

Race to the top

Build this bean maze and watch this very clever bean plant grow around obstacles to reach the light. Can your bean plant reach the top?

Let's watch how plants reach for the sun! Have you ever noticed how plants grow toward the light? Plants are amazing how they adapt to best photosynthesize. There are many adaptations that plants undergo to optimise their intake of radiant energy from the sun.

Phototropism is a mouthful however breaking it down it means 'photo' light and 'tropism' turning. So phototropism is when a plant will move in response to an external stimulus in their environment. Its hormones create this change in behaviour so as to take action to survive.

And we thought it was just a bean plant!

What you will need:

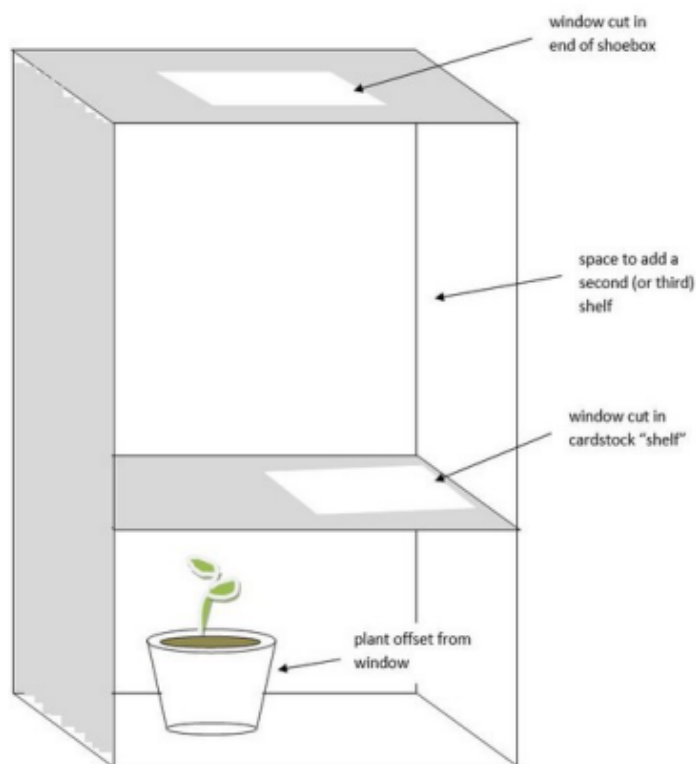
- Shoe box
- Scissors
- Masking tape
- Bean seedlings
- Pot and potting mix
- Cardboard for shelf

Steps to create your maze:

We are going to create a bean maze that has 2 shelves (not including the bottom and top of the shoe box)

1. Prepare your plant. A bean plant is great for this experiment because it grows quite quickly. *(If you would like to grow the plant from seed, plant the seed in a cup of soil (1 inch under the surface), plant a few in case one doesn't germinate. Place the plant near a window and wait a few days until a small plant sprouts)*
2. It's time to build your light maze. Cut out a large exit hole at the top of the shoe box. Cut out 2 shelves that are the same depth and width of the shoe box (you can see one created in the diagram below). Make sure that you use cardboard that doesn't let any light in. The windows that you cut must include these challenges for your plant's pathway:
 - **A right angle**

- 2 obtuse angles
3. Cut out these windows in each shelf to ensure you include these challenges and secure them to the box, using tape to seal all gaps (except the windows). Close the lid and check that there is no cardboard blocking the light at the top of the box.



4. Now it's time to pop your plant in the light maze. Place on the left hand side, close the lid and place the shoe box near a sunny window.

8. Do not open the box except to water it regularly to keep the soil moist. Do not over water. Just a little every 2-3 days would be ideal. If it's very hot, a little water daily is best.

Will your plant find the sun?

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Prediction - *Illustrate what you think your bean maze will look like in 2 weeks.*

Results - *Illustrate your bean maze looks like in 2 weeks*

Questions

- Do you think the bean plant will have used phototropism to reach the light in 2 weeks? If not, how long do you predict?
- Thinking about other plants, maybe in your veggie garden, school yard or out on a bush walk, what other examples have you seen of plants finding the light to survive?
- What other challenges do you think plants are up against in nature?

Conclusion - *What was your end result?*

