



Biology through Art

Organismal Lesson Plan

Intended courses: Ornithology, Local Fauna, or other organismally-focused classes

Grade level(s): lower or upper division undergraduate

Key topics: natural history, identification, field work, birding, wildlife, organisms, behavior, habitat,

Brief description: This lesson will be ideal for any instruction where students are learning to identify similar-looking species. Examples may be fish from the same family, black-colored birds (example below), or different types of native bees.

Materials

- Drawing paper [acid free, heavy weight]
- Pencil set: #2 (HB), 4H, 4B, and 8B [use 2 hard pencils (HB, 4H) and 2 soft pencils (4B, 8B)], although fewer can work
- Erasers and blending tools
- Pencil sharpeners

Lesson Instructions

Drawing Introduction (following the example video lesson linked in the protocol)

1. Have students use the different types of pencils to sketch lines in one direction, creating a grey scale sketch that fills a block of space
2. Using the blending tool, take some of the graphite from the left and stretch it to the right - make a gradient from dark to light (see figure below)



3. Gum and kneaded erasers can be used to remove small amounts of graphite
4. Use a circular object to have the students make a circle with any pencil
5. Have the students determine where the light will be coming from (this side will have little to no shading). Use 8B for the darkest area and use the blending tool to move the graphite from dark to light area
6. Use 4B for the middle area and 6H closer to the light area, then use blending tool
8. Gum and kneaded erasers can be used to remove small amounts of graphite
9. Create a shadow on the ball (dark side with 8B pencil) as this will help to give it a 3D effect



10. Discuss how organisms can be broken down into simpler shapes. For example, I put a projection of a bird on the whiteboard and then break it down into circles. Discuss how light may bounce off the object, and how to show different textures.

Student Assignment

Example from Ornithology class at NEIU: “One of the hardest things about learning identify animals is teaching your brain to pay attention to the subtle cues such as glimpses of color, behavior, and shape, especially when you see an animal in motion. Some people believe that the best way to reinforce this type of vision is to draw! That’s why I encourage you to sketch in your field notebooks while we’re out and about, but for this assignment, you’re going to spend some time while drawing as a way to learn and study differences between similar species.

I don’t expect anyone to be an artist, or to submit a perfect beautiful drawing. However, I will give you the tools you need to apply this skill, and I would like everyone to do their best to focus on the details. Noticing color may be as subtle as changing the gradations in darkness, highlighting the areas where badges exist, or changing the hardness of your pencil to illustrate texture differences. Sketching the behavior may involve noting the pose of a bird, it’s position within a landscape, and its chosen environment (the plants around it, etc.). Shape may involve not just the pose of the bird itself, but also the curves of the tail or wing, the thickness of the bill, and the shape of the wing feathers.

You will incorporate all of these ideas to sketch **two** similar-looking species from the list below:

- European Starling
- American Crow
- Brown-headed Cowbird
- Common Grackle
- Red-winged Blackbird

I recommend choosing the two that you have the hardest time differentiating from photos. Draw one individual of each of the two species, with an emphasis on the field marks, color, behavior, and shape that can help you determine which species is which.”

Example Rubric

Rubric					
	Absolutely yes (5)	For the most part (4)	Sort of (3)	Not really (2)	No (1)
Were two bird drawings submitted?					
Is there evidence of color or gradations of color in both drawings submitted?					
Is there evidence that behavior was considered in both images?					
Is there evidence that shape was considered in both images?					
Are both species recognizable to a practiced birder?					

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