

CHAPTER TEN

WHY TEACH PHYSICS IN HIGH SCHOOL?

10.1 Why Teach Physics?

10.2 Why NOT Teach Physics?

The “why” of teaching high school physics can be answered in two different ways. Why should I become a high school physics teacher?” and “Why should physics be included in the high school curriculum?” The former question was addressed in Chapter x; the current chapter attempts to answer the second question. Why, indeed, should we include physics in the high school curriculum? Better still, why should all students in high school take physics as part of their plan of study? This chapter will address this question, and look at what those say who are opposed to doing so. This chapter provides critical arguments to which high school physics teachers can refer in the event that they are attempting to expand their current program, or if that program is in danger of being shut down.

Why Teach Physics?

The key reasons for the study of physics is that physics helps us to:

- control and exploit the forces of nature (proves a sense of empowerment)
- satisfy human curiosity
- understand the body of knowledge we call science so that we may choose between good and bad applications
- become aware of nature and its limitations
- avoid alienation from the technological world
- understand our world because science is a prerequisite for a thorough understanding
- distinguish between fact and fiction
- lead healthier and safer lives
- promote a scientific attitude
- provide ourselves with a competent work force to maintain economic growth
- build problem-solving skills
- understand the greatest of human accomplishment
- generate openness to new ideas
- provide the simplest of systems to study (in contrast with complex systems encountered in biology and chemistry)
- provide content relevant to other fields of study
- understand the role that physics has had in shaping history with the development of a liberal education
- provides a common basis for discussion and understandings
- understand our own limitations and capabilities

maintain our stewardship of planet earth
gain insight into how people have explained the physical world
become better consumers - we won't get ripped off by outlandish claims
see that nature is inherently comprehensible
federal and state law call for higher accountability among students, and part of the accountability framework is physics
physics is a "central" subject, essential to the understanding of such disciplines as biology and chemistry; check out "Physics First" websites to see some of the argumentation in this area.
physics heavily used in various military careers and these students won't have an opportunity to take physics in the military
physics heavily used in the professions and trades such as doctor, nurse, aviator, plumber, and electrician
physics promotes careers in physical science and engineering, without which the US can not do
physics central to understanding much of the technology we encounter on a daily basis in our vocations
physics provides intellectual challenges in the way that many other courses of study do not
When attempting to justify physics in a high school curriculum, be certain to focus on those things that make Physics unique. Many other disciplines can make many of the same claims above.

Why NOT teach physics?

Here are some reasons (not all good) why a school administration might argue against keeping a physics course during budget short falls, etc.:

physics technology is expensive and costly to keep up to date
not as many student take physics
most universities don't require any physics
not a high school graduation requirement per se
very few physics questions on state exams
much of what is taught in physics can be taught in other courses such as math or chemistry
keeping larger enrollment courses is more cost effective and benefits students disproportionately
concentrate our resources in courses that are less expensive to maintain
students can take physics in college if the want and/or need it
physics is too hard; it attracts those who least need to benefit from it
math prerequisite not met by many students
few students go on to careers in physics
physics tends to separate the gifted from those less advantaged and this is contrary to inclusion principles
dropping physics will affect the least number of students
information in other courses has broad applicability too; what's so special about physics
historic chemists and biologist are better role models than physicists who are a bunch of dead, white, European males
most high school students don't have the mental maturity for the abstract reasoning required by physics
physics places stress on the math department to provide courses that fewer students take
physics has a bad reputation as being "hard" and students' grades suffer as a result
physics is at the end of a lock-step sequence, so it's easy to cut; not so with chemistry and biology which are in an earlier part of the sequence
Latin was once said to improve critical thinking of students; it is now gone from the school curriculum due to the falsity of the claim
we don't have highly qualified physics teachers

why is your attendance so low?

Extra Items:

The Intuitor web page <http://www.intuitor.com/> has some interesting statements about the benefits of studying physics.

The American Institute of Physics' "Physics First" webpage <http://www.aip.org/isns/reports/2002/034.html> also has excellent information about why to study physics.

[AAPT Statement of Physics First](#). American Association of Physics Teachers (13 April 2003)