Emily Piatt - Reflection Journal

Summary of Deliverables:

* Water from Fossil Fuel Estimate

My contribution to the water and fossil fuel estimate project was to calculate the coal usage and flux and to find out water movement fluxes between reservoirs. My experience with this deliverable was that I was able to learn more about how burning fossil fuels affect the environment. Even though the process of burning fossil fuels produces water, it is very insignificant compared to any other water sources or the amount of harmful carbon emissions produced.

* Water Footprint Calculator (individual)

My experience with the water footprint calculator allowed me to gauge how much water I used every day. I thought it was very interesting to see that even if you try your best to reduce your personal water usage at home, you will still likely have a large water footprint because of how much water is used in the food that we eat every day. This affects my role as an engineer because if I am designing a manufacturing process, I should pay more attention to how much water is being wasted in the process.

* Water Politics Case Studies

My contribution to the water politics case study was to study the case law for the Poland Springs case. I found the case very interesting because the argument against Poland Springs did not hold up in court well at all, even though it seemed like a reasonable argument. This project was also a good introduction to the privatization of water issue and the issue of state ownership of water sources.

* Water Privatization Debate (in class)

My contribution to the water privatization debate involved me being part of the privatization group. We prepared arguments together, as well as considered what some of the arguments against us would be. This was the first time I had participated in a debate in any of my college classes, so I thought it was very interesting to see how it worked. Through this exercise I realized that if you go into a debate with a strong opinion, then you usually come out with the same opinion, but if you go into a debate with an open mind, you can be swayed by the arguments of either side.

* Water Treatment Question (individual)

My experience with the water treatment question deliverable was that it it was more difficult than the previous assignments because we did not have time in class to go through the PowerPoint. I was, however, able to learn about some very interesting water treatment processes. I also had never thought about the order of water treatment before, but after completing the assignment I realized how important the order of the treatment process is because if there are particles in the water when it goes through the UV process, then bacteria can hide behind particles and the water will never be completely clean.

* Mid-term Presentation

My role in the mid-term presentation was to identify and introduce the problem for our project. I also helped identify potential customers and looked into similar products that already existed to see how we could make our idea more innovative. I thought the mid-term project was a great experience because it allowed us to be creative and think of a new idea and how it could help others. I thought the actual presentation was difficult though because we were still in the beginning stages of our idea, so we were not able to answer questions very well.

* Wind Turbine Annual Performance

My role in the wind turbine project was to create the necessary graphs in MATLAB and to work with my group to calculate the annual energy produced from a wind turbine. I found this project very interesting because I did not know that there was a maximum amount of power that could be produced by the turbine. I always thought that the faster the wind blows, the more energy produced. I also thought it was interesting that a single wind turbine could produce $1.4 million worth of energy in a year.

* Photovoltaic Systems

My role in the Photovoltaic system project was to calculate the required system capacity, research the availability of solar energy in Ohio, and select the PV modules. I found this project to be very difficult because at first my group planned to do the entire project together, but as we began to go through the steps and the calculations got more difficult, we started to lose the non-engineer in our group so we ended up splitting up and working on different aspects. Looking back on the project now, I see that we probably should have taken the time to explain what we were doing so that everyone in the group would have been on the same page going into the presentation.

* Solar Water Heating

My role in the solar water heating project was to research the availability of solar energy in Ohio, assist with finding possible parts to use, and drawing a sketch of our design. I found this project to be very challenging because it was very hard to find individual parts for our design. Many of the parts we were looking for were already in a solar water heating kit so we struggled to find individual costs at times. I also thought it was interesting how much cheaper a thermal solar system is than a photovoltaic system because I had never really heard much about solar water heating before this class. This made solar water heating seem like a very feasible project for an average family.

Class Suggestions:

* Suggestions for designing/managing a course for non-majors

A couple of suggestions that I have for designing a course for non-majors would be to focus on talking about concepts and doing real world examples with simple calculations. I think that it is very important to keep the calculations simple because non engineers would not necessarily have taken as much math as engineering majors would have. I also think it would be important to do real world examples in order to get students interested in what they are doing in class. I also think it would be helpful to have a couple engineering students TA or help teach the class because they could help explain concepts to students and it would help them develop communication skills.

* Suggestions for improving student experience in this course

I think student experience could be improved in this course by making the class more discussion based. I enjoyed going through the water material because we learned about water and then discussed and debated different issues dealing with water, but when we got to the energy material the class became less discussion based and very calculation heavy. Even though I enjoy the engineering calculations, my expectations of the class were that it was not just going to be another one of my engineering classes but instead a class that would help me to be more aware of the water and energy concerns in the world and brainstorm with others how to solve them. I also think it would be helpful to spread out the big design presentations for the class (photovoltaic system, solar water heating, and innovative idea) because they are all time consuming and it was difficult to juggle them all in the last couple weeks of classes.