



Seeing (and Inferring) is Believing: Using the Nature of Science to reinforce process skills and teach relevant science content.

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If science education can be compared to building a house, then conceptually it can be divided into three parts: content knowledge, process skills, and nature of science or science as a way of thinking. The basis of understanding any discipline begins with the accumulation of facts, theories and concepts. These are the building blocks which are used to construct and strengthen a foundation. Next are the investigatory processes and the methods; these are the tools necessary to create new knowledge and enable students to strengthen and expand their foundation. Closely linked with processes and methods are the values and assumptions that are intertwined with interpretations and conclusions. Students must be taught that science is not infallible or an absolute field. Theories and relationships are created and refuted based on the availability of data, and are heavily laden with personal and cultural bias. Teachers need to emphasize the importance of the different aspects of the nature of science—for example the connection between creativity and science—so that students will know there is not merely a single set of blueprints to build the house but an infinite number that merely await discovery.

In the United States, the National Science Education Standards recognize the importance of the nature of science as an instructional objective. As a consequence many states have incorporated the nature of science into their standards. In this presentation we will clarify what is meant by "nature of science" and relate it to the more traditional topics of science content and process skills. The focus of the presentation will be on introducing a sequence of teacher-tested activities designed for middle and secondary school students. These activities address specific aspects of the nature of science; they are designed to be engaging and student-centered and to link abstract concepts of the nature of science to more familiar science process-skills.