

## Build Your Own Tiny Greenhouse

A greenhouse is defined as an enclosed space that is heated and lit by the sun. Short-wave solar radiation passes through a layer of transparent or semitransparent material, and heats up surfaces like the ground and plants inside the greenhouse.



Making your own greenhouse is great for growing your garden and for teaching educational concepts in a hands-on way. In NYC, not everyone can have their own standard-sized greenhouse, but that doesn't mean you can't have a tiny one!

You can supplement this in-class or at-home activity with science, social studies, and math curriculum. The scientific greenhouse effect is the clearest curricular connection. But did you also know some of the earliest accounts of using structures to grow plants date back to ancient Rome, around 30 A.D., where members of the cucumber and squash family were grown for the Emperor Tiberius? Find this info and more in the [Greenhouse Manual for Educators](#) from the United States Botanic Garden.

Below, check out 4 models of Tiny Greenhouses you can build!

## Model 1: Egg Carton Greenhouse



This model is great for germinating seeds. The extra warmth trapped inside will help your seeds germinate faster than they would on their own. Once they sprout, you'll have to take the lid off in order for the seedlings to keep growing up!

Supplies needed:

- Cardboard or plastic egg cartons
- Gardening soil (seed starting soil mix preferred)
- Your choice of seeds- vegetable or flowers
- Permanent marker
- Sharp item (nail, box cutter or small knife)

**Step 1:** If using a cardboard egg carton, find an upcycled plastic bag or plastic lid to use as a cover. If using a plastic carton, you have a built-in lid!

The plastic lid for the carton will serve as a mini-greenhouse and heat your seeds up enough for them to germinate outside, even in cooler weather.

**Step 2:** Poke holes at the bottom of each cup, to provide drainage and prevent seedlings from drowning. Also, poke some holes in the top for a small amount of air flow.

Step 3: Add soil to the egg cartons! The soil should be slightly damp.

**Side note: On the topic of eggs, some gardeners have been following a cute trend of planting seeds in eggshells. If you do this, make sure to remove the plant from the eggshell once it gets 2 or 3 sets of leaves, or break up the eggshell when planting in the ground so that the roots can keep growing without being constrained to the shell.**

Step 4: Add 3-5 seeds in each little cup, following the planting instructions on your seed packet.

Step 5: Using your permanent marker, make sure you mark what day your seeds were planted and how many days it should take for them to germinate. Keeping track of this is especially if you are doing multiple types of seeds in one carton.

Step 6: Spritz them with water to make the soil saturated, but not drowning, then cover with the lid! Water every couple of days to make sure the soil doesn't dry out.

## Model 2: Greenhouse in a Bag



These mini-greenhouses are good for germination purposes. Each student can keep track of their own seed start. Of course we hope to one day live in a world without plastic bags, but for now, reusing baggies to grow plants is one way to upcycle. Minimum equipment for maximum germination! These sprouts are also a fun window decoration if you use painter's tape.

Supplies needed:

- (Re-used!) Ziplock bag
- Potting soil
- Spray bottle or measuring cup
- Seeds
- Permanent marker
- Masking tape, sticky notes, or labels

Step 1: Add soil to the bag

Step 2: Moisten the soil but don't soak it

Step 3: Add seeds (3 seeds or more to increase germination chances)

Step 4: Close the ziplock bag, tape it to a window, and label it!

**Note: No need to water the soil since the moisture is trapped inside the bag. The sun heats up the air inside the bag - just like a greenhouse!**

## Model 3: Plastic Container Greenhouse



### Supplies needed:

- Plastic containers
- Popsicle stick or pen
- Newspaper or tissue rolls
- Soil
- Seeds
- Marker
- Tape or label

For tissue roll seed starters - Cut the toilet paper roll in half. With each half, make four vertical cuts in the roll, 1/3 of the way up. Fold the cut area on the bottom like you would close a box. Now your pot has a base! Fill your new seed pots with a light potting soil.

For newspaper roll seed starters – You'll be making a newspaper mold of a can. You can use a 6-ounce can, a shot glass, or a small jar. Cut the newspaper into long, wide strips, then wrap the can multiple times over with the newspaper strip. Fold the edges of the newspaper over the can and work your way around in a circle until all the edges are folded over firmly. Then remove the can and you have a newspaper mold of it!

Step 1: Create your rolls for your seed starting

Step 2: Poke a few holes in the plastic tray for drainage.

Step 3: Moisten your soil lightly and fill the rolls with soil.

Step 4: Plant the seeds in the soil according the package's instructions.

Step 5: Place your rolls into your plastic container in a sunny spot. Label each roll with the type of plant and day it was planted.

Step 6: Allow the seeds to germinate. Once you see it sprout, prop up the lid of the plastic container to allow the sprouts to keep growing.

**Note: When potting seedlings make sure you completely remove the toilet paper roll cardboard before planting. The cardboard doesn't break down easily in all soil. For the newspaper roll, bury them completely - leaving the top of the newspaper sticking out can divert moisture from the roots.**

### Model 4: Plastic Bottle Greenhouse



This greenhouse model will allow you to grow the seedlings higher than the previous models. You can grow them until they have about 3 sets of true leaves, and then transplant them into the ground or a large pot. As show in the second photo, you can use just the top half of the bottle to create a greenhouse effect over a potted plant, or even place it around a seedling already in the ground.

Supplies needed:

- Upcycled Plastic Bottles
- Box cutter
- Seeds or seedlings
- Marker
- Label

Step 1: Wash out the bottle with soap and water thoroughly.

Step 2: Cut partly across the bottle 4-5 inches above the bottom of the bottle. Leave the upper part of the bottle attached to create a hanging lid.

Step 3: Place soil into the bottom of the bottle. Moisten your soil but don't soak it.

Step 5: Plant your seedlings or seeds in the soil and label them.

**Note: You can control the humidity inside the bottle by leaving the cap on top, which creates condensation of evaporated or transpired water. You can also take the cap off to let water escape through the bottleneck.**

Follow up activities:

- Measure growth, temperature, and other observations of the greenhouses. You can make charts and graphs.
- Compare germination rates of seeds started in a greenhouse versus seeds started without one.
- Draw pictures of the plants changing.
- Check out this lesson plan on [Desktop Greenhouses](#) from New York Agriculture in the Classroom
- Transplant your greenhouse sprouts to a larger pot or in the ground once they have about 3 sets of leaves or outgrow the mini greenhouse.