

The Way Things Work

1 Introduction

This seminar will take an in depth look at dozens of different inventions, mostly from the The Way Things Work books (see below). To supplement the information in those books we will be looking into the history and modern uses of many of the inventions we look at, as well as building a model of an invention or a piece of an invention each week.

The purpose will not be to do experiments that show physical principles; rather it will be to learn how human creativity can and has been used to use physical principles to various ends to satisfy various needs.

2 The Way Things Work Books

The recent editions of this book are filled with humorous explanations that use miniature angels and woolly mammoths to explain the workings of various modern technological marvels. I also have an older edition published in the 60s where each entry is like a short technical document written by engineers making the inventions.

3 Detailed Plan

The seminar would meet twice a week, once for 1 hour and once for 2 hours. In the first hour we will look at a class of inventions or an invention or two in depth. The second meeting will start with a technical introduction to a single device or aspect of an invention, followed by time for the building the device.

Students will also research inventions and present them to the class. Each student will be responsible for collecting information on the science, history, and uses of two inventions during the semester. Everyone, however, will be responsible for reading the appropriate sections of The Way Things Work for that invention.

4 Syllabus

Week 1 : Household Inventions (mechanical lock)

Week 2 : Household Inventions (clock)

Week 3 : Household Inventions (sewing machine)

Week 4 : Engines (stream engine)

Week 5 : Mass Transit (subway)

Week 6 : Navigation (gyroscope)

Week 7 : Sea Travel (submarine)

Week 8 : Electronics (transistor)

Week 9 : Communication (radio)

Week 10 : Recording (surveillance devices)

Week 11 : Space Exploration (satellite)

Week 12 : Space Exploration (telescope)

Week 13 : Space Exploration (space vehicle)