From seed to plant

Biology	Plant Physiology / Botany	Physiology of plants
Biology	Plant Physiology / Botany	Reproduction in plants
Biology	Plant Physiology / Botany	Germination, growth, development

Difficulty level	Group size	Preparation time	Execution time
easy	1	10 minutes	10 minutes

This content can also be found online at:

http://localhost:1337/c/5f0d6cd71c41060003916b75

PHYWE

Teacher information

Application

PHYWE

Beaker with beans in soil

It is such a self-evident process in nature that you don't perceive it anymore: seeds, sown in orchards, fields and forests, sprout and grow to become fully developed plants.

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Other teacher information (1/2)

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Prior knowledge

While there are kinds of seed, which only germinate in bright light, beans need darkness to sprout. That is why it is vital to encase the beaker thoroughly with black carton. Subsequently the beaker should be located in a bright spot, e. g. in near proximity of a window, to accelerate the plant's growth.

Scientific principle

This experiment underlies the common principles of plant growth.

To achieve valid results, the experiment must last at least 10 days.

Other teacher information (2/2)

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Learning objective

The pupils will experience the development from seed to plant in this experiment.

Tasks

The students are to plant the beans and observe their further development.

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Safety instructions

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The common rules of safe experimentation in scientific education to be applied to this experiment.

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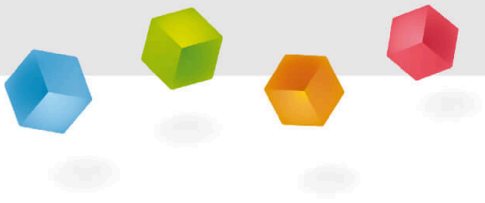

Student information

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Motivation

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Seedling

You see it so frequently, you don't realize it anymore with full awareness: small, inconspicuous seeds transform into big trees, pretty flowers, or delicious vegetables. But what happens exactly when a seed becomes a plant? This experiment will show.

Tasks

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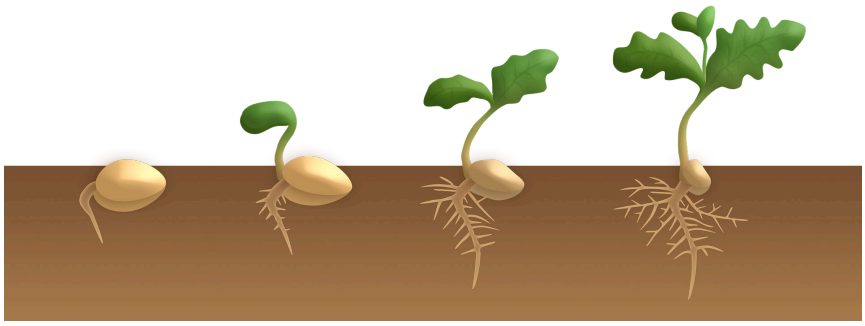
In this experiment you are going plant beans and observe their development. What happens before the plant appears on the surface?



Seed after germination

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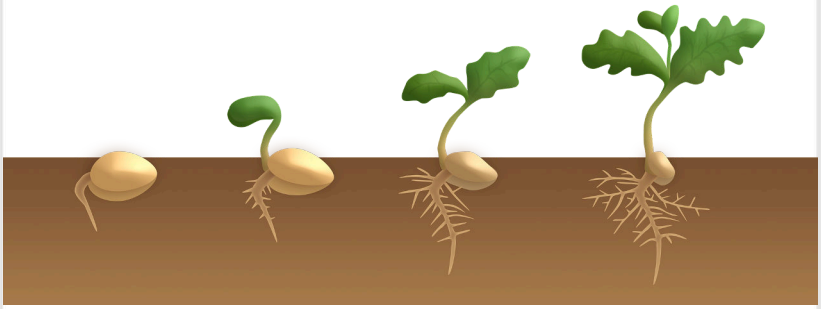

Seed after germination

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Equipment

Position	Material	Item No.	Quantity
1	Rubber bands, 50 pieces	03920-00	1
2	Beaker, 250 ml, plastic (PP)	36082-00	1
3	Beaker, Borosilicate, tall form, 600 ml	46029-00	1
4	Petri dish, d 100 mm	64705-00	1

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Procedure (1/3)

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At first place 10 beans in a petri dish.

Cover them with water afterwards in order that the beans swell.

Procedure (2/3)

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Now fill a 600 ml beaker with soil and plant the swollen beans in it, leave about 2 cm free from the top. You need to spread the beans evenly at the edge of the beaker so you can see them grow.

Then encase the beaker with black carton as high as the soil reaches. Fix it with a rubber band.

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Procedure (3/3)

Place the beaker in a bright space, e. g. near a window, water it regularly (but not too much) and observe the beaker for at least 10 days.

In order to see what happens beneath the surface, you have to remove the carton once in a while. Encase it again carefully afterwards.

Report

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Task 1

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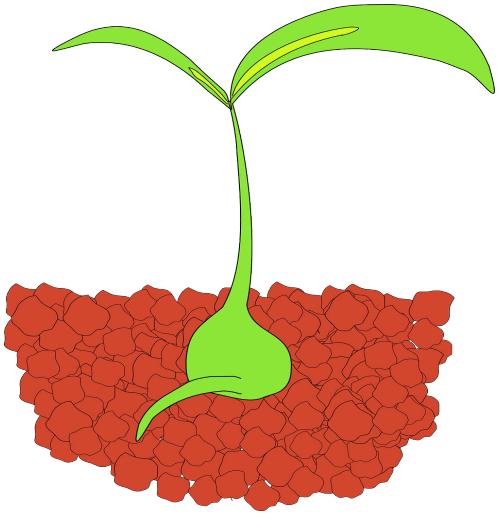
What colour is the stem beneath the soil?

- Black
- White
- Green
- Brown



Task 2

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The stem grows upwards.

○ True ○ False

Check

The root grows upwards.

○ True ○ False

Check

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Task 3

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Drag the words into the correct boxes

In the beginning the _____ need to swell so that the boll can burst open. Afterwards the beans must be planted in soil in order that _____ and stem can develop. When the plant appears on the surface it is called _____, it then begins to grow its first leaves.

beans | seedling | root

Check

Slide	Score / Total
Slide 15: Colour of the stem	0/1
Slide 16: Multiple tasks	0/2
Slide 17: Bean seed seedlings	0/3

Total Score 0 / 6

Show solutions | Retry

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