**Problem (February 11- February 18)**

For the first week i spent my time brainstorming on what category I should do and what topic/experiment I should do for it, there were many ideas but the most doable one for me was the electrobike (at least the small scale model) and I could use this experiment to take a look into the world of electricity and electromagnets. Back in my home country our power would run out around mid afternoon and my grandpa would have to climb the stair all the way up to our roof to start up our costly generator he liked the exercise but the money and noise of it is overwhelming, that's when i realized this is the problem that my electric-bike can solve, it may not be the easiest way to generate electricity but it is cheap and can produce enough electricity for people to get by.

**Method (February 20- February 27)**

After figuring out my project and what problem it will solve I needed to understand the basic concept behind a motor as that will be the source of the electric generation. I thought I should get my hand dirty and took a motor apart from one of my old toys, I realized it was magnetic so electromagnetism was playing a large role on how the motor spins. I also did my research and found out that generators are just large motors that convert some mechanical energy into electrical energy so I can use this as the basics for my electro bike. But I still needed a deeper understanding of how a motor works and how I can make electricity. After reading a few articles i figured out that the magnetic force between the two permanent magnets is called the EMF and if a conductor is placed in the EMF and spun around it generates a current.

**Analysis (February 28- March 5)**

Now all I had to do was make a small scale model of the electro bike. I took one of my old bicycles and planned out a model from it, mark 1 of the model was just the main pulley system that spun the motor around and generated electricity, this was too vague so I made a a full body small scale replica of the electro bike. First I made the normal set up for a bike with the first pulley system, I commenced the first test and it worked fine. After that I disassembled the back tire and placed a second pulley on to the back wheel, I then attached the motor on the back of the bike and put another pulley on it, then I attached the rubber band to round up the second pulley system.

 **Analysis part 2 (March 7- March 9)**

Before putting on the motor I also had to solder the motor to the battery terminal adaptor so you can remove the adaptor and transport the battery. After that I had to put it all together using some hot glue. I then hooked up the multimeter to the terminals of the battery and spun the bike's pedals around while holding it in the air. I managed to generate 3mv-1v but this mostly depended on how fast you pedal the bike. If this was the full scale model with a 1hp motor attached to it, the motor would have to generate 12 volts to charge the battery.

**Conclusion (March 10- March 12)**

If an average person can pedal 10-14mph this bike can generate enough electricity to power a small house. In the end I think many people who don’t have means to have access to electricity can benefit from the Electro-bike.