Introduction to Science

PSC 152

Overview

- In this section:
  - What is Science and why do we care?
  - How is Science Organized?

The Goals of Science

- What is Science?
- What are your thoughts on this…
  - Think to yourself
  - Discuss with your neighbors
  - Classroom discussion

What does Science try to do?

- Your thoughts?
- to understand the world
  - what's in the world
  - how things relate to and effect each other
  - why do things happen, what causes them
  - how did things get to be the way they are

Why do we want to understand

- Your thoughts?
- predict future events
- control future events
- manipulate environment
Science verses Technology

- Technology = application
- Examples
  - Computer
  - Others?

How does science affect us?

- Science leads to technology
- Science leads to better performance

Example: Plumber

- Better performance on the job …
- Understanding mechanics -> using tools to best advantage
- Understanding thermodynamics -> heating pipes safely

Example: Plumber

- Science leading to technology
- Physics of fluids -> indoor plumbing
- Material science -> better materials and tools to use

Example 2: ( )

- How would an understanding of science improve performance?
- What science led to technology?

In-class activity

- in groups of 2-3,
  - Choose a career one group member is considering.
  - How would an understanding of science improve performance?
  - What technologies are needed?
  - Write down and turn in up front
The Organization of Science

Why do we need to organize science?
- the study of everything is too much to tackle
- break up the concepts into related branches
- always more than one way to categorize
- we are using one method

Branches of Science

Formal Sciences
- Mathematics and Logic
  - Not always recognized as science
  - Our understanding developed over centuries, going far back into history
  - Results are now used as tools

Natural Sciences
- The most common conception of “science”
  - Physical Sciences:
    - Physics, Chemistry, Geology, Astronomy, …
  - Biological Sciences:
    - Biology, Zoology, Botany, Microbiology, …

Humanistic Sciences
- Still seeking to understand how things work
  - Methods often more difficult because of complexity of subject
- Behavioral Science
  - Psychology, …
- Social Science
  - Sociology, Economics, …
In-class activity

- In the same groups as before:
- Think about your previous in-class example
  - Classify the science examples you thought of into the major branches
  - Try to come up with additional examples for each branch

Interconnections

- Bio-Chemistry
- Biology
- Chemistry
- Economics:
  - Mathematics
  - Sociology
- ...