Badge 2:

Designing Robots

Gather your supplies:

1. Kit
2. Piece of paper
3. Pencil
4. Tape or glue
5. Scissors

Intro:

Who We Are

KnightKrawler Robotics

Irondale HIGH SCHOOL
Mounds View Public Schools

FIRST ROBOTICS COMPETITION

www.Team2052.com

Groves Foundation

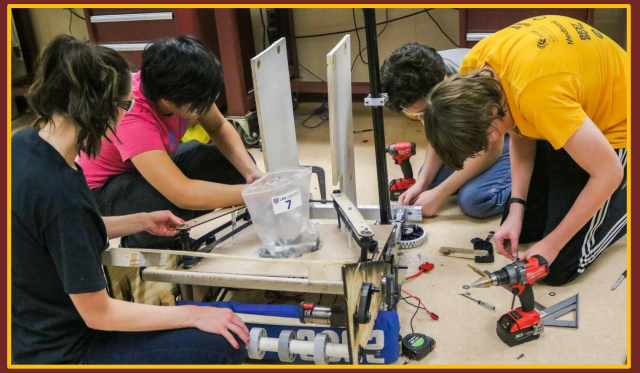
Medtronic

QONQR

Irondale HIGH SCHOOL
Mounds View Public Schools

EDLUND MANAGEMENT

3M




CRICKET

1. Discover the future of robots
2. Determine your robot’s expertise
3. Plan your robot
4. Create a prototype
5. Get feedback on your robot

Step 1:

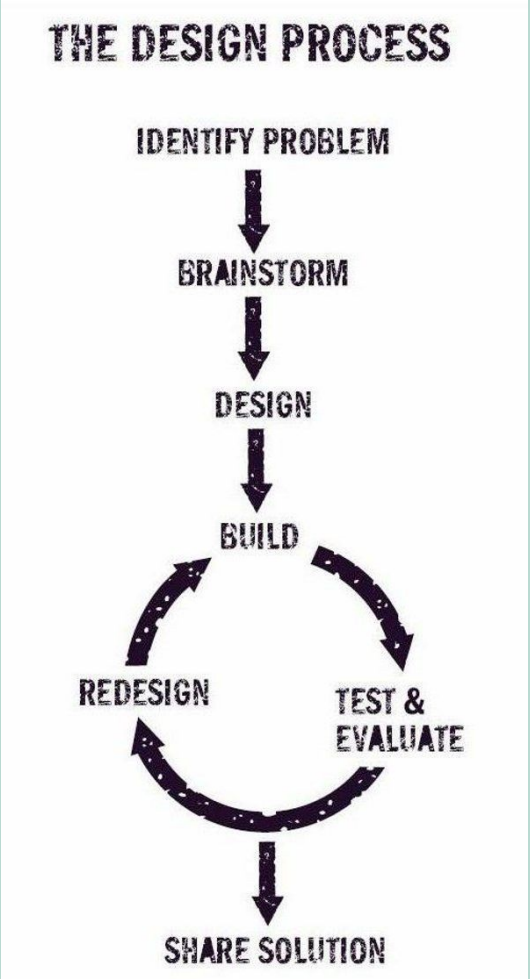
Discover the Future of Robots

What is the future of robotics? Why are robots so important?

Robots can be used for different jobs that humans can't do, or help in jobs that are hard for humans to do efficiently. Robots are starting to be used in many different fields for many different reasons.

What process do we follow when making robots?

When making robots we use something called the design process to help us know what steps to follow for a successful robot.



Step 2:

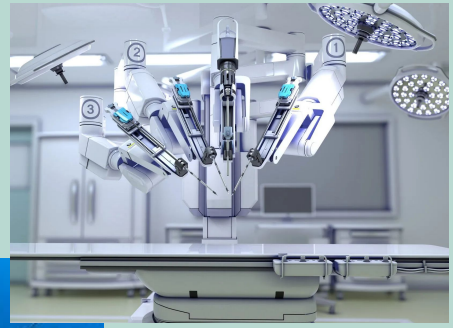
Determine Your Robot's Expertise

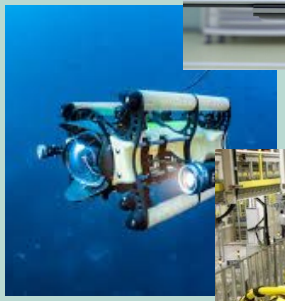
What are some different jobs that robots do? What do you want your robot to do?

Different jobs robots are used to do are,

- Underwater robots can explore shipwrecks that are too dangerous or small for humans.
- Surgery robots can be more precise than humans, and can't get tired like human surgeons!
- Manufacturing robots can be used to do jobs quicker than human workers.

So what job do you want your robot to do? Help firefighters? Climb tall mountains to save people? Take care of sick people?





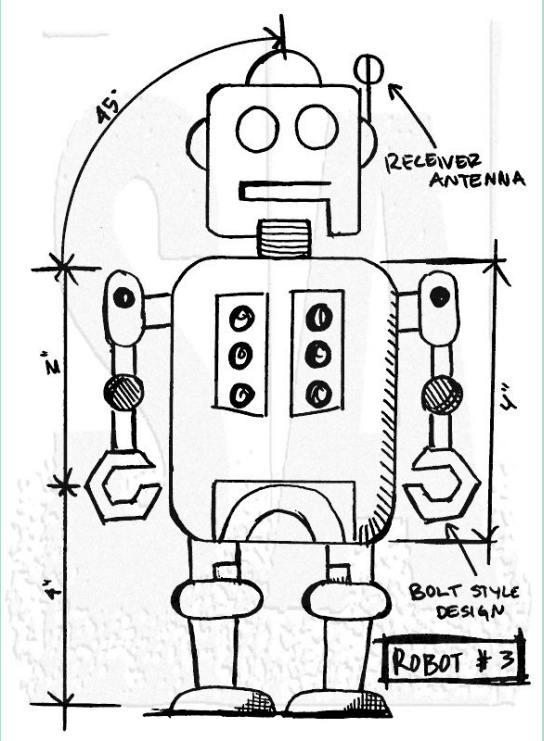
Step 3:

Plan Your Robot

Before you can start building you need a plan! Draw a picture of what you think your robot should look like considering questions such as...

- How big or small should your robot be?
- Do the colors matter?
- Does it need wheels or something else to get around?
- What does your robot need to do? What mechanisms will make sure it can do its job?

Make sure to show someone your design and get feedback! What do you think will work well, and what might work better?



Stretch

Grab a snack

Show your family your awesome drawing

Run to the bathroom

Break Time!

Gather Materials:

- Kit
- Tape
- Scissors

Step 4:

Create a Prototype

A prototype is used to test out different designs without messing up your final project. This means you can bring your robot to life using simple supplies such as...

- ❑ Cardboard
- ❑ Paper
- ❑ Tape
- ❑ Glue
- ❑ Scissors
- ❑ String
- ❑ Pipe cleaners
- ❑ Etc.

Bring your drawing to life by building a prototype! Be sure to include specific *mechanisms*, or *parts*, to help your robot do its job.

Step 5:

Get Feedback on Your Robot

INSTRUCTIONS:

We will be presenting our robots to each other. One by one, answer these questions about building your robot:

1.) What does your robot to do?

2.) What parts of the robot help it do its job?

3.) What would you like to try differently next time?

4.) Do you have any other thoughts on this activity that you'd like to share?

Congrats!

You've earned the second badge!

Want to Learn More?

- www.team2052.com/girlscouts (our website)
- www.FIRSTinspires.org (join a robotics team)
- www.scratch.mit.edu (code your own games)
- www.codecademy.com (learn coding languages)
- www.hourofcode.com (try an hour of code)