Writing and Robots?
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When people think of Botball, the first thing that comes to mind is almost always – the robots. The sad truth of the matter is, you can win first place in Double Elimination and Seeding, and still not win Overall with an undefeated robot. How is this possible in a robotics competition you ask? Because you didn't write. Now as silly as this sounds, documentation is a serious matter, not to be put off – not to be taken lightly.

What is Documentation (BOPD)?

Documentation (Also referred to as BOPD) is a series of assignments where you write about your robot, work practices, and team (Including factual pictures) to be turned into the judges and graded. Onsite Presentation is part of the competition itself, where up to two people talk to the judges for eight minutes about their robot, work practices, teams, and answer questions to be graded alongside documentation. The 1st Period of Documentation, 2nd Period, and Onsite Presentation are each worth thirty percent of your documentation score, 3rd Period is worth the remaining ten percent. The Documentation score itself is worth one third of your overall score. [1]

How Should Teams Divide Labor?

People are usually shocked when documentation deadlines roll around, scrambling to turn in a scrap of work. (I, for one, have been in this situation). It doesn't need to be that way. Teams can delegate work in many ways, the most efficient being that each member is responsible for a piece of writing or work. About two weeks or so before deadline, an experienced team member in this field should look over papers and edit for factual mistakes, misinterpretations, and grammatical errors. Documentation should NOT be put on the shoulders of a single team member. If completed in this fashion, teams should have enough time to turn in completed work comfortably and sleep soundly.

Why is it So Important That Everyone is Involved?

Picture One: A young girl looking over a documentation paper

Documentation is an excellent way to get a full understanding of what is going on with your robots and

team members. Have a less capable programmer read over your Software Design paper to become more acquainted with its layout..Have a challenged builder look at the Mechanical Design report. As the young girl in Picture One [2] displays, a epiphany moment may occur to students who read over documentation papers and earn new understandings. There have been many times when I discover why something was built the way it was, or why the programmer stuck that while loop in there for instance. Every team member should have the opportunity to read papers and ask questions.

How Should It Be Done?

What I always tell my own team members before writing is to “Stay on task and do as they ask”. If you read the rubric and go straight down the line of requirements, addressing each one, it is guaranteed that you will not miss any. Address each requirement by paraphrasing what they are asking word for word. For example, one of the requirements for the Period One *Design Concepts* was-“This section explains the most difficult aspects of implementing this design” [1]. The most concise and easiest answer would be “The most difficult aspect of implementing this design was... because...” Documentation is not about figurative writing with personality. It is about delivering facts. Giving answers in a different order or fashion will leave judges confused and they probably will not go searching for your answer. When beginners are unsure of something, they usually either answer in too short of an answer to give any information, or give a long, rambling essay on the topic hoping that something in there will be what they are asking for. Either one will confuse the judges. It is okay to ask questions of your teammates, remember, this is about enhancing the judges and your own understanding of your robot.

What are the Examples Good For?

You are provided with an example for a reason. This is the way that the judges want things to be done. So, without a question, you do it this way. Sometimes, even not naming the file correctly will result in point loss, or in the worst of cases – it won't be accepted. Now, KIPR has given us four examples. Two perfect scores, two barely passing. Though it might seem useless, take a good look at that seventy-five percent paper and see what mistakes they made, maybe you misinterpreted something or left out a bit of information that could be you a costly mistake. Also, if you are unsure of HOW to address one of the requirements look a the example. The example is a great way to see how a perfect scoring paper has done it, and how you should do it yourself. Remember to follow the format you have been given.

Should Hesitant Teams Lie?

Sometimes people feel ashamed or even scared to put down information about their deadlines or teams. So they lie. There is no reason for this or excuse. The judges will see your robot and team together at regional and national competition. Whether or not you were able to overcome mistakes around your team, organizational skills, or time management, everything if evident when you go up to the board, so there is no reason to cower behind your computer screen and lie on documentation. State your practices, your times, and your doings honestly and you will not be graded down. You are scored on whether or not you stated the facts asked of you.

What About Onsite Presentation?

So there is one more thing. Now that you have documentation under your belt, you can move onto Onsite Presentation. This is just an assigned time to have a little talk with the judges about all the things

you've been posting as documentation. There is no reason for panic, if you know what you are doing. At this point have those who are most comfortable speaking aloud do Onsite Presentation. It It is important that teammates with the best speaking ability present to the judges, NOT those who finish first or have nothing better to do. All that work you've been doing with documentation could be complimented and confirmed by presentation or ruined by an uninformative presenter. Picture Two [3] is a Botball team's Onsite Presentation to a judge.

A team in Picture Two is giving an Onsite Presentation to a judge

How Should We Start Onsite Presentation?

Onsite presentation is really just a conversation with the judges. All they are doing is getting to know you, your team, and your robot. Really, you have already addressed all of the requirements in your documentation. The first thing I do when getting the rubric is write a script starting with, “Hello, I'm Cassie Bija” and ending with, “Can we take any questions?”. Go right down the rubric and make sure to address every single concept in order. My partner and I practice and practice, and as you practice you get more comfortable with the words can add personality. You can bring notes to the table, but judges look for a much higher ratio of eye contact than looking down at a piece of paper.

What About the Questions?

Here is where doing documentation comes in handy. A bigger part of documentation and a lasting impression on the judges resides on your ability to answer questions about your robot to the judges. You can't just be the documentation guy – you also need to know the robots. Picture Three [4] is a copy of the actual rubric and the general topics that you will need to have secured.

Knowledgeable in Q & A responses	
Effectively answered questions about team structure and organization	2
Effectively answered questions about Mechanical Design	2
Effectively answered questions about robot code	2

Picture Three: A piece of this year's rubric outlining the topics the judges will be basing questions on

If you had read your documentation or done it yourself, you will know the mechanical systems, the makeup of the code, and the organization of your team, and it's structure. Make sure to arm yourself with this information before the day of the competition.

How Do Teams Present Graphs, Charts, Code, and More?

The rubric states that you must have a drawing, CAD, Photograph or physical model of the robot along with a flow chart and a graph representing one thing on the rubric and a copy of the code. How do you present this? Well, you have many choices from a science-fair board to a simple binder. (The binder method is very useful for when traveling long distances for competition) There are no electronic presentations of any sort allowed, but there are many ways to “Hard copy”. Flow charts usually represent the program and robot course as well as team demographics. Graphs may display a variety of concepts on the rubric such as the ratio of men to women on a team, robot tests successful to failure, job distribution, etc. In Picture Four [5], a team is seen using the Binder method to give their Onsite presentation, complete with graphs and flowcharts.

Picture Four: A team giving a presentation using the binder method – this team ultimately earns a perfect score

What are My Motives?

The reason I am writing this report is because in my first year in Botball we did not follow many of the principles that I stated above, and would like to ensure that other teams don't make these same mistakes. This is the first year I have done documentation and earned a ninety-eight percent in the writing portion with my team and a perfect one-hundred in the Onsite Presentation category. Next year, I hope to do everything perfectly and be an example for many.

Bibliography

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2: <http://theleadingedgeblog.com/a-timely-reminder-for-parents-about-internet-safety/>
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