Engineering Design Stages

1. **Recognize the Need**
   We were looking to design and build a kite that can be used for communication.

2. **Define the Problem**
   We were required to construct a flyable kite from the presented materials. The kite must be able to fly easily in case there was no wind on the day we were flying the kite.

3. **Gather Information**
   As a team we researched online the different designs of a kite. We found designs that were simple and easy to construct. We also researched applications of kites and what qualities make up of a successful kite.

4. **Generate Conceptual Ideas**
   Each team member came researched and chose a design. We researched the practicality and the applications of each design and then brought them together.

5. **Compare, Combine, and Select Ideas**
   We came up with a list of factors to grade the kites on. We weighted the factors so that the kites’ score would better fit our purpose. We created a chart to score the kites on each of the factors and added the weighted scores to find the best statistical kite.

6. **Analyze and Design**
   We searched for a delta kite blueprint that we liked online. We found one that was simple and easy to make.

7. **Fabricate and Test Prototypes**
   We constructed the prototype in the engineering workshop and then took the kite to the Old Main front lawn. After testing the kite we would bring it back to the workshop and fix and broken parts and improve the design. During our third trial our kite was successful and was able to fly for approximately 15 seconds.

8. **Communicate the Design**
   We showed the TA and professor our design, as well as communicated our success of our design to other groups.

Results

**Trial #1**
The first kite had two cross members one located toward the front and the other located toward the back of the kite. The kite also contained an attached keel, which was supposed to distribute the tension on the spine. When we went to fly our first kite it would not take off and ran directly into the ground. This caused the spine of the kite to break in half.

**Trial #2**
The second kite design we replaced the spine and removed the keel. The second kite also did not take off because the sheet plastic was not taut enough and created an airfoil. Having two cross members also made the kite very heavy.
**Trial#3**

For the third trial we removed the rear cross member. We also made the sheet plastic more taut along with shifting the front cross member toward the middle. The kite was then able to take off and was able to fly for approximately 15 seconds.