

Red Feather- Team 20F01

Postmortem Analysis

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Introduction

This memo reviews the team's performance from last semester and observes the ways we can improve upon our mistakes and experiences to have a more productive spring semester. The team looks at the effectiveness of the team charter, which practices and tools within the team increased productivity, and which practices and tools decreased productivity. Some of these practices involved poor habits or ways of management. Some of these tools involved technology and adjustment to new kinds of technology. Additionally, the team analyzes which parts of the group's work suffered from the negative aspects and how the team can improve upon its work.

Contributors to Project Success

During the fall semester team was able to accomplish many of the objectives outlined in their charter. The team's primary goal was to design a device that would function by collecting and storing heat during the day and then releasing the stored heat during the night. After changing the scope of the design to better fit the restraints of the capstone, the primary goals were able to be completed. The main accomplishment was the actual designing of the thermal storage and subsequent system for releasing the thermal energy. Along with this the overall design met the goals outlined at the beginning of the semester. These included having an effective and simple design able to be implemented on the Navajo Nation Community. This requirement was specifically handled by designing a system that could efficiently work without any external source of electricity.

To accomplish these primary goals, the team arrived at a series of ground rules and coping strategies for problems the team members had come up against in previous group related work. To start the team set a minimum requirement of three meetings per a week. This rule was followed consistently throughout the semester and ensured that the team communicated and stayed on top of assignments. Along with this the team members consistently showed up to their meetings on time and or communicated ahead of time when issues came up. The team also decided early on that they would split work evenly among each other, but also be there for each other if they found they needed help. It was agreed by all the members to speak up early and communicate often. Both rules helped the team to value each other's time and support each other when they struggled with completing their work. With these rules and strategies, work was consistently taken care of and kept at a high standard.

As a result of the team's willingness and ability to follow the established ground rules and coping strategies, many positive aspects of our performance were present throughout the semester. The most positive of these were largely related to the organization, communication, and collaboration of the team. In terms of organization, the team consistently began work well in advance of the due date, following both the team leader's instructions and the tasks laid out in the Gantt chart. As a result, though there were times where the team had to finish their work close to a deadline, throughout the semester the workload remained relatively consistent only increasing near the end of the semester.

Similarly, the team was met with great success when it came to communicating with each other; in addition to meeting regularly as agreed upon, they consistently communicated via text and Microsoft teams. This was done to coordinate meetings, send emails to clients and advisors, and notify each other if they could not meet at the agreed-upon time. This communication made for a harmonious work environment and improved the team's ability to collaborate. This collaboration, done mostly over

Microsoft teams, allowed for the frequent division of tasks that helped the team to complete assignments in a timely manner. The division of tasks typically involved each member volunteering for specific tasks, and any remaining work being assigned according to workload, with the intent of ensuring an even distribution of effort throughout the team. Though this was not always perfect, it contributed significantly to the team's ability to work together, complete project deliverables, and finish any other tasks within the deadlines assigned.

Clear forms of communication, such as texting and using Microsoft Teams contributed positively to the team. Lack of organization of files was tedious at times for the team. Each teammate exchanged phone numbers and developed a group chat, so that each member could instantly communicate with each other. This was particularly useful when communication was required to discuss assignment due dates, difficulties with roles, and any other capstone related matter. Microsoft teams was the main platform the group used for the whole semester. Video meetings, file exchange, word documentation, power point presentations, and excel were all utilized and shared on Microsoft teams. However, as the first semester of capstone progressed, an increase of files was natural to accommodate for the total workload of the capstone. By the end of the semester the number of files were tedious to go through and made finding certain information much more difficult.

Opportunities/Areas for Improvement

While there were many elements that positively contributed to the team's success, there were also aspects of project performance that could be improved significantly. In terms of the deliverables and presentations created by the team, the most negative aspects of project performance were the technical writing done by the team as well as a lack of attention to certain details. In terms of technical writing, the team at times struggled with the use of personal pronouns, informal language, and consistent proofreading. Additionally, different writing styles and the use of overcomplicated or long-winded language tended to make reading certain documents tedious. Furthermore, the team frequently failed to include certain important details in deliverables. For example, presentation slides may be missing the names of the team member presenting, or the slide number. Such omissions are relatively minor, but still important in the professional engineering world. That is why these are a clear area to improve on in the spring semester. Alongside these small issues, the team also encountered more critical problems, some of which were already addressed and some that will require more careful attention in the coming semester.

The team encountered some problems in ME 476C, some of which were unavoidable, and the team needed to adapt to, and some which were bad habits that need to be corrected in ME 486C. The scope of the project changed during the previous semester because the client originally gave the team a wide scope which included heating the home during the day. This made narrowing design ideas difficult before the scope change, and completely changed ideas after the scope change. Although this was unavoidable, the team should be ready to adapt to any client changes. One bad habit of the team included poor organization of files, which made navigating to files time-consuming and sometimes confusing. One problem that the team encountered was struggling to fit an entire HVAC system independent of electricity into a \$1,500 budget, which meant the team had to choose less than ideal options with materials to save money. Another bad habit was not contacting both clients on a regular basis. While having two separate clients was confusing, the team failed to reach out to both consistently, receiving feedback from only one of the clients on a regular basis. The team did however discuss some ways to improve on these problems.

Some problems in ME 476C that the team faced were poor organizational skills. In order to fix this problem going forward the team is going to organize the team's files so that it is broken up by semester

and then all the documents will be divided into folders based on topics and file date. The goal for the semester is to keep the files well organized. In addition, the team is going to keep the website updated with the advancements we have made. When going into the meetings the team is going to have a detailed and precise agenda to keep on topic and to avoid wasting time. This will ensure that everything is accomplished in a timely manner and tasks aren't missed. An additional way the team is going to improve performance is to stay in close contact with the clients and provide continuous progress updates. This will ensure that the clients are more updated on current progress and the team can get the clients insights into problems or design ideas that may arise.

During the fall semester the team learned some specific technical lessons. The team learned how to prepare and record presentations. This was extremely useful when all the presentations were online because it made it so everything could be recorded separate and added together. Our team found it the most useful to utilize the meeting recording tool from Microsoft Teams for our presentations. Another technical lesson that was learned during ME 476C was how to utilize Microsoft Teams best. The team learned how useful Microsoft teams is for sharing files and for collaborating on documents. All members could work on an excel sheet, a presentation or word document at the same time and there could be a meeting happening to make collaboration easier. The last technical lesson that was learned was how different aspects of design, work or do not work based on technical analyses. The technical analysis was helpful to provide detailed calculations and analyses of different design aspects, which led the team to decide which products were best or if a design would fail. Implementing all these new changes should provide a more productive team with a high-quality final design, keeping the team sharp with checks and balances as well as good habits. The team members should hold each other accountable in upholding this higher standard this semester.