Project 2 Report

Our final project for this course was the design of a kite made of limited materials that we would later attempt to fly. Throughout this project we learned to work better as a team and get a great amount of work done in a short time period. It taught us more about the engineering design process in a more hands-on way that we were extremely intrigued by. We will explain the process we went through in order to pick which kite we used and design it, then we will explain the outcome when we tested the finished product.

The first aspect of this project that we completed was recognizing the need for the product. The kite was first invented in China and was believed to be made by philosopher Mo Di. It was used in the South Sea Islands during early times for fishing purposes. Kites were used for military purposes, but then began being used for recreation and spread across the world. Besides being used in the military, kites had many other useful purposes. Alexander Wilson used it to raise a thermometer, Ben Franklin used it to show that lighting was similar to static electricity, it was used to raise anemometers to measure wind, pull carriages, and many other things. Kites advance with technology and history may have been altered if they were never created.

Next, we had to define the problem and gather information. During this project, we had to look at the characteristics and practical uses of four different kites, then pick the one we thought
would be the best fit for us. Our first option was the Diamond kite. This kite is extremely popular. It is stable in several different wind speeds and could be used for Ariel photography. It is quite easy to make, since it is only in the shape of a diamond and has two rods going across it. Option 2 was the Sled kite. This kite is particularly easy to make and is also very popular. Its shape is usually rectangular in some way and it can be altered to accommodate the amount of spars we want to use. This kite is used for fishing, recreation and is even used in kite festivals. The next option was the Delta kite, which is a triangular shaped kite. This kite does not require a tail to fly, is usually made of plastic, and works in extremely light winds. It is used for kite races and recreations. Lastly, we looked at the NASA Parawing kite. This kite has a hexagonal shape with rounded edges and generates a very strong pull. It was developed for the Apollo Program and is used for wind surfing and other wind sports.

The next step was to Brainstorm. The first this first thing we did in order to brainstorm was create a chart stating uses for a task, suitability for a task, management of resources, feasibility, cost, and safety, and the task we planned to make our decision on was which one was more suitable for kite fishing. We then created on concept map on how kite fishing itself works and what we needed to do in order to make it possible. This went along with comparing and selection our ideas. Each of us drew a design of the kite we had earlier researched and what materials would be needed in order to build it. We compared qualities of our kites and looked at which kite would be more suitable under low amounts of wind. After comparing our ideas and reviewing our charts and concept map, we decided that the kite that would be the best fit for our task would be the Sled kite.
Now we headed to the shop to begin creating our kite. The materials given to us were wooden dowel rods, plastic, duct tape, and string. We cut the plastic into the correct shape of the Sled kite, and tripled the dimensions given to us on My Best Kite so that it was a little bit larger. We taped two dowel rods vertically down the kite and the string was attached to the bottom. Again, this kite did not require a tail. After we created our kite, it was time to go outside and test it. There was barely any wind so we did not have a lot to work with. We had to run with the kite in order to make it fly. When we got it up in the air, it began to spin around because the string was too short and because we were running with it, but it still stayed up in the air. Overall, we were happy with the outcome of our product and the fact that it was capable of flying.

Lastly, we had to put all of our results on our team website and create a presentation on our design. The website displays all of our design ideas, our charts and brainstorming ideas, our Solidworks design of the Sled kite, the forces diagram, and everything else that went into this project.

The project was an overall success for our group. Going through the stages of the design process really taught us the importance of each aspect of the design. Each step required a lot of hard work, thought, and brainstorming that led us to the success we had in creating our kite. Building kites seems like a small task, but covers everything you need to know about design, and will be a helpful tool to remember as we continue through engineering school.