



Honors Curriculum: The Daedalus Project, a problem-based approach to learning about technology

The Honors 241 course entitled "The Daedalus Project", by Dr. John S. Harris, English; Dr. Paul Eastman, Mechanical Engineering; and Dr. Ray Matheny, Anthropology, Brigham Young University, Provo, Utah (1998)

Course Design:

In the course, students study technology from the Stone Age until the Wright brothers successfully flew their airplane in 1903. By studying the timeline of technological innovations and by having to replicate certain tools, such as cave dwellers' stone tools, students gain a better understanding of the components of various inventions and of the process of building upon the discoveries of others. The course's overarching project is for students to design an airplane based on the materials that they might find on a desert island. By the end of the semester, students submit a portfolio which includes completed plans for the airplane, the research that they have completed during the semester, a model of the airplane and of particular parts such as the engine and the wings, and a learning log. The entire portfolio is evaluate based on the extent of reflection in the personal log, as well as the depth of the research, written reports, oral presentations, and participation in class and team group dynamics.

The class works cooperatively on the overall design of the airplane. Students must therefore establish a system of leadership that enables them to make design decisions. They must also divide the design work to be completed among the three subgroups. Subgroup responsibilities include researching and reporting on their assigned task: either the engine design, the structure of the main components of the plane, or the logistics of obtaining fuel, tools, and a catapult system for takeoff. The groups must interact extensively to devise the overall design of the plane as well as to develop the resources necessary for the plane's construction. The instructors, all of whom have extensive flying experience, play a very minimal role in the problem-based aspect of the course.

Higher Level Learning:

While there is a great deal of emphasis placed on the actual design and construction of the model airplane (**Acting**), the course's principal goal is to focus students on the process of learning (**Learning**). Through the project, students come to understand how to address their own knowledge deficiencies and how to apply new knowledge to the problem-solving process. Students reevaluate their perceptions of technology, of problem-solving, and of group work (**Caring**). The Daedalus project guides students toward a deeper understanding of how different parts fit and work together both in terms of the physical components of an airplane and of how one can direct one's own learning (**Caring**).

Active Learning:

Students engaged not only in the theoretical development of resources necessary for the project but also in the actual construction and manipulation of models (**Doing**). Group work in the subgroups and with the class as a whole enabled students to learn about both the technological and the learning processes necessary for successful completion of the project (**Observing, Dialogue with Others**). The Daedalus project also emphasized self-analysis and the evaluation of personal learning experiences through the use of student learning portfolios called "personal logs" (**Dialogue with Self**).

Tripp, S. (1998). On a wing and a prayer. Brigham Young Magazine, Spring 1998 [Online] Available: <http://advance.byu.edu/bym/1998/98spring/wing2.html>