

Pseudoscience, the Paranormal, and Science Education

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Abstract. The study of pseudoscience and the paranormal is an important but neglected aspect of science education. Given the widespread acceptance of pseudoscientific and paranormal beliefs, science educators need to take seriously the problem of how these can be combated. I propose teaching science students to critically evaluate the claims of pseudoscience and the paranormal, something that can be accomplished in a variety of ways.

Should science students learn about pseudoscience? Should science educators be concerned about the paranormal? The answers to these questions may seem obvious. Pseudoscience is false science, pretending to be a true science. But then, as something that appears to be a science yet is not, it is precisely what science students should not be learning. Claims about the paranormal – for example, that some people have ESP, that there are mysterious disappearances in the Bermuda Triangle, that faith cures have occurred – are thought to be scientifically suspect. So again it seems that science education should not be concerned with them.

Nevertheless, I will argue that these answers are mistaken. I will maintain that learning pseudoscience and the paranormal should be part of the goal of science education. The goal should not be to instill such beliefs in students but to get them to think *critically* about such beliefs. Science education, I will maintain, should not be narrowly conceived. The goal of science education should not just be to get students to understand science but *to be scientific*; that is, to tend to think and act in a scientific manner in their daily lives. Learning to think critically about pseudoscientific and paranormal beliefs is part of being scientific.

Despite the fact that the study of pseudoscience and the paranormal is a legitimate goal of science education, science educators have in general neglected it. Indeed, science educators seem almost to have a strong aversion to mentioning pseudoscience and the paranormal in textbooks and curriculum material; detailed discussions of pseudoscience in science education material are virtually unknown. The same thing is true of the paranormal. Science educators avoid mentioning the paranormal as if it were a taboo subject.

Perhaps science educators avoid pseudoscience because they believe that if students study it, they will become pseudoscientific. Similarly perhaps they avoid the paranormal because they believe that if students study the paranormal they will accept paranormal claims. These beliefs are

similar to the views of those who were opposed to studying communism in school because they thought that it would make students communists. However, there is no reason to suppose that a critical study would have this effect. This is undoubtedly true for the study of pseudoscience and the paranormal. There is no reason to suppose that those who study pseudoscience and the paranormal in the proper way will be taken in by the claims of pseudoscience and the paranormal. Indeed, the evidence indicates just the opposite. But, it may be asked, what is the proper way?

In the study of communism, there is a distinction to be drawn between teaching students *to be* communists and teaching them *to evaluate critically* the doctrines of communism. Similarly, one can distinguish between teaching students *to be* pseudoscientists or *to accept* paranormal claims and teaching students *to critically* evaluate pseudoscientific or paranormal claims. What I am recommending is science education in the sense of teaching students to critically evaluate pseudoscientific or paranormal claims.

It may be objected that there is no need to introduce the critical study of pseudoscience and the paranormal into science education. It may be assumed that the scientific thinking educators teach their students to use in investigating physical and biological phenomena will automatically be applied outside the classroom and laboratory, when, for instance, students are confronted with the false or unsupported claims made in the popular media in the name of science. It may also be thought that few people hold pseudoscientific and paranormal beliefs and, consequently, that it is not necessary for science educators to expend energy on trying to keep their students from accepting these.

However, as I will show here, there is little reason to suppose that science students are being scientific in their daily lives. On the contrary, the scope of pseudoscientific and paranormal beliefs is surprisingly wide; indeed, the evidence suggests that pseudoscientific and paranormal beliefs are rife among the general population, students, and even science educators. I will argue that the extent of the acceptance of paranormal and pseudoscientific beliefs should be of great concern to science educators. Then after clarifying the concepts of pseudoscience and paranormal, I will suggest specific ways that pseudoscience and paranormal beliefs can be taught from a critical point of view.

THE EXTENT OF PSEUDOSCIENTIFIC BELIEFS AND BELIEFS IN THE PARANORMAL

How widespread is belief in pseudoscience and the paranormal? There is good reason to suppose that belief in paranormal phenomena is widespread among students. For example, a 1979 survey of University of Washington undergraduates showed that a majority of those sampled – excluding those who were Born Again Christians – thought they might