**Grade: 5**

**Program Title: Turtle Hurdles**

**Related Iowa Core Performance Expectations:**

**5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**

**Future Considerations:** Blend this program with the unit storyline developed by the classroom teacher.

**Program alignment with the Iowa Core Science Standards:**

| Disciplinary Core Ideas (DCIs) | Investigative Question | Investigative Phenomena | Practices (SEPs) Students will: | Cross Cutting Concepts (CCCs) Students will identify: |
|---|---|---|---|---|
| **ESS3.C**<br>Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams. But individuals and communities are doing things to help protect Earth's resources and environments. | What influences the mortality rate of populations of organisms?<br><br>Is it hard for baby turtles to survive? | Fieldtrip to a local native turtle nesting area, pointing out the path they must take to water.<br><br>Or, share with students a photo of a turtle nest and a map showing where you find turtle nests near your nature center as well as where the baby turtles will have to travel.<br> <br> | **Ask questions** about the life cycle of native turtles and what might affect the mortality rate of newly hatched turtles.<br><br>**Use mathematics and analyze data** to calculate the mortality rates of live turtles and eggs.<br><br>**Design solutions** to increase survival rates for land turtles.<br><br>**Engage in an argument with evidence** to compare and refine solutions that could increase the survival rate of young turtles | Analyze mortality rates for **the cause and effect** of habitat availability and change on the mortality rate of the turtles.<br><br>Students will model the habitat as a **system** that has many interacting parts.<br><br>Using the simulation data, the students will analyze the mortality rates to identify **the stability or change** in populations reflecting the **stability or change** of habitat availability on turtle mortality rates. |

**Program components: The presenter will have students use the CCCs, the SEPs and the phenomena to figure out how to answer the investigative question and to grasp the disciplinary core ideas.**

Turtle Hurdles adapted from Project Wild (see Mary Bulger and Clay Steele for adaptation for freshwater turtles).

Introduction: If there is a local nesting area for turtles, take students to the area, have students generate questions about the life cycle of the turtles and what might affect the ability of the newly hatched turtles to survive and grow.

After students have completed the Turtle Hurdle simulation, ask explicit questions to guide discussion on how the simulation was a model of life cycle and survival rates of turtles in an ecosystem.

Students identify and discuss the factors that limit survival- have the students cite evidence of the causes that affect turtle mortality rates.

Ask students to make recommendations that the area community could do to increase the successful reproduction and survival of the native turtles. Students evaluate the proposed solutions and make a class presentation to the community.

Finally, remember to again ask your investigative question - What influences the mortality rate of populations of organisms?

Is it hard for baby turtles to survive?

**Extension activities**: The Migration Headache from Save the Song of Spring and Monarch Game (contact Mary Bulger for this activity)