

Topic 1 • Science Literacy Report (100,000 points)
PHYS-1060 (2) • Fall 2009

Purpose

Science Classes

As a student, you have received science and science related information from your teachers. Whether you believe it or not is up to you. But a professional has taken the time to determine what sorts of things are important to know and with how much detail, both for the purposes of the courses you are taking and for the more general purpose of “Science Literacy”, to help make you a better citizen and better able to function in our science & technology driven 21st Century.

How Will I Get Science Information in the Future?

For some of you, your courses at Western Michigan University may be the last time you will have the benefit of someone directing what science you are exposed to. So, what happens when you get to the “real world”? Well, you may be bombarded with information from all sorts of sources: your job, newspapers, magazines, books, television, radio, movies, the Internet, friends, conversations overheard while standing in line somewhere – you name it. What these methods may lack, though, is the control and expertise of your teachers. You can find all sorts of amazing information on the Internet, but you would have to be very naive to believe 100% of *everything* you read there. Much of our news is dominated by politics, but how much science do our politicians know? At the moment, we have exactly one professional engineer and one physicist in the House of Representatives (both of these men are from Michigan – you *should* know who they are, but probably don’t), none in the Senate. Most of Congress is made up of lawyers. While there is nothing wrong with studying the Law *per se*, legal arguments do not follow the same rules and purposes of scientific arguments. Therefore there is nothing that requires an environmental cleanup bill, for example, to have anything to do with either the environment or cleaning it up. Likewise, the talking heads we get our news from on TV are not trained in science and technology for the most part. I don’t know what Tom Brokaw or Katie Couric majored in at college, but I can probably bet it wasn’t Physics. They may have, unlike you, been able to graduate from college without ever having had a Physics course. Even on the cable channels, one of the hosts of a computer show I used to watch is now doing a cable show on gardening – go figure.

So how will you evaluate information on your own? This is possibly something that you have never thought about, but Dr. Phil and other professionals have. Dr. Phil’s approach is to have you watch a movie and examine what you see and how it affects you, as well as whether you believe it. (You don’t have to.)

Learning to “Parse” Information

Evaluating what you view in this context is very much in line with definition 3 of the verb *parse*:

parse (pārs) *verb*

parsed, pars-ing, pars-es *verb, transitive*

1. To break (a sentence) down into its component parts of speech with an explanation of the form, function, and syntactical relationship of each part.
2. To describe (a word) by stating its part of speech, form, and syntactical relationships in a sentence.
3. To examine closely or subject to detailed analysis, especially by breaking up into components: “*What are we missing by parsing the behavior of chimpanzees into the conventional categories recognized largely from our own behavior?*” (Stephen Jay Gould).
4. *Computer Science*. To analyze or separate (input, for example) into more easily processed components. Used of software.

verb, intransitive

To admit of being parsed: *sentences that do not parse easily.*

[Probably from Middle English *pars*, part of speech, from Latin *pars* (*ōrātiōnis*), part (of speech).]

Source: Microsoft Bookshelf '95 (American Heritage Dictionary of the English Language (Third Edition))

Dr. Phil’s Definition of Science Literacy

science literacy *n.* An exposure to science in a historical context that serves to allow a person to observe the world around them with understanding, deal with technological applications at home and work, appreciate the distinction between fact and speculation in the media and politics, have a working knowledge of numbers and the scale of the universe, and be able to pursue more information if desired, as a function of everyday life.

Philip Edward Kaldon, Fall 1995

Movies as a Source of Information

This is a new version of this assignment, where I’ve restricted the movie list to those with some connection to space, the space program, etc. Some of these are based on real stories, some are clearly fiction. Some are blockbusters, some are movies you’ve never heard of. All should be available on DVD for you to see sometime, either borrowed, rented or purchased.

Secondly, we don’t really expect Hollywood to “get it” in Science Literacy terms most of the time. This is where the fun comes in – finding the good stuff and panning the rest.

It is easiest to pick a movie you have *not* seen before. And if you pick a title from the movielist, that’s it. However, since the list is new, it isn’t yet as long as I’d like. So not only will Dr. Phil be adding titles for the next few weeks, you may also nominate other films – you *must* get Dr. Phil’s approval beforehand and be prepared to hand in a draft of your paper at least one week before it is due. If you go ahead and write a paper on a movie that Dr. Phil has not approved anyway, there is a 100,000 point penalty.

Books as a Source of Information

For more than ten years Dr. Phil has been building up a booklist of suitable books. They are, as you shall see, not just Physics books, but cover all the Natural Sciences, Engineering, Computers, Technology, Medicine and the Morality and Ethics of using these. The total list is kept around a hundred titles. Books come on and off the list from time to time, sometimes because Dr. Phil gets sick of reading too many papers on Airframe or Jurassic Park, etc., and sometimes because some books work better with some classes (such as PHYS-3090) than others.

Because this is not strictly a Physics paper but a Science Literacy paper, the range of books is considerable. There are fiction and non-fiction titles, biographies, science fiction, mysteries and *technothrillers* – books that straddle the line between science fiction and current reality – from some popular best-selling authors as Tom Clancy and Michael Crichton, covering topics that include Physics, Biology, Chemistry, Engineering, Computers, Mathematics, Technology, Medicine, etc.. The list is anything but boring.

It is easiest to pick a book you have *not* read before. And if you pick a title from the booklist, that’s it. However, you may decide that (a) you have read everything on the list, (b) read everything you think is interesting on the list or (c) waited too long to get the book(s) you were interested in from the library and are now stuck. You *may* read a book that isn’t on the booklist, but you *must* get Dr. Phil’s approval beforehand and be prepared to hand in a draft of your paper at least one week before it is due. If you go ahead and write a paper on a book that Dr. Phil has not approved anyway, there is a 100,000 point penalty.

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Topic 1 – Due Thursday 3 December at 5pm
Grade Period Ends: Tuesday 8 Dec. at 2pm

Full Handout Descriptions at: <http://homepages.wmich.edu/~kaldon/classes/ph106-2-bmc.htm>