



Exploring 4-H at Home



Science and
Technology

Pillar: Science & Technology

Project: 4-U: Science

Activity: Create Your Own Science
Experiment with Ruby

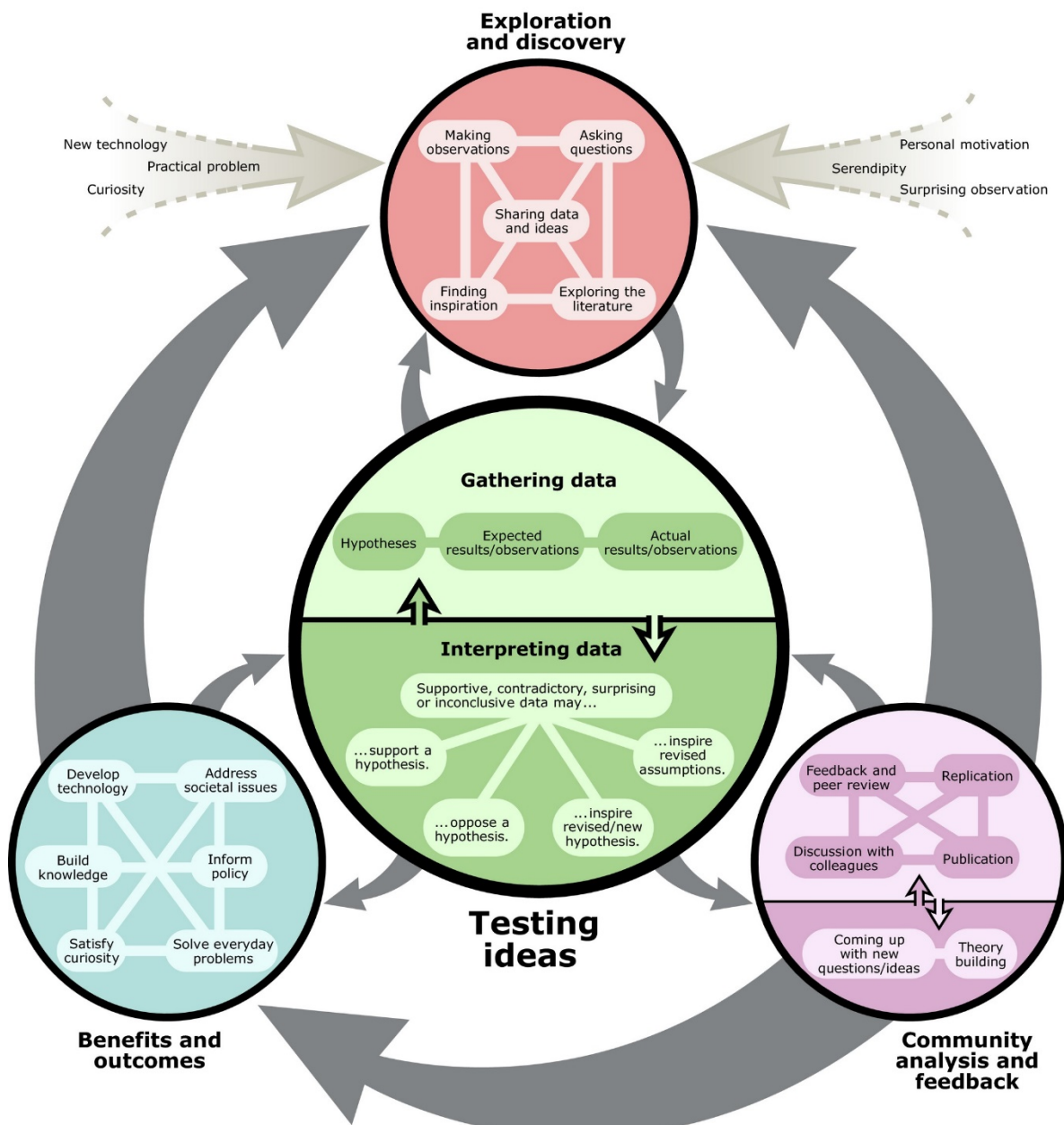


Designing Your Own Experiment

Science is based upon observations, experiments and other methods of discovery performed by inquisitive people called scientists. The scientific process is complex and can be non-linear (contains cycles and loops).

Science is an ongoing process. Scientists will find an answer to one question, but it may open up numerous other questions to be answered.

How science works



Tips to remember:

- Scientific observation is anything detected with our senses – sight, sound, smell, taste and touch
- Scientific questions should have the potential to be answered through observation
- A hypothesis is a tentative answer to a question, often presented in “if, then, because” format
- Make sure to identify the variables important in the process you are investigating. A variable is any factor that may differ or change in your experiment.
- Make sure to have a control. A control is one piece from the beginning which has not be experimented on.
- Make sure there is a way to measure your variables.
- Choose a topic that will interest and challenge you.
- Do not be afraid to try something new—you will learn about it along the way.
- After picking a topic, spend a lot of time gathering background research.
- Look for important concepts and equations that will explain how and why your experimental results turn out the way they do.
- Find equations that will help you predict the outcome of your experiment. Learn all the important math, physics, chemistry etc. in order to fully understand your project.
- Keep a detailed and up-to-date lab notebook with you regularly. It will help you organize your thoughts and if you ever need to go back to see how you did something, you can find out.
- During the experiment, do not get discouraged if you run into a lot of problems.
- Do not stop if your experiment does not turn out the way you think it should.
- It's okay if your hypothesis is proved incorrect.
- Look at your results and ask yourself why they do/do not make sense.
- Apply your background research to your results to help you figure out what happened during the experiment.

Use the form, which is part of this document, to come up with your experiment and write down your observations – or you can have your own notebook to write it all down instead!

Remember, if you come up with a great experiment, you could enter it into the 4-H Canada Science Fair! For more information about the science fair, visit <https://4-h-canada.ca/sciencefair>
Registration for the 2021 Science Fair will open September 1, 2020.

Name of Experiment

Question (What do you want to find out?)

Hypothesis (What do you think will happen and why?)

Materials (List all materials you will be using)
