

In the previous handout, we used the *Design Outline* to organize and identify the components of a scientific experiment. In this handout, we will look at some standard methods for collecting and recording data.

■ Data Collection Guidelines

- Information collected during an experiment is called **data**. Always be careful, thorough, consistent and accurate when you are collecting data.
- Always complete *as many* repeated trials as is reasonably possible.
- Clearly identify the category of the independent variable.
 - **Continuous**: levels of the I.V. that are measurements based on a continuous metric or English scale
 - **Discontinuous**: levels of the I.V. that are distinct, discrete categories
- Clearly identify the category of data collected for the dependent variable.
 - **Quantitative measurement**: continuous data collected using measurements based on standard scale of metric or English units.
 - **Qualitative measurement**: discontinuous data that is classified into discrete categories.

■ Data Table Design

To design and make a proper data table, you must first fully understand the data you will be collecting. Begin by identifying the following:

- a. Independent Variable and levels of the Independent Variable
- b. Dependent Variable(s)
- c. The number of trials for each level of the I.V.
- d. All calculations used to analyze the data

Now you are ready to construct your data table! Always sketch a rough draft of your data table first. Include all appropriate units.

1. Make a table containing vertical columns for (1) the independent variable, (2) dependent variable and (3) statistical calculations (i.e. mean). Use a ruler. ** are the cells of your table large enough?*
2. Subdivide the column for the dependent variable to reflect the number of trials.
3. Under the I.V. column, list the levels (treatments) of the independent variable in rows – preferably from the smallest to the largest.
4. Title the data table (“The Effect of I.V. on. D.V.”)
5. Record all data values and calculations in the appropriate locations!

■ Sample Data Table – The Effect of Compost Age on Plant Height

Age of Compost (Months)	Height of Plants at 30 Days (cm)					Mean Plant Height (cm)
	<i>Trials</i>					
	1	2	3	4	etc.	
0 months (control)						
3 months						
6 months						

Data Table Practice

Directions:

1. Consider the following scenarios below. For each scenario, identify the aspects of the Design Outlines (previously completed) that are needed to construct appropriate data tables.
2. Using a ruler, neatly construct a blank data table for each scenario.

Scenario 1: Mashed Potato Color

Gloria wanted to find out if the color of food would affect whether kindergarten children would select it for lunch. She put food coloring into 4 identical bowls of mashed potatoes. The colors were red, green, yellow and blue. Each child chose a scoop of potatoes of the color of their choice. Gloria did this experiment using 100 students. She recorded the number of students that chose each color. Gloria also observed, and recorded, their body language while the students ate the mashed potatoes. Gloria made sure that only kindergarten age children participated; she also made sure that each child received the same amount of potato in the same size and color bowl.

Important Aspects of Design Outline:

Independent Variable: _____

Levels (treatments) of I.V.: _____

Number of trials for each level (treatment): _____

Dependent Variable: _____

Scenario 1 Data Table - Title _____ :

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Scenario 2: *Aloe vera* and Planaria

Jackie read that *Aloe vera* promoted healing of burned tissue. She decided to investigate the effect of varying amounts of *Aloe vera* on the regeneration of the worm planaria. Using a sterile scalpel she cut the planaria in half to obtain 10 parts (5 heads and 5 tails) for each experimental group. She applied 15 milliliters of *Aloe vera* for each of the following concentration: 0%, 10%, 20%, and 30% to each group. All planaria were maintained in a growth chamber with identical food, temperature, and humidity. Everyday, she observed her planaria and recorded the time required (in days) for complete regeneration. The overall healthiness each worm part was described in paragraph form.

Important Aspects of Design Outline:

Independent Variable: _____

Levels (treatments) of I.V.: _____

Number of trials for each level (treatment): _____

Dependent Variable: _____

Scenario 2 Data Table - Title _____ :

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