Resources Pre/post test: The pre- and post-test given to Wells College students on the first and last days of class, Fall 2005. In hindsight the multiple choice questions do not adequately address student learning in this course.

1. A hypothesis:
    a. May be proven by experimental data.
    b. Is a confirmation of events or observations.
    c. May be refuted by experimental data.
    d. All of the above.

2. Ecology and environmentalism differ in that:
    a. Ecologists base their arguments on ethical or moral criteria.
    b. Environmentalists formulate and test hypotheses.
    c. Ecology is a science, environmentalism is a concern.
    d. There is no difference between ecology and environmentalism.

3. Which of the following statements best describes evolution?
    a. Evolution is survival of the fittest.
    b. Evolution is a passive process of losing all the population except those which have the best traits for survival.
    c. Evolution is an active process towards an ideal form.
    d. Evolution increases a population's fitness through time.

4. The general equation for photosynthesis is:
    a. Sunlight + O_2 = CH_2O + CO_2 + H_2O
    b. Sunlight + CO_2 + H_2O = CH_2O
    c. Sunlight + CO_2 + H_2O = CH_2O + O_2
    d. Sunlight + H_2O + O_2 = CH_2O + CO_2

5. Which of the following statements best represents a testable hypothesis?
    a. All striped fish have stripes for camouflage purposes.
    b. Fish stripes have evolved for predator avoidance.
    c. Striped fish are less vulnerable to predators than non-striped fish in sea grass habitats.
    d. Striped fish live in sea grass habitats.

6. What is ecology?

7. What is science?

8. Student A hypothesized that plants obtained their energy from light and student B hypothesized that plants obtained their energy from nutrients in the soil. They set up the following experiment: Each of several groups of plants received different treatments of light and fertilizer. After all the seedlings grew for 21 days, the energy in each group of plants was measured using an instrument called a bomb calorimeter. The treatments and the results of the energy measurements are shown below:

Light Intensity	10	20	30	40	50
Fertilizer (grams)	1	2	3	4	5
Energy content (Kcal)	974	1190	1510	2170	2865

Which of the following would be the best statement about the data from the students' experiment?

a. The data contradict student A's hypothesis but support student B's hypothesis.
b. The data contradict both hypotheses.
c. The data contradict student B's hypothesis but support student A's hypothesis.
d. The data are consistent with both hypotheses.
e. The data show that energy is obtained from both light and fertilizer.

Would you redesign their experiment, and if so, how? If not, why not?

On the back, graph the data in a way that makes sense to you.