

# Ideas for Educational Activities with UAVs

## (Unmanned Aerial Vehicles or “drones”)

Use your drone to **check out something that isn't readily visible.** (Set up a type of scavenger hunt where you ask things like “what object is on the roof?” or “submit a picture of an island in a pond.”)



Take pictures of the same thing from two different points of view. Identify similarities in the picture to align them. Use image-processing software to generate a red/blue composite image. View it with red/blue glasses for a **three-dimensional visualization.**

**How does temperature affect battery life/flying time?** Can you fly longer in cold or warm temperatures? At high or low elevations? What other factors might affect the maximum flight duration?

**What is the maximum distance (range) at which you can control your UAV? Can your UAV receive signals through wood? brick? glass? metal?**

Devise a test to find out which materials (or what distance) interfere with the signal from your controller to your UAV. Consider conducting similar tests with other remote devices (Bluetooth computer mouse, cordless telephone, other RC toys).

**Take several photos with your drone and use software to “stitch” them together to produce a photo-realistic map of a park or school campus.**

How often might you need to update the map to ensure that it remains up to date? Would it remain the same in each season?

Set up a challenge: Model the steps it would take to deliver food, water, and medical supplies to an area where a disaster occurred. Take a payload of a minimum weight to a specified location, deliver it, and fly the drone back to you.

Explore social facets of using drones. Some people are against the use of drones for various reasons (their use in war, potential for invasion of privacy, the nuisance of noise).

**Choose a location and take repeat photography to document change.**

Pre-requisite: Figure out how to fly your UAV to the same height and location on multiple occasions for time series photos. Consider using GLOBE and/or Nature's Notebook protocols to become familiar with observable changes in plants and animals in different seasons. How would you modify the protocols to make observations with your recreational drone?

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## More Educational Activities with UAVs

Available online at: [SciEd.ucar.edu/engineering-activities](http://SciEd.ucar.edu/engineering-activities)

- Learn to Fly! UAV Flight School
- Learn to Fly! UAV First Flight
- Learn to Fly! Aerial Maneuvers with a UAV
- How fast can my drone fly?
- How high is my drone flying?
- UAV Performance Test: Battery Lifetime
- UAV Performance Test: Carry a Payload
- UAV Challenge: Retrieve a Payload
- UAV Challenge: Aerial Survey of a Disaster Area
- UAV Challenge: Deliver Disaster Relief Supplies
- A 3d view from a drone: Make a 3d model from your photos
- Comparing Images from Drones with Satellite Images

