

# Covidabot

## Recycled Robot Design

**Pandemicorns 44036C**  
**VEX VRC**  
**Winneconne Middle**  
**School**

Winneconne, WI

**Team Members:**

Gabby Hostettler, Hailey Erickson,  
Ivy Kelly, and Jenna Immel  
(Coaches Jenni and Matt)



**Recyclebot Components:** Cardboard box and tubes, can tabs, ribbon, cans, plastic food containers, Altoid tin, nuts and bolts, valentine candy box, corks, IRobot battery, stickers, beads, hand sanitizer bottle, yarn

---

## Intro

You enter the building, but a panda-shaped robot with a unicorn horn stops you. “Stop. Covid symptoms have been detected, please allow me to test you for covid. Please take off your mask and press my nose”. You press the oversized button, it then lowers its horn and a swab ejects. “Remove the swab, self-swab both nostrils, place it back in the top of my horn,” You do so, within seconds it says. “You are covid free, have a great day.” or “I’m sorry, you have tested positive for Covid-19, please step into the nurses office for your parents to be contacted.”

Our robot has many parts and pieces and each one has its individual purpose. Like how the horn ejects a swab and actually tests you for covid. There are functions like the blue ear that is a motion sensor to detect when someone enters or the red ear that allows the robot to hear your responses to questions it may ask you about symptoms, and if you are coughing or sneezing. The left eye has a heat sensor to check your temperature, while the right eye has a visual sensor to see if you are flushed, fatigued, or not wearing a mask on entry. The bow tie spins if two or more symptoms are detected. The tail is used to both balance the robot and to alert the child when the robot is backing up with flashing lights. The tray holds containers for the “cure”, masks, and sanitizer. The stickers are to be kid-friendly, since it’ll be around children. The wheels are used to allow the robot to move around with little to no risk of falling over. The battery is used to power the robot. To conclude, our robot has many individual pieces and parts and they all are needed in order for our robot to be successful.

---

## Robot Purpose

We designed this robot with our focus currently on the pandemic. We knew from the start we wanted it to help people by both giving out “the cure” and testing people as necessary. As we started development we decided it could also scan people and that it would make sure people were being covid safe before entering a building. We were planning for it to work in a school because we were most concerned about where everybody goes each day. We are all middle school girls and we know that most people aren’t covid safe 100% of their day. In a school we would make sure that it was appropriate language for the age of the children present and that it would be cute and approachable so they don’t get scared or angry. The symptoms the robot will detect are all the basic symptoms for covid and if it has more than one of those then it will ask the person to take a test. (The covid symptoms: fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, and diarrhea.) If our design did work in a school entry way application, we could start marketing it to business owners with simple edits to code and appearance so it’s better for adults.

---

## Construction Process

To find our materials we just asked our whole team to bring in a bunch of random recycled parts and then we each sketched our design and tried to build it with the recycled parts we had on hand. To decide what materials we were going to use for what function we looked at the shape of them and saw which ones looked like our initial sketches, so if we had a small cylinder for the tracks we used paper rolls. When we build an actual robot that we use either wheels or tracks so we added tracks to represent the movement on an actual robot. We actually have a discarded battery on our robot that represents the battery on a functional robot. We also have a lot of sensors which we explained in the Intro. To put it together we used glue and tape, and like an actual VEX robot we incorporated scrapped screws and nuts to make moveable arms. If it were an actual robot we would use metal instead of cardboard and would have gears, a brain, and cables to connect to the sensors and motors.

---

## Design Challenges

The robot will move by rolling on its tracks made of toilet paper tubes and string with soda can tops. We were going to make it walk on can legs to make it look more like a human, but like a VEX robot can be, it became too top heavy, so we re-designed it to have a heavier, broader base. To actually detect covid nurses give patients nasal or blood tests. So we had to decide if our robot would conduct a verbal survey to determine if you have covid or it could use sensors to detect symptoms and then do a swab test. To a child this robot is supposed to look friendly and safe because it may give children the shots or conduct the test. It kind of looks friendly because it's supposed to look like a cute panda. However, it may look a bit scary because it is not an actual human. So we needed to design it to be shorter than them so it was less intimidating, and in reality probably cover it with fur.

While we may not have the actual “cure” yet, perhaps someday this robot will be a relevant asset to school entryways.