

Module 18 Task 7 Handout Nature of Science

Tentativeness

Scientific knowledge changes over time as new data is developed and old data is re-interpreted. While this knowledge may change over time, the bulk of scientific knowledge is very reliable - reliable enough for many medical and technological advances to occur.

Empirical

Scientific knowledge is based on evidence.

Creativity

Scientists are creative as they generate explanations of evidence. Data does not interpret itself!

Theory and Law

Both laws and theories are very important in science. Theories and laws have different jobs. Laws are statements of patterns and regularities in the natural world. Theories are explanations for those patterns. Scientific laws and theories are both well-substantiated and have much evidence to support them. A theory does not become a law - they do different things.



Nature of Science

Observation vs. Inference

Scientists make observations of natural phenomena and make inferences as to what these data mean. For example, you may observe that a houseplant's leaves are wilted, droopy, and brown. Then, you might infer that the house plant has not been watered in a long time.

Social and Cultural Context

Scientists and the practice of science exist within a certain social and cultural context. This social and cultural context may shape the kinds of questions, methods, and interpretations used by scientists. Similarly, science impacts the social and cultural context.

Subjectivity

Scientists are people who have their own background knowledge and theoretical perspectives. When they make observations, they (just like all people) "see" the information in light of these personal perspectives.