**Original Work Set-Up & Completion Summary**

*Objective*

 My original work ended up being about turning trash into energy. What I was trying to solve was how can we reduce the amount of trash we are putting into landfills while obtaining energy? Also, what is the best system to reduce the amount of trash while using energy conversion?

*Methodology*

 *Materials*

 Most of the material I used were graphs and research that I found. I used that research to help support my research paper. I also used Coach Goff’s paper as a reference to create my study. In my paper, I developed an experiment that could be used to determine the best method of trash to energy conversion.

 *Process and Procedure*

1. I did research on the environmental problems we had locally, and also went out and looked for problems physically.
2. I decided to do more research on trash and wastes since I noticed that my family was throwing away lots of trash.
3. Through the research process, I was able to find three main methods to use trash as a form of energy and reduce the amount of trash that ends up in landfills or on the Earth.
4. I then did more detailed research on each of the methods: gasification, incineration, anaerobic digestion.
5. After I did more research on the different methods I was able to tell that the method I approved of the most was anaerobic digestion.
6. I wanted to find a way that a person could test this theory that anaerobic digestion was the better method and created an experiment that someone could possibly follow to determine which system was the most suitable.

*Utilization and Higher- Level Thinking Skills*

 When creating my original work it took some out of the box thinking. Throughout my whole process I went through many changes of what I was going to do my work on. Initially I was going to do my project about air pollution at first, but after talking to Coach Goff it seemed like I should be more specific, so I started to investigate the more specific problems. At first I did look into the lead deposits that had been still in Frisco, but I found more interest in trash and wastes. My family throws aways tons of trash and I wanted to find a safe and efficient way to use trash to turn into energy. This is when I looked into the different methods that were created today. From then I decided to create a study over the information I had found and it forced me to think not how I usually would.

*Results*

 After completing my original work and looking back on creating it, it turned out to be something I never knew I would do. Initially I tried to just write a research paper reviewing the information I had learned, but after some guidance put my own ideas into the work. Everything did not work out how I exactly thought it would, but I actually am happy with how it turned out. I got to formulate my own experiment with no limitations. As a high school student I do not have certain resources such as an abundance of money or resources, but I enjoyed creating this experiment that could display how we can prevent pollution without having to actually create the whole study. I got to compare the three different types of trash energy conversion, gasification, incineration, and anaerobic digestion. Each one had their advantages and disadvantages. For example gasification and incineration are usually a quicker and more efficient way to use trash, but usually can cause pollution. Anaerobic digestion uses bacteria to deteriorate the wastes and this causes it to take a longer amount of time to actually develop the biogas(methane and carbon dioxide), but it does not release as much pollution to the air compared to the other systems.

*Conclusions/Interpretation*

After doing research over the different methods it has led me to the conclusion that the best method to reduce pollution as well as encourage sustainability is anaerobic digestion. This is the most natural way to deal with organic wastes and will prevent organic wastes (consist of 24% of trash in landfills) from going into the landfills and releasing tons of methane and carbon dioxide.

*Application/Meaning*

My original work has shown to be applicable to many different areas. Although my study ended up just focusing on how it can benefit households, it also can work for businesses as well. Those businesses that use organic matter, such as restaurants, can apply this knowledge to figure out how they can become environmentally friendly as well as being sustainable. If they are able to use what they already have to generate them energy to cook it will allow them to save money as well as being sustainable. This information can also be applied to many communities, as if we start with smaller areas then we should be capable of spreading to larger areas and make the world a safer place. I think the project has opened my eyes to see what we can do to save the future. Many people are thinking about short term goals, but we need to be thinking about how we impact the future. So I believe my original work allowed me to find a way we can look towards the future while helping prevent harm to our environment.