



Ideas in Brief

Ideas from key articles in reviewed publications

Treat Creationism as a Misconception

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There are few areas in science education as controversial as the teaching of evolution. Even among those who find the scientific evidence for the theory of evolution completely overwhelming, there is room for much debate over what to do about the objections of highly vocal creationists. Should we, as many advocate, simply ban all talk of creationism from the science classroom? Can we legislate the problem away? In Foster (2012) I argue that students' understanding and acceptance of evolution may be supported, rather than hindered, by classroom discussion of creationism. I suggest that censorship can inadvertently raise the status of

creationism in students' eyes, thus hindering its exposure as a falsity. Attempts at suppression can make it easier for opponents of evolution to portray themselves as an attacked minority and the theory of evolution as some kind of conspiracy. If creationism cannot be talked about in science lessons, then it will be discussed elsewhere instead--the playground, the canteen, the religious studies classroom, the home, the church--places where it is unlikely to be challenged as effectively as it might be by a scientist.

In Foster (2012) I categorise creationism as a misconception and compare its treatment in the classroom with that of other scientific misconceptions. I advocate the use of socio-cognitive conflict, where students' ways of thinking are deliberately confronted by experiences that do not fit in with their current understanding, as a more authentically scientific approach. A very strongly-supported scientific explanation does not win the day by attempting to deny its opponents a voice but by engaging them with evidence. Lessons along such lines seek to cultivate in students a disposition to think critically. I disagree with those who suggest that students are too inexperienced or lack the necessary knowledge to reason scientifically about evolution. I regard it as essential for young people to be given opportunities to examine the facts for themselves and to see how the evidence supports some explanations but not others. We cannot regard young people as scientifically literate simply because they know some important scientific facts; they need to be able to make evidence-based scientific judgments for themselves.

None of this is to elevate creationism to the status of an alternative competing theory. In the history of science it has always been necessary for scientists to challenge superstition and false, "common sense" arguments. Many science teachers see part of their role as debunking pseudoscience, for instance. Scientific observations and theories inevitably stand in opposition to alternatives, and it is just as necessary to teach the negatives as it is to teach the positives: students need to know what is not supported as well as what is. Teaching about the errors of creationism can help students to understand the character of scientific inquiry better, both in and beyond the context of evolution. To expect students to suspend their critical faculties in school and become passive recipients of generally-accepted scientific wisdom would be the very antithesis of science!

Although a single conversation or lesson is unlikely to move a student from outright rejection of evolution to cheerful acceptance, stages such as uncertainty, peripheral belief change, and belief decrease may be viewed as educationally positive steps towards an eventual acceptance of the theory. To be in favour of discussing creationism in science lessons is not to be in favour of promoting it; on the contrary, creationism's demise will inevitably follow from its careful examination. Should the Holocaust "be taught" in history lessons? Should eugenics be taught in biology? To teach about these topics does not imply that they are good or correct! Many of the debates about whether creationism should be taught implicitly invoke a transmission model of teaching, in which the teacher is passing on facts to the students, who are accepting them on trust. So to "teach" something is to imply that it is valid. By contrast, a constructivist paradigm places the responsibility on the students to make sense of the evidence for themselves. From this perspective, presenting creationism as a case study can be seen as an opportunity for learning real science.

Reference

Foster, C. (2012). Creationism as a misconception: Socio-cognitive conflict in the teaching of evolution. *International Journal of Science Education*, 34(14), 2171-2180.