



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute

1999 Volume VII: Electronics in the 20th Century: Nature, Technology, People, Companies, and the Marketplace

Introduction

Electronics has played a part in the lives of all Americans in the 20th century. At the beginning of the century the news was of point to point wireless telegraphy. During this final decade the news is of e-commerce.

In the first of these units Gail Hall has used the event of the Titanic catastrophe to teach on the methods of finding informational source materials. Derived from primary sources, her description of the accident and the role of the then new wireless technology in the hours before and after the collision illustrates how one is able to use the vast reservoir of information available from the World Wide Web (www.dot). As with all information, evaluation of its quality and accuracy is essential. The unit addresses these concerns with a thorough and reasoned discussion.

Wireless, radio, and all of electronics, are based upon the Physics of Force at a Distance. In the three units by Rebecca Blood, Roberta Mazzucco and Jacqueline Porter, this notion is explored in ways designed for primary level students. Some of the experiments described were performed for the seminar by these fellows. We all had fun as I anticipate all students of any age will with these hands on learning experiences. To the user of these units I add parenthetically, be sure to perform the experiments as outlined first in the privacy of your home or office. During my forty years of doing demonstrations for students of all ages, I found there was nothing more debilitating to my ego than not being able have nature perform for me when there was an audience of more than one.

Electronic devices and techniques, so cleverly designed by large numbers of our citizens, have impacted the practice of medicine. Bonnie Osborne reviews for her students some of the diagnostic instruments, which have become available in the last two decades. She will be teaching to students whose situation may necessitate the use of such apparatus. Her subject is of general interest since sooner or later we all find ourselves needing medical attention.

As seen in the first unit, the World Wide Web (www.dot) is an indispensable tool for teachers, students, and rapidly so becoming for all Americans. Joanne Pompano shows how the computer has been adapted for use by the visually handicapped, yet the design of web-sites and web pages can either enable or frustrate these individuals. The unit outlines a set of standards that web site creators should consider implementing. The number of physically challenged individuals in our society is significant, significant enough that if e-commerce is to be successful, which means available to all, web site design must be improved. This unit proposes a set of assessment exercises for pairs of compatible students. I look forward to hearing of the progress made by Joanne's class.

The penultimate unit contrasts modern computer technology as a revolutionary event with the Industrial Revolution. Students are challenged to draw upon their experiences to determine how their lives are being changed by this technology and how to adapt to take advantage of these new ways of thinking. Sheldon Ayers is leading his students to think about future developments in this dynamic arena, and thence to develop life strategies incorporating their thoughts and conclusions.

The last unit appropriately addresses the future but in a novel way. June Gold will be having her students create new stories, new perspectives by writing science fiction based upon their speculations on future science. I urge both students and teachers to write fiction based upon rational but imaginative extrapolation of our current understanding of nature. I am reminded of the trip to the moon as written by Jules Verne in 1865. He did get the basic science correct; the necessary escape speed is 12,000 yards per second and he did site the great COLUMBIAD in Florida so that the rotation of the earth assisted the launch of his space vehicle. He was a masterful writer whose many speculations have been matched by accomplishments in our century.

I believe the fellows in the seminar have detected my belief that this technology in the 20th century has created many marvels, which have changed the culture of our society. But you have not seen anything as yet, watch the 21st!!

Robert G. Wheeler

Harold Hodgkinson Professor Emeritus of Engineering and Applied Science

<https://teachersinstitute.yale.edu>

©2019 by the Yale-New Haven Teachers Institute, Yale University

For terms of use visit <https://teachersinstitute.yale.edu/terms>