

InvenTeam Essay

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Per. 3

We have been given a great opportunity from the Massachusetts Institute of Technology. Not many people get to experience something like this in high school. Only 10 schools nationwide have been given this honor. The grant that we acquired from MIT will serve as a major experience jump in the field of engineering and technology. I am quite positive that this is the same process that people who are actually in the field go through. Getting some experience like this would be very advantageous in the future.

In the initial grant application-writing process, I learned a lot about water quality indicators. I also learned a lot about all the different kinds of sensors that are used to find out what is contaminating the water. Ironically, I was also doing a lab in chemistry where we had to do experiments on water contaminated with unknown agents and we had to determine what was in the water and then we had to test for it.

I also learned a lot about how to go about writing a grant application. It is actually a very intricate process that involves a lot of explanation about what you are doing, what you have done, and what you are planning to do in the future to make advances in the project. It also involves a lot of justification for the amount of money you are applying for. It is very important to keep whoever is giving you the grant up-to-date on the current happenings in the project so they know that they are not just giving you money for no reason.

There are many major steps that we have gone through throughout this project already. First, we made the initial grant proposal. This included a rough idea of what we were going to design and build to better our community or region. This part of the grant

process was one of the toughest. We had to come up with a problem that was affecting our area and our community and that could be solved by something that we were able to invent. We came to the conclusion that we could design a remote water quality-sensing unit. In the final grant application, we vaguely described our invention and what it would be used for. We could only vaguely describe it because we were not really sure ourselves what exactly we were designing or who we were designing this invention for. After we got the okay on the grant application, we started some serious research. We researched more on the sensors that we would be using to detect the various water pollutants, the power supplies and methods of supplying power to the unit we were designing, the enclosure or the containment unit that we would store everything in, the methods of communication or different ways that we could send the data from the unit that we were designing to some sort of data-collecting station so that the data could be processed into something useful, and we also researched a little bit on how we would integrate all of the components together. By the time most of that research was done, it was time to turn in our first progress report and budget request. According to the research we did, we came up with a beginning list of things that we thought that we would need in the future to design and develop our remote water quality-sensing unit. We put those items in our budget request along with a reason that we needed each item. After we got confirmation that it was okay to buy those items, we ordered them off the Internet. They arrived shortly after and we categorized them and sorted them.

About the time we got the materials, we found that we needed to organize our project better. We broke into sub groups that would handle certain aspects of the project. The groups included: communications, sensors, system integration and control, and

power and enclosure. The communications team is in charge of finding out the best method of sending and receiving data between the remote water quality sensing unit and the data collection station. The sensors team is responsible for finding the best way to acquire the data and decide on what sensors will be appropriate for what we plan to use them for. The system integration and control team, which is the group that I got into, is in charge of making sure all the components will work together and we also control how they work. And finally, the power and enclosure team will decide the best power source to use and the best enclosure to use to put all the components in. We have been splitting into those groups and developing experiments to make advancements in our individual groups. I learned from this that big projects can easily be done if they are broken down into smaller groups.

Another big thing we have done this year was all the work we did with micro controllers. Being in the systems integration and control team, I especially need to understand how to work micro controllers because my group needs to be able to program the micro controller to control the operations that the remote water quality-sensing unit will carry out.

I've learned a lot from those labs and from doing the rest of this project. This project has already given me so much that will benefit me in the future. The fact that it counts as a national achievement on a college application is enough to make this project worthwhile. It is also a good learning tool and provides a good experience of how real engineers apply for grants and such. The trip to MIT will be pretty cool too.