**ACTIVITY: Student-led investigations about seeds**

**Activity idea**

In this activity, students choose a question they have concerning seeds and design an investigation to help them answer their question.

By the end of this activity, students should be able to:

* gain experience in phrasing questions that can be answered with simple investigations
* gain experience in designing simple investigations
* discuss why they chose their question
* discuss the outcome of their investigation.

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**Introduction/background**

In this activity, students choose a question they have concerning seeds and help to design an investigation to answer this question. This could be a whole-class investigation or by groups of students.

The aim of the activity is to develop a question that can be tested with a simple investigation. The complexity of the investigation is age dependent.

In many cases, a control may be used. For example, if the students choose to try and grow a seed in a refrigerator, use the same type of seed, soil, pot size and watering techniques to grow the same type of plant in the classroom. This will allow students to assess the changed variable (temperature) and its effect on seed growth.

In a similar manner, if the students are investigating growth rates amongst different types of seeds, keep all of the other components the same (temperature, water, pot size, etc.).

Example questions might be:

* Does seed size affect the time it takes for a seed to germinate?
* Do cooked seeds grow?
* Can we grow plants from the seeds found in a supermarket apple (or other fruit)?
* Can seeds grow in cold places like the fridge?
* Will seeds grow if they are given Coke instead of water?

**What you need**

Materials will vary according to individual investigations but are likely to include:

* seeds
* potting soil
* yoghurt containers or other small pots for planting.

**What to do**

1. Discuss the activity with the students. Generate a list of questions they have about seeds or seed growth. Write down all ideas presented.
2. Narrow the list by discussing what is possible to achieve in a classroom setting. For example, it takes many years for an apple tree to grow. It’s possible to investigate whether an apple seed will sprout or grow into a seedling but probably not to grow into a tree.
3. Once the students have selected a question, begin to plan the investigation. Students need to consider:
* materials they need for the investigation
* time it will take to do the investigation – is it manageable?
* validity – will the investigation answer the question?
* reliability – will using a single seed provide a trustworthy answer or will students need to have several seeds growing at once?
* measuring, recording or reporting their plan, the investigation process and results – how often will they make measurements and how will they present the data?

1. Older students can also:
* identify the variables (any factor that can be controlled or changed in an experiment)
* identify the independent variable (the one factor that is changed in an experiment)
* establish a control
* identify how they will measure the change.
1. Write out the question and the steps the students plan to take. Post them near the activity.
2. Have observation/recording sheets ready.
3. Conduct the investigation. Record results regularly.
4. Discuss the results:
* Did the investigation answer the question?
* Is this similar to what you thought might happen?
* Were there any challenges to the investigation? How did you handle them?
* Would you make any changes to your investigation if you were to do it again?
* What did you learn about seeds as a result of this investigation?