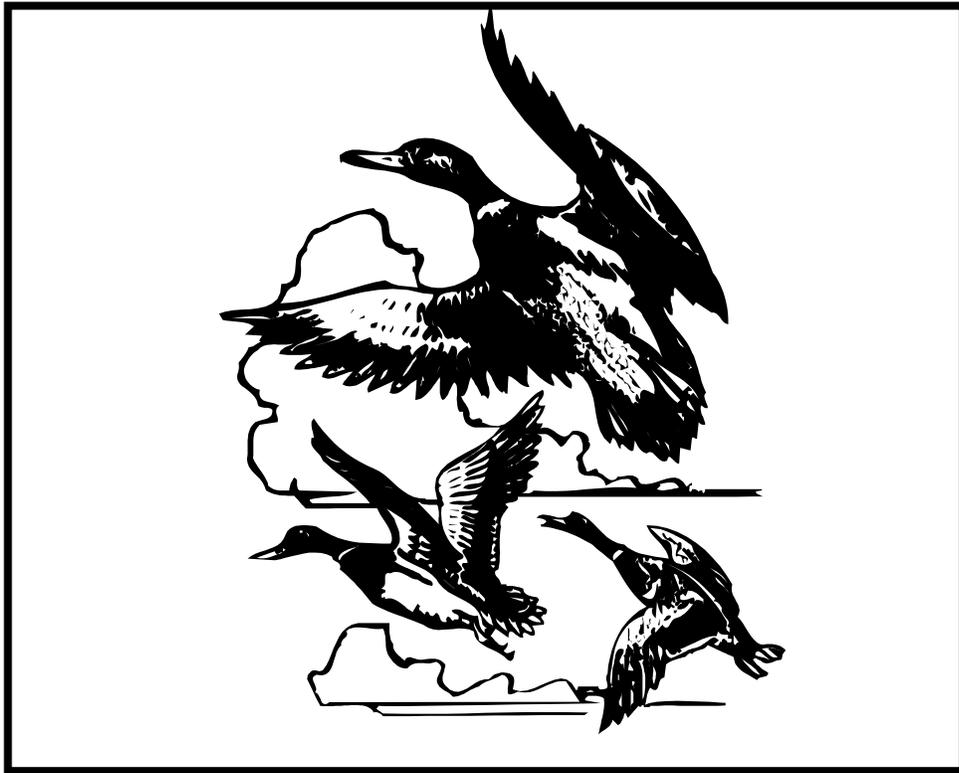


Feather Physics

Driftwood Education Center



Class Description:

Students will examine the general principles behind the physics of flight. We will discuss the forms of aerial locomotion, and the animals that use them. Students will be immersed in experimentation, discussion, and observation to understand these flight principles.

**Most appropriate for grade levels 5-8
Can tailor all classes for High School Students**

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Feather Physics

I. Introduction, overview, and assessment (20 min)

1. Using various experiments students will define the four principles of flight: gravity, drag, thrust, lift.
2. Students will explore Bernoulli's principle and examine air pressure and its importance through experiments.

II. Dynamics of Animal Flying: (30 min)

1. Types of aerial locomotion
2. Discuss the different types including: Parachuting, Gliders, Flighted Birds, and Soarers.

III. Experiments with Drag, Thrust, Gravity (30 min)

1. Students will design and create paper Airplane experiments
2. Paratroopers, Parachute ball, and Electric glider will show types of flyers
3. Alka Seltzer™ Rockets. Thrust, drag and gravity

IV. Conclusion and Wrap up: (10 min)

1. Review using a concept map.

South Carolina Performance Standards met

5th Grade: Physical Science IIB1: Distinguish among gravity, friction, magnetism, drag, lift, and thrust.

6th Grade: Earth Science ID3: Explain the effect of air pressure at different elevations.

7th and 8th Grade: Physical Science IB1: Analyze the direction and effects of forces in a variety of situations.

Florida Performance Standards met

5th Grade: SC.A.1.2: The student understands that all matter has observable, measurable properties.

6th- 8th Grade: SC.H.1.3: The student uses the scientific processes and habits of mind to solve problems.

Concepts:

Focal points of this class are:

1. Animals use four types of aerial locomotion.
2. There are four main forces that contribute to flight. They include: thrust, drag, lift, and gravity.
3. Animals that fly have adapted unique abilities over a long period of time.

Outcomes:

Upon completion of this class, students will be able to:

1. Understand the four principles behind flight and how flight works.
2. Investigate through experiments and be able to determine where drag, thrust, lift, and gravity are taking place.
3. Understand that air pressure plays a critical role in the ability for an animal to fly.
4. Identify unique adaptations in a bird's ability to fly.

Georgia Performance Standards met

5th Grade:

1. S5CS7. a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.

6th Grade:

1. S6CS9. Students will investigate the features of the process of scientific inquiry.

7th and 8th Grade:

1. S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.

2. S7L5. Students will examine the evolution of living organisms through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring.

3. S8P3. Students will investigate relationship between force, mass, and the motion of objects [Particularly involving Flight]