Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
1999 Volume V: How Do You Know? The Experimental Basis of Chemical Knowledge

Discovery Through Experimentation ? Past and Present

Guide for Curriculum Unit 99.05.01
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Vast amounts of information pertaining to the make up of the world around us came from men using experiments to make investigations. As stated in Professor McBride's seminar description of *How Do You Know? the Experimental Basis for Chemical Knowledge* , it is much more beneficial for science students to "understand the logic of inference from experimental evidence" than to just accept information on the basis of being told. The goal of this unit is to allow students to gain an understanding through personal experience and a historical look at certain scientific discoveries of how research works. The target audience would be high school students who have very limited science backgrounds regardless of what grade level they are in.

During the first week or following the review, students will perform various activities and experiments. The purpose of this is to give the students practical and personal experience in obtaining information about something through experimentation.

The second week will involve the students studying a few experiments that were done in the past. Two of the experiments of Lavoisier will be studied. Following Lavoisier, the unit will end with the students researching the 1909 experiment by Ernest Rutherford that led to the discovery of the atomic nucleus.

(Recommended for Integrated Science, Chemistry, Physical Science and General Science, grades 9-11.)