Advanced Headrest System for Comfort and Support in Automobile Seats

Overview
Current designs of automobile headrests are uncomfortable for occupants and provide little comfort and support. They are also designed for a narrow range of people and are typically used improperly. A design that would provide comfort for a wider range of users and allow for more support of the head and neck was desired. A report detailing the design process as well as a working prototype was completed. The prototype provided feedback for improvements and recommendations by having testing various individuals test it.

Objectives
- Develop a concept for a new headrest design
- Headrest must relieve neck strain, be easily adjusted while driving, is comfortable, and meets safety standards
- Build a working prototype that proves idea is feasible

Approach
- Gathered customer needs through interviews and online research
- Looked at current patented designs for inspiration and to focus on designs that are not available
- Develop multiple concepts and select the one that best fits the customer needs
- Develop concept further by determining dimensions and other specifications
- Develop CAD models using Solidworks
- Determine materials and components to be used in a prototype
- Build working prototype to show validity of concept
- Test prototype to ensure customer needs were met through multiple different tests
- Present design and prototype

Outcomes
- Built working prototype that met customer needs
- Headrest system allowed vertical and angular adjustment
- System was designed to be easily compatible in current automobiles
- Adjustments are made by using switches installed near other seat adjustments
- Project was under budget
- Mass manufacturing plan was created
- Design can be applied to other markets
- Further recommendations on improvements were made to sponsor