TERRESTRIAL HI-LO HUNT

BACKGROUND

The suitability of a habitat to support the life of any particular organism is determined by factors such as temperature, moisture, wind, and light. These factors, which do not remain constant but change in daily and seasonal patterns in any one location, are called **environmental variables**. At any one time, a single environmental variable is usually not uniform in an area. The top of a hill might be windy, while at the same time, at the foot of the hill, the air may be calm. An open, grassy area might be warm and dry from the sun, while just a few meters away, in the shade of a tree, it may be cool and moist.

Different values of environmental variables create different living conditions for plants and animals. Various organisms living in the same general area may exist under drastically different conditions due to variations in their "micro" (little) climate. Searching out the locations of highest and lowest values for several environmental variables can prepare students to investigate relationships between living organisms and their environment.

CHALLENGE

Investigate the extremes of environmental variables in a study site: Find the locations that are warmest, coolest, brightest, darkest, windiest, calmest, flattest and steepest.

PREPARATION

Read through the equipment cards listed under the MATERIALS FOR THE HUNT section and the activity text to determine the materials you will need for the environmental variables the children will be investigating. You may decide to investigate temperature, wind, and slope but not the others. Thus you could ignore the photographic materials.

Construction of the instruments for the Hi-Lo Hunt can be an activity in itself. If you have time and wish to do so, duplicate all the equipment cards and have the students prepare the instruments they will be using. This construction will take approximately one hour.

Materials for the Hunt

For the group:
1 data board
1 felt pen

For each team of two:
1 pencil
2 Hi-Lo markers (1 stick with 3" x 5" card marked Hi and 1 stick with card marked Lo)
Depending on your decision on how you will conduct the activity (see PREPARATION section), one or more equipment cards and listed materials will be necessary. Listed below are the equipment cards necessary for the topics you decide to investigate. Equipment cards are located in the Tool Box #1.

Equipment Cards:
"Measuring Slope" (see Tool Box 1)
"Measuring Wind Direction and Speed" (see Tool Box 1)
"Measuring Light"
Measuring temperature: no equipment card. Provide thermometers.

The Hunt

1. Point out the boundaries of the study site to the group.
2. Introduce the Hunt: Tell the students they are going Hi-Lo Hunting. "Can you find the warmest and coolest, the brightest and darkest, the steepest and flattest, and the windiest and calmest spots in this site?
3. Divide the group into teams of two to four and either designate or let each team choose the factor (light, wind, temperature, or slope) it will investigate. (If the group participated in the construction of the equipment, this decision has probably been made already.)
4. Distribute two markers to each team for marking the spots where the highest and lowest measurements are taken. Each team should print the variable it is testing on the two cards.
5. Hand each team the appropriate measuring device. Action Card, and a pencil. If the teams aren't already familiar with the Hi-Lo measuring devices, demonstrate each piece of equipment before handing it out.
6. Let the Hunt begin! Encourage the teams to take six or more measurements each in their hunt for Hi-Lo values.

After The Hunt

When all the teams have finished taking measurements and have set out their Hi-Lo markers, call the teams together and visit each of the Hi-Lo markers in the site. As the group moves from one marker to another, raise the following questions:

1. What features of this spot might explain why this is the darkest (insert appropriate term) place in this site?
2. Do any of the Hi-Lo measurements seem to relate to each other? For example, do the coolest spots also seem to be the darkest spots? Are the warmest spots also the brightest spots?
3. Will the warmest and coolest spots in the study area always be the warmest and coolest? How about the other measurements?
4. How might the direction of the wind cause some spots to be windy and others calm?
5. How might the time of day change the Hi-Lo measurements? The time of year?
6. Tell the group that physical factors, such as temperature, wind, light, and slope, that may change from minute to minute, day to day, or month to month, are called **environmental variables**.
7. In what ways do environmental variables affect man and other organisms?
8. In what ways does man affect environmental variables?

Follow Through

1. For an interesting comparison, conduct the activity again at a different time of day, on another day, or during a different season.
2. Measure the changes which occur from early morning through late evening.
3. Select a site with different characteristics (ask the group to describe the differences) and compare the environmental variables of the two sites. If you have just studied a lawn, you might want to try a dense woody area, bare soil, pavement or a meadow.

What To Do Next

Aquatic Hi-Lo Hunt
ESP-Environmental Sensory Perception
Plants Around a Building

ACTION CARD
TERRESTRIAL HI-LO

Temperature: Use a thermometer to find the warmest and coolest spots in this site.

Temp. 'C	Location
1.	
2.	
3.	
4.	
5.	
6.	

After you have finished taking temperature measurements, mark the warmest and coolest spots with your Hi-Lo markers.

ACTION CARD
TERRESTRIAL HI-LO

Slope: Use a slope-measuring device to find the steepest and flattest spots in this site.

Slope (cm/meter)	Location
1.	
2.	
3.	
4.	
5.	
6.	

After you have finished taking slope measurements, mark the steepest and flattest spots with your Hi-Lo markers.

ACTION CARD
TERRESTRIAL HI-LO

Wind: Use your wind station to find the windiest and calmest spots in this site.

Wind Speed (rev/min)	Location
1.	
2.	
3.	
4.	
5.	
6.	

After you have finished taking wind measurements, mark the windiest and calmest spots with your Hi-Lo markers.

ACTION CARD
TERRESTRIAL HI-LO

Light: Use a light-measuring station to find the brightest and darkest spots in this site. (Remember: the darker the proof paper, the brighter the spot.) Write the location of each exposure above each piece of proof paper.

Light	Location
1.	
2.	
3.	
4.	
5.	
6.	

After you have finished taking light measurements, mark the brightest and darkest spots with your Hi-Lo markers.