Title: Vertebrates or Invertebrates
Grade(s): 4th
Subject(s): Science
Author: ICAC
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**

Step 2 Allow students to view a Scratch project that tells the difference between vertebrates and invertebrates.

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:** Rubric

**Assessment Strategies:**

**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](https://www.enchantedlearning.com/animals/invertebrates/) and [Enchanted Learning: Vertebrates](https://www.enchantedlearning.com/animals/vertebrates/) for review sheets to help learn about vertebrates and invertebrates. Point students to various internet resources that contain information on vertebrates and invertebrates.