The Predator-Prey Theory in an Ecosystem

Presented

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Purpose of the Predator-Prey

- **Initial Goal:** To demonstrate the concept of energy flow in an ecosystem
- **Ultimate Goal:** To help students understand that Biology is not only a theory but rather a daily interaction between species in the environment
How does Energy travel in the Environment?

**Key Concepts:** The ultimate source of Energy in the environment is the Sun.

**Green Plants** known as **Producers** use the sun’s energy into a process known as Photosynthesis to produce food.

The group of animals eating directly from the plants called **herbivores** use the plants as their source of energy.

**Carnivores** (meat eaters) and omnivores (eat both meat and plants) Get their energy from the herbivores or smaller carnivores.
Purpose of the Predator-Prey model

Goal # 1: To illustrate, using visual interaction, that a hierarchy order exist in the environment

Goal # 2: Advance the Predator-Prey model to perform more functions related to classroom activities useful to scientists.
Building the Predator-Prey Model

- We built a table and a border wall using plywood, Plexiglas and green felt to simulate grass.
- We used a silk flower mounted on a servo-motor to simulate growth by photosynthesis.
- The prey was made using a Boe-Bot kit.
- The predator was built using mechanical hardware.
- All components, except the table, were built using various circuitry.
Programming the Predator-Prey Model

- **The flower:** We use a photo-resistor to sense light which activates the motor mechanism causing the flower to grow and also in the absence of light, it causes the crickets to chirp.

- **Prey:** Using Infrared detectors, the prey is able to hone in on the flower containing the infrared emitter.

- **Predator:** Similar to the prey, is able to hone in to the prey using its infrared sensor.
Conclusion

- The predator-prey model is a useful tool that all living environment teachers are encouraged to use in order to help students understand with a visual the way energy travels in an ecosystem.
- Such a vivid image will help students realize that biology is an applied concept, not pure theory.
Special Thanks To:

- Professor Vikram Kapila
- Anshuman Panda
- Padmini Vijayakumar
- Jared A. Frank
- Sang-Hoon (Nathan) Lee
- Alessandro Betti
- All the other T. A’s who have done a great job assisting us