STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS

LEARNING LINKS FOUNDATION

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STEM from Home

How Do Birds Fly?

Introduction:

Would you like to be air-dropped to your school instead of going by bus, car or on foot? Just imagine how exciting and wonderful will it be if cars can unfold wings and transform into a mini-plane? After doing the following activities you can be the designer of such an amazing car!

To learn more about the first flying machine, click here.

In this STEM card, you will learn to use Scratch to demonstrate how birds fly; in the bonus activity, you will construct your own kite; and in the challenge activity, you will make aeroplanes of various shapes and wings and will watch and report which aeroplane will fly the farthest using origami.

Main Activity: **Tell Me Why, How Can You Fly?**

Introduction

You will develop a project that demonstrates the reason behind flight of birds and insects.

Let's get started! Take a look at the program here.

You can access the guidelines for the Scratch Project here.

What You Will Need

Hardware
A computer capable of running Scratch or Scratch 3 software (either online or offline).

Software
Access Scratch 3 either online at https://scratch.mit.edu/ or download from https://scratch.mit.edu/download

What You Will Learn

- How to add, modify or remove characters (sprites)
- How to add or modify backgrounds (backdrops)
- How to add customized characters
- How to make characters speak
- How to change looks (costumes) of characters
- How to navigate across the project

Bonus Activities

Activity 1: Fly A Kite

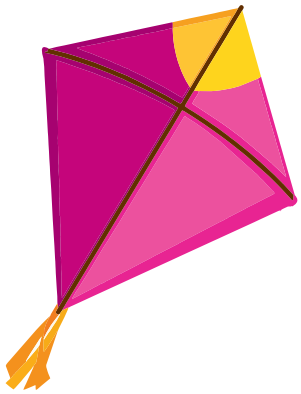
Introduction:

Do you know that there are so many great reasons to fly a kite as it has lot of physical, educational and social benefits? It is wonderful for hand-eye co-ordination, kinesthetic awareness and gross motor skills. Kite flying also helps strengthen the eyes as they focus far and near, observing and controlling the kite's flight.

You will be amazed to know that kites are flown on many occasions all around the world. These are said to be the first flying machines. Chinese were the first to create kites. Kite festivals are held all around the world, where kite flying enthusiasts assemble with various types of kites. Click here to learn more about the many varieties of kites. In this bonus activity, you will make a simple diamond-shaped kite using kite paper.

What You Will Need:

- Kite paper/ Craft paper
- 2 thin hardwood / bamboo sticks
- Thread to tie the sticks
- String to fly
- Gum/fevicol
- Cello tape
- Scissors



What You Will Learn:

- How to make a simple kite
- Science behind kite flying

Let's design a simple kite, follow the steps given in the link. Click here for the activity.

Challenge Activity: High Up In The Air

Did you realise that each bird's wings are unique? Some have little wings, while others have enormous ones. The amount of time a bird spends in the air is determined by the size and form of its wings. It's time to learn about the bird's flight by becoming the master crafter!

Design your own paper plane.

What You Will Need:

- Paper of different sizes
- Pencil/scale
- Measuring tape
- Record book or sheet
- Stopwatch

To make different kinds of airplanes refer here.

You can invite your friends to this activity. Once you and your friends design different kinds of airplanes, go out in the open or any open indoor area free from any hindrances to fly your airplanes.

Make a table in your record book or use the template provided.

Measure the wingspan of each aeroplane (from the tip of one wing to the tip of the other wing across the aeroplane) with a ruler or measuring tape. Take note of the flying pattern as well. Make a note of your findings.

Fly each design at least three times with the same force to obtain precise results. Time how long each plane is in the air using a stopwatch.

You may also change your design to create an aeroplane that flies farther and remains in the air longer. After you've recorded your observations, come to your own judgments about the following topics.

- Which plane lasted in the air the longest/shortest time?
- What sort of wings did it have, and how big were they?
- Which plane travelled the farthest distance?

Extended Activity

Using adhesive tape, add coins to see how much weight your aeroplane can hold and how far it can fly.