

Paper for Global Conference on
Educational Robotics
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Building Good Robots

1. Introduction

This year, I led a team to winning double elimination at our regionals. This was the first year in which I led the building team on one of our robots, and the experience was very enriching. This has probably been my favorite year in Botball so far, and this is also the first year I have really built a robot. There are many important elements to consider when building a robot.

1.2. Requirements

Building a robot is, in a way, like making a cake. To build a robot, you need parts, down to earth thinking, and at least one partner. Once you have all the ingredients, you add your own flair to it, and “bake your cake.” A partner, I believe, is the most essential ingredient, besides the parts, of course. Partners can help you do so many things that you wouldn't have noticed or done otherwise. I would always offer my help to my other team members in the previous years. I would most often find at least one thing to help them with, and I would leave with a sense of having done something.

1.3 Partners

This year, I took on the task of leading the build and having people help me. I found how valuable partners are. They helped me notice numerous important things that I would have totally missed otherwise. I found teaching the younger kids on the team building and programming to be a lot of fun, much more than I expected. When I was in sixth and seventh grade, I always thought that my help wasn't worth much, but I found out that it probably was worth more than I had thought. You get so involved in what you're doing that you can forget the most essential tiny parts, such as a screw that holds the robot together, and oftentimes your younger team members notice that and point it out to you. It's very helpful.

1.4 Simplicity

The first robot that I built this year looked really, really cool, but was way complicated. As soon as I started to program and run the robot, I found that the enormity of the task would be too much to handle. After voting among ourselves, we scrapped the robot and started anew. After the failure of our last robot, I wanted to take on a robot that was very simple. I used the chassis and a very simple claw arm. After running the robot around the board, I figured it wouldn't hurt to add on a roll cage to the robot, which we soon christened “Bob.” I must say, in the two or three times where that robot fell, that roll cage sure helped. And as a pleasant surprise to us all, we found the roll cage could double as a handle.

2. What's Needed?

To literally build a robot, you want to have a plethora of parts and creativity. You want to start

off with a goal in mind. I like to start with the chassis. I put on the motors and whatever skid I choose to use. Then, I build the effector, usually a simple arm. Keep in mind that I am attempting to stay very simple here. Then, I make sure that I can put the link on the robot somewhere. Sometimes, when I put the link on, it messes up my robot completely by unbalancing it. Sometimes, this even calls for a total rebuild of the robot.

2.1 Conclusion

This robot won the engineering award at our regional tournament. It most definitely would not have been possible, though, without the help of my teammates. They helped me realize that certain things were actually impossible, and helped me to learn much more about building. They didn't realize it, of course. But indirectly, they taught me how to work with people, how to make sure my design will work, and how to be practical.