Variables grid

Purpose

A planning tool for analysing the variables associated with science investigations.

Process

To illustrate the process, the specific example of plant growth as the measurable variable has been used. The process can be applied to any investigation analysis.

- Elicit variables from participants in response to the question, for example,
  What things might affect plant growth?
- Draw a large 3 x 3 grid on a whiteboard or chart and write the variable to be **measured** in the centre, for example, plant growth. Place an **M** for **measure** in this box. Label the diagram 'Variables grid 1'.
- Brainstorm the variables which might have an affect on the measurable variable in the centre and write these in the surrounding spaces. There is room for up to eight variables. Not all boxes need to be filled.
- Choose one variable to be **changed**, for example soil type, in the investigation. Put a **C** for **change** in this box.
- Explain to participants that all other variables must **stay the same** to keep the test fair. Place an **S** in every other box.
- Once the variable to be changed is identified, a second grid can be drawn with the change variable now in the centre. The ways it will be changed are identified in the surrounding spaces. Label the diagram 'Variables grid 2'.
- From Variables grid 1, up to eight more grids can be created to demonstrate the wide range of variables which might impact the variable being measured.

Variables grid 1

amount of light **(S)**	amount of water **(S)**	type of soil **(C)**
size of container **(S)**	**plant growth** **(M)**	amount of fertiliser **(S)**
type of seed **(S)**	shape of container **(S)**	number of seeds per container **(S)**

Variables grid (cont)

Variables grid 2

sand	no soil	clay
potting mix	**type of soil (C)**	vermiculite
pebbles		

Product

The variables grid provides a means of visually demonstrating all the variables which might affect the outcome of a science investigation and thus assists in the planning stage of an investigation. Numerous investigation questions can be derived from this activity.

Primary**Connections examples**

Examples of investigation questions from the variables grid analysis for measuring plant growth:

- What happens to plant growth when you change the amount of light?
- What happens to plant growth when you change the amount of water?
- What happens to plant growth when you change the type of soil?
- What happens to plant growth when you change the size of the container?
- What happens to plant growth when you change the amount of fertiliser?
- What happens to plant growth when you change the type of seed?
- What happens to plant growth when you change the shape of the container?
- What happens to plant growth when you change the number of seeds per container?

Reference

Langford, David (2003). *Tool Time, Choosing and Implementing Quality Improvement Tools.* USA: Langford International Inc.