

Project Abstract

IPRO Team 341 Fall 2004

IPRO 341

Cardiovascular Display of Blood Flow System Pre and Post Natal

IPRO 341 worked with the science and exhibit development staff of the Museum of Science and Industry (MSI) to develop a working prototype of a cardiovascular display of blood flow from a pre to postnatal system. MSI is currently developing a number of new human physiology and health displays.

The goal is to present more current scientific and engineering concepts to better educate the public on the relationships between physiology, pathology, and medical technology. The IPRO team will develop a bench-top working model as well as an educational presentation that demonstrates the change in blood flow from fetus to newborn.

Students were divided into four groups each focusing on a different aspect such as prenatal circulation, postnatal circulation, development of the interactive computer prototype, and development of the interactive mechanical model prototype. Students investigated the foundations of science and technology underlying such blood flow and how to use such knowledge to create a demonstration prototype. Multiple skill and knowledge disciplines were required to carry out this project, including: fluid mechanics, materials, physiology, control systems and interactive design capabilities.

Throughout the semester, our IPRO encountered a few tribulations. Although the use of email and smartgroups were employed, efficient communication was not achieved in a timely fashion. The guidelines set by MSI required the group to refine our original text and length for the general public's understanding. It was difficult for the group to judge the level of difficulty that should be used for an exhibit for the general public.

This semester, the IPRO completed an interactive Flash presentation with a model display that visually supports the pressure and blood flow changes that occur in a neonate. The Flash presentation has a run time of seven minutes with extra links and pop ups available for further detailed information. This project could lead to further collaborations between MSI, IIT, and various industrial partners in the field of medicine and medical technology. This IPRO will continue next semester to field test the interactive computer and mechanical model prototype at the MSI to observe how it is used, collect data, obtain feedback and further refine its design.

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