

PI

Scientific Method:
a way of problem solving.
General

Controlled Experiment:
How scientists test a solution
Specific

Example: Color of light and growth of a pumpkin plant

Observing/Asking Questions

- Being Curious & observant

Is the investigative question & Problem statement
"What is the effect of MU on RV?" or
"Does MU have an effect on RV?"

IQ:

Inferences and Predictions

using inferences to predict answers

Inference: logical interpretation based on prior knowledge

Hypothesis: predicted explanation, designed to be tested further
Sentence Frame: If MU (increase/decrease) specific! change
then RV (↑/↓ specific!) because logical scientific reason

Hypothesis:

Design an Experiment

Why? Test possible answers!

Could be:

- Controlled experiment
- Field study
- informal

Variables: Factor that can change
Independent Dependant
Manipulated: Responding:
Factor you (Scientist) - Reacts to that change
Changes - What is measured

MU: Color

RV: Growth

Design an Experiment (Cont.)

Always have 2 groups where all but ONE factor (MU) are the same.

Important for all experiments!

Controlled Group: with out MU
Why? Need to show that MU caused change, so need to compare

Controlled Group
normal light

Experimental Group: with MU
Why? 3 versions (manipulations) of MU
See if result
Scales - smallest amount MU
- middle amount MU
- large amount MU

Experimental Group
1 Blue ting R
2 medium R
3 Red Bright R

Control for Accuracy

To "prove" that the factor you changed actually caused the results you saw,

have to control/ not change every-thing else

Validity: Accuracy/trustable in an experiment

How?

Controlled Variables: Factor kept the same.
- temp, amount, time
LOGICAL, specific

Other measures: Don't mess up results if not done, but help
- Clean between trials

- AMMOUNT of light
- How long exposed to light
- Type of pumpkin
- Inside/outside
- Amount H₂O

Collect Data

2 types!

Quantitative: quantity
#s! measuring,

Qualitative: quality
features / characteristics
of something.
- NOT #s!

Data is usually

quantitative

Data table set up:

Title: **MV vs DV** Restate
I.P. "Effect"

manipulated on the left
responding on the right,

including:

- 3 trials
- Average

Title:

* Color control ex1 ex2 ex3	*(Growth) - Weight (g)		
	# 1	# 2	# 3
	Pumpkin		

Analyze Data

Recognize

Two types of graph:

When to use a _____:

What data does it visually display?

and find

When to use a _____:

What data does it visually display?

Scale:

Best Fit Line:

Draw Conclusions

Make _____
_____ and draw _____
based on them.

Claim:

Evidence:

Reasoning: