Integrating Computing Across the Curriculum

Title:	Vertebrates or Invertebrates
Grade(s):	4th
Subject(s):	Science
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Overview:	During this lesson, students navigate the Internet to discover facts about vertebrates and invertebrates. They use the facts they learn to create a Scratch project on a vertebrate or invertebrate.
Content Standards:	SC(4) 6. Classify animals as vertebrates or invertebrates and as endotherms or ectotherms. TC(3-5) 8. Collect information from a variety of digital sources
Local/National Standards:	
Primary Learning Objectives:	Students will compare and contrast characteristics of vertebrates and invertebrates. Students will correctly identify vertebrates and invertebrates.
Additional Learning Objectives:	
Approximate Duration of Lesson:	120 Minutes
Materials and Equipment:	Paper and Pencil
Technology Resources Needed:	Computers with Internet access, Scratch program, Text program, printer
Background/ Preparation:	Prepare a Scratch project about vertebrates and invertebrates. Knowledge on vertebrates, invertebrates, endotherms, and ectotherms.

Procedures/Activities:

Step 1 Ask the students if they can give an example of an animal that is a vertebrate. What is a vertebrate?

- *Vertebrates are animals with a backbone*

Ask them to give an example of an invertebrate animal. What is an invertebrate?

- *Invertebrates are animals without a backbone*

Allow students to view a Scratch project that tells the difference between vertebrates and invertebrates.

Step 2 Ask students to define the differences between endotherms and ectotherms:

- *Endotherms (warm blooded) are organisms that maintain a certain body temperature, despite the environment.*
- *Ectotherms (cold blooded) are organisms whose body temperature is determined by the surrounding environment.*

Have students list examples of the different types of animals that are:

1. Vertebrates Endotherms *(birds and mammals)*
2. Vertebrate Ectotherms *(fish, amphibians, reptiles)*
3. Invertebrate Endotherms *(none)*
4. Invertebrate Ectotherms *(insects, worms, mollusks)*

Step 3 Have the students research a particular animal and type a short summary, which will include:

1. Classification of animal
2. Whether the animal is a vertebrate or invertebrate
3. Whether the animal is an endotherm or ectotherm
4. Where to commonly find this animal
5. An image of the animal

Step 4 Have students create a Scratch program that incorporates the information that they researched about their particular vertebrate or invertebrate animal.

Allow students to present their Scratch program to the class.

Attachments:

Assessment Strategies: Rubric

Extension: Students may create a short story about their animal. Ask them to include facts about vertebrates and invertebrates in the story. Students can share their summaries with the class.

Remediation: Enchanted Learning: Invertebrates and Enchanted Learning: Vertebrates for review sheets to help learn about vertebrates and invertebrates. Point students to various internet resources that contain information on vertebrates and invertebrates.