Framework Biology 3

An Inquiry Based Science Teaching and Learning Framework

Discover SENSORS

Biology B3

Topic/Learning Activity

Investigating a habitat. OB59/OB60

Student Cohort

Student Level
Second Year

Prior Knowledge
Students will have used the sensors to record room temperature, ph concentration, humidity of the air and light intensity.
Students will be able to read data and present the data in a graph form.

Stimulus to Engage

How do you get the students interested in the topic to start?
Bring the class on a short nature walk and request them to write down what they observed.

Request the students to make a list of the factors that would influence the survival of plants/animals in this habitat. How could be measure them?

Take a photograph and suggest to students to write a report on the contents of the photograph.

Science Questions

Initial questions leading to the questions students will work on during the activity:

- Why are there no plants growing under the trees
- Why have the leaves of the docks near the hedge got a larger area compared to the docks in the field?
- How can we measure the light intensity?
- Can we suggest a way to collect data to find if there is a variation in the light intensity?
- Can we measure the moisture in the soil under the tree and in the field?
- How could we select sampling points to sample?
- Why do we use a quadrat?

Learning Outcomes

Content Knowledge

- Why living things are affected by their environment
- How living things respond to changes that occur in that environment
- The numbers of living things depend on the availability of light, temperature, moisture

Process

- Students will list variables
- Students will draw a map of the habitat
- Students will discover the link between plant frequency and distance from hedgerow
- Students will be able to suggest if there are other factors that could be responsible for variation in plant distribution using light and temperature sensors

Skills

- Working in groups - teamwork
- Creative thinking - making predictions
- Information processing - Recording data

Questions during Activity

Questions to drive student learning (directing them to the learning outcomes):

- Why did you use the quadrat?
- What is happening to the moisture level as you move out into the field?
- Why are there more plants in the quadrat in the field?
- How can we measure the relative humidity in the air?

Questions to probe understanding:

- Why is light important for plants?
- Can the carbon dioxide concentration be measured between the plants?
- What animals depend on the plants?
- How can plants depend on the animals?

Questions to get students thinking about their own learning (metacognition):

- What role/effect has climate on my results?

Developing the Activity

How do you stimulate students to ask even more questions/think further?

- What would happen if the hedgerow were removed to the plants in the field?
- How could you design an experiment to test if fallen leaves heat up the soil?

Possible supporting activities:

- Worksheet for students to record plant frequency distribution
- Plastic bag to collect soil samples

Questions for supporting activities:

- How could we examine the effect of soil ph on the habitat?

Reflecting back to Learning Outcomes

- How many of your intended outcomes were achieved?
- Teacher - what worked well /what didn't work
- Student - can the student link the evidence collected with the reasons for the variation in the plant distribution
- Do any of your intended outcomes need to be revised?
- Students need to know the names of some of the plants/animals in the habitat. The expectation would be that students would be able to recall the names of the common plants present

Additional Resources

Stimulus materials, websites, etc.:

http://www.teachnet.ie/mrogan/2004/

http://www.juniorscience.ie/jsss/Main/1C7R.htm

How has the use of ICT enhanced the learning?

Evidence of enhancement:

The students data will be in a graph on the LabQuest. Many locations along the hedgerow can be selected and a comparision between different locations can be done.

Additional Comments

It is possible to collect three sets of data at a time by using 'Events with Entry' on the LabQuest. Tape the temperature, ph sensor and the moisture sensor together.