Discovery Space II: Lite Brite

Overview
The problem addressed through this project was to educate children aged 2-12 about light via a large scale lite brite. Challenges for this project were defined by The Discovery Space. The request was to have two faces, one with 1” diameter pegs and the other with ½” diameter pegs of the size 4’ by 3’, which proved to exceed the capabilities of our budget.

Objectives
The objectives of our teams was to prove the capability of the project through prototyping then construct the final product to fit the needs defined by The Discovery Space.

Approach
- Customer needs were gathered from The Discovery Space through on-site meetings
- Generate concepts to fit the needs of The Discovery Space
- Concept refinement and selection through Pugh chart
- Search patents for existing products and acrylic transparency
- Communicate with vendor regarding unit size and diameter of pegs and number of pegs desired for each face
- Model the unit in SolidWorks to obtain full scale unit specifications
- Fabricate prototype to prove the concept and select best rubber orientation and light source
- Purchase long term materials from the vendor
- Construct final deliverable
- Perform transparency test and tipping test on the final model to ensure it met the safety and educational factors
- Unit with 1” face transmits light and is safe. During testing at the Project Showcase children were successfully entertained by the product and found the experience very fun
- Unit with the ½” face was not constructed due to budgetary and scheduling conflict

Outcomes
Deliverables for The Discovery Space Children’s museum are outlined below:
- Working unit for 1” diameter pegs with enough pegs to fill the majority of the face and enough peg color choices to effectively demonstrate the properties of light and transparency to children aged 2-12
- Working manual for replacement and maintenance
- Cut list and instructions for how to create second unit if desired