Batty Science

Setting: Whole group in the classroom using IWB

Materials:Vernier Go Motion Sensor, Vernier Logger lite program file number 22, The book *Stellaluna* by Janell Cannon.

VA SOL''s correlations: Life Processes
1.5 The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. Key concepts include
a) basic needs include adequate air, food, water, shelter, and space (habitat);
b) animals, including humans, have many different physical characteristics; and
c) animals can be classified according to a variety of characteristics.

Objectives:
Students will make observations about a graph they make using
Activities:

1. Classroom Teacher directed exploration of the book *Stellaluna* Cannon, Janell and Cannon, Jewell. (1993). (A little fruit bat falls into a bird's nest with the baby birds and the mother bird tries to raise her. Stellaluna is different from her bird siblings as she likes to hang upside down and fly at night. Eventually she is reunited with her mother.) Students will discuss the characteristics and habitats of bats and birds.

   Discuss how Bats are different from birds - What are some characteristics of bats?they fly at night, eat things like fruit and insects. Can they see very well? Can they hear very well? What is that hearing called? Can they hear the same things we can? Can we hear the same things they can? How do bats find their way?(echolocation). A form of sonar ("fish finder") where they put out a loud high pitched sound that gets reflected back to them (like a mirror reflects back you). They can tell how far away something is from how many minutes or seconds it takes for the sound to reflect or return to their ears.

2. Explain and show the motion detector. Pretend it is a bat and you are the insect. First Make a graph of a student standing .5 meters away, Then make a graph of a student standing 20 meters away. Explain the graph of distance vs time. The lines should be flat at the different distances and the length of time the detector was making the sound. Students will draw the graphs. Identify the color differences.

3. A student will now stand at the .5 meter mark and walk slowly backwards.Another student will stand at the same mark and walk quickly backwards. Students will draw the graphs. In this investigation the graphs will change distance and the time will change, fast walking should take less time and the graph will go flat. Encourage the students to make observations about the graphs.

4. If time permits: Continue the exploration by having students stand at 3 meters away and walk slowly and fast towards the detector. Examine the graphs. Students can also stand at 2 meters away and jump up and down. Examine the graphs.

Assessment:
Formative assessment correct interpretation and drawing of the graphs.