

PioNerds Drive Team

Introduction

The Drive Team is a key aspect of any FIRST Robotics Competition (FRC) team. At competition the drive team is undoubtedly the most important part of the team. These individuals become the figurehead of the team. Their reactions and attitudes will become the entity that forms other people's opinions of the team. The most important thing about the drive team is that they will not always be able to win a match or regional. This is just because of the fact that the team may not have a robot that can effectively accomplish all the game tasks. However, a drive team's actions always have the potential to lose a match or regional. It is this fact that makes choosing the right people for a drive team so important.

All student members, regardless of age, role on the team or previous experience are eligible, however, all drivers must meet the eligibility requirements as outlined in the PioNerds Handbook to be selected and remain eligible. Similar to competitive sports teams at Hill-Murray, these positions will be chosen by a team of mentors, coaches and teachers. Since all members including leaders and captains are eligible, the leadership team is not part of the driver selection process.

If chosen, students are expected to be present during practice sessions which will be held for approximately 2-3 hours a day for 3-4 days a week of the 6 week period after the robot is completed up until the World Championships. The dedication and involvement required is significant, and these positions should be respected and viewed as an honor to those who are chosen.

Drive Team Positions

Drive Coach

The drive coach should have a near-perfect understanding of the game and the meta-game. Knowing which decisions will get you more points and which decisions will impress the top teams are key elements for a Drive Coach. They should also know the limits of their robot and drive team, while not being afraid of pushing these limits. Off the field the Drive Coach should be in contact with the Scouting & Strategy team formulating a plan for the next match. One of the most important aspects of the Drive Coach is being able to communicate effectively with the drive team and to keep the drive team energized, calm, and as stress-free as possible. The Drive Coach should be strategic in thinking, but cool and decisive in acting.

Primary Driver

The Primary Driver needs to know the limits of the robot. Knowing which areas their robot excels in and where they struggle are key aspects. Lining up a shot or where to place a game piece should be second nature to them. The Drive Coach tells the Primary Driver a generic task and the driver should know every detail of how to do so. The Primary Driver should be aggressive, bold and steadfast and have the confidence that they can accomplish any task. While being bold, the driver should be very confident of their Drive Coach. As a Primary Driver, only focus on what the robot is doing. A Primary Driver should work to perfect the little details of his driving while the Drive Coach gives him/her a plan. The Drive Coach trusts the Primary Driver has perfect control of the robot,

and the Primary Driver trusts the Drive Coach will tell him the right actions to perform to have perfect teamwork with their alliance partners. The Primary Driver must be able to communicate robot related issues and remember details that occurred during a match to help improve strategy or to diagnose robot performance issues. The Primary Driver must be able to take criticism, is open to helpful advice, and is humble and gracious in their role.

Operator

As the Primary Driver knows the ins and outs of how the robot handles, the Operator should know the fine details of how to control the scoring mechanisms. Picking up a game piece or how to place the game piece should be down to muscle memory. The best Operators are the ones that aren't noticed. As the Primary Driver moves the robot around the field, it should feel like all the other mechanisms are autonomous. Right as a shot is lined up, the robot should fire. As the robot approaches a bridge, it should lower automatically. This is the mission that the Operator needs to accomplish, often even more difficult than being Primary Driver. As for personality, an Operator needs to be fine with others making the decisions and will do their best without the need to be told to. The Operator must also keep an eye on the game clock and inform the Drive Coach & Primary Driver when time is running out.

Human Players

Some games have Human Players that interact with game pieces and indirectly with the robots. This could be loading game pieces onto the robot, removing game pieces from a robot or placing game pieces to score points. The Human Players must have detailed knowledge of the game and how the game pieces score points. They may need to interact with other alliance team robots. Before each match, they should talk with alliance teammates to see what their robots needs and capabilities are to maximize points. The Human Player must also have good verbal and non-verbal skills to be able to communicate with the drivers during the match.

Drive Team Selection

The first thing that all drive team candidates need to understand is the fact that when they say they want to be on drive team, they are effectively saying "All the work the build team, the programmers, and the hard work of whole the team is now on me to execute our designed strategy to the fullest extent of my ability". When (not if) they make a mistake, someone is going to be unhappy, maybe even angry because all of their hard work is not being utilized correctly. A drive team member needs to be able to respond to this and not be overwhelmed. If he/she thinks that he/she was right in his actions he/she needs to be able to explain why and then stick with what he/she was doing. However, if he/she was wrong, he/she needs to accept it, do something different and move on. If a drive team candidate is not able to handle this then he/she should not be on the drive team.

Selection Process

1. Drive Team candidates may not touch the robot controls without demonstrating they have a good knowledge what the controls do and the rules of the game.
2. Drive Team candidates choose a position – Primary Driver, Operator, Drive Coach or Human Player. They also list who they would prefer to Drive/Operate/Coach alongside with.

3. Drive Team candidates are then put through a series of practical tests using the practice robot or a previous years robot.
4. The Drive Team is then chosen using the data from the steps above. The other candidates become the backup drive team.

In the end drive team members need to be extremely dedicated. Arguably the most dedicated members of the team, willing to spend hours every day driving the robot and repeating drills over and over. They need to be perfectionists, understanding that they are never done. They need to be proactive, not reactive for accomplishing tasks. They need to be quick thinkers and know how to face adversity. If something breaks, they need to know how to keep being productive for the alliance, not get frustrated and bring the team down. Even if they've become "good" at driving, there is always more work to be done. They should never need to be asked to practice, or to do a drill again or pestered to practice more. They need to want to do it themselves, and get angry and hold others accountable when for some reason they can't practice. Good reflexes, good decision-making, the knowledge of what can break and when it's all right to push your robot that extra step.

Drive Team Training

Once the Drive Team has been selected they will practice together and only in those roles that they have been selected for. Practice with others watching and when others aren't watching. Teammates should make sure they see they're mistakes but don't overdo it when pointing out such mistakes. Little pointers that point out very specifically the mistake goes a long way.

Given that the Drive Team will command the robot for about 2.5 minutes every match, with a rough average of 10-16 matches per regional, that's 22.5 to 36 minutes of operation. There's no way to master something in that amount of time. Thus, any direct or indirect practice they can do will vastly increase the skill of the Drive Team.

Drive Team at Competition

The most important thing to remember is that, going on to the field, each member of the Drive Team should know exactly what they are going to be doing every match. That doesn't mean that as in knowing the match strategy, though they should, it means in terms of what types of calls they will be making and what things they are going to be saying. This will depend on the Drive Team dynamic but they should come up with a system. For instance, the Drive Coach relays instructions to the human player, and gives the Primary Driver and Operator updates on what is happening elsewhere on the field. The Primary Driver handles the doings of the robot. This means that he/she moves the robot around the field and tells the Operator exactly what action he/she is going to take. The Operator then needs to be ready to take instant action the second that an arm needs to be moved or a game piece grabbed.