

MEDIA FACT SHEET: Evolution in state science standards

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Introduction

The news interest in the inclusion of evolution in the new draft state science standards has been increasing steadily as the final decision on the standards' ultimate fate draws closer. In an effort to assist you with accurate, factual coverage of the issue, Florida Citizens for Science is providing the following fact sheet to point out some fallacy pitfalls you may encounter.

Statements made by education system leaders, opinions expressed by the general public, and stories run by the various news organizations across the state have revealed a number of common misconceptions and misunderstandings. The two most prevalent fallacies/errors in facts are "evolution is just a theory" and "evolution is against God." These fallacies are described below:

Fallacy #1: "Evolution is just a theory."

Example: School Board Vice Chairman Andy Tuck said, "I strongly oppose any study of evolution as fact at all. I'm purely in favor of it staying a theory and only a theory."

<http://www2.highlandstoday.com/content/2008/jan/25/board-opposes-evolution-being-taught-fact/>

The fallacy demonstrated here is that the theory of evolution is just a guess or hunch. That's how the word theory is commonly used, and so many people make the innocent mistake of assuming evolution's status is nothing more than speculation. The fact is that the word theory is used differently in the scientific community. A scientific theory is a carefully thought out and as-thorough-as-possible explanation for a body of facts, observations and experiments. The theory of evolution is robust, having withstood well over a century of testing. The theory has strengthened as more facts have been discovered from many diverse fields of study. Furthermore, the theory of evolution has been accepted by a consensus of the scientific community, not because of some type of popular vote, but rather based on the strength, usefulness and explanatory power of the theory. In other words: the consensus is based on the overwhelming evidence. All scientific theories, not just evolution, are invaluable tools to scientists as they learn more about the world and universe around us. Some people claim that there are weaknesses in the theory of evolution and that those weaknesses should be taught. The fact is that there are things as yet undiscovered in all fields of science, not just evolution. These are not weaknesses, but rather exciting new areas for future scientists to explore.

The bottom line: Evolution is the furthest thing from a guess. It's a scientific theory that explains an abundance of facts.

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Example two: Donna Callaway has stated that she opposes evolution being taught “to the exclusion of other theories of origin of life.”

http://www.palmbeachpost.com/localnews/content/local_news/epaper/2007/12/31/m1a_EVOLUTION_1216.html

There are actually two problems wrapped up in this one statement. First of all, evolution as taught in the public schools addresses changes in life over time, not origins. So, complaints against evolution that focus on origins of life or even origins of the universe are irrelevant. Secondly, sometimes people exclude the “origins” part and just say that evolution needs to be taught alongside other theories. (Several county school boards have passed formal resolutions critical of evolution that incorporate this fallacy. See the Florida Citizens for Science blog for more information on these resolutions.) Keeping in mind the definition of a scientific theory, there are no other theories competing with the theory of evolution. There are other ideas proposed by fringe groups, but those ideas have no scientific backing (no peer-reviewed papers published in science journals, no science experiments conducted, etc.) and are in no way defined as scientific theories.

Example three: Newspaper articles that include “know your theories” sidebars or graphics.

This is, unfortunately, a common error in fact many news organizations make. The reporter may have all the facts straight in the story, but the editor or graphics department riffs off of the story without having an understanding of the background information. As mentioned in the paragraph above, there are no other scientific theories to place alongside evolution. Newspapers will mistakenly label creationism or intelligent design as theories in the same sidebar or graphic as evolution. It needs to be made clear to all people involved in the production process that labeling creationism and intelligent design as theories is an error in fact and contributes to the public misunderstanding of the issues involved. Consider it this way: would you label the idea of invisible rubber bands holding us down on the earth as a theory alongside gravitational theory? If you have a clear understanding of what a scientific theory is, then no, I hope you would not.

Further reading:

-- What’s Wrong with "Theory not Fact" Resolutions

http://www.ncseweb.org/resources/articles/8643_whats_wrong_with_theory_not_12_7_2000.asp

-- Understanding Evolution [This site was created by the University of California Museum of Paleontology with support provided by the National Science Foundation and the Howard Hughes Medical Institute.]

<http://evolution.berkeley.edu/>

-- Statements from Scientific and Scholarly Organizations

http://www.ncseweb.org/resources/articles/2712_statements_from_scientific_an_12_19_2002.asp

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Fallacy #2: “Evolution is against God.”

Example: Nassau County Superintendent John Ruis said ... presenting it [evolution] as undisputed fact “is certainly contrary to the beliefs of many people, including myself.”

http://www.jacksonville.com/tu-online/stories/011708/met_237288652.shtml

There is classroom instruction throughout Florida on physics, astronomy, geology, biology, meteorology, chemistry, and so on. Not a single one of these subjects makes any statement on the validity or non-validity of any religious belief. These subjects teach our students about the world around us through observation and repeatable experimentation. The supernatural cannot be measured or tested and so is not included in any science course. Additionally, there are many people with sincere religious belief who accept the theory of evolution. It needs to be made clear here that no student is asked to “believe” evolution. Rather, evolution is to be “understood” in the same way that the heliocentric solar system is understood.

Further reading:

-- PBS’s religion section of their evolution website:

<http://www.pbs.org/wgbh/evolution/religion/index.html>

-- Clergy Letter Project

http://www.butler.edu/clergyproject/rel_evolution_sun.htm

-- Dover Pa. court decision outlining intelligent design’s religious origins

http://www.pamd.uscourts.gov/kitzmiller/kitzmiller_342.pdf

Conclusion

We hope this fact sheet helps you as you cover this important education issue. If you have any further questions, please feel free to contact Florida Citizens for Science. We also encourage you to contact the men and women who work daily in biology-related fields at Florida’s universities and biotech research facilities. It’s discouraging to watch school boards, politicians and state board of education members making decisions concerning science education without doing any homework when they have such a rich field of experts to draw upon.

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Contact Information

Florida Citizens for Science website:

www.flascience.org

Also see our regularly updated blog:

www.flascience.org/wp/

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