

# Pipe Cleaner Animal Camouflage

**Target Grade Level: 4th**

Created and Adapted by:  
T.J. Fontaine

## Pipe Cleaner Animal Camouflage

1. CONTRIBUTOR'S NAME: TJ FONTAINE
2. NAME OF INQUIRY: PIPE CLEANER ANIMAL CAMOUFLAGE
3. GOALS AND OBJECTIVES: TEACH STUDENTS ABOUT CAMOUFLAGE AND HOW ANIMAL AND BACKGROUND COLOR ARE IMPORTANT FOR ANIMALS TO BE CAMOUFLAGED AND HOW DISTANCE INFLUENCES CAMOUFLAGE
  - a. Inquiry Questions: What is camouflage? How is color important for animal camouflage? Is the distance you are away from an animal important for how camouflaged it appears?
  - b. Ecological Theme(s): Camouflage is an important adaptation for predators and prey.
  - c. General Goal: Discover how camouflage works to hide animals in their natural environment.
  - d. Specific Objectives:
    - Academic:* Students learn how camouflage works to conceal animals in their environment.
    - Experimental:* Students learn about *a priori* predictions and testing predictions.
    - Procedural:* Students learn how to search their environment for camouflaged animals.
    - Social:* Students work in groups to develop predictions and test them.
    - Communication:* Students must work with other students to answer question.
  - e. Grade Level: 4<sup>th</sup>
  - f. Duration/Time Required:
    - Prep time: 45min – 15min to make animals – 30 min to place them
    - Implementing Exercise During Class: 10 min intro and 15min outdoors
    - Assessment: follow up worksheet is 30-40min
4. ECOLOGICAL AND SCIENCE CONTEXT:
  - a. Background (for Teachers): Most students know about camouflage, but generally they think of it within the context of the military or hunting. What they may not realize is how common camouflage is in their natural environment. To this end, we are going to explore how well different colored pipe cleaner animals hide in the outdoor classroom, and how distance from the animal influences the effectiveness of camouflage. We will allow students to make inferences of how color and distance influenced their ability to find animals in the outdoor classroom.
  - b. Background (to present to Students): Who here can tell me about camouflage? Do you think that animals can be camouflaged? Which do you think is more likely to be camouflaged, predators or prey? Why? What do you think is important to be camouflaged outside? (animal color, background color, shape, distance) Today we are going to explore how animal color, background color, and distance influence the ability of animals to be camouflaged. To do this we are going to walk down the trail through the outdoor classroom in search of the elusive pipe cleaner animal. Along the trail there are 40-50 pipe cleaner animals of different colors, (red, brown, black, white, green), some of which are multicolored. The animals are placed along the trail at three different distances from the trail. You are going to work in pairs, and the objective of your group is to walk

along the trail and try to find as many pipe cleaner animals as you can. The rules of the game are: 1) you can't leave the trail, 2) you can't go backwards on the trail, and 3) you have 10 minutes to walk the whole trail. For each animal you find you will record all of the colors of the animal, the color of the background that the animal is against and the distance that the animal is from the trail. Then we will come back in and see what colors and at what distances it was easiest to find the animals. Before we go outside, what color animals do you think will be the easiest to find? Why? Do you think it will be easier to find animals that are close to the trail or far from the trail? Why?

5. **MOTIVATION AND INCENTIVE FOR LEARNING:** It is important that students understand that things that they commonly think of as human inventions are common in nature. Camouflage is something that is pervasive in the natural world, but for students is they generally think of it as something that their parents wear to go hunting or soldiers wear to war.

6. **VOCABULARY:**

Camouflage: To conceal by the use of disguise or by protective coloring or garments that blend in with the surrounding environment.

7. **SAFETY INFORMATION:**

NONE

8. **MATERIALS LIST** (including any handouts or transparency masters):

40-50 pipe cleaner animals made from 4-8 different colors of pipe cleaners

15-20 (1 for every pair of students) Data sheets

30 (1 for every pair of students) Work sheets

9. **METHODS/PROCEDURE FOR STUDENTS:**

a. Pre-investigation work: Before we conduct the inquiry we will introduce the students to the term camouflage and present some photos of camouflaged animals. We will discuss what animals should be camouflaged and what is important for effective camouflaged.

b. Investigation work: Students will be broken up into pairs. Each pair will have a data sheet and will work together to find the pipe cleaner animals along the trail. Students will record information about the color of the animal, its background and its distance from the trail on the data sheet. Students have 10 minutes to complete the length of the trail and find as many animals as they can.

1) What evidence (data, samples) do students collect? Animal color, background color, and distance from trail

2) How do students present the evidence (data)? They will answer question from a worksheet that will test their understanding of how color and distance influence the effectiveness of camouflage.

3) What conclusions are drawn from the evidence students collect? That animal color and background color really work together to influence the effectiveness of camouflage and that animals at a distance are always more difficult to locate than close animals.

4) Include examples of data sheets.

10. **ASSESSMENT:** The students learning is assessed by their ability to make generalized conclusions about how color and distance influence the effectiveness of camouflage.

11. **EXTENSION IDEAS:** This inquiry could be extended by having the students make their own pipe cleaner animals. They could then challenge each other to produce more camouflaged animals and place them against backgrounds that would maximize their camouflage effectiveness. Each animal is labeled with the maker's name and the class could do much as above, but once an animal is found its maker's name would also be recorded. This would make the game an additional challenge for the students.

12. **SCALABILITY:** This inquiry is scalable to any age group, with the addition of difficulty to the exercise, particularly the introduction.

13. **REFERENCES:**

14. **LIST OF EXPERTS AND CONSULTANTS**

Karie Decker helped to develop this inquiry

15. **EVALUATION/REFLECTION BY FELLOWS AND TEACHERS OF HOW IT WENT:**

The teachers remarked that the most impressive and most obvious indication that this inquiry was working, was that the students were quite. The students labored very intensively to find as many pipe cleaner animals as possible. They scanned the outdoor classroom, and although they were looking for artificial animals, the fact that they were so aware of their surroundings and interested in finding anything outdoors. The findings from their data suggested that both distance and color were important in determining the probability of finding a pipe cleaner animal. The students were able to determine how the color of the animal, its background color, and the distance from the observer all interacted to influence the camouflage of the animal.

Names: \_\_\_\_\_

1. What color did you find the most? Why do you think that is?
2. Were multicolored pipe cleaner animals easier or harder to find? Why do you think that is?
3. What background color did you find the most pipe cleaner animals on?
4. What color of pipe cleaner was the hardest to find? Why?
5. At what distance was it easiest to find the pipe cleaners? Why?
6. On the back of this paper draw a camouflaged animal (real or imagined) and the environment where it is best camouflaged

