teams of scientists and engineers as they study the moon. Student teams decide to determine what crops might grow fastest and provide the largest mass yield for a lunar biosphere. Student teams carefully set up and monitor classroom biospheres over a four-week period. Crops tested include sweet potatoes, lima beans, collards, squash, radishes, and oats.

Each student team selects a different crop. All teams then follow the same set of procedures and start their crops from seeds, planting them in plastic containers that will be tightly closed. The amount of light is held constant for all containers so that the only variable is the plant size and mass. As team members monitor the growth of their crops, they track crop height and growth rates. Teams take photos of the crops at different stages in the growth cycle.

At the end of four weeks students harvest the crops, measure the mass of the crops (after drying them), and determine which crops produce the highest mass yields. They compare and analyze data across teams and select crops they believe to be good candidates for producing food and biomass in a lunar biosphere.

Each team writes a technical report to an imaginary NASA Lunar Engineering Team, recommending the specific crops they selected and explaining these choices.