



pets in the  
classroom

## Colorful Cafe for Birds

**Pet:**  
Small reptile

**Class:**  
PK -2

### Brief Overview:

In this STEM lesson, kindergartens become avian architects and fashion designers, creating and testing colorful bird feeders to learn about their pet bird's color preferences. They'll explore the fascinating link between bird vision and color, experimenting with paints and observations.

*Note: If you do not have a pet bird in your classroom, this lesson can be adapted to have the student hang the feeder outside and observe the number/ type of birds that come to the feeder.*

### Essential Question

Which colors does our classroom bird find most attractive when it comes to bird feeders?

### Lesson Breakdown

**Lesson 1:** Build a Bird feeder

**Lesson 2:** Testing the Feeders

### Subjects

- ☒ Science
- ☒ ELA
- ☒ Math
- ☒ STEM
- ☐ Art
- ☐ Other

### Stem Connections

**Science:** what animals need to survive

**Technology:** observation of other types of bird feeders

**Engineering:** building a bird feeder and choosing a color

**Math:** weighing the bird seed, collecting and recording data

## **Performance Expectations/ Standards**

### **NGSS**

**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.

**K-2-ETS1-1.** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

**K-2-ETS1-2.** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

**K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

### **CCSS Math**

**K.MD.A.1:** Describe measurable attributes of objects and describe lengths and weights.

**K.MD.B.3:** Classify objects and count the number of objects in each category.

### **CCSS ELA**

**SL.K.5:** Participate in focused conversations on topics of interest with peers and adults in small groups and whole class settings.

**W.K.8:** With guidance and support from adults, describe familiar objects, experiences, and events using accurate and descriptive words.

## **I CAN statements**

- design and build a colorful bird feeder for our classroom pet.
- choose different colors of paint to decorate my feeder.
- observe our bird's interaction with different colored feeders.
- record and analyze data about our bird's color preferences.
- share my findings through drawings, charts, and conversations.

## **Materials**

- [Colorful Cafe for Birds Student Worksheet](#)
- Empty milk cartons (cleaned and rinsed) (collected from the lunchroom!)
- Scissors
- Tempera or acrylic paint in several colors
- Paintbrushes
- Permanent markers
- Birdseed
- Yarn or string
- Sharpened pencils
- Small twigs or wooden skewers precut
- Glue
- Scale

### Teacher Background

Unlike humans with our trichromatic vision, most birds boast tetrachromatic vision, meaning they possess four types of cone cells in their eyes, allowing them to perceive an expanded spectrum of colors, including ultraviolet (UV) light invisible to us. This enhanced chromatic perception grants them several advantages in the natural world:

- **Foraging:** Birds can readily distinguish ripe fruits and seeds by detecting UV reflectance patterns invisible to us.
- **Predator Detection:** Insects often employ camouflage against human vision, but they stand out like beacons against the UV spectrum, making them easy targets for avian predators.
- **Navigation:** Certain bird species utilize UV landmarks for celestial navigation, aiding in long-distance migrations.

**A Palette of Purpose: Colorful Communication:** Bird plumage serves a vital role in communication and survival. Color plays a key role in:

- **Species Recognition:** Different species often display distinct color patterns, allowing them to identify and interact with conspecifics.
- **Sexual Selection:** Vibrant plumage in males often functions as a signal of health and fitness, attracting potential mates during breeding season.
- **Camouflage:** Some birds exhibit cryptic coloration, blending seamlessly with their surroundings to evade predators.
- **Aposematism:** Brightly colored plumage, often coupled with toxic compounds, serves as a warning signal to predators, signifying potential danger.

### Bird Color Preferences

While our understanding of how birds utilize color is extensive, their specific color preferences may be due to:

- **Food Source Selection:** Studies suggest birds gravitate towards red and yellow fruits and flowers, possibly due to their association with ripeness and high nutritional content.
- **Mate Choice:** Female birds often exhibit a bias towards males displaying bolder, more vibrant colors, signifying superior genes and potentially better parental care.
- **Habitat Selection:** Research indicates certain bird species prefer nesting sites adorned with specific color combinations, possibly due to factors like camouflage or thermal regulation.

## Lesson 1: Build a Bird Feeder

Time	Materials	Activity
		<p>Prior to class:            Collect individual milk cartons and wash them thoroughly with soap. Allow them to dry.            Cut out a rectangle opening near the top of the carton. Leave 1-2 inches at the bottom to allow room for the seeds.            Pole a hole towards the bottom of the carton (this is where the students will insert a perch for the bird)            Precut the wooden skewers to about 3 inches.</p>
5 mins		<p>Show pictures or videos of birds with diverse plumage colors. Discuss how birds use color for communication, camouflage, and attracting mates. Explain that birds see different colors than humans!</p>
10 mins		<p>Gather students around the pet and encourage them to observe its eating habits. Ask questions like: How fast does it eat? Does it prefer to pick at food or gobble it all up? Can it reach food in different locations?</p> <p>Introduce the challenge: Explain that they will be building a bird feeder for their pet (or to hang outside) but they will need to choose what color to paint their bird feeder and how to decorate it. Show them the colors of paint that they are able to choose from. Allow them to choose and mix colors, decorating their feeders in vibrant patterns or themed designs.</p>
30 mins	Empty milk cartons (cleaned and rinsed) Scissors Tempera or acrylic paint in several colors Paintbrushes Sharpened pencils	<p>Have the students spread newspapers on their tables to catch any drips or spills. They should set the milk carton on its bottom so that they are able to paint all of the sides easily.</p> <p>Instruct students to place the feeders where they can dry easily and to clean up their area.</p>

## Lesson 2: Testing the Feeders

Time	Materials	Activity
10 mins	Permanent markers Birdseed Yarn or string Small twigs or wooden skewers precut Glue	<p>You may wish to allow the students to add additional decorations once the feeders have dried.</p> <p>Use a piece of yarn to attach to the milk carton to hang the bird feeder. Staple the yarn to the top of the milk carton.</p> <p>Lastly, insert the stick or wooden dowel into the small hole to create a perch for the bird to use while eating. You may need to add a small amount of glue to secure the perch.</p>
25 mins	Scale <a href="#">Colorful Cafe for Birds Student Worksheet</a>	<p>Have the students weigh out a specific amount of bird seed (this will be determined by the teacher and will be dependent on the type of bird, how much it usually eats, etc.). Students will place their bird seed into the feeders.</p> <p>Have the students place the bird feeders into the birdcage - one feeder at a time. (You may be able to place more than one feeder into the cage at a time, depending on the size of the cage. Too many at a time might confuse the bird.)</p> <p>Leave the bird feeder in place for 1 day.</p> <p>When the feeder is removed, have the students weigh the remaining bird seed and record the data on their data collection sheet.</p>
10 mins	<a href="#">Colorful Cafe for Birds Student Worksheet</a>	<p>When all of the feeders have been tested, conduct a class discussion about which of the colors the bird seems to like the best. (The students may need some explanation that the smallest number means the bird feeder that was liked the best. )</p> <p>How might this change how successful the bird would be finding food in nature?</p>

## Differentiation

### For students who need additional support:

- **Visual Aids:** Provide picture books or videos showcasing different types of bird feeders to spark student imagination.
- **Templates and Scaffolds:** Offer pre-cut shapes or simpler designs for younger students to build upon.
- **Sensory Input:** Incorporate textures, sounds, and colors into the feeder design for children with diverse learning styles.
- **Group Work:** Partner struggling students with more confident peers to collaborate on the building and testing phases.
- **Assistive Technology:** Use timers, switches, or voice-activated commands for students with physical limitations.

### For students who need additional challenges:

- **Seed Mix Exploration:** Research different types of birdseed and create custom mixes tailored to attract specific birds to the feeders and place them outdoors. Discuss the nutritional needs of different species.
- Have the students add the amounts of how much bird seed was left for each of the colors.

Assessment				
Category	Excellent (4 points)	Good (3 points)	Fair (2 points)	Needs Improvement (1 point)
Observation & Data Collection	Records observations of the bird's interactions	Observes and records some data	Records very few of the data	Needs reminders to observe and record data.
Collaboration	Works effectively with peers to collect and analyze data.	Collaborates with peers during data collection.	. Shows some cooperation with peers.	Lacks participation in discussions and data collection. Needs support to work with peers.
Engagement & Reflection	Actively participates in all aspects of the experiment, demonstrating	Shows interest in the experiment and contributes actively.	Participates occasionally in the experiment.	Shows minimal engagement and struggles to focus during the experiment.



	enthusiasm and curiosity.			
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**Extension**

- Birdwatching: After testing the feeders with their classroom pet, have the students test them out with birds outside. Organize a birdwatching session near the classroom to observe how different birds interact with the feeders. Discuss the types of birds attracted and their feeding behaviors.
- Design different types of bird feeders - does the type of bird feeder make more of a difference than its color?