Garden Science

Materials

- Mason or other
 - glass jar
- Paper towels
- Water
- Seeds (pea, sunflower, and bean seeds work best)

Germination is the process of a seed becoming a plant. Seeds are dormant ("asleep") until the moisture, light, temperature, and air are just right. In this experiment, you'll germinate seeds by giving them what they need to "wake up" -- and the glass jar allows you to see what happens "underground" as they grow! Note to parents: Seeds will germinate faster if you soak them in warm water for a few hours ahead of this experiment, but it is not required.



Instructions

Loosely pack the glass jar with paper towels. Then, add enough water to wet the paper towels -- but don't add too much! (Add water slowly, and dump out any water that has pooled in the bottom of the jar.)



Carefully push the seeds into the jar around the outer edge of the paper towels (so seeds can be seen from outside the jar).



Wait! For most seeds (like the ones we suggested), germination does not require light, so just keep your jar in a safe place where you can see it. In a few days, you should start to see changes. Observe and track what you see on the activity chart on the next page. See if you can spot the stages of the germination process over the next 7 days!



Questions & Further Experiments

- Try germinating 2 or 3 different kinds of seeds and compare their progress. Does one germinate faster than the other?
- Try planting 3 of the same kind of seed and use different amounts of water for each jar (no water, half water, lots of water). What changes?
- Plant seeds in soil (in a jar or outside). How long does it take for the shoot to appear and grow leaves? How many days did it take for the shoot to grow leaves in the paper towel jar? Do they match?
- Garden together! Choose seeds, track plant growth, learn about new plant species, and discuss the function of plant parts (root, stem, leaves, seed, flower).



Stages of Germination

STAGE A: Seed **fills with water and swells**. Scientists call this "imbibition."

STAGE B: Oxygen from the water activates seed growth. You can't see this happening, but in those first few days, the seed is in respiration -- it is waking up and getting to work on building a plant!
STAGE C: The seed will grow a root. Watch as it grows downward towards the bottom of the jar-- this is how the root takes hold when planted in soil. Keep an eye out for little hairs growing off the root, which the plant will use to collects water and nutrients from the soil!
STAGE D: The seed will grow a shoot. This will grow upward towards the top of the glass, looking to push through the soil and toward the sun.
STAGE E: The shoot will grow leaves, which harvest energy from the sun.





	Day of the Week	Observations/Description	Stage (A, B, C, D, or E)
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			

