Section 2-1 Scientific Method

Types of Data

Qualitative– Descriptive of the situation (think quality)
ex. The color of the sky is blue

Quantitative– Numerical information (think quantity)
ex. The room is 30 feet wide

Four Common Steps to the Scientific Method

1. Observing / Collecting Data
2. Form Hypothesis
3. Testing Hypothesis
4. Theorizing

System – Matter and region where the experiment takes place
This could be a beaker, a classroom, a country, etc.

Experiments use a controlled system

1

Section 2-1 Scientific Method

Observing / Collecting Data

Information needs to be collected for a problem or situation. The observer tries to find patterns.

Freddy noticed he scored higher on tests when he studied the night before

Form a Hypothesis

Hypothesis – a testable "if-then" statement, developed from data that displays patterns or relationships

If Freddy studies the night before a test – then he will score higher.

Testing a Hypothesis

Involves creating experiments that prove or disprove the statement

2

Section 2-1 Scientific Method

Parts of an Experiment

Independent Variable – The variable being tested (Cause)
Freddy varied his study habits

Dependent Variable – The variable being affected (Effect)
Freddy recorded the scores of his tests

Control Group – The group or study that is tested at the normal condition.
Freddy scored a 62 without studying

Experimental Group – The group or study that is tested with the experimental variable or condition
Freddy scored a 93 when he studied the night before

3

Section 2-1 Scientific Method

Testing a Hypothesis (Continued)

- A hypothesis that is not supported by data is revised or rejected
- When a hypothesis is supported by data, a model should be developed

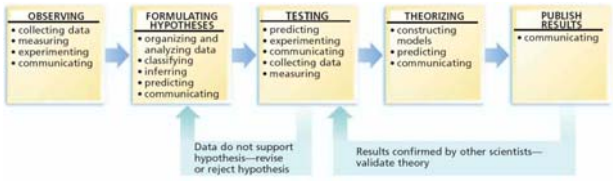
Model – explains or predicts how the data and conditions are related
A model can be used to help develop a theory
Freddy scored 50% higher when he studied

Theorizing

Theory - a generalization that explains facts or phenomenon
Studying improves your grades

4

Stages in the Scientific Method



5