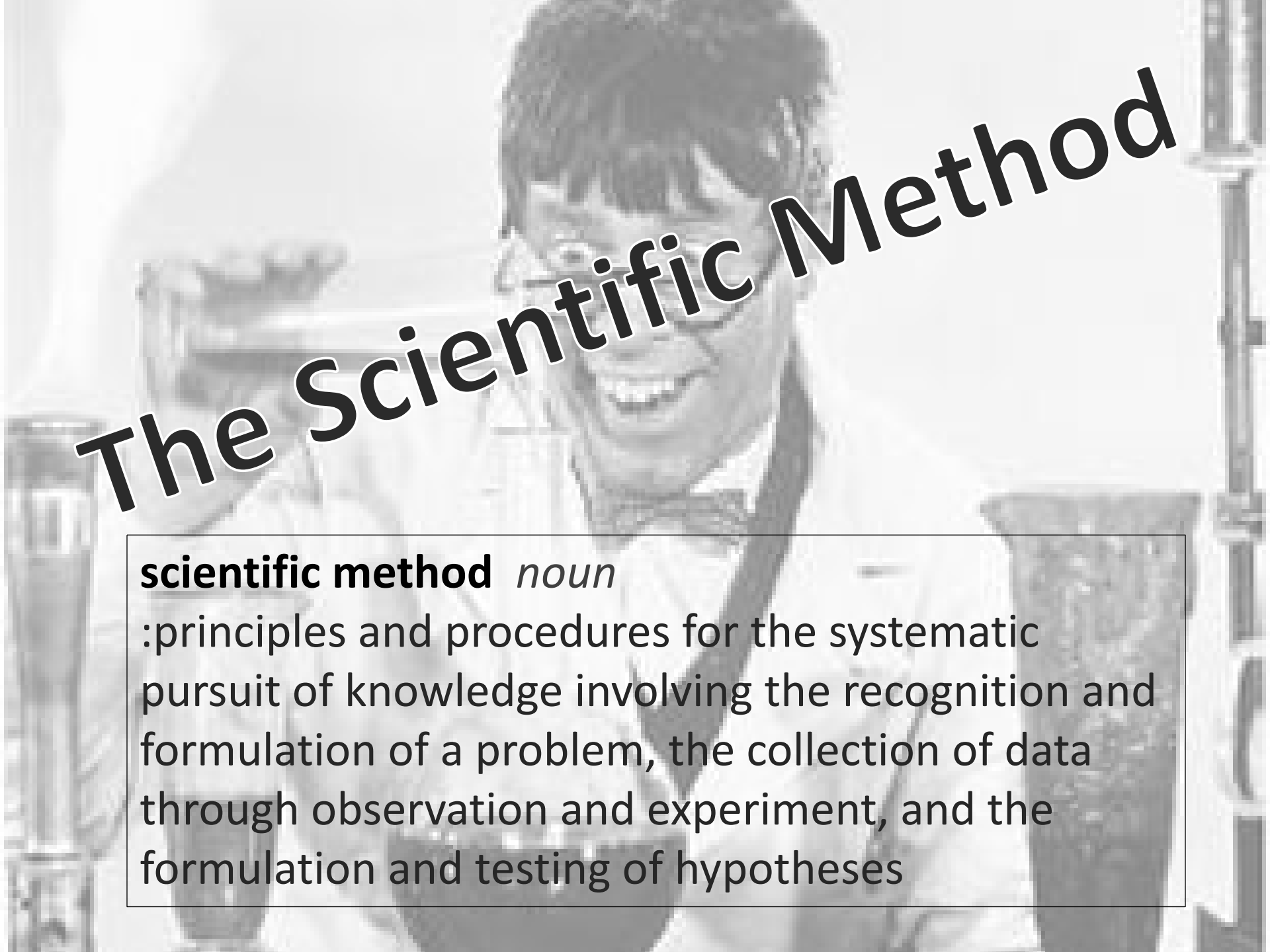


The Scientific Method

scientific method *noun*
:principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses

The Pro

prob·lem *noun*

: a question raised for inqui ution

I'm going to be late.....AGAIN!

Example: You go to leave for school in the morning and your car won't start

Observations & Background Research

ob·ser·va·tion *noun*

: an act of recogn or occurrence

re·search *no*

:the collectin ular subject

Hi Mr. Beardsley! I'm having car trouble. My car won't start and the lights won't come on either

Hypothesis

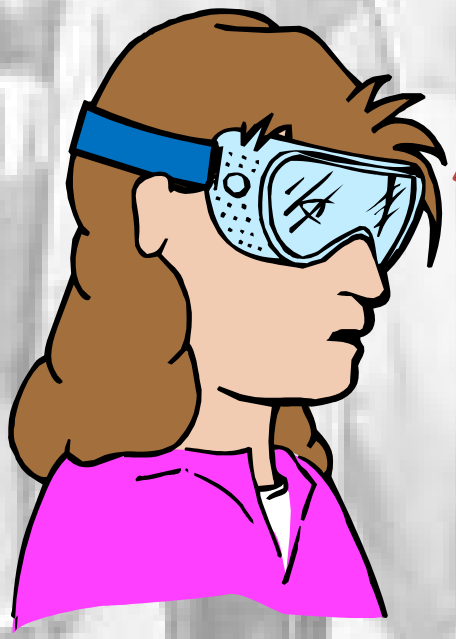
hy·poth·e·sis *noun*
: an educated guess

The Battery is Dead

Experiment

ex·per·i·ment *noun*

: an operation or procedure carried out under controlled conditions in order to test a hypothesis



WEAR GOGGLES!
BATTERIES CONTAIN SULFURIC ACID!

Collect Data

da·ta *noun*
: factual information such as measurements

Make more observations

Only test one *variable* at a time!

Draw Conclusions

con·clu·sion *noun*

: a reasoned [illegible]rence

My hypothesis was correct! Thanks Mr. Beardsley!

Theory

the·o·ry *noun*

: a scientifically accepted general principle or body of principles offered to explain phenomena or a scientific model

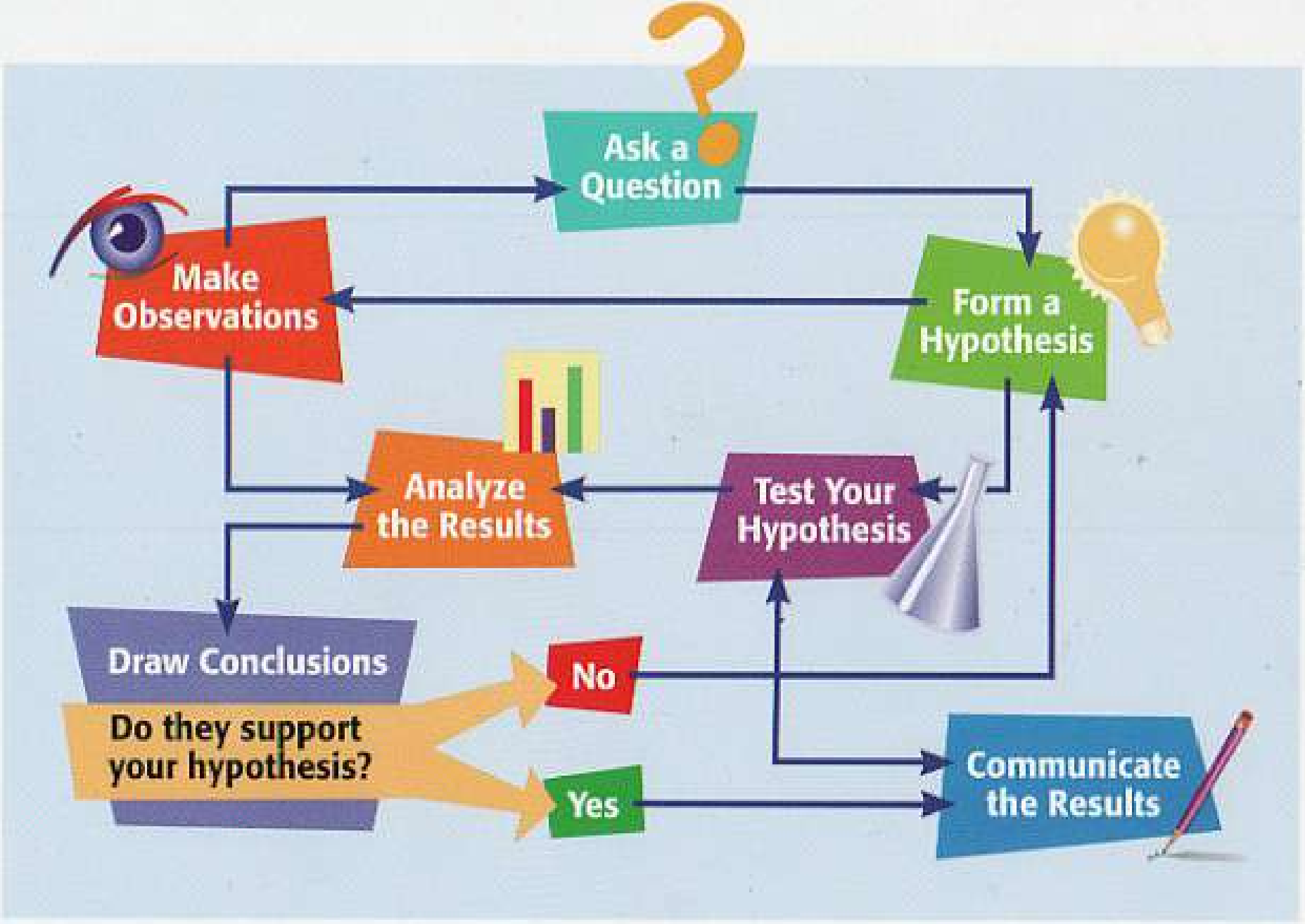
If a hypothesis is tested repeatedly and experimentation always leads to the same conclusion, a theory may be developed.

Law

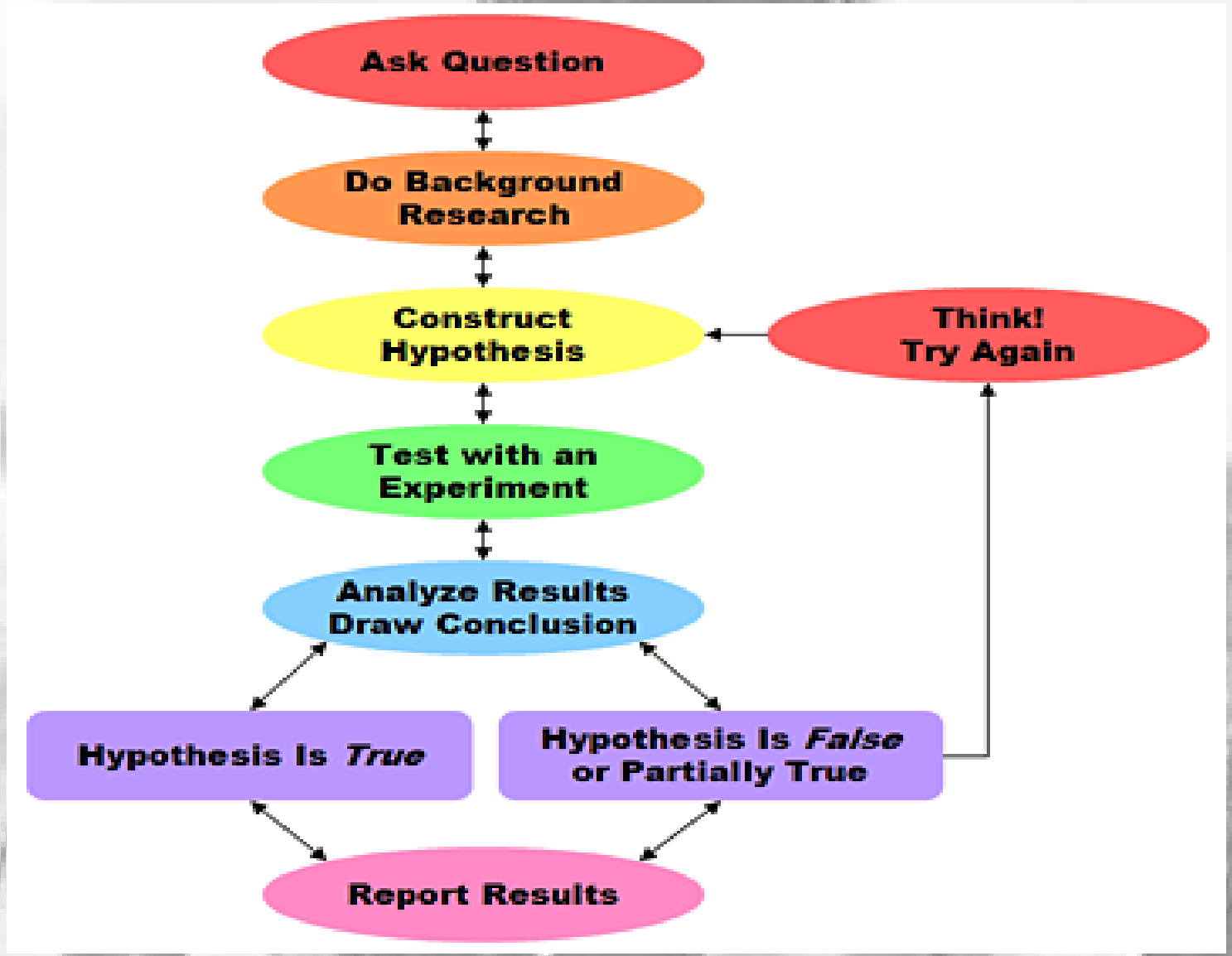
law *noun*
: a statement of an order or relation of phenomena that so far as is known is invariable

When a theory can be proven with no doubts

The Scientific Method



The Scientific Method



http://www.sciencebuddies.org/science-fair-projects/project_scientific_method.shtml

http://en.wikipedia.org/wiki/Scientific_method

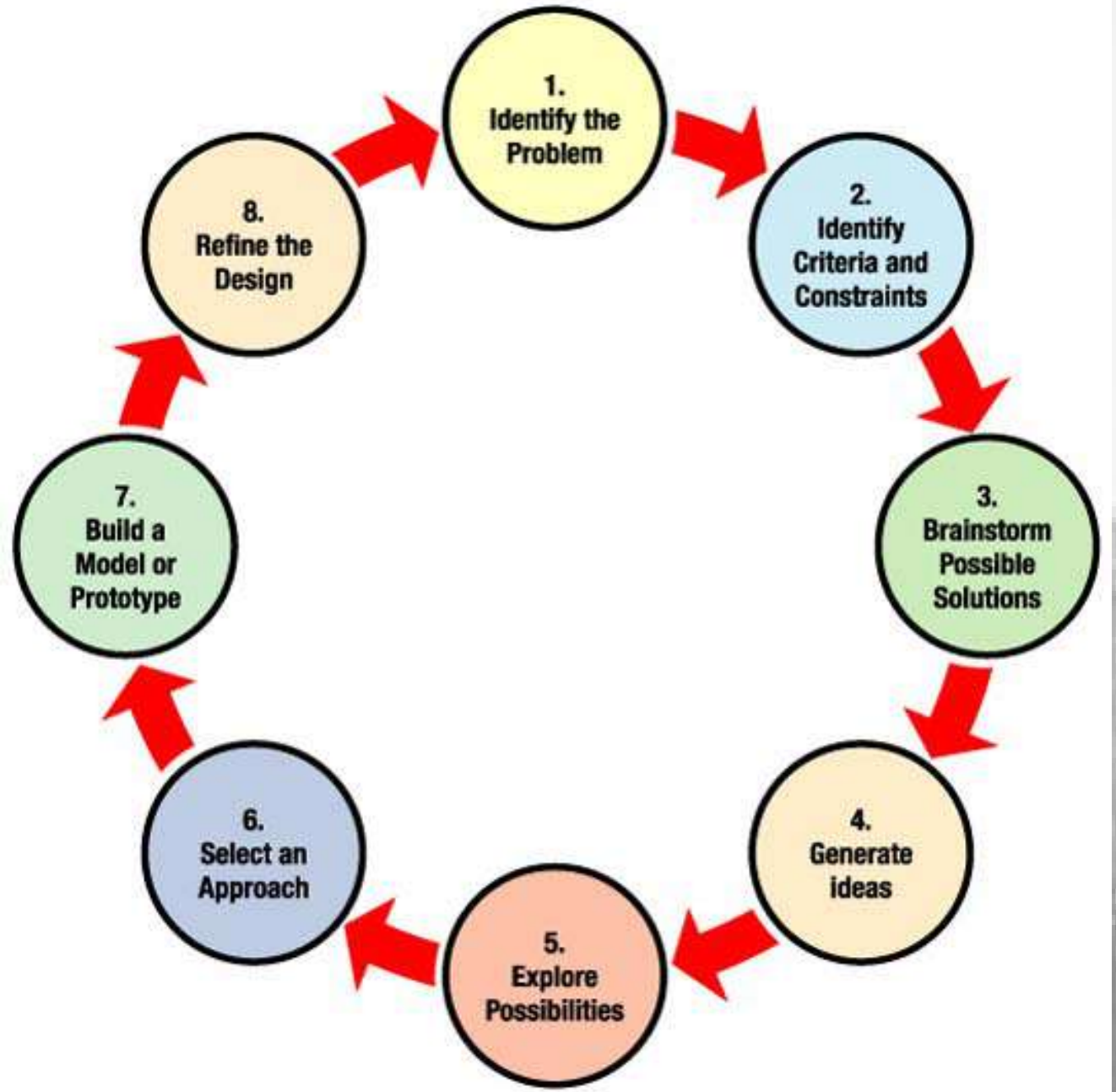
Standards for Technological Literacy
Standard 8: Attributes of Design

The engineering design process includes

- Defining a problem,
- Brainstorming,
- Researching and generating ideas,
- Identifying criteria and specifying constraints,
- Exploring possibilities,
- Selecting an approach,
- Developing a design proposal,
- Making a model or prototype,
- Testing and evaluating the design using specifications,
- Refining the design,
- Creating or making it, and
- Communicating processes and results

NOTE: The process is iterative and different steps are revisited as necessary in order to arrive at a solution.

NASA Model of Engineering Design Process



Tufts University Example of Engineering Design Process