Investigating seed germination and plant growth

Background

Most seeds have a similar structure but they vary in shape, size and colour. They have three important structures: the embryo, seed coat and a food store. The main steps in germination are the same for all seeds. When seeds start to germinate they need oxygen, water and a suitable temperature.

Investigation

In this investigation you will explore the factors that affect germination and plant growth.

You should choose one factor to investigate, examples are:

- do large seeds germinate faster than small seeds?
- do all seeds from the same plant germinate at the same time?
- what conditions are best for fast germination?
- do seeds germinate faster in the light or dark?
- do plants with large seeds grow taller or faster?

In your investigation:

What is the thing that you will change?
What will you measure? How will you measure it? Will you count the numbers of seeds, the height, number of leaves?
What will you want to keep the same during your investigation?

If you do not have access to packets of seeds you could try dried peas or beans from the kitchen cupboard. If you have a pet hamster, rabbit, or chickens then these contain seeds which you could use. Wild bird seed contains a range of seeds but avoid sunflower hearts as they will not germinate. There are some wild plant or weed seeds around which you could try also.
An example investigation

This is an example of the type of investigation you could carry out. Try to think of your own.

Question: Do large seeds germinate faster than small seeds?

This investigation will compare the germination rate of small cress seeds to large bean seeds.

Method

1. Place a wad of cotton wool or kitchen towel in a flat dish or tray and add sufficient water to make sure it is thoroughly wet.
2. Count out sufficient cress seeds to spread evenly over the cotton wool.
3. Line a jar with kitchen towel or with cotton wool and wet it thoroughly.
4. Push beans about halfway down the side of the jar. The number of beans you use will depend on the size of your jar. There should be sufficient space between the beans to allow them to grow.
5. Check the seeds every day for signs of germination

Results

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<thead>
<tr>
<th>Number of seeds germinated</th>
<th>% of seeds germinated</th>
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Conclusion

You should present you investigation in a way that you think is most suitable.
Will you make a video by recording the seeds every day, a PowerPoint presentation, or a written report? Can you present the results in a graph?
What did you find from your investigation?
What conclusion can you make about the effect of the size on seed germination.

Extension

Try growing some more exotic seeds; avocados, peanuts, oranges or tomatoes for example.