

To be fair, shouldn't we teach both evolution and creationism in science class and let students decide for themselves?

"Teaching both" is not an advisable or even feasible option, for several reasons:

- The idea of teaching "both" casts evolution and creationism as two equally valid scientific theories. But they are not:

"Science" refers to the systematic study of the physical world using a variety of approaches, including observations and experiments.

Creationism, whether it's called "creation science" or "intelligent design" (a belief that the appearance of design in nature points to an unnamed, supernatural intelligent designer), is not a scientific theory. It is based on a belief in supernatural causes rather than observable facts, so it cannot be tested or falsified. Also, unlike a scientific theory, it has no explanatory or predictive power.

- The Supreme Court and federal courts have ruled that creationism, or "creation science," is a religious belief, not science. Therefore, teaching it in a public school science classes would violate the Establishment Clause of the First Amendment to the U.S. Constitution.

Will students be forced to believe evolution if it is taught in science class?

- Students are not required to "believe" anything they are taught in school—only to understand it. The object of modern science education is to provide students with they knowledge they need to qualify for enrollment in accredited colleges and universities and take their place in today's increasingly technological and scientific work world.
- The fairest solution—and the best for sound education—is for religious discussions to occur at home, at churches and synagogues, and in world religion classes, but not in the science classroom.

Who has publicly opposed the Board of Education's vote on the science standards?

- Governor Bill Graves
- Presidents and chancellors of all the Kansas state universities
- All major statewide and national educational and scientific organizations
- Religious leaders of many denominations
- Columnists and commentators in newspapers, magazines, and TV and radio reports around the world
- The Fordham Foundation, a conservative think-tank, which gave the BOE-adopted science standards an "F" grade

What can Kansas citizens do about this issue?

- 1 **Be an informed citizen.** And vote in the August 2000 primaries and in the November 2000 election. Candidates in Districts 2, 4, 6, 8 and 10 will be on the ballot.
- 2 **Express your concerns** about quality education to state and local officials. Write letters to your local newspaper.
- 3 **Be aware of activities** at your local school board and support your local science teachers.
- 4 **Learn more about these issues.** On the Web, visit www.kcfs.org - the Kansas Citizens For Science site, and www.natcensci.org - the National Center For Science Education site.
- 5 **Get on the Kansas Citizens For Science Update e-mail list.** You can sign up on our website (www.kcfs.org).
- 6 **Become an activist for sound science stands.** join KCFS now

Join Kansas Citizens for Science to help promote sound science education in our state.

Individual membership: _____ \$25.00
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Knowledge Under Siege

How the Kansas Board of Education's Decision on the Science Standards Threatens Our Children's Education

On August 11, 1999, the Kansas State Board of Education (BOE) voted to adopt a new set of standards for the teaching of science in Kansas public schools. Those standards are bad for kids ... bad for schools and teachers ... and bad for the state's image and economy. That much is clear, once you understand what happened. But many Kansans are still unsure what the BOE actually did, and what that means. The following points attempt to answer those questions.



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What did the BOE actually do?

- The Board's six "social conservative" members rejected standards—based on national science guidelines—written over the course of 13 months by a writing committee that the Board itself had appointed.
- The Board voted 6-4 to approve public school science standards that greatly de-emphasize or delete concepts of evolution, the geological time scale, continental drift, the Big Bang theory, and global warming—all generally accepted scientific concepts. Most of the changes were authored by a Missouri young-earth of Mid-America (CSAMA), and incorporated into the standards by BOE members Steve Abrams, Scott Hill and Harold Voth.

What exactly are "standards?"

- "Standards" are a framework to help local districts establish their curriculum. Each major subject area taught in public schools (Mathematics, Social Studies, Science, etc.) has its own set of standards, determined by the State Board of Education.
- State-wide assessment tests of schoolchildren, which are based on the standards, allow districts to measure how well schools are performing.

Who was on the Board-appointed writing committee, and what did they write?

- The writing committee consisted of 27 top educators and scientists from across Kansas, many with state and national teaching awards.
- The writing committee's standards were based on standards recommended by the National Research Council and endorsed by a distinguished list of national science organizations, including the National Science Teachers Association, the National Association of Biology Teachers and the American Association for the Advancement of Science.
- The writing committee's standards received high marks in an external review by the Council of Basic Education (Washington, DC)—a review requested by the Board.

Why did the Board reject the writing committee's standards?

- Science was targeted for "local choice" by the six "social conservative" BOE members because some of its findings conflict with young-earth creationists' religious views, based on a literal interpretation of the Book of Genesis, i.e., that the earth is only 6,000 to 10,000 years old, and that man was created from nothing by God, not evolved.
- The "social conservative" members of the Board argue that teaching of evolution and other scientific concepts should be left to "local choice" and decided by local school boards. But they have not taken this position on any other subject area besides science. The three BOE members who rewrote the science standards deny that they made changes for religious reasons. However, the book "Kansas Tornado," by Dr. Paul Ackerman (one of the creationists who participated in the CSAMA rewrite of the standards) clearly indicates the reasons were religious.
- In September, 1999, the National Science Teachers Association (NSTA), the National Research Council (NRC), and the American Association for the Advancement of Science (AAAS) said in a statement they would not let Kansas use their copyrighted standards language because the BOE-adopted science standards do not advance science education.

What are the consequences of the Board's decision?

- If the BOE-adopted standards are implemented in school year 2000-01, as planned, local school boards and teachers may choose to delete discussion of evolution, geological time, and origins of the universe. The BOE has ruled that those topics will not be included on state assessment tests, so some schools may eliminate them to avoid complaints from local creationists.
- The net result is that many Kansas schoolchildren will lack a modern science education. Evolution and geological time are as central to the study of science as grammar is to the study of English.
- The majority of Kansas schoolchildren go on to a university or college education. Students without solid academic preparation will be at a disadvantage when they take national-based achievement tests for admissions and scholarship applications and when they take college level courses. Research and teaching of these topics is a central part of the science curriculum at colleges and universities across the nation and around the world.
- The tremendous worldwide publicity on this issue has already damaged Kansas' image as a progressive, forward-looking state. It could hurt our state's ability to hire quality teachers and attract quality businesses and industry.

What is "evolution"?

- Evolution is simply defined as "change over time." Biological evolution—change in the genetic composition of a group of organisms—can occur over different time periods. The BOE's standards mention some aspects of evolution as it occurs over short periods of time (sometimes called "microevolution"), but they leave out discussion of evolution over longer periods of time (sometimes called "macroevolution"), which can lead to the development of new species. "Microevolution" and "macroevolution" are actually stages of a continuum.
- There is no debate among scientists about whether evolution has occurred. Evolutionary biologists do, however, discuss the relative importance of different mechanisms of evolutionary change.
- Evolution is central to our understanding of life and its history. Knowledge of the evolutionary relationships among species is a major theme that integrates biology, geology, anthropology, genetics and many other scientific disciplines.

Are there practical reasons for studying evolution?

- Definitely. For instance, evolutionary concepts are central to the breeding of crops and domesticated animals and to studying the development of antibiotic resistance to disease-causing bacteria. Also, knowledge of evolutionary relationships among species is crucial to the rapidly growing field of biomedical research.

Isn't evolution "just a theory"?

- The word "theory" in science doesn't mean a guess or speculation. It refers to a testable, well-supported explanation for a large body of observed facts. A scientific theory must also have predictive power. With 140 years of research and testing behind it, the theory of evolution is one of the most well-supported theories in science.

Can a person accept the evidence for evolution and believe in God?

- Yes. Many religious organizations, including the Catholic Church, most Protestant denominations and Jewish theologians, agree there is no conflict between evolution and faith. Many people believe God created the world and accept that life unfolded on earth by the process of evolution. Others believe that God created all species and that evolution is the mechanism that He used.