Warm Up 2: Responsibilities
9-10-18

LT I can explain the steps to the scientific method.

Q1. What is the student's job, what is the teacher's job?

Q2. What if you don't know what a question is on a HW assignment, what should you do?

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Q1. What is student's job, what is teacher's job?

A1. Student's Job: to learn
Teacher's Job: to teach

Q2. What if you don't know what a question is on a HW assignment, what should you do?

A2.
1) take educated guess, Star it, mark it, circle it
2) next day, compare with another student

during HW corrections

LT I can explain the steps to the scientific method.

Today's Plan

Warm Up: Scientific Method
Discussion
Notes
Lab Safety

HW 3:

Ask Partner
1 min

Ask LeMay
? min

Discussion on Scientific Method

-At your table give examples of scientific method that you have been a part of or heard of.

-What are the steps in this process

-Describe what each step looks like or what you do in each step

Question 1

Notes 1: Scientific Method
9-11-17

Observation / Problem

O-Notice something about your surroundings.

P - Define a problem you are encountering.

Question / Theory

Q -Ask a question about your observation, why your surroundings are acting or behaving they way they are.

T- Predict what is causing the problem and how to fix it

Question 2

Hypothesis

An educated guess, starting with IF.... , THEN.... because...

Should have a testable independent variable that relates directly to the question or theory.

Experiment

A set of repeatable procedures to test your hypothesis, including clearly defined independent and dependent variables.

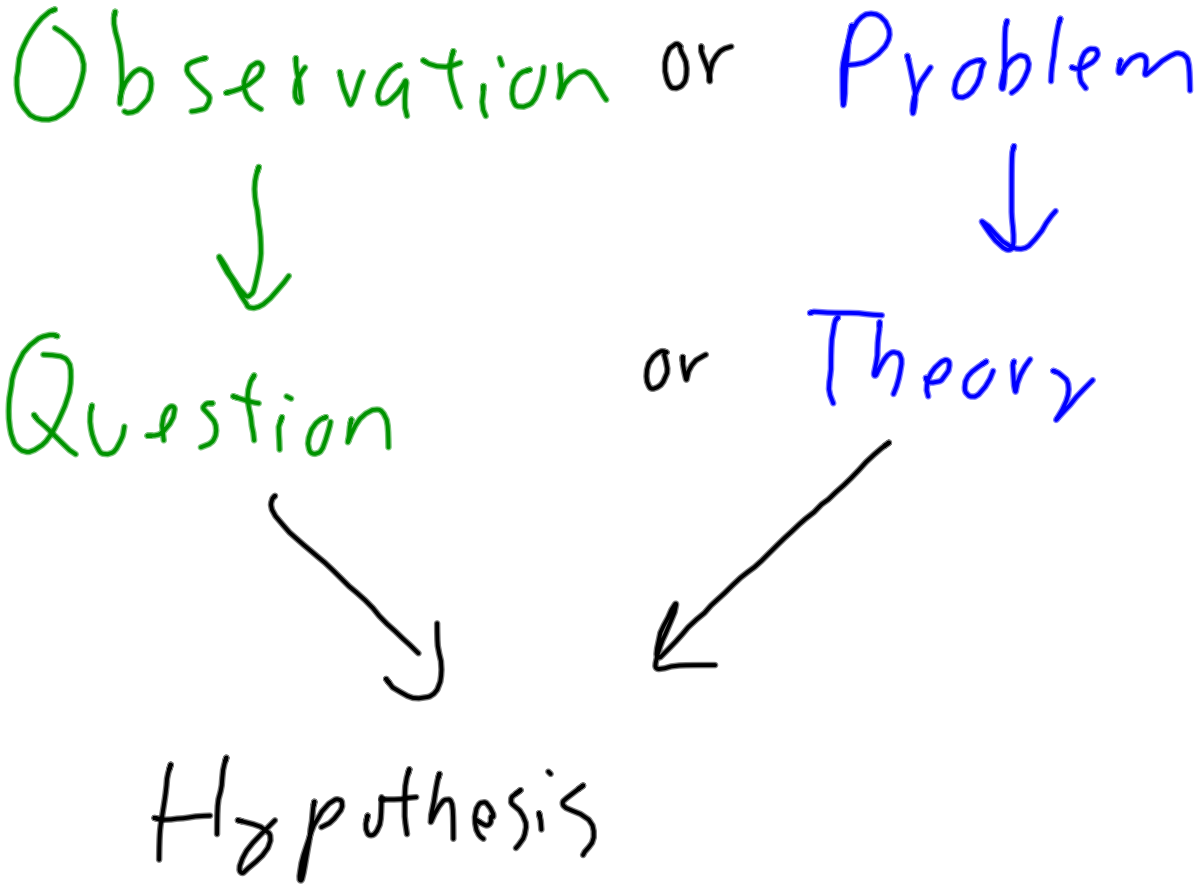
Analyze Data

Collected data from the experiment in charts, tables, graphs with explanation of what the information means.

Conclusion

Summary of your experiment, explaining why and how your data supports or rejects your hypothesis. Analyze how the future be affected with this knowledge.

Summary


Observation
or
Problem
Question
or
Theory
Hypothesis

Notes 1: Scientific Method

9-10-18

1) Observation / Problem

O-Notice something about your surroundings.

P - Define a problem you are encountering.

2) Question / Theory

Q -Ask a question about your observation, why your surroundings are acting or behaving the way they are.

T- Predict what is causing the problem and how to fix it

3) Hypothesis

An educated guess, starting with IF.... , THEN.... because...

Should have a testable independent variable that relates directly to the question or theory, with a way to collect data on the dependent variable.

(IV - scientist manipulates)

(DV - scientist measures to see if their is a relationship between the two)

4) Experiment

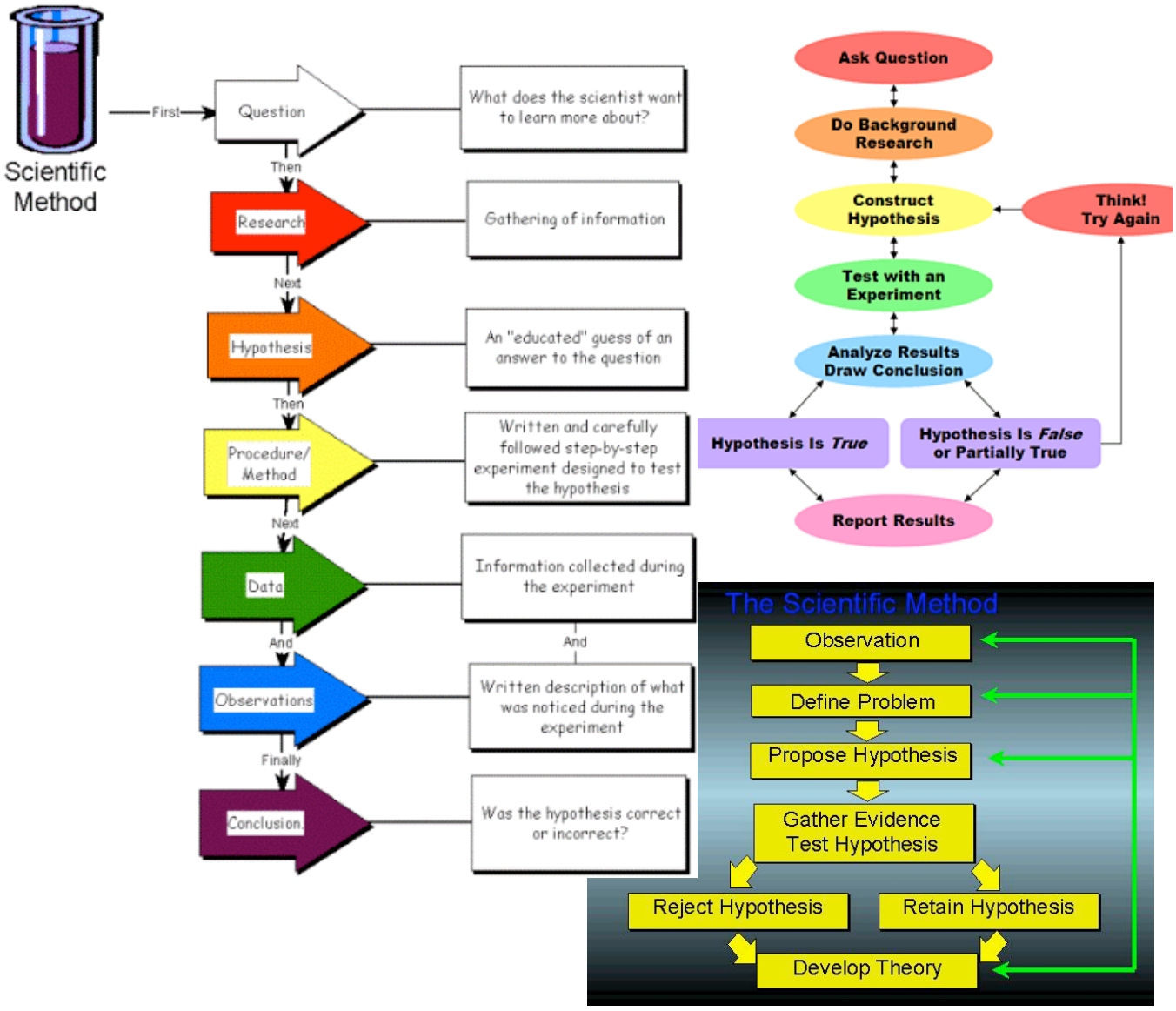
A set of repeatable procedures to test your hypothesis, including clearly defined independent and dependent variables.

5) Analyze Data

Collected data from the experiment in charts, tables, graphs with explanation of what the information means.

6) Conclusion

Summary of your experiment, explaining why and how your data supports or rejects your hypothesis. Analyze how the future will be affected with this knowledge.


Scientific Method
First
Question
What does the scientist want to learn more about?
Then
Research
Gathering of information
Next
Hypothesis
An "educated" guess of an answer to the question
Then
Procedure/ Method
Written and carefully followed step-by-step experiment designed to test the hypothesis
Next
Data
Information collected during the experiment
And
And
Observations
Written description of what was noticed during the experiment
Finally
Conclusion
Was the hypothesis correct or incorrect?
Ask Question
Do Background Research
Construct Hypothesis
Think! Try Again
Test with an Experiment
Analyze Results Draw Conclusion
Hypothesis Is True
Hypothesis Is False or Partially True
Report Results
The Scientific Method
Observation
Define Problem
Propose Hypothesis
Gather Evidence Test Hypothesis
Reject Hypothesis
Retain Hypothesis
Develop Theory

Examples of Independent and Dependent variables.

Launching a Rocket.

Independent	Dependent
Air (Fuel)	Distance

Q. In Notes 1: Scientific Method, what is the difference between Problem and Observation?

A. Problem leads to an Theory or we just notice something interesting that leads to a question.

Q. Could our Observations be part of the data in our Analyze step, HOW?

A. Yes, if we quantify (make them measurable or empirical) our observations.

Q. What does it mean to have measurable or empirical data?

A. Using numbers or rate observation on a scale. Ex 1-10 which one is most complex

Q. What is the difference between dependent and independent variable? Should we ever have more than one independent variable?

A. Independent is what we are testing, if we have more than one we will not know which one changed the dependent varible

-Explain the importance of a repeatable experiment?

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Q2. What if you don't know what a question is on a HW assignment, what should you do?

Q3. What is a hypothesis?

Q4. What is the difference between an observation and data analysis?

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Q3. What is a hypothesis?

A3. An educated guess, (uses If..., then...)

Q4. What is the difference between an observation and data analysis?

A4. Observations you make of your surroundings that lead to a question or hypothesis

Data analysis is recordings of your experiment that will be used to support or reject or hypothesis.

HW 4: Scientific Method

Use your notes to help you write out an Observation OR Problem, Question OR Theory, Hypothesis, and Experiment.

Make sure you clearly identify the dependent and independent variable in the experiment.

(Stop at analyze because we can not conduct the experiment)