

Q: How have the Standards improved?

A: The New Standards:

- reflect updated science
- promote informed decision making
- contain more specific teaching objectives formatted to facilitate assessment.
- Seek objective teaching of the scientific controversy over evolution.
- Urge teachers to reinforce normative parental and legal expectations about health issues.

Q: What is the scientific basis for the changes?

A: Most of the changes reflect common sense and all have a solid scientific basis.



They were crafted by eight members of the Writing Committee (the Authors), three of which hold doctoral degrees in the life sciences (biochemistry, entomology and medicine). They were then scientifically and educationally validated by 23 experts during 3 days of hearings in May, 2005 by 5 PhD biologists/ molecular biologists, 4 PhD biochemists, 3 PhD Chemists (2 with expertise in theories of chemical evolution - origin of life), 1 PhD Geneticist (the inventor of the Gene Gun), 1 PhD Quantum

Physicist, 3 Philosophers of Science (two with PhD's), 1 PhD Professor of Education, 3 biology teachers, a Muslim journalist and an attorney.

Q: How do parents want evolution taught?

A: Parents want evolution taught honestly. Most Polls conducted by highly regarded organizations show that more than 80% of the public oppose an "evolution only" curriculum, i.e., one that discourages critical analysis of evolution.

Q: Did the Board insert Intelligent Design into the standards?

A: No. It expressly **excluded** ID from the standards.

Q: Did the Board remove evolution from the standards as stated by the National Association of Biology Teachers (NABT)?

A: No. This is misinformation that seeks to suppress any critical analysis of evolution.

Q: Why has the Board opened Pandora's box by inserting discussions of "origins" into the standards?

A: The Board did not insert origins. It inserted objectivity into an existing one-sided discussion of origins. Textbooks and prior science standards teach the origin of the universe and the origin of life and its diversity from a single perspective. The new standards are more objective.

Q: Are the changes educationally appropriate? It has been argued that many biology teachers will disregard them.

A: Yes. They seek objective discussions of origins that are less stressful for students and teachers. Teachers testified that they are afraid to teach origins objectively because of pressure from institutions of science and education. Professor Warren Nord argued that a liberal education requires teaching both sides of controversial issues.

Q: Why is the teaching of origins so controversial?

A: It is scientifically controversial because it is an historical science, and therefore very subjective. It is religiously controversial because it addresses the question: "Where do we come from?" This is a question that some claim is inseparably linked with the question: "Where do we go?"

Q: Do the changes seek to criticize evolution to advance religion?

A: No. They seek to eliminate rather than advance a religious bias that permeated the old standards.

Q: Are the changes legal? It has been argued that they insert religion into the standards.

A: Yes, they are legal. They insert scientific objectivity rather than a bias that favors a particular religious perspective.

Q: Will the changes drive businesses out of Kansas and disqualify students for college?

A: No. This is propaganda designed to frighten rather than inform. It amounts to crying "FIRE! FIRE!" in a crowded theater when there is no fire. This deception was concocted by founders of Kansas Citizens for Science and was outlined in the November 2000 issue of Freethought Today, a publication of atheists and agnostics.

Q: Why do we get conflicting reports about the changes to the standards?

A: Organizations that oppose the changes are unwilling to publicly debate evolution because they falsely claim it is not scientifically controversial. To avoid a discussion of the real controversy they unfairly demean those who seek it. See www.KansasScience2005.com for an explanation of the strategy of the media and public relations officer of Kansas Citizens for Science: our "strategy" is to "portray" those who seek an objective discussion of evolution "in the harshest light possible, as political opportunists, evangelical activists, ignoramuses, breakers of rules, unprincipled bullies, etc." The boycott of hearings that discussed key issues of science and education is an example of this strategy - to demean rather than to discuss.

Q: How do the 2001 and 2005 definitions of science differ?

A: The 2005 definition replaces a novel definition of science (not found in other state standards or the national standards) with this traditional definition:

“Science is a systematic method of continuing investigation, that uses observation, hypothesis testing, measurement, experimentation, logical argument and theory building, to lead to more adequate explanations of natural phenomena.”
[The definition continues for two more paragraphs that increase, rather than decrease the scientific rigor of this concept.]

Q: Does the 2005 definition redefine science?

A: No. It is a traditional definition that is consistent with other state science standards and the National Science Standards. It is rigorously objective and focused on empiricism. It derives from the Ohio Academy of Science definition, and is consistent with the definition embraced by the US Supreme Court.

Q: Doesn't the new definition imply that Kansas will now seek supernatural causes?

A: No. By describing science as an open-ended search for more adequate or reliable explanations of the natural world using empirical methods, it implies nothing about the supernatural.

Q: What changes did the Board make about origins and evolution?

A: The following reflect most of the key changes:

- Added a reminder to teachers that: “Although science proposes theories to explain changes, the actual causes of many changes are currently unknown (e.g. the origin of the universe, the origin of fundamental laws, the origin of life and the genetic code, and the origin of major body plans during the Cambrian explosion).”
- Added an indicator about the evaluation and testing of historical claims, a concept important not only to origins, but also to geology, paleontology, archeology, and forensic sciences.
- The Board added material that more completely describes the core **postulates** of evolutionary theory, so that students will know that “Biological evolution postulates an unguided natural process that has no discernable direction or goal....” with new traits arising “from new combinations of genes and from random mutations or changes in the reproductive cells.”

The Standards introduce students to major scientific controversies about:

- Universal common ancestry.
- The adequacy of evolutionary mechanisms, that are known to produce micro changes within a species, to also explain macro changes such as “new complex organs or body plans and new biochemical systems which appear irreducibly complex.”
- Chemical explanations for the origin of life.

The text of this brochure was produced by the Authors. For more information go to:

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