Peripheral Vision Tester

Requirements

According to our client, the optometrist, the product we design must:

- Have four dome quadrants to measure the peripheral vision of a child
- Have independently-controlled lights in each quadrant
- Be able to be turned on/off by an observer/tester
- Allow the observer/tester to clearly see the child's eyes through the product
- Allow the parent to hold the child stationary (in lap) while the product is being used

Constraints

The product must meet the above requirements under the following constraints:

- Lights must be one-third of a meter away from the child
- Must have at least one light in each of the four dome quadrants
- A center light must be able to be turned on/off to refocus the child's attention
- Operator/tester able to control the brightness of the lights with a dimmer switch
- Operator/tester able to control the size of the light showing through using an aperture
- Time available: 6 weeks
- Budget and materials: as limited by teacher and school
- People: students in your class contributing to the project

Ready, set, GO!

Definitions

Requirement:
What a particular product or service should do. It is a statement that identifies a necessary attribute, capability, characteristic or quality. In engineering, sets of requirements are inputs into the design stages of product development.

Constraint:
A restriction or limitation on the degree of freedom one has in providing a solution to problem or challenge.

Aperture:
A device controlling the amount of light that passes through an opening by changing the size of the opening. Cameras use apertures to make sure film is correctly exposed.