

## Book Review

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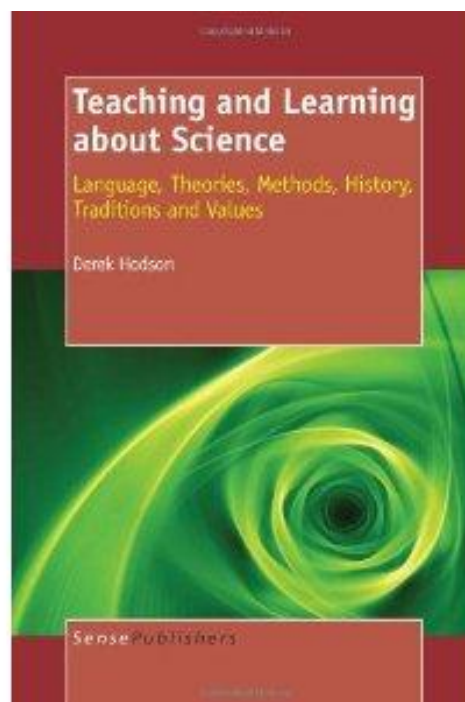
### **Teaching and Learning about Science: Language, Theories, Methods, History, Traditions and Values**

by *Derek Hodson*

2009

Sense Publishers, Rotterdam /The Netherlands, 440 pages

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In 2008 Derek Hodson critiqued the literature on the history, philosophy and sociology (HPS) of science in his book “Towards Scientific Literacy: A Teachers’ Guide to the History, Philosophy and Sociology of Science”. His current book examines how these issues can be developed into curricula in ways that are meaningful and motivating for students, but clearly indicates that he is not arguing for a formal course in history, philosophy and sociology of science, but for an anthropological approach, i.e. viewing scientists as a group of people with their own distinctive language, body of knowledge, history, traditions, norms, values and influence on society.

I have followed Hodson’s publications with great interest for over thirty years and have never failed to be impressed by his clarity of argument and focus. This book is no exception. It is a rich mine of information, and gives both novice and seasoned science educator/researchers a comprehensive overview of current and important issues in

science education. He tracks the radical rethinking that has taken place in terms of the nature of science, model-based reasoning, inquiry-based learning, scientific argumentation, and language-rich learning experiences to enhance conceptual understanding, and argues that research findings seem to clearly point in the direction of regarding science education as a study of scientific practice.

In chapter 1, Hodson identifies the key role of HPS in achieving critical scientific literacy, while chapter 2 and 3 survey the research literature concerning student and teacher understandings of HPS issues, and how they can influence curriculum, learning and attitudes. In chapter 4 he introduces the anthropological approach to teaching and learning about science. Chapter 5 looks at the demarcation of science, in contrast to pseudoscience, traditional knowledge and technology. Chapter 6 focuses on the substantive structure of science while chapter 7 looks at the syntactical structure of the discipline. Chapters 8 and 9 consider key issues relating to the distinctive language of science and language rich curriculum experiences, respectively. Chapter 10 draws the book to a close by examining the driving forces of contemporary scientific practice in the light of its historic tradition and distinctive values.

His interpretations ring true, and are fairly and logically argued. Only once did I feel the urge to emphasise a point not covered, in my opinion, robustly enough. This was Goode and Shymansky's (2001) argument that a firm foundation for understanding the NOS within a modern/realist perspective is required before postmodern/relativist views of the scientific enterprise can be appreciated, and how important these perspectives are when distinguishing between science, indigenous knowledge and technology.

The chapters on the nature of science, the demarcation of science, and issues of reading, writing and talking for learning science relate most readily to current ideas around promoting scientific literacy in both its fundamental and derived senses. These ideas, and others in this comprehensive book, provide both theoretical and practical frameworks for developing scientific literacy, an issue that has gained relative consensus within the science education community over the past five decades. As such, teachers, student teachers, graduate students, teacher educators, curriculum developers and policy makers should all find value in this publication.

Hodson states that when writing the book it was his intention to provide a resource to stimulate the debate on how HPS impact science education, and how this debate might change the science education we provide and in which we engage. In my opinion he has provided a well reasoned and balanced framework to achieve that purpose.

## References

- Good, R. & Shymansky, J. (2001). Nature of Science Literacy in Benchmarks and Standards: Post-Modern/Relativist or Modern/Realist? In F. Bevilacqua, E. Giannetto & M.R. Matthews (Eds.), *Science Education and Culture: the Contribution of History and Philosophy of Science* (pp.53-65). Dordrecht, The Netherlands: Kluwer.

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