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Outline - Coyote Traits, Adaptations & Behavior

Center for Urban Resilience

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LESSON #3: Coyote Traits, Adaptations & Behavior

OVERVIEW:

The purpose of this lesson is to facilitate student acquisition of background knowledge on topics related to Canid speciation and evolution. This will focus on unique physical and behavioral characteristics of coyotes from other Canids as well as those adaptations that have allowed them to become so widely distributed through North America, though not quite as well distributed as dogs, which will also be a focus of this lesson. Students will research and present their findings via a Project Based Learning (PBL) poster.

SUB-QUESTIONS:

- What is the origin of *Canid* species?
- How has their evolution been shaped by their relationship with humans?
- How do the North American *Canid* species differ from one another? How are they similar?
- What adaptations have made coyotes so successful in North America?
- What is a species, and what causes one to go extinct?

WAYS OF KNOWING URBAN ECOLOGY:

Students will...

<u>Understand</u>	. Learn about the origin of <i>Canids</i> and their relationships with humans.
<u>Talk</u>	. Research in sub-groups the speciation and evolution of <i>Canids</i> .
<u>Do</u>	. Organize material for presentation to a larger audience.
<u>Act</u>	. Create a poster and present it to peers.

SAFETY GUIDELINES:

None for this lesson.

PREPARATION:

Time: Four (4) class periods (50 mins ea).

MATERIALS:**Activity 3.1 (1st class; 15 minutes): Video & PowerPoint – Evolution of Canids**

- Laptop
- Projector & Screen
- YouTube video: Rise & Fall of Bone-Crushing Dogs
<https://www.youtube.com/watch?v=sZhxCUay5ks>
- Instructional PowerPoint Slides – Introduction to *Canids*
- Student Handout for note-taking (M12_L3_A3.1_SH1)

Activity 3.2 (remainder of 1st class): Activity – Build a *Canid* Poster

- **Assign students to 10 groups**
- Student laptops or access to computer lab for research
- Poster board – large
- Access to printers for printing all poster materials
- Glue and/or tape
- Construction paper for creative display
- Markers, colored pencils and/or crayons
- Pens/pencils

Activity 3.3 (2nd class): Videos & PowerPoint – Canid Physical and Behavioral Attributes

- Laptop
- Projector & Screen
- Instructional PowerPoint Slides with Behavioral Videos Included – Introduction to *Canids*
- Wipeboard and marker for notes
- Pencils/Pens
- Student Handout for note-taking (M12_L3_A3.1_SH1)

Activity 3.4 (3rd class; 15 minutes): PowerPoint – Humans and *Canids*: Domestication

- Laptop
- Projector & Screen
- YouTube Video: The World's First Domesticated Foxes
https://www.youtube.com/watch?v=4dwjS_eI-IQ
- Instructional PowerPoint Slides with Behavioral Videos Included – Introduction to *Canids*
- Pencils/Pens
- Student Handout for note-taking (M12_L3_A3.1_SH1)

Activity 3.5 (remainder of 3rd class): Activity – Build a *Canid* Poster

- Put students back in their 10 groups
- Student laptops or access to computer lab for research
- Pencils/Pens
- Poster board that students began in previous class period
- Access to printers for printing all poster materials
- Glue and/or tape
- Construction paper for creative display
- Markers, colored pencils and/or crayons
- Pens/pencils

Activity 3.6 (4th class): *Canid* Poster Presentations

- Completed Posters
- Easels for Poster Presentations

Instructional Sequence (4 class periods):**Activity 3.1 (1st class; 15 minutes): Video & PowerPoint – Evolution of Canids**

- **Step 1:** Show video and present introductory PowerPoint slides to students (first 7 slides). These will introduce students to speciation, genetic variation in *Canid* species and evolution of *Canid* species.
- **Step 2:** Have students jot down anything that interests them as they will be using this to start their posters.
- **Step 3:** Allow time for questions and clarify understanding and any misconceptions.

Activity 3.2 (remainder of 1st class): Activity – Build a *Canid* Poster

- **Step 1:** Divide students into 10 groups.
- **Step 2:** Explain to them that they will be creating an informational poster about *Canids*, and the first step is to pick an extinct *Canid* species to feature on their poster.
- **Step 3:** Explain to them that you would like to know about the ecology of the animal. Where did it live? When did it live? What did it eat? How did it hunt? Who were its competitors? Why did it become extinct? Have them find pictures to illustrate their key findings. Remind them to leave about half of the poster blank because they will be adding to it later.
- **Step 4:** Students can gather at their laptops/computer stations to begin research/printing out their visual aids.

Activity 3.3 (2nd class): Videos & PowerPoint – Canid Physical and Behavioral Attributes

- **Pre-Lesson**
 - Teachers are encouraged to read background articles on coyotes, provided in Reading and Reference Materials under

Module Resources. In addition, see “Educator Resource – Building Background” on Module 12 Outline.

- Teacher may want to assign selected articles or other coyote reading for homework, to build background knowledge.
- Main Instruction:
 - Step 1: Think-Pair-Share: Show students slide 8 with a picture of a coyote, dog and wolf. Give them 2-3 minutes to jot down observations. How are they alike? How are they different? Then have them share their notes and discuss with a neighbor for 2-3 minutes. Finally, have the pairs share with the class what their observations were. Write them on the board.
 - Step 2: Think-Pair-Share: Show students slide 9 with behavioral videos of coyotes, dogs and wolves. Have them take notes on their observations of each video. How are they alike? How are they different? Then have them share their notes and discuss with a neighbor for 4-5 minutes. Finally, have the pairs share with the class what their observations were. Write them on the board.
 - Step 3: Show students slide 10, which presents them with information on the distribution and IUCN status of these species.
 - Step 4: End with a discussion: Which would they say is more successful? Why? What differences (physical or behavioral) have made them more/less successful? Why haven't the other species adapted these traits?
 - Step 5: Allow time for questions and clarify understanding and any misconceptions.

Activity 3.4 (3rd class; 15 minutes): PowerPoint – Humans and *Canids*: Domestication

- **Step 1:** Show video and remainder of introductory PowerPoint slides to students. These will introduce students to domestication.
- **Step 2:** Allow time for questions and clarify understanding and any misconceptions.

Activity 3.5 (remainder of 3rd class): Activity – Build a *Canid* Poster

- **Step 1:** Divide students into their 10 poster groups.
- **Step 2:** Explain to them that they will be finishing their poster by selecting a dog breed that they find interesting and featuring it in the second half of their poster.
- **Step 3:** Explain to them that you would like to know about the genes of this breed. What was it bred to do? Where was it originally bred? What does it look like? What traits must it have to do the job for which it was bred? If you were adopting a dog of this breed to a family, what traits should they have to give it the best life? Have them find pictures to illustrate their key findings.
- **Step 4:** Students can gather at their laptops/computer stations to begin research/printing out their visual aids.

Activity 3.6 (4th class): *Canid* Poster Presentations

- **Pre-Lesson:** Have the easels and posters set up ahead of time.
- Once posters have been created, the students can share their work!
- Each group should have 3-4 mins to present their posters, allowing 1-2 minutes for Q&A.
- **Conclusion / Wrap-up / Exit Activity:** Audience Q&A
- **Note:** It is always a nice idea to invite the Campus Administrators (Principal, Asst Principal), so they can see the great work students are doing in science!

- Note: It is also a nice idea to take pictures and post them to a classroom blog or the classroom web site to showcase student work.

Summary Notes/Conclusion: By the end of Lesson 3, students will be able to (SWBAT):

- Understand many topics related to *Canids*, such as their speciation, evolution and domestication
- Make observations and draw conclusions through picture and behavioral analysis
- Take notes during video and PowerPoint presentations
- Conduct research on various assigned topics
- Work as a team to successfully complete a project
- Create a research poster about a topic
- Present work to a larger audience