Performance Task
The Impact of Farming: pH levels

The essential question for this project is: What affect do our agricultural and environmental practices have on the Common Ground Environment?

We will be looking at this question through the “lens” of pH levels. You will be required to take pH samples from various locations around campus. You will need to read one to two scientific articles. You will put together a brief presentation/report about your discoveries and conclusions concerning pH levels around campus.

Day 1 – Collecting samples for pH testing
Day 2 – Research/Read pertinent articles concerning pH levels and the micro environment you sampled
Day 3 – Put together a 5 to 10 minute presentation about your findings. Write a brief report that summarizes your findings.
Day 4 – Presentations

You will be assigned to a group and each group will be assigned a sample collection area. The areas are:

1) Wintergreen Brook (the stream that runs along Springside Avenue)
2) Compost pile area
3) Lower garden: Blueberry patch, Asparagus patch, main garden
4) Chicken yard
5) Animal pens (Goat/Sheep, pigs)

Day 1: Collection area tasks

1) Wintergreen Brook

a) Make a sketch of the stretch of the stream where you are collecting samples.
b) Collect about 5 to 6 samples from different locations along the stream. Samples should be about 20 yards apart. One or two samples should be before the CG site, a couple of samples directly across from CG and one or two samples past the main campus of CG.
c) Mark on the map approximate locations of the sample locations
d) Clearly label the collection vials with date and location.
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Days 2 – 4: Group focus and Tasks

For the rest of project days here are the questions that each group should be focused on answering. Remember, in general we are trying to establish what are appropriate or normal pH levels for a particular environment and is our activity at CG having any impact on pH levels?

Begin by briefly describing what location you sampled.

1) Why do you think it was important to sample your area?

2) What were the pH results from your samples?

3) Find one or more articles about what would be considered a normal pH level for the environment you were sampling. For example in the compost area you would want to know what a “normal” or average pH level would be for compost. How does the compost pH compare to the surrounding environment?

4) If you got pH levels that were outside the norm, how could you change the pH levels?

5) If pH levels are outside the norm, what is the impact of a more acid or base pH if left untreated?

6) Describe the hydrogen ion concentration for your pH results. Remember the formula for pH is the following:

The pH of a substance is defined as \( pH = -\log_{10}(H^+) \) where \((H^+)\) is the hydrogen ion concentration of a solution in moles per liter.

7) If you make a change to the pH level, what does that mean in terms of the hydrogen ion concentration?