We are team 5870, Sir Frederick Banting Secondary School's FIRST Robotics Team from London Ontario, and go by the name League of Logic. After an incredibly memorable year of success and teamwork, we look back on what a great time we had and reflect on what we can improve on in the years to come. Even in our first rookie year, we learned a great deal about how to organise and communicate within our team, as well as, work hand in hand with the administration at our school to promote a positive and nurturing relationship between our team and our school. Many of our members also learned valuable leadership and management skills over the course of the year, many of whom will be returning next year to mentor the next generation of students joining our team.

We pushed ourselves in our first ever competitive season and made it all the way to the FIRST Championship, where our team saw the greatest teams across the world competing against one another, and that we were among them and our robot performed better than ever was a thrilling accomplishment. The following is a list of critical reflections on our past year as a rookie team and how we aim to improve as a team.

Among the most important lessons we learned was to set hard deadlines to prevent groups from falling behind schedule, especially when it comes to the design and build teams who can get lost in their own creativity. For this reason, students in management roles next year will discuss and establish broad deadlines before the build season begins (such as when the drive train should be finished, when the robot should be programmed, etc.) and more precise deadlines during build season (i.e. the shooting mechanism needs to be done by next week).

Our team also noticed that on nights where we did not assign specific roles to each student, projects were often overwhelmed with manpower or completely neglected. We have henceforth resolved to divide our students as needed at the beginning of the night, be it for build, programming, or business, and the captain of that meeting will give specific jobs to each student to ensure that we are working effectively across all of our goals. This feeds into the deadlines we will be establishing next year, as a smaller project with a closer deadline might be higher priority than those with distant deadlines.

As a result of these two factors, our team also fell victim to a bad habit amongst many FRC teams; over complication. At the beginning of our build season, when obstacles were introduced in the competition reveal video, instead of opting for a simpler design using large wheels to climb over the obstacles, we reverse engineered what is called a Tri-Star wheel. It is a three wheel assembly that pivots around its center axis so that two wheels are always touching the ground, making it ideal for climbing. Our team did not realise just how complicated this design would be to manufacture by hand and as a result it consumed the majority of our build season as we wrestled with the design. Although successful, the lack of time at the end of the build season put a lot of unnecessary pressure on the programming and drive teams and as a result, it is now the responsibility of the design and build teams to keep their designs as simple as possible.

The Tri-Star wheels also taught our team how important it is to include all team members in what is going on in groups they are not a part of. Since the Tri-Star wheels proved to be more expensive than anticipated, the build team needed to cooperate with the business team in order to

get the funding they needed. As a result, many of our team members learned important communication skills needed to explain complex mechanical machines to those who do not specialise in engineering. After seeing how important interdepartmental communication is, it was decided that the whole team should be made aware of the general accomplishments of each meeting in order to encourage other departments to weigh in on future decisions.

It is for this very reason that from this point forward, all departments will be encouraged to mingle and train in at least one other team that they are not apart of. This way, interdepartmental communication will be easier because everyone will have a basic understanding of what other departments are capable of and how they operate. Some of the business team might decide to be trained in design so as to better understand the robot they are raising money for, some build members might decide to be trained in the skills necessary to design the robot so that they feel like they have more input as to what the final design of the project comes out as, and so on. This not only encourages interdepartmental harmony, but lessens the load on the people in that department.

By training all of our members in more than one task, we enable them to help where help is needed. This year, as one would expect, there were lulls in every team's workload as well as spikes. With this cross training, no three people will be totally responsible for managing this erratic workload. Instead, people from other teams that don't have as much to accomplish will be able to help the department experiencing the greatest workload. If build team is ahead of schedule, perhaps a few of their students could help business write a grant, or students from the programming team could help design the robot while they don't have anything to work on at the beginning of the build season. Not only does this help relieve the pressure on specific people, it also keeps students involved in what is going on in the team throughout the year to give them a greater sense of accomplishment when the season ends.

But this feeling of accomplishment is often overshadowed in overbearing work environments, where students don't feel comfortable contributing, or don't get the chance to. It is for this reason that our team shifted decision making from the captains down to the group as a whole. Through this experience, it was learned that our students work best in an open and positive work setting that encourages discussion and creativity. It was through this method that even more functionality was added to the robot, like a blocker and an intake.

Lastly, but certainly not least, our team learned how to incorporate new members into the team. This past season, many of the new members, that hadn't been a part of the Lego Mindstorms competitions previously attended by our school, did not stay for the larger part of the season because they felt out of place amongst the more experienced members and the pre-existing social group that had formed. To prevent this from happening next year, we have decided to assign volunteers from our senior team to look after one or two new members and include them in the decision making, to make them feel more welcome and confident in this potentially intimidating setting.

This year was both a tribute to what we are capable of and a once in a lifetime experience, where we made new friends at the FIRST Championship and joined in on the fun events like

Roboprom. We learned so much from our rookie year, and our team looks back on this year with pride. We are incredibly excited for the next season of FIRST competitions because of the interest by the future grade 9s and the Banting community as a whole, and the support that our graduating members are giving us as they plan to return as mentors. Our members cannot stop talking about the spectacular experience they've had and all that they've learned, so we've included some quotes below.

Quotes:

"This year I learned a lot about organising build teams, and being realistic with our goals. No matter how successful our tri-wheels may have been, we didn't organize our build team very well and that led to some challenges on the road to getting them done on time. I really learned the value of a simple solution, and while complex solutions can be necessary, it should still be the simplified version in order to increase its chances of succeeding. If I ever had to choose between tracks and doing Tri-Star wheels again, I would probably choose tracks." – Olivier J Hébert, Designer and Builder

"I learned a lot about myself and what my weaknesses and strengths are, as well as, how to design effectively and deal with setbacks appropriately. The best lesson that I've learned is probably "If you learned something from a failure it's not a complete loss."" - Colin Lesco, Build team captain

"Personally I found a deep passion for robotics this year. I learned about website development, media, the importance of good networking. I also learned to never overlook anyone or anything, especially when contacting teams for the countdown, given that the rookies were the most excited and most responsive to messages." – Charlotte LaBelle, Media captain

"I learned that practice makes perfect and that arguing and disagreement is ok because it leads to progress." – Lennon Nemirovsky, Pit captain