



**North Surrey
Secondary Robotics
FRC Team 6390
2019
Lessons Learned**

Advice for Rookie Teams

As all FRC teams know, rookie year is a huge learning curve. It is hard to prepare for something when you have no idea what you're preparing for, but here are some helpful tips that will guide you in your upcoming journey.

As a team we have learned the importance of team bonding. Yes, we had a build season where we spent six weeks together, but our time was focused on our build and not each other. It wasn't until the bus ride to our first competition that we actually started talking to one another in a more personal way. We strongly recommend participating in team bonding activities, as it will really help when times are stressful and you are experiencing the challenges of being on a FRC team.

We also strongly encourage you to start learning and preparing early. It is hard to determine what you'll need to learn for the upcoming game, but from personal experience we can say it is difficult to learn as you go. Find resources that will help you build your knowledge about FRC. This includes going to www.firstinspires.org/resource-library/frc/competition-manual-qa-system, reviewing game specifics around the match, safety and conduct. As well, study other teams and find out the challenges they experienced and how they overcame them. For instance, in our first year, we had to spend time gathering information on motors, wiring, building techniques, designing, and specifically programming. If you become familiar with the program you will be using for design, it will make it easier to work with, as you start prototyping. It is important to master both of these skills before build season.

This may seem hard to do on your own without guidance, but this is why reaching out to other teams and asking questions and is important. You should create social media accounts for your team. With this, you can establish friendships with other teams and ask experienced teams any questions or request advice. Staying connected on social media platforms is a

way for FRC teams to collaborate. Another option is to check one of the many resources FRC has online - WPilib and Chief Delphi. They will either provide you with the answer to your question or a way for your team to find an answer.

Team Hephaestus is happy to mentor rookie teams and will support you in any way possible. Please contact us if you would like us to mentor your team.

Lessons Learned During Our Rookie Year

Before Build Season:

- Start Learning Early
- Ask Questions
- Find a Mentor Team
- Go Online
- Membership
- Team Building
- Inside/Outside School
- Outline Team Roles and Responsibilities
- Team & Social Media Communication
- Branding
- Finances
- Sponsorship
- Use Resources (www.firstinspires.org/resource-library/frc/competition-manual-qa-system)
- Access to Metalwork & Woodwork Shop
- Designing (program you will be using)
- Programming
 - + Know language beforehand
 - + Learn downloading
- Prototyping (do you have the materials)
- Commitment

During Build Season:

- Schedule
- Keep Logs

- Build Practice Bot Alongside Robot
- Take Measurements
 - Measure speed of robots
 - Build robot with one type of size screw, washer, etc.
 - Test robot
- Defense/Offense
- Does It Meet Challenge?
- Triple check Inspection Check-list as you build

For Competition:

- Prep Scouting Team
 - Create scouting sheets
 - Create scouting spreadsheet
- Pit packing
- Display with Signage
 - Handouts for other teams about your robot
 - Handouts for Rookie All-Star judges
- Judging Prep
 - Always have someone in pit ready to answer questions
- Robo RIO
- Extra-Extra-Extra Parts
- Ensure everyone has a role
- Pit
 - Organization
 - Have shifts
 - Too many people in the pit caused congestion and confusion
- Mascot
 - Designated guide to assist the mascot safely

Lessons We Are Learning

- Documentation
- Responsibility
- Independence
- Organization
- Preparation

Team Challenges

- One of our team's biggest challenges was that neither our mentors nor our members had any previous experience with robotics competitions or with FIRST. We did a lot of research, contacted experienced teams for mentorship, participated in the Ask the Expert Webinar series, studied previous game challenges and committed ourselves to the learning process. We strategically sought out potential mentors with skill sets that would help support the team.
- In BC there are very few FRC teams to provide us with support, so we partnered with the only local veteran team we knew (FRC team 6008 Lions from Surrey, BC) and reached out to a veteran team from Ontario (FRC team 4476 W.A.F.F.L.E.S. Community Robotics from Kingston, ON) to mentor our rookie team.
- We had no funds when we started the team and we needed to create a long-term financial plan for sustainability after our rookie year.
- Not having a regional competition in BC added significantly to the costs of establishing a team, so we had to make fundraising and acquiring sponsorships a priority.
- As an inexperienced team we made a lot of mistakes along the way, but we learned from them and managed to adapt with each technical challenge that presented itself.
- Attracting and maintaining club membership without an actual robot to work with presented challenges. We had to be creative and present practical hands on activities for meetings that were strategic in developing the targeted skills to keep the students engaged.
- Build season timing was in the middle of finals and semester turnaround, as well as in the middle of the flu season, which impacted our team's health when they were already run down and working so closely with one another. Last year, we also had several snow days where

the schools were closed and we were not able to work on the robot, which put us behind schedule.

- We anticipated that this year would be challenging and many difficulties would be faced. We strived to overcome all obstacles and come out a stronger and better team at the end.
- Our biggest challenges are related to managing the size of our team. As a third year team with fifty-five members, we worked hard to find roles for each of our students to keep them motivated and on task. The size of our team is encouraging, as it means we are providing a vital need to our students, while the interest our team is generating indicates that the size of the team will likely increase in the years to come.
- The greatest challenge associated with having a large team is the additional costs. We believe it is important to be inclusive and provide each of our students with the opportunity to experience the FIRST Robotics Competition through attendance and participation. The reality is that most of our students do not have the financial resources to afford the trip so we are relying on our ability to obtain sponsorship support to cover the costs of their travel. We previously believed having an event in British Columbia would be the best way for BC teams to grow, more students to be able to participate, and have access to see the event in person. Now that an event is held in Victoria, BC, new teams have been encouraged to form due to the increasing presence of FIRST in Western Canada.
- Unfortunately, our former administrative mentor is no longer with our team this year. This has caused unforeseen challenges such as an increased need for student leadership, accountability, responsibility, and initiative. We learned how much effort and perseverance is necessary for an administrative team to function and greatly appreciate what Julie Occleshaw did for the team.

Advice for Financial Planning

Beyond these initial start-up grants, our team had the added expense of traveling to Alberta to compete in the Western Canadian Regional event during our first year. It was important for us that we only use grant funds toward the long-term needs of the team and not towards travel costs. Travel costs were offset for members by obtaining individual sponsorship and fundraising efforts.

We have been strategic about soliciting smaller amounts of funding from a variety of sources during our rookie year rather than risk our applications being rejected. We understood that as a rookie team we did not have an established track record, nor did we have anything to show our investors in terms of an actual robot, so it wasn't an easy sell. Our intentions were to use our rookie year to create some traction and hope that our outreach efforts will generate buzz to attract potential sponsors; this will allow us to have something to show for their potential investment. This year we adapted a new outlook on financial planning by applying for grants, while continuing to find sponsorships in our community. We are attempting to not only promote our team, but also educate and promote FIRST, as British Columbia does not yet have an established FIRST presence, and most companies we approach have little knowledge about the program.

It is important to our team not to rely on school district funds to support our team. We do not want to find ourselves in a situation where district funds are reallocated to another department and want to be in control of our financial future. We also wanted to be in a position where we only asked for funds from our school, and our school district, after receiving an invitation to the World Championships.

We used a variety of approaches to reach out to potential sponsors including personal connections, parts suppliers, online applications, cold-call emails, phone calls, and personal visits.

Given that we won the Rookie-All-Star award on week six of the competition, we only had a few days to organize our travel arrangements and raise the necessary funds to go to World Championships. Our strategy of not asking our school or school district for funds proved to be successful as they were able to offer us some financial support when we really needed it. We also made sure we had funds on reserve from our sponsorship donations to pay the registration fee for the championships.

Fundraising

Beyond our sponsorship efforts, we have also participated in two fundraising activities to-date and plan to do more in the off-season.

We offered students the opportunity to fundraise in order to off-set their individual cost of travel to the Western Canadian Regional Competition in Calgary, AB. This was a “scratch-card” fundraising activity where students could earn up to \$100 in fundraising per scratch-card.

We partnered with the Spartan Smoothie Co. at our school in a cooperative venture where for a designated time all proceeds from the sales would be donated to our team. We plan to continue to run this activity several times throughout the school year.

In the spring/fall we are looking into holding car washes to raise funds, and we are hoping to run spring break camps in 2019 as a fundraising activity as well.

We have learned so much since our inaugural year and want to invite rookie teams to contact us so we can offer our advice and support to anyone who is interested in our mentorship. Please follow us on social media and contact us directly if you would like us to mentor your rookie team. We are happy to mentor rookie teams!

Team Contact Information

Team Email: robotics.hephaestus@gmail.com

Social Media

Website: www.hephaestus6390.com

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