* Steps of the Scientific Method
* **2-1**
* 2-1 Learning Targets
* Describe the scientific method
* Make observations
* **Scientific Method**
* Logical approach to solving problems by observing and collecting data, formulating hypotheses, testing hypotheses, and formulating theories that are supported by data
* System
* A specific portion of matter in a given region of space that has been selected for study during an experiment or observation
* Example: you observe a reaction in a test tube, the test tube and contents from a system
* Observing and Collecting Data
* **Observing**- the use of the senses to obtain information (data)
  + Sight, hearing, touch, smell, and sometimes taste
* Two types of Observations
* Quantitative
  + Observations that involve numbers
  + Ex. There are three birds being fed
* Qualitative
  + The characteristics that cannot be measured or counted
  + Ex. The girl is feeding the birds, or the birds are eating
* What type of observations can you make about this picture?
* Now What?
* **Inference** -is a logical interpretation based on prior knowledge and experience
* Formulating Hypotheses
* Generalizations about data are used to formulate a testable statement, or hypothesis
* Testing Hypotheses
* Experimentation yields data that results in the discarding, modification, or adoption of a hypotheses or theory
* Experimenting
* Carrying out a procedure under controlled conditions
  + Experiment in which only one variable is changed at a time.
  + All other variables should be kept unchanged, or controlled
  + The variable that is being changed is called the Manipulated Variable, or Independent Variable
  + The variable that is observed and that changes in response to the manipulated variable, is called the Responding Variable, or Dependent Variable
* Theorizing
* A theory is a broad generalization that explains a body of facts or phenomena
  + It must allow for successful prediction of future behaviors within a system
* Model- explanation of how phenomena occur and how data or events are related
  + Visual, verbal, mathematical, physical object
  + If successful, may become part of theory
* Must have repetition and replication
* Publish Results
  + Experimental results must be repeatable by other scientists
* Scientific Method
* Observe
* Formulate hypothesis
* Testing
* Theorizing
* Publish