

## Teach Intelligent Design!

Submitted to *ABT* 9/13/05 Guest Editorial?

With all that clamoring to teach intelligent design and creation science, maybe we science teachers should go ahead and do it. Actually, this is a blessing in disguise. With science illiteracy running rampant throughout the country, science teachers need to rise up and shout "... I'm not going to take it anymore!" This is our golden opportunity.

[This first paragraph was omitted and the title changed for its publication as an *ABT* Guest Editorial]:

## The Importance of Teaching the Nature of Science

by Larry Flammer

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When you open your course in science (any science, all sciences, any level, from 5<sup>th</sup> grade up), be sure your students experience in the first few weeks the most critical elements about the nature of science. This is *not* "The Scientific Method" so widely presented in textbooks. Far more important is for students to learn that science is tentative, uncertain, cannot solve all kinds of problems, and deals mainly with attempts to explain natural phenomena in natural terms. They must realize that science does this by trying to *disprove* or invalidate possible solutions, not prove them. This scientific testing of ideas is very much like testing a car by driving it into a wall to see if it would keep its passengers protected, or not. If a possible solution (hypothesis) is valid, certain observations can be expected in nature, or certain results can be expected from an experiment. If it's not a valid hypothesis, different observations or different results must be found. If predicted observations are consistent with a hypothesis, then that hypothesis is strengthened (not proven). If not, the hypothesis is weakened. Nothing is ever established with certainty in science, only varying levels of probability, based on tested explanations and observations. Out of this process come levels of understanding that may not be perfect or complete, but good enough for all practical purposes, upon which deeper understanding can be built and effective applications can be made.

These discriminating challenges are only possible with *natural* explanations. They do not work with supernatural solutions. To supernatural forces, anything is possible. By definition, such "miracles" operate outside of natural laws, so nothing is reliably predictable and *any* observations are possible. Consequently, testing any supernatural hypothesis will always be indeterminate, therefore pointless. Primarily for this reason, science can never consider, evaluate or judge the validity of supernatural explanations for any phenomenon. Such explanations lie completely outside the realm of science; they don't follow the rules of science.

There are individuals or groups that attempt to use supernatural or mystical explanations as alternatives to scientific ones. This clearly misuses and misrepresents science. Likewise, any such group that claims to have scientific support for a supernatural force is not following the rules of science. In either case, such an attempt is a clear example of a false science, or *pseudoscience*. Examples abound, and include astrology, palmistry, pyramid power, ESP, UFOlogy, quack medicine, creation science, and even intelligent design.

In these last two examples, it's very important to emphasize that we're *not* talking about "creation" here. Science has no issue with personal beliefs in creation (or "special creation" in a religious sense). Such a point of view is based on faith in religious doctrine, and makes no attempt to invoke science as part of it. We must all respect such beliefs. Science cannot say whether creation is an accurate view, or not, because this is beyond the scope of what science can do. Science is neutral on that issue. Some observations may seem to conflict with traditional interpretations of religious doctrine, but such conflict may simply be due to missing information or misinterpretation with respect to either position.

However, when science is expressly combined with stated or implied supernatural forces, that is a pseudoscience, and that *is* something science teachers *must* address. Unfortunately, there are people who recognize the power and effectiveness of science, and want to somehow merge their beliefs with that kind of support so they can gain a greater following for their ideas. All sorts of distortions are used for doing this, and many people, because they don't understand the nature of science, are fooled. When such misrepresentations lead to harmful or useless treatment by a medical quack, or inadequate preparation for the professional world of science, engineering or medicine, students must be alerted and informed. A compelling case can even be made that teaching intelligent design or creation science is un-American or unpatriotic. Science has played a critical role in our past successes in World War II, the Cold War, the Apollo program, and many other endeavors, so any distortion or weakening of the science education of our citizens makes us a potentially weaker nation.

If you've done a thorough job of presenting the nature of science as described here, you will be much less likely to be challenged when you teach the science of geological age-dating, the evolution of stars, life's origins, the evolution of life, and other issues that might seem to conflict with some traditional views. If you are challenged, you can simply refer back to earlier class experiences and discussions on the nature of science. Far from being an awkward confrontation, it's an excellent opportunity to briefly refresh that understanding.

In no case should you ever give "equal time" or "teach the controversy" or teach "evidence against evolution." These are all ploys by pseudoscientists to get their supernatural agenda into the science classroom. Science is *not* democratic; equal time has no part in science, nor does the emotional rhetoric of debate; science is based on the weight of evidence. Besides, there is *no* scientific controversy regarding the reality of biological evolution, only about some of the mechanism details. The so-called controversy claimed by anti-evolution promoters is, upon inspection, clearly contrived, and misrepresents both science and evolution. Finally, there is absolutely *no* evidence against evolution; virtually all of the thousands of research studies continue to fully confirm the validity of evolution. When you ask anti-evolutionists for their "evidence against evolution," they can only cite distortions, quotes out of context, long-ago-discredited reports, and appeals to logical fallacies. None of this deserves a place in the science classroom when evolution is being presented. Otherwise, controversy is being suggested where none really exists. It's only when the nature of science is being thoroughly explored that the misleading strategies of pseudoscience *must* be exposed. It's our obligation to do so.

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#### ADDENDUM:

The best way for students to discover the actual realm and limits of science, and to recognize the main rules of science, is to engage in interactive activities designed to teach these elements of the nature of science. Check out the list of lessons in our **Nature of Science Index**, and do at least one lesson from each of the three categories listed there. My personal favorites (along with the modeling of an investigative mini-research project, e.g., the effect of plant foods on oat seed germination):

Magic Hooey Stick

Perception is Not Always Reality

Mystery Boxes

False Assumptions

Checks Lab and/or the Great Fossil Find

Women's Brains