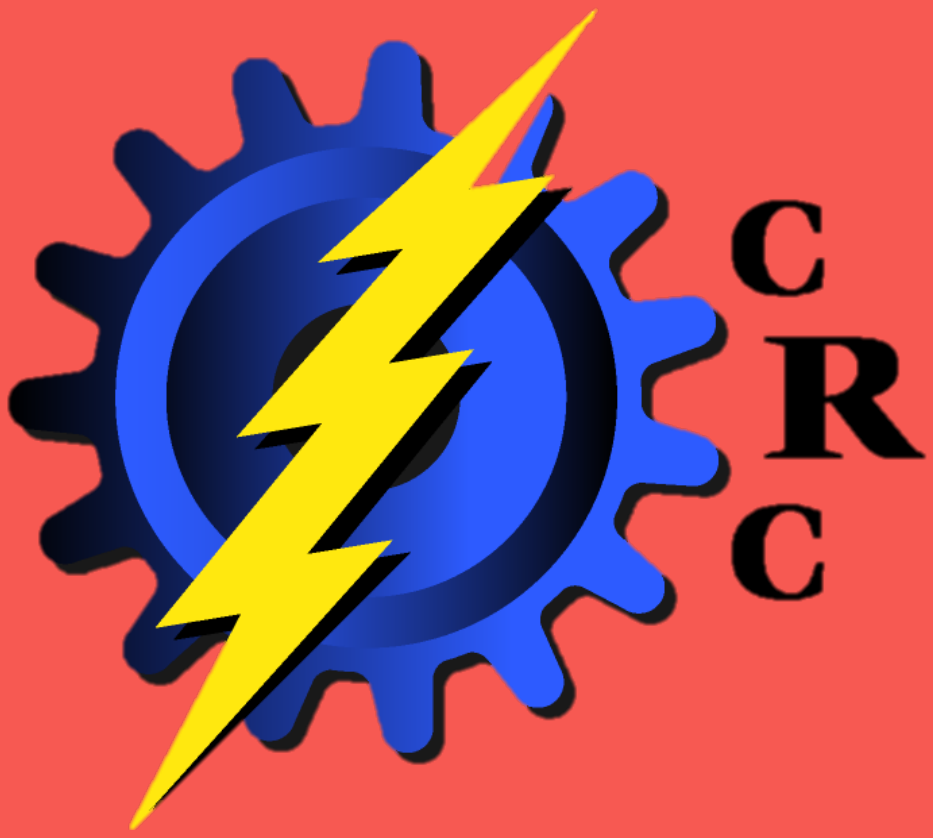
CRC'S



SURVIVAL GUIDE

TABLE OF CONTENTS

Welcome to your CRC survival guide! In this document, you will find all you need to know to get yourself and your team on track for a great robotics competition! Of course, our goal here isn't to teach you how to dominate the world with your robots, but at least how to dominate the CRC competition. If this is your first time participating in the CRC, then we strongly recommend that you keep reading the entire document; however, if you are only looking for specific answers, then feel free to navigate through this document using our beautiful Table of Contents above. Keep in mind that this document isn't, in any way, enforcing you to change your current methods or techniques, but simply a tool produced for the purpose of suggesting tips and tricks from people who were once in your shoes!

WHAT'S THE CRC?

If you are new to the CRC, then welcome to this awesome and crazy robotics competition! Also known as the Canadian Robotics Competition, we pride ourselves in having schools from all over the province of Québec participating in this event! If you didn't already know, the CRC isn't only a robotics competition. It is divided into seven (7) distinct categories:

- *Kiosk*
- *Website*
- *Online Journal*
- *Video*
- *Robot Design and Construction*
- *Skills and Programming*
- *Robotics*

We know this seems like a lot to take on! But don't worry, you'll have expert mentors helping you throughout your journey and the CRC volunteers are always there to lending a helping hand! Talking about our volunteers, you'll get to know more about a few of them throughout this document.

KICKOFF DAY

This has got to be the best day of the year! Each year, your entire team is invited to attend to the CRC Kickoff. This event is where all the magic happens and it is also the last day of free time you'll have until the competition! But, why is it so special, you ask? Well, during this particular evening, you will discover the playing field on which your robot will have to compete only a few months later! We will explain the game, after which you will be allowed to ask all of your questions. If your question is so good that you managed to find a loop-hole in the game rules (which, by the way, you just lost), we will gladly make the corrections in the rule book! You will also receive a huge box filled with goodies!

THE SCHOOL KIT

This box is called the **KIT** and in it, you will find the motors provided for this year's game, controllers, rule books, playing pieces, and sometimes, we'll even add in some extra surprises just to help out your team! All of these items might seem overwhelming, but there is no need to worry because our team of experts will have organized workshops for you during the kickoff to get you started!

Tips and Tricks

Don't forget, you'll receive the rule book ahead of time!
So prepare all of your questions before the kickoff!

Jérémy Marsolais

THE PLAYING FIELD

On this important date, you will also be invited to step on the field and see it for yourself! Prepare yourselves accordingly because all of the teams will be taking measurements at the same time and it is very important for your team to work as one and be organized to collect all of the important data. The most common tools that participants bring on this quest are a measuring tape, a pen, and paper to draw on. We strongly suggest taking plenty of pictures and videos because, be aware, this is the first and last time you will see the playing field before the competition.

Tips and Tricks

Most of the material used to build the field might not have been cut! For example, the playing field is often made up of 4 feet by 8 feet sheets of plywood!

David Martin

COMPETITION DAY

The day you have all been waiting for! But how does it really go down? Well, first of all, it is important to know that the competition is held over the course of 3 days. The first day gives you and us (the CRC) time to set everything up so it is all ready for our panel of judges. Each team will be given a time period where they can arrive at the school and unload their truck. We strongly suggest sending someone inside to make sure you guys know where you are going before taking everything out of the truck. This person should be asking about parking passes if they are available that year and about the designated area in the gymnasium for your team!

Each year, the CRC tries to have electricity at every kiosk as early as possible. However, problems happen and sometimes you might not have any electricity for the first few hours! In that case, the awesome team that you have won't have any problem because you will all think about **bringing battery-powered power tools!**

Personally, the first day is our favorite part of the competition. Why do you ask? Well, for about two weeks now, you will be searching on the web for every glimpse of another team's robot with no success and finally... FINALLY... you can see the other teams' masterpieces! Of course, there will always be super secretive schools who decide to keep the big reveal until the last second, but you should be proud of your robot and show it to the world!

Tips and Tricks

I suggest showing it as early as possible and have the person responsible for presenting it to the judges explain the robot to anyone who comes by so he can practice!

Fanny Beauchemin

Once everyone is set up, we can proceed to the main event! The preliminaries start on the first night and this is where you see if your driver has had a good night's sleep and enough practice driving the robot! During these first games, we strongly suggest observing as many robots as possible to know who you have to look out for and what are the great ideas you can implement as well!

FUN FACT

Many times, we have seen robots fail the first night and the team decided to bring the robot back home and work all night! The next morning, that improved robot brought them to the semi-finals! Never give up!

It is important to know that, on the first two days of the competition, once the day is over, we will give you a few hours in the kiosk area and on the playing field (unless we have to repair it) to keep repairing your robot or practice your driving skills! This time is where all great teams are born!

Then comes the second day of the competition. This entire day is reserved for the preliminary games, where you test your new designs or simply perfect your team’s synergy with other robots. During this day, your team will also greet the judges at your kiosk. At the end of the day, the best teams will have won the chance to wake up later the next morning (if they are confident enough in their robot).

Then comes the final day and it’s a big one! We start the day with the knockout rounds. Then come the quarter, semi, and finals! Quite simple, but with a very fast paced! The best trick we can give you for this day is to have someone appointed to charging batteries, to have someone with a tool belt who’s ready to fix anything, and have a runner who knows where everything is in the kiosk and that runs fast!

KIOSK

You might wonder, why is there a kiosk competition built into the robotics competition? Well, this is because the CRC is pushing your team to have multiple challenges at the same time and see how well you will perform! For those of you that are tasked with building this amazing cave that will host your team during the 3 days, you will want to pay close attention to the criteria that the judges will be using.

WHAT ARE THE GOALS OF THE KIOSK?

The main goal of the kiosk can be divided into 2 objectives. First of all, it will be the main resting area for you and your team, so don't forget to make it practical! The second goal is to have an area reserved for your team to be able to present your school to all the visitors during the competition, including the judges, other teachers, or even other students!

DIVIDING THE KIOSK

Imagine that the kiosk is like your room at home. When you're alone, you can just leave stuff here and there, but when you have visitors, everything in your room has a place where it should be stored! Indeed, your kiosk can have storage for batteries, coats, bags, pizza, chips, or even a super-secret TV screen! But most important of all, your kiosk should have all of the essential items or components for your team to work quickly and safely on the robot!

FUN FACT

In 2007, the team from Montmorency built a 2-story-high kiosk because of a bet with their teacher! Since then, these kiosks are no longer permitted! Can you guess which CRC volunteers were on that team?

PRESENTING THE KIOSK

The main point, as for any presentation, is for you to be prepared. Take time to select a couple of members that know the different aspects of your CRC adventure well enough to be able to present it to outsiders. That person will be in charge of presenting, so have them practice in front of people beforehand. Draft a plan and do not hesitate to interact with each other. We need to feel you are a solid team! The presentation given at the kiosk will introduce your different projects, present your team and its organization, as well as the different steps involved in your adventure to the competition day. Do not hesitate to base your presentation on the journalism aspect of your website as it contains a lot of similarities to the kiosk presentation. In addition to all of that, take time to explain the layout of your kiosk, why it is well-designed and how it suits you best in terms of how your team works. Also, being invested in your theme is a good thing and it is always a plus, but it shouldn’t be at the expense of the other aspects evaluated by the judges!

ROBOT

PRESENTATION

This is always a stressful part of the weekend! Your team only has a few minutes to convince judges that your robot can conquer the world! But how can you do that without a robot that looks like Terminator? Well, don't worry; we'll try to clear that up for you! Just as a reminder, don't forget you will have two presentations to do: one for the robot's design and a second one for the robot's construction.

First of all, imagine yourself being on the TV show "Dragon's Den" and you have to sell your robot to the judges! Depending on which judge is with you at that moment, you will have to tell him/her the key aspects of your robot that make it unique amongst the others in the universe!

Pay special attention to the time allocated to these presentations in the rule book; you want to use every second of it so you don't finish short and didn't say all you had to say. On the other hand, you don't want to overextend because no extra time will be given to you! Here is our advice: **PRACTICE**!

What if the judges have questions during your presentation? Well, no worries! We have thought of that already! Judges will also be given a certain amount of time to ask all of their questions at the end or your presentation and, trust us, they WILL test how well you know your robot! It is not an interview: you have to give them all the information. They won't necessarily bring you to tell them what you omit.

Sometimes your robot won't work during the presentations, but that isn't what the judges will be evaluating. Of course, we won't stop you from doing demonstrations with a working robot. Sometimes, it will even be self-explanatory! But, if you do indeed have a non-functional robot, we suggest giving your team that is currently working on the robot a break so that the judges have full access to the robot and can clearly see every little ingenious aspect of your machine.

You can use any resource you want to help you with your presentation from cue cards to dioramas, but they can't replace you! You can even use them to explain challenges you had to surpass or simply demonstrate failed attempts or why you picked the materials you used. The resources used have to be portable, as the CRC won't provide any material (computers, screens, etc) for the preliminary or final presentations.

"If it isn't well presented, a diamond can be mistaken for a rock."

Joseph El-Helou

Construction vs. Design

The design part has to explain why your robot is the best-suited to tackle the challenges encountered on the playing field. We don't care that you used drill motors simply because we gave you some, but it could be interesting to explain why, for example, you used this motor in that mechanism because it is slow but powerful. It's also a must to explain why you selected one mechanism over another to accomplish a certain task.

The construction presentation evaluates the different techniques and materials used to build your robot. We want to know why your robot is the best rendering of your concept. We don't care about the number of screws used, but we want you to tell us, for example, why you used Robertson heads instead of stupid flat-headed screws. It's important, as an example, to explain why you positioned your motors at this place using that mean so they are easily replaceable. We think you get the idea.

If you're not sure about what goes in which presentation, do not hesitate to contact us via the CRC's Slack!

BUILDING THE ROBOT

So you want to build the best robot out there? But does anyone know what the best robot is? We can't stress how important it is to always keep telling yourself that there is a better robot out there and it is just waiting to be discovered!

Brainstorming

The first step to building an Autobot is to have a huge brainstorming session! Get all the folks in your team and even outsiders (okay their ideas might not always be doable, but they always are incredibly outside of the box and very funny!) and organize a massive brainstorming team.

1. *The first step to a good brainstorming is to have a brave white knight who will decide who's turn it is to speak (if two people want to speak at once, otherwise, just let the conversation flow).*

2. *Have a whiteboard handy, or anything you can write all your ideas on! (You might want to write whose idea it is!)*
3. *All ideas are good ideas (at this point in the brainstorming)*
4. *Have the person explain their idea, but don't go into specifics right away and, once everyone understands it, switch to another one.*
5. *Once the first wave is done, you can start to develop your ideas. The approach we suggest is determining the weak points of an idea and having a few people, including the person who came up with the idea, try to defend their point. If the idea is deemed "not good enough", scratch it off!*
6. *Depending on the size of the team and how much time you intend on spending on the robot, we would say to keep 3 or 4 ideas to be tested via prototypes.*

Prototypes

Now that you have a few concepts, it is time to build prototypes!

WARNING:

- *A prototype is NOT necessarily going to work on your first try!*
- *If it's too complicated, it's probably going to break!*
- *Don't waste time! As soon as you see it is not worth it, try something else. More than 5 attempts on the same concept might be bad time management!*
- *KISS (Keep It Simple, Stupid!)*
- *This isn't a final product; if you drilled a hole in the wrong spot, no need for a new piece of lumber!*

The material you decide to use for your prototypes or final robots is up to you guys. Some teams use the previous year's robot for spare parts for a prototype and others start from scratch. We have always found it inspiring to browse through old bike parts or robot parts to figure out a new way to use them. Most of the time, you have a prototype in mind,

but you might not know exactly how to build it because you might not all have a 3D printer nearby.

Hey guys, film your prototypes! Those are memories you'll watch for years afterwards! And, you can even put them on your website (if it doesn't give away your robot concept)!

FUN FACT

In 2011, at Montmorency, we bought 2 BMXs at Walmart and salvaged them for two years for all the parts they had! Too bad 4 20inch wheels don't turn as well as we had planned! Back to the drawing board! Jérémy Webb

PROGRAMMING

With the changes we have brought to the programming competition, this year, this aspect will be easier to participate in for all schools! Indeed, you will no longer have to wait until your robot is finished to start programming. In other words, you will be able to program an autonomous robot this year (built by the CRC). But don't forget to also program your team's robot!

PROGRAMMING THE REMOTE CONTROLLED ROBOT

The programming of your robot for the main game of the competition will give a huge advantage to your team. On a field filled with obstacles and robots that can block your field of view, having autonomous systems (or semi-autonomous) can make a difference between success and failure, even if it is simply a limit switch that prevents your robot from breaking. The less the pilot has to think about, the more productive he/she is. Don't be scared to use limit switches!

Also, know that the task of programming the robot, just like doing the electrical wiring of the robot, will make you the scapegoat of the team. They will blame you for the robot not being able to do what it was designed to do. But stay calm and tell them that using a vex motor for lifting a bucket full of cement just won't cut it! Don't be afraid to test your program on a small scale prototype to prove your program works.

Quick tip, please have your driver and programmer talk about what the driver feels more comfortable with and what is most intuitive for the layout of the remote control!

REPLICATE THE CRC ROBOT

Before you start programming for the programming competition, you will need a replica of the robot provided by the CRC. All the plans will be available online and the wiring for the cortex is in the rule book.

Replicate the Programming Field

To do programming test BEFORE you arrive at the competition. You should try to build a smaller scale replica of the programming field. Try to follow the plan as much as possible, but it doesn't need to be a perfect replica simply because, if you use your sensors correctly, you'll be able to follow any path. If you're confident in your robot, you can even test its limits by making the path harder! If that's a breeze, then no worries for the competition!

KEEP IT SIMPLE, STUPID!

By now, we all know the KISS principle (Keep It Simple, Stupid). To keep the autonomous programming aspect simple, you have to create a competition project in EasyC so that we can control the program with the CRC's *Competition Switch*. You can also use the virtual *Competition Switch* in EasyC to do tests at your school. You should have a different project for each task you need to accomplish.

For the best results possible and minimal effort, get to know the sensors one by one. The best way to do that is by having simple programs to get you familiar with a sensor and all of its possibilities. You will then have a better idea of how to use which sensor for a given task.

TIP AND TRICKS FOR SENSORS

The VEX sensors can have a mind of their own sometimes and may need some love to work properly. A good example is the line follower sensors. Too close to the ground and they don't work, but too far and they get disturbed by the ambient lights. Don't hesitate to ask for help on Slack! We'll be happy to help out!

Tips and Tricks

A sensor that uses external information (line follower, light sensor, distance finder) will be easier to work with than internal information (number of wheel spins).

Jean-Philippe Gélinas

Experimenting will always be the key to success! Programming with timers isn't always suggested because it is very rarely precise. Try to optimize your motor speed to obtain the best time possible and, of course, pray you guys get lucky! If you are unlucky on your first try, stay calm and get ready for your other attempts!

WEBSITE/ JOURNALISM

The website portion of the competition boils down to two (2) components: Journalism and Design. These two components are evaluated separately by two different groups of people, so don't forget: one is just as important as the other. In this section, we'll discuss a few tips and tricks on how to get an awesome website with some awesome content.

JOURNALISM

Before you get started on the design, it's a good idea to have some of the content ready. Why, might you ask? Think of it this way, if you start building a house without thinking about what you want to put inside it, you are either going to end up with a big empty house, or a small house with not enough room for everything you wanted, which will directly lead you to a participation in *Hoarders*. You don't want a website that looks like all the content was jammed in and you don't want a website that makes you feel like something is missing!

We give you rules, why not read them?

The first mistake that 99.9% of teams make is they forget a key element of content that the rules require. Make sure you have read them through carefully before you start and read them again when you are done!

Proof-read, Proof-read, Proof-read!

Finally, you are done writing your content! Don't send it off to your web guys just yet. Make sure you read through everything at least twice.

Resources

Here are a couple of good links to use when writing your content:

- *http://designmodo.com/text-readability/*
- *https://readability-score.com/*

DESIGN

So now you have decided how many bedrooms and bathrooms you are going to want in your house and you've repeated, for a thousandth time, to your grandmother that you're not yet ready to consider adding a baby's room! Now, it's time to decide where to put them all. While there are millions of different things that you need to keep in mind when designing your website, here are a few key things to keep in mind for your team's website.

Tips and Tricks

Set deadlines for your team with estimated timelines of each task that needs to be completed and STICK TO IT!

Haritos Kavallos

"Measure Twice, Cut Once!"

Before you even start coding your website, it is very important that you have a solid plan of what you want your website layout to look like. A good idea is to "storyboard" the experience of your website. This process basically involves drawing rough sketches of the layout of each page and drawing lines from one to the other to show how users will navigate through the website.

Home Page

Your home page is one of the biggest key elements of your website. It should capture the attention of your visitors, inform them very briefly about who you are, and should make them want to visit other pages on your site.

Avoid making a language selection landing page; rather, you should have your website automatically load the correct language based on the visitor's browser information. However, a link to change languages should also be present as a convenience for your visitors.

Your home page should also provide quick and easy access to the majority of the content on your website. It should not take a user more than 2 clicks to access important information.

Choose a Readable Font

Another big mistake teams often make is that they select a font that is difficult to read. Choose a font that matches the theme of your website, but make sure it works well with your content and background.

Some designers like to use multiple fonts. This can be both good and bad, depending on how you use them. The general rule of thumb is to avoid using more than 2 different fonts.

Cross-Browser Compatibility

It is imperative that your browser works on every major browser (no, that doesn't include Netscape). Based on current trends, the top five (5) web browsers, ranked by usage, are Chrome (57.1%), Safari (13.5%), Firefox (13.1%), Internet Explorer/Edge (9.5%), and Opera (2.8%). It is important to test your website in each of these applications. The user's experience should never change. You should also test on the mobile versions of each browser as well.

Tips and Tricks

Use virtual machines to test your website on different operating systems and browsers! This trick is especially useful if you don't have an Apple computer to test your website with Safari. Check out the Virtual Machine Links in the resources section below for tutorials!

Alex Stojda

Responsiveness

On the topic of compatibility, it is also important that your website is responsive. This means that your website should display itself without any errors, or missing content, no matter what size screen your visitor is using. This also means that your website should work well on a touchscreen device. The easiest way to do this is to make your content layouts using a library like bootstrap.

Share Your Knowledge!

If you already know a little bit about how to design and build websites, share your knowledge with the rest of your team! Holding web design workshops, teaching the basics of HTML, CSS, and even JavaScript can help give your team build a solid foundation for this year and the following years to come!

Version Control Software

Version control software, like Git, is very useful for larger teams, and those with more experience coding. This type of software allows for very easy collaboration between team members. It keeps track of every modification to the code in a special kind of database. If a mistake is made, developers can turn back the clock and compare earlier versions of the code to help fix the mistake while minimizing disruption to all team members. A tutorial on how to use Git is included in the resources.

Start Early, Test Often!

The last, and most important, piece of advice that any team should need when building their website is to start early! Web design is not an easy task, especially if you have no experience in the field. Start as early as possible, even if that means just watching YouTube tutorials over the summer. Web design is a process that does not generally turn out well when rushed.

FUN FACT

Did you know? For Actimania 2015, Vanier's 1st place website was actually 50% complete before the kickoff event!

Adding on to that point, it is important to start early so you have time to test your website and make sure everything works properly! You can never predict what problems you might face, so having some extra time towards the end is always a good idea!

FUN FACT

Did you know? For Pythagorium 2016, the Vanier College team realized a week before the submission deadline that there was a major bug in the website. It required re-coding about 25% of the website and took almost 3 full days of non-stop work to complete! Good thing we started early!

Resources

- *6 Elements of Outstanding Web Design - http://www.inboundmarketingagents.com/inbound-marketing-agents-blog/bid/345449/6-Elements-of-Outstanding-Homepage-Design*
- *Choosing web fonts: 15 Expert Tips - http://www.creativebloq.com/web-design/choose-web-fonts-1233034*
- *Browser & Platform Market Share - https://www.w3counter.com/globalstats.php*
- *Bootstrap 3 Tutorial - http://www.w3schools.com/bootstrap/*
- *Hello World, Github Guides - https://guides.github.com/activities/hello-world/*

VIDEO

Making a video for the competition can seem straightforward enough but, in reality, has a ton of depth that is often overlooked. There are a couple of things to keep in mind when planning for your video that may seem obvious but sometimes get lost during the production of the video. The two sides of the metaphorical "coin" when it comes to the video portion of the competition are rule implementation and story. The whole video-making process can be broken down into three (3) stages: Pre-Production, Production, and Post-Production.

PRE-PRODUCTION

This is the part of the video portion that you can start as soon as the previous year's competition concludes. This is where you can write your script, location scout, make storyboards, and generally outline what you're going to do when time comes to roll the cameras. Spending a little extra time in Pre-Production can save you from wanting to rip your hair out in Post-Production. You'd be surprised how many people skip Pre-Production all together, which usually results in an all-around sloppier end product

Scriptwriting

When writing a script for your video there are a few guidelines to take into consideration. Formatting your script to be like a real movie script is not only cool, but it makes it a lot easier to follow. There's a reason

they do it the way they do! Pages and pages can be written about script formatting, but here's a crash course. Start with a header line: this is to just orient you in the script. Is the scene an Interior or Exterior (INT. EXT) shot? Where is this in your story's world? Finally, what is the time of day? Here's an example:

INT. ROBOTICS COMPETITION - DAY

After that, you typically can have a couple of different things: action lines or character ID, along with some other fancier things that we won't outline in this guide; however, full resources will be linked at the end of this segment. Action lines are exactly what they sound like: they describe an action that a character is doing or some interesting event that is happening on screen. While character IDs are simply the names of any given character in the scene, the presence of a character ID means that a line of dialogue is to follow on the line below. Here's a small sample of what a section of a basic script might look like:

INT. ROBOTICS COMPETITION – DAY

ALEX stands in front of a flaming robot, dumbfounded. SIMON walks on screen.

SIMON

What happened?

ALEX

I just put the battery in and then it just went up in flames!

Simon face palms

SIMON

You put the battery in backward again, didn't you?

ALEX

Maybe…

If this still seems a little complicated, don't worry, there is software that can help you format your script and does a lot of the heavy lifting for you. All you need to do is write a compelling story. When writing your script, easily the most important part is integrating the rules into your script. This is what makes or breaks a video! If you don't explain the rules of the competition in your video, you don't have a chance of winning. Usually, most competitors will reword the rules to fit into a dialogue sequence and flow naturally with the theme of the video. This is where you can earn the most points. That is, in essence, the challenge of the video portion: making rules interesting to listen to!

Location Scouting

This part is pretty simple, it's best to go out and find where you're going to shoot your film before you trek all your equipment out there and find out there's a problem with the location itself. Again, this is something that will save you a ton of headaches later in the video production process.

Storyboards

Storyboards are essentially drawings of what you want to shoot, which are usually in the comic book style panel layout. This is more of an advanced thing to do, but if you have a specific vision, it helps to make a storyboard. This not only ensures you'll remember what you wanted to shoot but it also helps you communicate your vision to the rest of your crew.

FUN FACT

Did you know? The CRC highlight videos were done by Selwyn House School from 2001 to 2011 as part of a multimedia class.

PRODUCTION

Production is where it all goes down; this is where you find out how well you planned your video shoot. If you planned well, then this stage of the process will feel like it's on autopilot! A lot of people seem to think that making a great film is all about the gear, but that could not be farther from the truth. The story is what makes a video memorable! It could be shot on a potato, but if the story is compelling and interesting, it still has a chance of coming in 1st place. If you do opt to use fancy equipment, make sure you're comfortable using it or else it will show in the finished product. Something important to keep in mind here is organization. Make sure to label and categorize all your footage and sound files.

Crew Composition

Having a small but effective crew makes shooting your video a blast. Make sure that everyone on set has a job and isn't standing around because they will slow you down. If possible, make sure each person has one job so they can't get confused about what they should be doing. There are fancy names for each position on a film set, but really, it comes down to a few different departments. There's "Photography", which consist of your camera-men and women. There are the "Gaffers", who direct the lights in the scene to make sure everything is properly lit. Then, there is "Sound" who captures all the sound that happens in a scene. Depending on the amount of equipment you have, your crew size will change in size drastically. For example, if you're not recording sound on an external device, chances are, you won't have a sound department.

POST-PRODUCTION

When you get here, take a breath and pat yourself on the back... you're in the home stretch! There are four (4) phases of Post-Production: Editing, Visual effects, Sound Mixing, and Color Correction and Grading. Again, if you weren't organized in the previous phases of production, it'll come back to haunt you here, so beware!

Post: Editing

There are a ton of options when it comes to software here. They range from very sophisticated to very simple. If you can, get more sophisticated software even if you have to pay for it. Most of the time, the fancier software can usually do the same things just as easily, but have a lot more room for you to expand your skills. Abobe Premiere Pro is one of the better editing software out there and they offer discounts to students. In editing, you're making your story coherent. If all your footage is sorted and organized, you just have to put it in order on your editing timeline and cut out the bad takes. Making a well-edited piece takes practice to get right. If you can spare the time, edit your video once, then take a break for a couple days and try editing it again and see if you can improve on it.

Post: Visual Effects

If your story doesn't include any special effects, then you can skip this step. Usually, it helps to have your edit locked down before tackling special effects so that you can make your effects flow a bit better with your edit; however, that is more a matter of personal preference. As a general rule of thumb, if you're not already skilled in visual effects, keep them minimal and rely on practical effects captured in camera.

Sound Mixing

Sound mixing comprises mainly of adjusting the volumes of all the different sounds in your video. Do you have music? If so, how loud is it compared to the dialogue? Is it drowning out the talking? Do you have sound effects? If so, are they timed well and are their volumes proportional to the effect you want them to have on the viewer? These are all questions you should keep in mind. Having good sound is almost as important as actually editing the video. Without properly mixed sound, your video will feel cheap. Good sound design will have high points and low points, making your piece feel more dynamic. If you manipulate your sound properly, you can make a scene go from comical to deadly serious or vice versa.

Color Correction and Grading

Color correction is really the last step of the process in making a video; although, if you're pressed for time, this is something you can skip. Color correction is where you normalize all the colors in your video. The reason you need to do this is because sometimes you're filming in a room that makes the light have a slightly bluer tone or perhaps you're filming during a sunset, so all your footage is a little too orange. Sometimes this isn't desirable and actually changes the mood of your piece. A lot of the time, some more advanced editing software will allow you to do color correction directly in said software. However, keep in mind there is very powerful software out there dedicated to color correction and some of it is free! As a guideline when doing color correction, unless the color of a scene is exactly how you want it, try and make the colors match even other pieces of footage. You can always give it character with color grading. Color grading is when you add more artistic direction to your footage by coloring a scene to fit the tone. Is a scene dark and dangerous? Try giving it a bluer tinge! Is it a bright and happy scene? Play with the oranges and reds. Just with those two tips alone, you can find a middle ground for almost any mood you want to set. Color grading has everything to do with getting a feel for the emotions in a scene, so have fun with it!

Resources:

- *Screenplay Formatting - https://www.youtube.com/watch?v=9CjlKQclsWo&index=22&list=PLgbzhqRbpTYcSYahoY7FCxGBwt5pTCWEz*
- *DIY Lighting Kits - https://www.youtube.com/watch?v=qSTGnl7HHao&index=23&list=PLgbzhqRbpTYcSYahoY7FCxGBwt5pTCWEz*
- *Adobe Premiere Pro Tutorials - https://helpx.adobe.com/premiere-pro/tutorials.html*
- *How to Make your Editing Feel Invisible - https://www.youtube.com/watch?v=ziZrLeXw6vw&index=5&list=PLgbzhqRbpTYcSYahoY7FCxGBwt5pTCWEz*
- *DaVinci Resolve, A free but powerful color correction and grading software - https://www.blackmagicdesign.com/ca/products/davinciresolve*

HELP!

Asking for help from the CRC is now simpler and more user-friendly. Our goal is to help our students and teachers with any questions or problems that may arise during the process of preparing for the competition. Whether it be related to the building of the robot, the kiosks, websites, or video, we are here to offer our help and guidance. CRC is now on Slack, which is the most efficient way to reach the CRC team. You can also use Facebook or contact us through our website.

Slack: www.robo-crc.slack.com

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Official Website: www.crc.sciencetech.ca/

YouTube: https://www.youtube.com/user/roboCRC