



FIRST at Home Activity Building *Star Wars* Droids

PROBLEM STATEMENT

FIRST® City has heard your call for help! Soon transport ships will be dropping supplies on your planet. However, due to the current COVID-19 pandemic affecting your world we will be unable to assist with the dispersal and utilization of this aid.

Engineers, we need your help to design robots to carry out these tasks. Using your supplies and expertise, we can help defeat this invisible invader. Details of your mission are below.

CRITERIA & CONSTRAINTS

- Your solution can be presented as a physical model, prototype or drawing (hand or CAD).
 - Your robot must do multiple tasks.
 - Provide an explanation of how the robot assists the citizens.
 - Create a pseudocode for your robot design that shows how the robot performs a task.
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ENGINEERING DESIGN PROCESS & *FIRST* CORE VALUES

[FIRST Engineering Design Process](#) | [Explore FIRST Core Values](#)

BUILDING THE BACKGROUND & BRAINSTORMING

- [Watch the *Galactic Builders: A Visit to Lucasfilm* video on Star Wars Kids YouTube..](#)
- Reflect, research and answer the questions below.
- What other devices have gyroscopic sensors? How does that type of sensor work?
- Why is a magnet an idea solution for BB-8? What ideas do you have for creating a robot using that type of magnet technology?
- How do different types of wheels affect how a robot can move?
- How could you get a single robot to do a variety of tasks?

SKETCH YOUR DESIGN

Sketch your ideas for your multi-tasking robot. Include the pseudo code that you would need to create to program the robot to perform the task.

REFLECTION QUESTIONS

1. What task was your robot programmed to do?
2. What in your robot design related to the programming you created with your pseudocode?
3. What specific actions was your robot designed to perform and how?
4. Think about the work that Matt Denton does in his career. What types of skills are essential to know?
5. What skills did you use or learn in this activity?

GO FURTHER!

Hear from Matt Denton himself and host Libby Kamen during Galactic Builders Live! Join us on May the 4th for a live chat at 1:00 p.m. ET.

We'll be joined by Matt Denton to give us a preview into what it's like building BB-8, his approach to building engineering marvels and how you can get involved in animatronics. Matt will also talk about his latest project, the [creation of D-O](#) from *Star Wars: The Rise of Skywalker!*



[Register for Galactic Builders Live.](#)

Submit questions you'd like Matt to answer at to GBLive@firstinspires.org.

CORE VALUES SELF-REFLECTION

	Amazing Skill	Great Job	Making Progress	Could Be Better
Discover	I approached the tasks looking for all possible answers independently and used perseverance to discover the answer on my own.	I approached the tasks and asked questions from one other person but persevered to discover the answer on my own.	I approached tasks but needed assistance multiple times to reach a point of discovery.	I depended on others to make the discovery for me.
Innovation	I used creativity and perseverance to solve problems on my own, coming up with unique solutions for the tasks I was given.	I used creativity and perseverance to solve problems on my own coming up with different solutions for the tasks I was given.	I used creativity but struggled with perseverance to solve problems on my own.	I struggled with being creative and only used the information given and needed a lot of encouragement from others to complete the task.
Impact	I approached the tasks applying understanding of the information with the impact it can have on me and my future as well as how I could help others.	I approached the tasks knowing and applying the information with impact it can have on me and my future.	I understand the tasks but struggle to apply how it will help me in my future or to influence others.	I understand the tasks but did not approach it with understanding the impact it can have on my future or others.
Inclusion	I approached all tasks with inclusion of others' ideas, I showed tremendous kindness by including others' views in my projects and work. I approached my solution thinking how all people would interact with the solution.	I approached most with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution mostly incorporates needs of others.	I approached some tasks with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution meets only a few needs of others.	I did not approach tasks with inclusion of others' ideas, I tried to understand others' views and include them in my projects and work. My solution is not inclusive of different types of people.
Teamwork	I used collaboration, communication and project management to get all tasks accomplished for myself as well as the others.	I used collaboration, communication and project management to get most tasks accomplished for myself as well as the others.	I used collaboration, communication and project management to get some tasks accomplished for myself as well as the others.	I only sometimes used collaboration, communication and project management and accomplished a few tasks for myself as well as the others.
Fun	I kept a positive attitude throughout and found opportunities to have fun even through struggle. I looked for additional opportunities to have fun in my tasks.	I kept a positive attitude throughout and found opportunities to have fun even through struggle.	I saw the enjoyment and fun after the activity but struggled to see it during.	I only saw struggle in completing my tasks and did not look for times to have fun.