

## Biology

# The Strength of a Seed Project

(Germany)

### Background

Background: This activity is adapted from the project 'How tomatoes conquer biology lessons'. Planting seeds with a class at the start of a term, caring for them, watching them grow and develop. Opportunities then arise for leaving certificate biology revision while watching the seeds grow and develop. Pin point questions to be asked to lead to revision topics being covered. Topics such as; seed formation, seed dispersal, germination, photosynthesis, reproduction in plants, cell division, nutrition in plants, zones of differentiation, plant responses and the characteristics of life.

### You will need

- ✓ Soil / compost
- ✓ Small trowel
- ✓ Radish seeds x 20
- ✓ Propagator (optional) then a seed tray
- ✓ If not using a propagator then a seed tray
- ✓ Windowsill or lamp
- ✓ Water

### Follow these steps:

1.  $\frac{3}{4}$  fill the seed pot with soil
2. Plant 2 radish seeds into each pot at a depth of a finger nail
3. Lightly cover over with soil
4. Sprinkle with water



5. Place lid of propagator on top if using
6. Place on windowsill
7. Monitor over class times
8. Ask the students each class as to what is happening, what they can observe.
9. Use trigger questions as a guide.

### What next?

- Seed project can be used for revision in leaving cert biology or as a junior science project.
- A student report can be written on the growth of radish seeds. Keywords can be given that have to be used. This will summarise a large part of the plant biology course.

### So what happened?

The radish seeds will start to sprout around 3 days. The days before this is happening questions can be discussed; how did the seed form, how may it have been dispersed, what is germination, what are the conditions needed.

As the radish sprouts and grows the process will make it more realistic for the students and the depth of questions can grow.



# The Strength of a Seed Project

## — worksheet

### Trigger questions for 'The strength of a seed project' for leaving certificate biology

1. Not all questions need to be asked, this is just a guide.
2. Show the students the seeds; ask how the seed was formed & what precisely gave rise to the seed?
3. How could the seeds be dispersed in their habitats?
4. What conditions are needed for seeds to germination?
5. What is the seed coat called?
6. When the seed is germinating what does the radicle and plumule give rise to?
7. After germination & growth into a young plant what chemical process does the young plant now carry out?
8. Where does this process of photosynthesis occur in the plant & what are the materials needed?
9. What plant tissue is responsible for the transport of the water, minerals and food?
10. Write out both the word and chemical equations for photosynthesis.
11. Now that the plant is growing what adverse conditions within the habitat could affect the growth of the plant?

### Questions for more depth:

12. Growth occurs in the plant, explain the type of cell division that is happening. In what zone does this division take place and or name the tissue that is involved. Name the other 3 zones. Sketch a labelled diagram of the zones of differentiation.
13. As the plant is growing list the plant growth responses involved. Explain each one.
14. List the characteristics of life that are evident during the growth from a seed to a plant.