

BIO 205 – Introduction to Biological Research

Topic: What is Science?

Annotated References

"Bridging the Gap Between Science and Practice: Insight to Researchers from Practitioners." Shriver, M. Public Health Reports. June 1998.

Callicutt, Jamie

This article is very useful in defining how to gain the most practical and beneficial uses from research. Emphasis is placed on the importance of HIV research being easily accessible and useful to the public, as well as the need for researchers and practitioners working together to create better programs to help those affected by HIV.

Alfred I. Tauber, "Is Biology a Political Science?" Bioscience, online June 1999, http://www.findarticles.com/cf_dls/m1042/6_49/58409454/print.jhtml.

Coats, Nicole

This is an excellent article/discussion dealing with how science fits into culture and society. It explains how science and culture affect each other. It also "attempts to summarize biology's complex social setting."

Hayes, Lawrence

A discussion that seeks to unite science and culture, an area that is often thought of separately.

Boulter, D. (1998) Public Perception of Science and Associated General Issues for the Scientist, Phytochemistry, 50: 1-7

Decker, James C.

Provides an excellent overview, not only on the definition of science, but also the public's perception of science. Clearly elucidates and gives ample support for the reasoning behind the presented definition of science. Also addresses public concerns about science and scientists.

Greeno, C.G. "Introduction to the Technical Series: What is Science, and How Does It Help Us?" Fam Proc, 40: 115-120, Spr 2001 [Fam Proc = Family Process]

Epler, Matthew

This article would be informative if you were interested in knowing about the definition of "science". An example from this article is a study on how humans misinterpret information when having to recreate it. Science should help us see more clearly and look without bias, says this article.

Franklin, Sarah. "Science as Culture, Cultures of Science." Annual Review of Anthropology. 24 (1995): 163-184.

Gilbert, Mark

A look at how science is viewed and practiced and the shifts that have occurred in the field from an anthropological point-of-view.

"Public Perception of Science and associated general issues for the Scientist", D. Boulter. Phytochemistry. Oxford :Januaray,1999

Page, Amanda

In this article, Bartler explains that science "cannot be strictly defined or delimited from all other activities". He gives us an explanation of the two types of scientists who might look at "mature science", theoreticians or experimentalists. The author breaks the two types of scientists into groups and describes how one might go about conducting his work of science. Bartler also describes the different steps to science. He states that science can be tested but is falsifiable, that theories are developed and that science is composed of lots of observations. Bartler also states that there are certain causal laws to follow in making observations of the world and its surroundings, which are used in developing theories. Bartler also gives us a historical view of what makes science and how it was thought to "work" hundreds of years ago.

Rosenstock, Linda and Jackson Lee, Love. Am. Journal of Public Health. "Attacks on Science: The risk to evidence-based policy": Washington. Jan. 2002-vol.92 (Issue 1) pgs. 14-18.

Goad, Amber

In society today, the importance of scientific research is evident. However, government officials, agencies, and even politics have hindered scientific advances for various reasons. This article seeks to provide solutions for the scientific community and most eminently enables them to distinguish between science and policy-making.

Johnson, Phillip E. 1999. The Church of Darwin. Human Events, Vol.55, Issue 32, p16

Lewis, Miranda

The term "science" can have many meanings stretching from investigation to scientific naturalism. How science is defined can play a role on how science is accepted.

Jacob, F (1999) Understanding Science and Knowing Ignorance. Nature Biotechnology, 17, BV 3 – BV 4

Godwin, Kelly

This is a well-written article explaining the problems with ignorance in science. It begins by giving an understanding of science as we know it and reviewing the development of molecular biology. It states that biology is still in its infancy and only just begun to exist.

Ede, Andrew. "Has Science Education Become an Enemy of Scientific Rationality?" Skeptical Inquirer (July, 2000) http://www.findarticles.com/m2843/4_24/63693008/p1/article.jhtml

Hash, Jon

"A discussion of what science is, and what it means to a diverse body of students. Provides insight on why students view science the way they do."

Golinski, Jan. "Science Peace?" American Scientist Jan-Feb 2002:72-74.
The Magazine of Sigma XI, The Scientific Research Society

Howell, Jeremy

An article viewing many different ways science is looked upon, among sociologists, philosophers, historians, and others engaged within this field. Foremost, tries to bring understanding to those who are concerned with science and its place in our culture.

Tarib, Hassan H. (2001). "How do Pre-service and In-service Science Teachers View the Nature of Science and Technology?" Research in Science and Technological Education, Vol 19, No. 2, 235-48.

Isley, Lee

This article examined how science teachers felt about the definitions of science and technology. The article provided interesting views and showed how different opinions exist. The charts were useful in clarifying the author's point and were a helpful addition.

Siepmann, J.P. Journal of Theoretics. "What is Science?" Vol. 1-3. Aug/Sept. 1999.
www.journaloftheoretics.com/editorials/vol-1/e1-3.htm

Orvin, Carson

This article describes what science is and where we find it. It also asks the question "Is the scientific method still science when used in other fields of study?" It also goes on to describe generally what other words basically mean.

Shermer, M (Feb 2002) The Gradual Illumination of the Mind. Scientific American, vol 286, Issue 2, p35-?

Ray, Tracy

This article emphasizes the fact that science is based on evidence and not general public or religious belief. It uses this argument to encourage the theory of evolution and discourage the teaching of creation science.

Moreland, JP. "Is Science a Help or Threat to Faith?" Christian Research Institute Journal.
www.iclnet.org/pub/resources/text/cri/cri-jrnl/web/crj0180a.html

Nelms, Lauren

In the first page of this article Moreland describes the basic assumptions of science. He also describes some of the limitations that are a part of science. This article, however, does not take a traditional view of science. It allows for the incorporation of science and theology. The article also touches on the idea that science is not definite. From a scientific perspective, there is great emphasis that science is not only composed of biology but also social sciences.

Arp, Halton. "What Has Science Come to?" *Journal of Scientific Exploration*, Vol. 14, No.3, pp.447-454, 2000.

Pridgen, April

This is a good, thought-provoking article that discusses how science has become a "deliberate attempt to hide the evidence that contradicts the current paradigm." The author complains about how we have come to readily accept many scientific theories and are compromising the inquisitive nature of science in exchange for an almost "religious" faith in concepts that may not be completely accurate, but that we are comfortable believing.

Thompson, Bert. "What Is Science." Reason & Revelation. (1981): [1] 2-3.

Rogar, Amy

Provides inside thoughts about how science and religion relate to one another. The article talks about the need for dependence on God when searching for truth in science. Genesis 1 is also tied with the five basic science fundamentals.

Kahn, C. Ronald. 1994. Sounding Board. Picking a Research Problem: The Critical Decision. *New England Journal of Medicine*, Vol 330, 21

Rowley, Cheryl

Presents the problem of choosing a topic for research as a solvable problem, one that requires the researcher to merely follow a series called the "Ten Commandments for Picking a Research Project." The article addresses problems or questions the researcher might encounter at any point in the research process.

Bjorn, Lomborg. "Defending Science." *Economist*, 2/2/2002, vol 362, issue8258, p15

Sewald, Renea

This article is a good explanation of how science defends itself against the skeptical environmentalists. It expresses how it is not science's fault for the inadequate forests and food supply.

Martian, Brian. *Strategies For Dissenting Scientist* *Journal of Scientific Exploration*, Vol. 12, No.4, pp. 605-616, 1998

Thomas, David

Strategies for Dissenting Scientist, is an article for readers at all levels of biology. This article covers what science is, dynamics of the scientific community, the problems faced by challenges, likely responses to the dissenters, and strategies. These topics are covered in a clear and scientific structure and outline.

Mayor, Federico. Science to what Purpose? *UNESCO Courier*, May 99, vol. 52 Issue 5, pg 9, 1p

Thomas, Timothy

Science has the ability to shape our lives in a good or a bad way. Since the enlightenment when great minds started to think science started. It has created weapons of mass destruction. "Hiroshima" Science does not seem to reach out to the population of the 3rd world countries. A meeting in Budapest will try and change things for those people.

Hand, R Science Education: Consensus Versus Critique Teaching in Higher Education, Oct 1999, vol 4, issue 4, p501; 10p

Suggs, Jimmie

An enlightening paper concerned with the importance of critical discourse in science. According to the author, Russell J. Hand, science-based courses tend to view scientific knowledge as being true, without question. What is taught in venues of "higher education" are merely consensual areas of scientific knowledge posed as being absolute. It is assumed that since science works, then therefore the theories and models are correct. However, critical thinking should be incorporated more often in science classes. The act of indoctrination is a very uncritical approach to science and its methods. In order to establish true higher education, students must be allowed to critique the applications and methods of science. This article gave insight into the idea of being educated in critical scientific thinking, rather than simply trained in scientific methodology.

Boulter, D. "Public perception of science and associated general issues for the scientist," *Phytochemistry* v 50, 15 January 1999, pp1-7

VanHeeswyk, Tracie

Understanding that science cannot be specifically defined, this article uses past scientific experiments to describe what science is. Boulter addresses the point that science is limited, but is the best known way to solve problems. Attempting to disprove the public opinion that science is infallible, Boulter uses this paper to show that science evolves and can only be approximate truth. Addressing other misconceptions of the public, Boulter hypothesizes ways to better educate and inform the public's opinion on science. He feels that the public's reluctant support for many scientific fields is due to their lack of knowledge and misconceptions. The solution to this being scientists speaking in the language of the public so they can better understand scientific findings.

Young Skeptics: "A Brief Definition of Science." 2001. 6 Feb. 2002.
(by the Committee for the Scientific Investigation of Claims of the Paranormal)
<http://www.csicop.org/youngskeptics/education/resources/sciencedef.html>

Walker, Rita

This site gives a sufficient definition of science in explaining it in terms of the process it is. Useful examples are given, as well as definitions of the different aspects of science, including theories and their role in science.