



Turtle Power!

Karen Catron, LoveJoy Elementary 1st Grade
 Dr. Nicole Valenzuela Laboratory of Evolutionary and Ecological Genomics



What goes on in a turtle lab?

Dr. Valenzuela and her students are doing many interesting research projects in developmental biology.

They study the development of males and females by controlling the temperature during the incubation of the turtle eggs. They do this in an incubator set at specific temperature and also outside, in a natural setting underground that is either shaded or sunny. Eggs are sampled through the weeks to study the development of the turtles and how the specific temperature is affecting their growth. **Warmer temperatures develop females while colder temperature develop males.**

Objectives

The purpose of this unit is to take the methods that are used in a laboratory of molecular and evolutionary ecology and incorporate them into an elementary classroom using different species of turtles as models. In using these techniques it is my hope that students will have a better understanding on the nature of science and also develop an increased interest in science topics as they grow older.

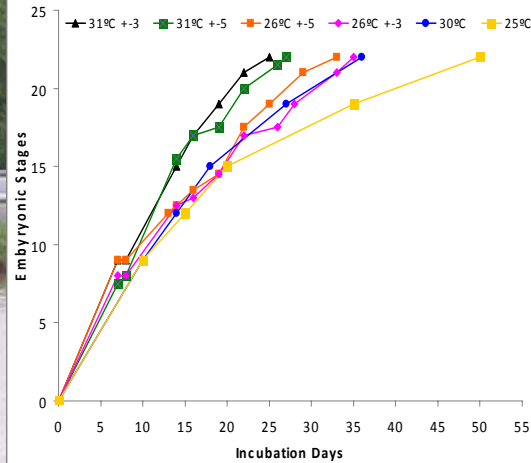
After working on this unit, students will be able to:

- List similarities and differences among different species of turtles.
- Demonstrate the ability to formulate a question.
- Observe and describe changes in the turtles as they grow.
- Record data from their observations in a turtle's growth.
- List characteristics that turtles and other living things share.
- Learn to raise questions and seek answers about the world around them through observations and experiments.
- Understand animals and plants are classified according to certain characteristics.
- Describe the life cycle of a turtle.

Activities

1. Students will record measurements and weigh pet turtles in the classroom. They will be located in their science journal and will be reviewed by the teacher bi weekly.
2. Students will draw and write about their observations with their classroom turtle.
3. Students will do an oral report on a turtle that they have studied. This will be presented to the class.
4. Students will compare Franklin and other animated turtles to real turtles. What are their similarities, what are their differences?
5. Students will take care of a turtle in the classroom.

Effects of Temperature on Growth Rates



Stages in Pictures



Painted Turtle lays egg



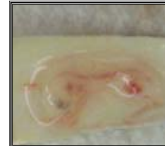
Natural incubator set outside at the Horticulture station at ISU.



Painted Turtle eggs washed and ready to be opened



Strong light helps see where the embryo is before the egg is opened.



Stage 12 embryo



Stage 16 embryo



Stage 21 embryo

Extracting the yolk from a stage 21 embryo



Different Species



Painted Turtle (eastern):

Description: They have bright yellow and orange/red marking on body and plastron.
 Size: Maximum 10 in (carapace).
 Habitat: They live in ponds, lakes and marshes (fresh water).
 Food: Young turtles eat insects; as they grow older they become more omnivorous (eat plants).



Soft shell Turtle:

Description: They have 'soft shells' because their carapace lack scutes (scales).
 Size: Average 18 in (carapace).
 Habitat: They live in ponds, lakes and marshes (fresh water). The color of the turtle depends on the area they are living in.
 Food: They eat insects, plants, and some meat.



Snapping Turtle

Description: They have a large head, with powerful hooked jaws that close with a snap.
 Size: Average 12 in (carapace) Their tail can be almost as long as their shell.
 Habitat They live in ponds, lakes and marshes (fresh water)
 Food: They are carnivorous. They eat anything they can catch

Words to Know

CARAPACE: Top of a turtle's shell which is made of bone.

PLASTRON: Bottom of a turtle's shell which is made of bone.

REPTILE: Egg laying vertebrate, that is "cold" blooded or ectotherm. Snakes, lizards, crocodiles and turtles are all examples of reptiles.

HATCHLING: A young reptile recently emerged from an egg.

COLD-BLOODED (or ECTOTHERM): Animals whose body temperature changes with the temperature of its surroundings.

INCUBATION: Act of warming eggs in order to make them develop and hatch.

EMBRYO: An organism in its early stages of development.

Acknowledgements

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