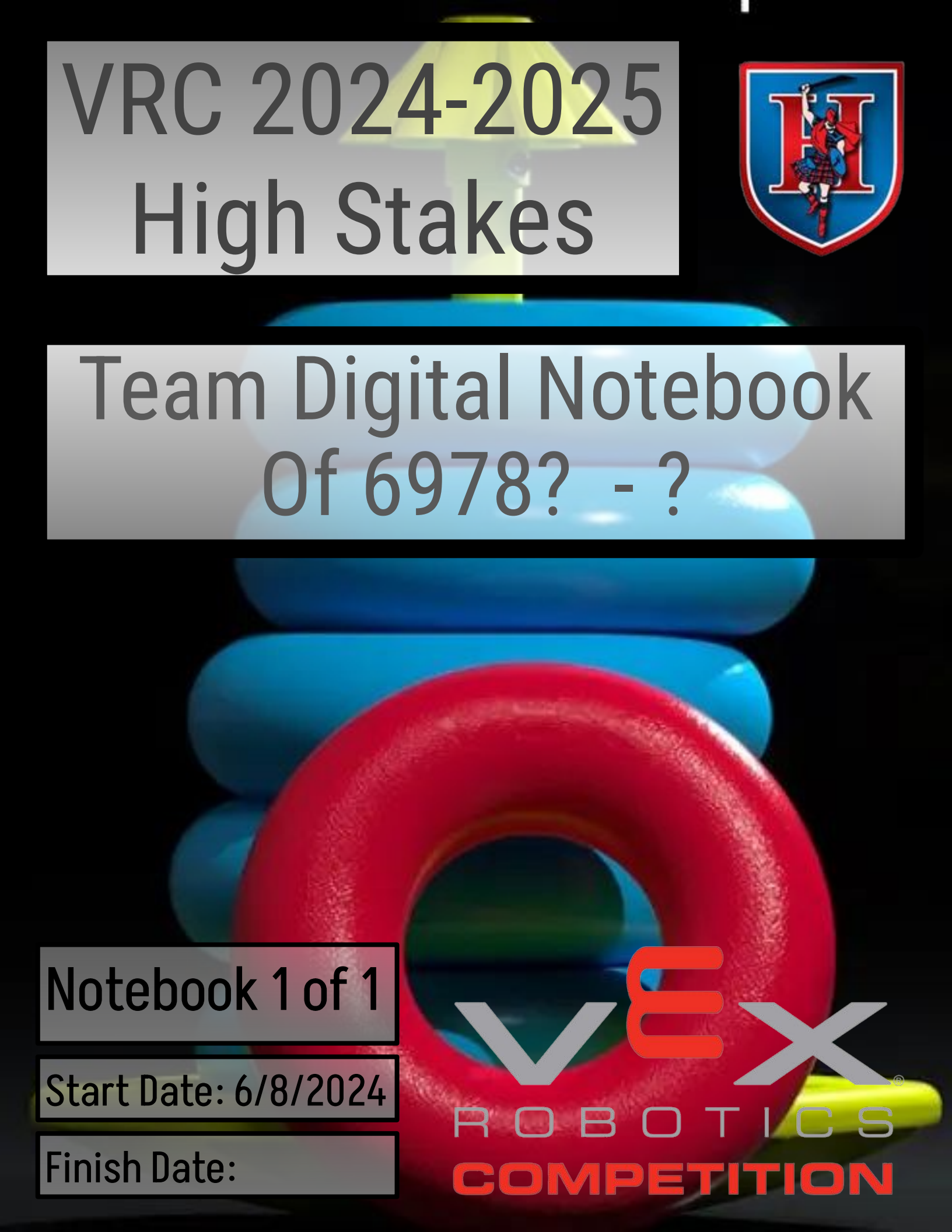
Slide Template (Title Here)

VRC 2024-2025
High Stakes

Team Digital Notebook
Of 6978? - ?



Notebook 1 of 1

Start Date: 6/8/2024

Finish Date:

VEX ROBOTICS COMPETITION

How To Read the Book

Titles are put in **Bold Roboto Condensed, size 43**

Regular text is usually put in Roboto Condensed, size 24 or 29

`Table of contents is put in Roboto Mono, size 22`

`Info at the bottom of pages is put in Roboto Mono, size 17`

We understand that using certain text sizes (11, 12, 18, 24) is generally seen as more professional, but as you can see in scale, this makes text seem far too small, and when typing, it makes things difficult to read and see, especially at the lower sizes. We have also seen examples of successful teams using font sizes similar to ours, so we understand that provided it has a reason and the content is good, this can be made up for.

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Introduction to The Notebook

Welcome to 6978? - ?'s VRC Digital notebook for the VEX Robotics 2024-2025 season, High Stakes.

Some important things to note before continuing:

1. This notebook was made with its own format. We decided that using our own template —----------would fit our interests best by allowing us to display and communicate what we need to in a more streamlined and efficient fashion.

2. This notebook will not have pages edited after previous submission (Example: Once this has been page has been turned in at a competition, it will be turned in exactly the same at the next.

3. In most cases, this notebook will probably be printed out and put in a binder, page by page. This makes it easier to carry around and submit, and also provides proof of honesty in terms of not changing things about pages. (Explained on page 3)

Introduction to Our System PT. 1

We plan to organize the notebook and how we make entries, developments, and such in certain ways. We want to make sure that the development of the book, the team, and the bot are all as clear as possible and qualifying well under the Notebook Judging Criteria (See pg. 4).

How will we do this? Well, we will try to make entries consistent and as detailed as possible, while still being readable and making it clear what was done and what the goal of the entry is. This is my —----------third year of being a team notebook lead, but first year of doing a digital one, and with the digital notebook it opens more opportunities for more frequent entries and easier ways to collaborate with teammates so everyone has more say and gets to put more of their insights and projects into the book.

The reasons why we chose to use a digital book and how we will keep it trustworthy will be on the next pages.

Introduction to Our System PT. 2

There are several reasons why we decided to choose a digital notebook, rather than a physical notebook like had used previously. There are some huge benefits:

1. Faster to Create
   - Digital notebooks are much easier to edit and add on to on the fly
   - Much faster and easier (in most cases) to type rather than write

2. Naturally Neater / Better Formatted
   - Due to being typed instead of written, digital notebooks are naturally far neater
   - Using all the available tools, it is much easier to format the book how we want it and get our points across in a nicer, better organized fashion

3. Easier to collaborate
   - It is easier for any member to work on the book at any time, even at the same time, due to it not being physical.

Introduction to Our System PT. 3

Some do believe that using a digital notebook can be less trustworthy or genuine than a physical notebook, for several reasons. Despite this, we decided to do a digital notebook, because those problems can be solved.

Issue 1: How can you know if the book has been edited to correct previous mistakes or imperfections?

We have a school rule that means after we have printed out pages, they are final and we may not reprint those pages. This means you will always get pages as they were made the first time.

Issue 2: How can you know that the content of the book was not stolen or copied from other sources?

We will quote and link to where we have taken content (with permission) if we do. Part of why we have our own template is so that it does not look like we could have just taken someone else's book and called it our own.

Introduction to The Team

At this point, it's best to know who's on this team, and what we all do.

Date of Writing: 6/8/2024

Contributors:

Continued on:

The Notebook Judging Rubric

VEX Engineering Notebooks are generally judged off of the official rubric, which is below. We will follow it as best as we can, in order to improve our documentation.

CRITERIA	PROFICIENCY LEVEL		
ENGINEERING DESIGN PROCESS	**EXPERT** (4-5 POINTS)	**PROFICIENT** (2-3 POINTS)	**EMERGING** (0-1 POINTS)
IDENTIFY THE PROBLEM	Identifies the game and robot design challenges in detail at the start of each design process cycle with words and pictures. States the goals for accomplishing the challenge.	Identifies the challenge at the start of each design cycle. Lacking details in words, pictures, or goals.	Does not identify the challenge at the start of each design cycle.
BRAINSTORM, DIAGRAM, OR PROTOTYPE SOLUTIONS	Lists three or more possible solutions to the challenge with labeled diagrams. Citations provided for ideas that came from outside sources such as online videos or other teams.	Lists one or two possible solutions to the challenge. Citations provided for ideas that came from outside sources.	Does not list any solutions to the challenge.
SELECT BEST SOLUTION AND PLAN	Explains why the solution was selected through testing and/or a decision matrix. Fully describes the plan to implement the solution.	Explains why the solution was selected. Mentions the plan.	Does not explain any plan or why the solution or plan was selected.
BUILD AND PROGRAM THE SOLUTION	Records the steps to build and program the solution. Includes enough detail that the reader can follow the logic used by the team to develop their robot design, as well as recreate the robot design from the documentation.	Records the key steps to build and program the solution. Lacks sufficient detail for the reader to follow the design process.	Does not record the key steps to build and program the solution.
TEST SOLUTION	Records all the steps to test the solution, including test results.	Records the key steps to test the solution.	Does not record steps to test the solution.
REPEAT DESIGN PROCESS	Shows that the design process is repeated multiple times to improve performance on a design goal, or robot/game performance.	Design process is not often repeated for design goals or robot/game performance.	Does not show that the design process is repeated.
INNOVATION/ ORIGINALITY	Team shows evidence of independent inquiry from the beginning stages of their design process	Team shows evidence of independent inquiry for some elements of their design process	Team shows little to no evidence of independent inquiry in their design process
USEABILITY AND COMPLETENESS	Records the entire design and development process in such clarity and detail that the reader could recreate the project's history.	Records the design and development process completely but lacks sufficient detail	Lacks sufficient detail to understand the design process.
RECORD OF TEAM AND PROJECT MANAGEMENT	Provides a complete record of team and project assignments; team meeting notes including goals, decisions, and building/programming accomplishments; Design cycles are easily identified. Resource constraints including time and materials are noted throughout.	Records most of the information listed at the left. Level of detail is inconsistent, or some aspects are missing.	Does not record most of the information listed at the left. Not organized.
NOTEBOOK FORMAT	Five (5) points if the notebook has evidence that documentation was done in sequence with the design process. This can take the form of dated entries with the names of contributing students included and an overall system of organization. For example, numbered pages and a table of contents with entries organized for future reference.		ZERO POINTS (DOES NOT MEET CRITERIA) If awarding zero points, please include details in the "NOTES" area below.

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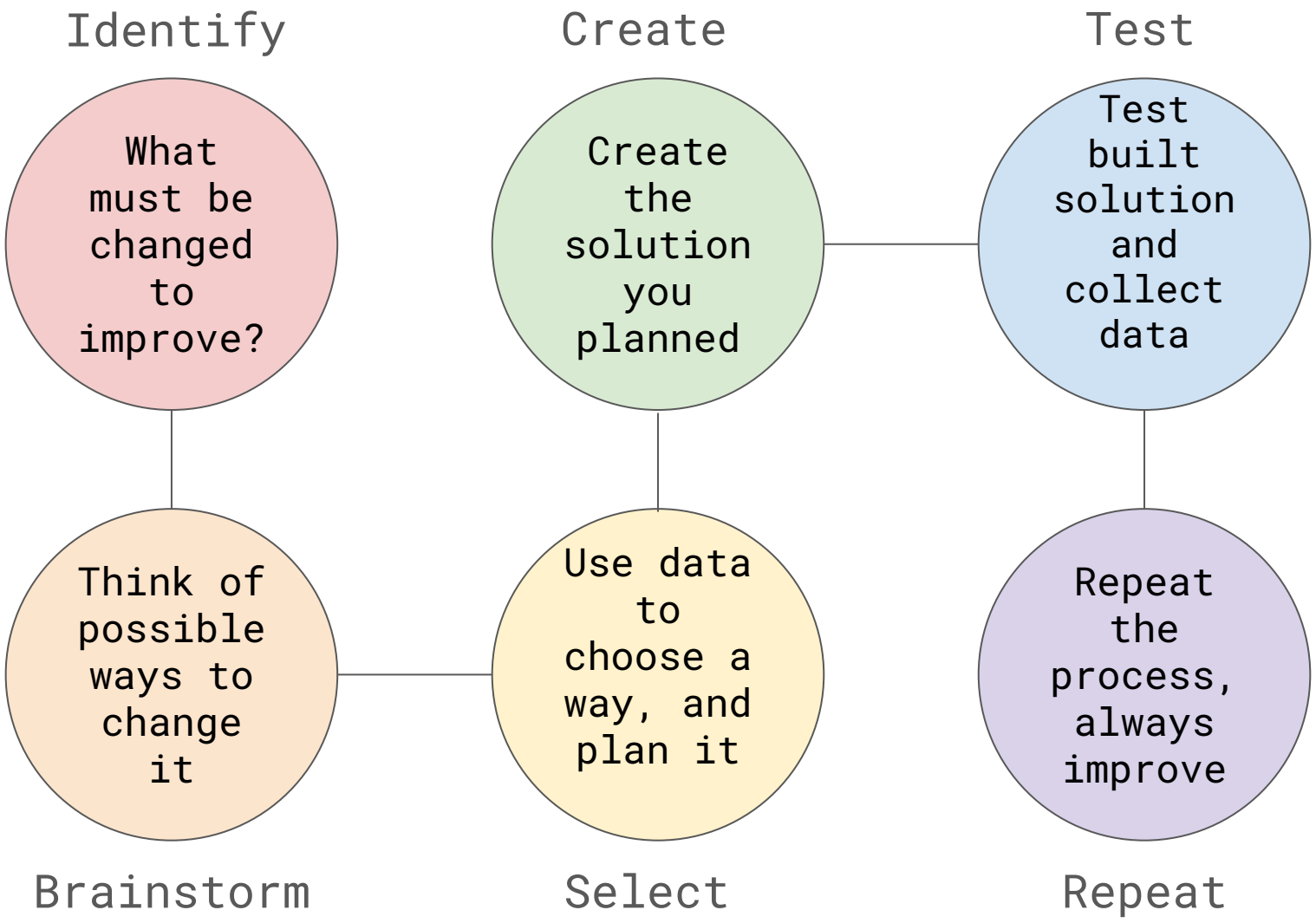
The Engineering Design Process

An extremely important part of designing, improving, and learning about things, especially in engineering and in VEX, is understanding and implementing the Engineering Design Process.



We will use the engineering design process throughout the season, to help us create and improve an effective robot.

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The Engineering Design Process

Identify

The first step in the 6-step variant of the Engineering Design process is generally Identify.

This means you need to identify a problem or area of the design (in this case, the robot/program) that could be improved.

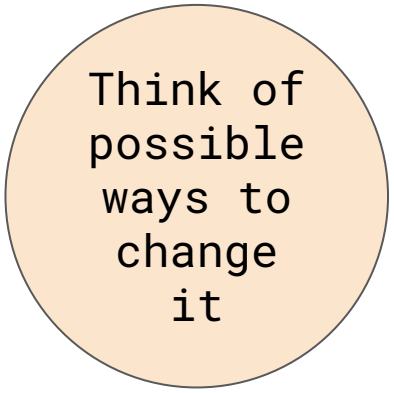
As the first step in the process, it is arguably the most important, because there's always something in the design that can be improved. You just need to figure out what it is, then you can perform the rest of the process, and continue improving the performance of your design.

Examples:

- You realize that your lift is quite slow, and this is an issue
- You realize that your robot doesn't turn consistently during autonomous, and is messing it up

The Engineering Design Process

Select



The second step in the 6-step variant of the Engineering Design process is generally Brainstorm.

This means you need to take the problem or improvable area you have identified and think of ways to fix/improve it.

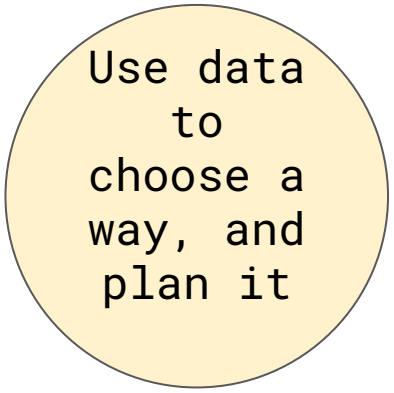
As the second step in the process, it directly follows the first. After identifying the issue, you need to think of ways to fix it. The rest of the process is built off of using these ideas you have come up with.

Examples:

- You think about how you could change the motor on your lift to make it faster, or make it lighter
- You learn about sensors and PID, Odometry, and other loops, and think you could use those to improve your turning consistency

The Engineering Design Process

Brainstorm



The third step in the 6-step variant of the Engineering Design process is generally Select.

This means you need to choose one or more of the solutions or improvements you brainstormed, and maybe test them to find the best.

The third step of the process, it marks the halfway point. Once you have brainstormed ideas, you need to systematically test and choose one or more, and figure out which is best for your situation.

Examples:

- You decide to make your lift lighter because it had better results and is more versatile
- You decide to make a PID loop with a sensor because it is simpler, easier, and more fitting for your situation than something like an odometry loop.

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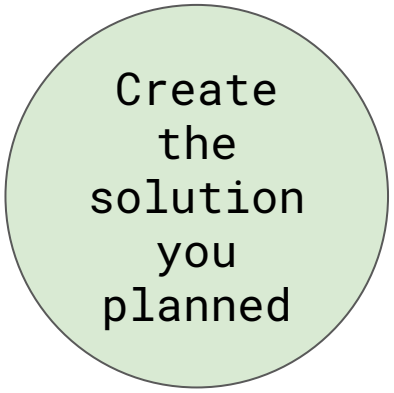
The Engineering Design Process

Create



The fourth step in the 6-step variant of the Engineering Design process is generally Create.

This means you need to build or create the solution(s) that you brainstormed and chose for the issue or imperfection you identified.

As the fourth step in the process, it is very important as you must actually create what you have been planning throughout the process, and finally begin to improve your design with it.

Examples:

- You remove/replace some of the metal on your lift to make it lighter as you had planned
- You add a sensor to your robot, then code each part of the PID loop you had planned to make your autonomous turning and movement consistent

The Engineering Design Process

Test

The fifth step in the 6-step variant of the Engineering Design process is generally Test.

This means you need to test your creation that you made with the rest of the process, and see how well it works, and how it compares to the previous.

As the fifth step in the process, it is the final part of a cycle before it starts again. It means actually putting what you've made with the process in action, seeing if your creation works well, if it is better than it was previously, and if it was truly the best option.

Examples:

- You see that your lift is much faster now that it is lighter and not bogged down.
- With the loop implemented, your robot now turns much more consistently and has been improved.

The Engineering Design Process

Repeat

The sixth and final step in the 6-step variant of the Engineering Design process is generally Repeat.

This means you need to repeat the process, which you should always do. You can always improve anything, even in the slightest. It's never perfect.

As the sixth and final step in the process, it is maybe the most important because it makes sure the cycle keeps going. You should always repeat the Engineering Design Process, always improving, always making things better. There will always be something to fix or change.

Examples:

- You realize that your robot might not be strong enough, so you begin the process again
- You realize that the code for your motors sometimes stops during a match, so you begin the process again