

(Part II-Garden Investigation)

EALR/Standard:

4-5 SYSA-D: Systems, subsystems, inputs, and outputs

4-5 INQA-D: Designing investigations, making observations, collecting data

Activity:

Design an experiment to investigate the effects of manipulating an input on a system.

*Created by Carrie Reinhart, Environmental studies intern for Whitman College, Spring 2010*

Goals:

Understand the process of designing an experiment

Discuss variables and the importance of controls

Take data

Brief description:

Each group chooses a subsystem from the Part I brainstorming session to manipulate inputs and determine the effects on outputs.

Materials:

Students will come up with a materials list as part of planning the experiment.

Rulers, measuring tape, magnifying lenses, watering cans, material to shade plants, etc.

Procedure:

Groups of 4 students each choose one of the subsystems from the brainstorming session and design an experiment to manipulate one of the inputs (eg. Construct a shade to see how plants are affected by sunlight).

Experimental designs should include a control, and keep all variables constant except for the variable being manipulated.

As part of the design process, groups should turn in a proposal for their experiment including the question they are testing, their hypothesis, a list of materials, and the type and frequency of measurements they will take (eg. Measure the height of the plants with a measuring tape each day).

Over the course of a week or so (depending on time constraints), groups will collect data each day.

New vocabulary:

Control      Variable