1.2 Scientific Inquiry – Experimental investigations

- ALL use a similar process to find answers
- Most cases, attempt to identify relationships between variables
- Variables are any condition that can change in an investigation
- Some variables are controlled while others cannot be controlled

A. Controlled experiments:
- An experiment where **one variable** is changed to determine the effect on a 2\textsuperscript{nd} variable. (eg. How varying **amounts of water** affect **plant growth**)
- A **Hypothesis** is a possible explanation for your initial observation
- From your Hypothesis, you can make a **prediction** that can be tested in a controlled experiment
- **NOTE:**
  
  a) The variable that you, the investigator, change is called the **INDEPENDENT VARIABLE**

  b) The variable that changes in response to the independent variable is called the **DEPENDENT VARIABLE** ("it depends on the independent variable")

  c) A **control** is a standard or reference, to help compare the other results (eg. One plant gets NO water)

B. Correlational Studies:
- **Scientist determines if one variable affects another without changing or controlling any variables.** 3 types:
  1) High positive correlation – graph shows Y increases as X increases
  2) High negative Correlation – graph Y decreases as X increases
  3) No Correlation – graph shows NO correlation

C. Observational Studies:
- **gathering scientific info by careful, systematic observations (animal behaviour)\n  ** hypothesis is generated & tested. (biology, astronomy, paleontology examples)