* Title
  + Breathing Plants
* Objectives
  + Students will be able to understand and visualize the transpiration step of the water cycle
* Vocabulary
  + Water cycle
  + Transpiration
  + Evaporation
  + Condensation
  + Precipitation
* Materials
  + Leafy plant that is still planted (either in a pot or in the ground)
  + Clear plastic bag big enough to wrap around a bundle of the plant’s leaves (like a sandwich bag or gallon storage bag)
  + String
* Introduction
  + On Earth we have a limited amount of water and we will never have new water. The water we have has been recycled continuously through the process called the water cycle. Water is constantly moving through the cycle; there is never any “new” water, only water that has been recycled.
  + There are three main steps in the water cycle: Evaporation, condensation, and precipitation. As water molecules move and bounce around more and more quickly, they become a gas (water vapor) through evaporation. When those molecules rise high enough in the sky, they cool and lose energy, becoming liquid water again through the process of condensation. Clouds are formed through condensation. When the droplets of water in a cloud become too heavy, they fall to the ground as precipitation (rain, snow, sleet, and hail).
  + There is another step to the water cycle that is just as important as the main steps: Transpiration. When we exhale, we breathe out water vapor. Plants do the same thing, except when plants “breathe” we call it transpiration. When a plant transpires, water evaporates from the leaves’ surfaces. The water that is transpired evaporates into the air, feeding into the water cycle. Transpiration is still happening even if we can’t hear or see it (and we typically can’t).
  + Explain to students that they will be using some household items to capture and see transpiration.
* Procedure
  + Wrap the clear plastic bag around a handful of leaves on your plant/tree. Tie it off with the string.
    - Note: You do not need to create a seal with the string. It is only used to keep the bag securely on the plant. The plant still needs some room for transpiration to escape.
  + Let the bag rest for about an hour. You should see some steam forming inside the bag. This is the transpired water from the plant leaves. If you can’t see any steam, try tying off your bag a little tighter, setting your plant in the sunlight if possible, and waiting a little longer.
  + Remove the bag from the plant immediately after observations are made.
* Closure
  + Have students make some general observations about the bag:
    - Did you expect more/less water? Why? Why do you think transpiration is important for plants? How might transpiration be important in the water cycle?