

VEX IQ Curriculum: Your First Robot



Build and Test Clawbot IQ

There's nothing quite like building your first robot. Clawbot IQ enables even the complete novice to build and test a fully functional teleoperated robot! Just use the easy to follow VEX IQ Clawbot Assembly Instructions and you'll be on your way.

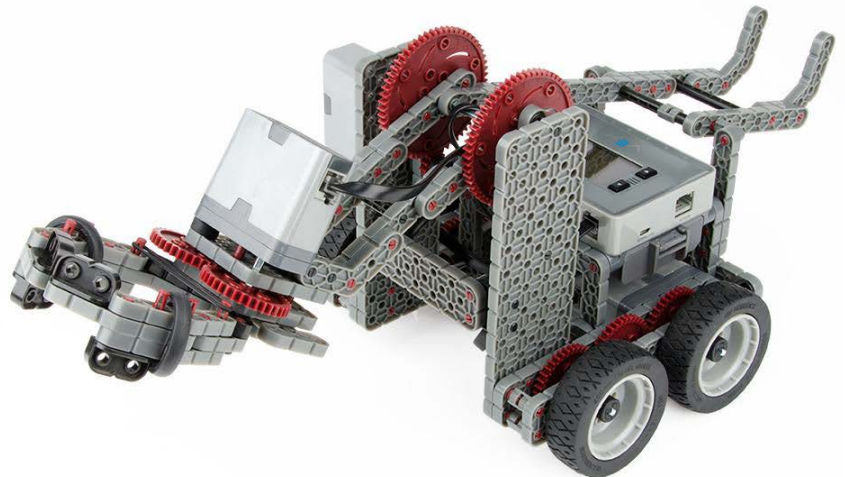
Build Options

Option 1: Follow the assembly instructions to complete and test the robot base only. This gives you a fully functional drivetrain that can be operated and added to with your own creativity. Also note that this robot base will be the basis for other lessons as well, so your work will be used!



-OR-

Option 2: Follow the assembly instructions to complete and test the robot base then continue using the assembly instructions to build and complete the claw, tower, and ball holder. Suggested test objects to use for full Clawbot testing are tennis balls, VEX IQ Challenge Mini BuckyBalls, or similar round objects.



Build Rubric

No matter which of the two options above you and your teachers choose, the Build Rubric can be used to assess your build and even serve as a troubleshooting guide as you move through the process, preparing you for the open ended challenges in later units when you make the design decisions!

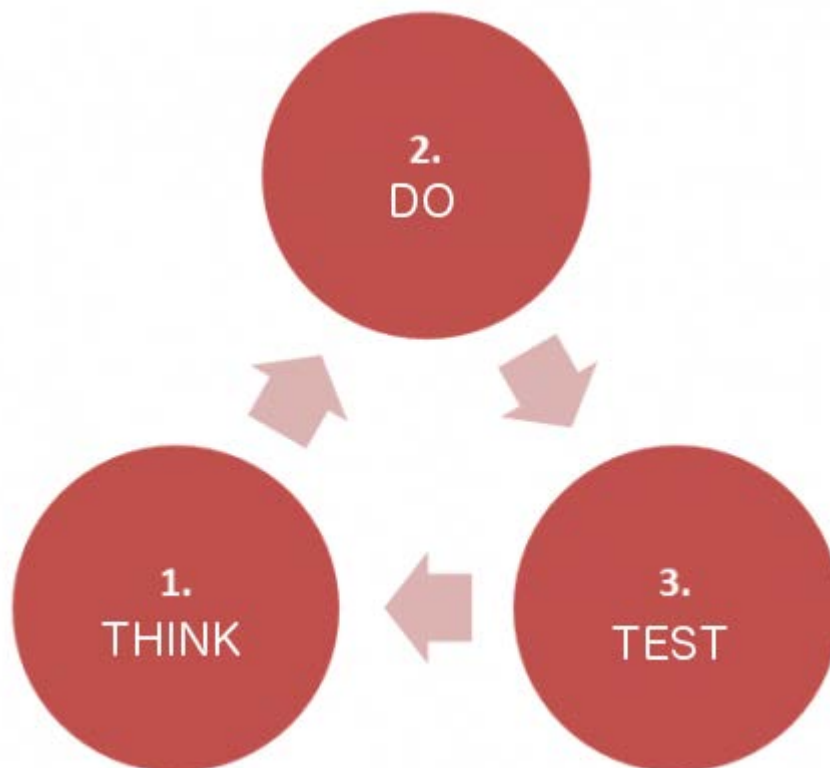
Unit Idea Book Pages: Learning Design Process

The Your First Robot unit also comes with Idea Book pages that help guide you through your first robot build and help you to learn about design process.

Engineering was defined in the *It's Your Future* unit as **using practical & scientific knowledge to create solutions for identified problems**. In that unit we also learned that engineers often use an engineering notebook to help them think about and solve problems. What does an engineer write and draw in that notebook if questions and instructions aren't already on the page, like are in some of your Idea Book pages?

Well, engineers use a **design process that is a series of steps that can be followed to help solve a problem and design a solution for something**. This is similar to the "Scientific Method" that is taught to young scientists. There is no single universally accepted design process. Most engineers have their own twist for how the process works. The process is a cycle that generally starts with a problem and ends with a solution, but steps can vary.

Simplified, the design process can be seen as a three-step loop:



Step 1: Think about a problem or generate an idea and write it down and/or draw it. Sometimes the problem or idea is given to you and sometimes you come up with the problem or idea on your own.

Step 2: This is where you take action and you "do" something to solve the problem or try to prove your idea. In our lessons, this is where you will build your potential solution.

Step 3: Test what you did in Step 2.

Is your problem fully solved? In testing, if you conclude the problem is not fully solved, then you have something more to think about, so you write down or draw your next problem (that you see in testing) and you repeat the cycle until your problem is fully solved. **Always know, problems ARE NOT failures. They are an expected part of the design process!**

In this unit you will use one Idea Book page for each "Think-Do-Test loop" you need to solve your given problem of following directions to build your first functional robot. The prompts and questions in the Idea Book pages will lead you through the robot build preparing you for full engineering notebook use when you make all of the design decisions in the future.