



# FIRST at Home Activity

## Building Star Wars Droids

### ACTIVITY SUMMARY

After viewing the “Galactic Builders: A Visit to Lucasfilm” episode where FIRST® students visit Lucasfilm HQ and meet Matt Denton, the co-creator of BB-8, students will take a deep dive into the possibility of using multi-tasking robots to solve real world problems.

**Age Range & Grade Level:** Ages 6+, Grade 2+

**Program Connection:** FIRST® LEGO® League Jr., FIRST® LEGO® League, FIRST® Tech Challenge, FIRST® Robotics Competition

### ACTIVITY OUTCOMES

Participants will:

1. Explore the mechanical components of a multi-tasking robot.
2. Research career pathways and identify career readiness skills related to real world careers.
3. Design, pseudo code, or build and share a solution to solve a real-world problem.

### RELEVANCE MATRIX – Subject Area Crosswalks and Core Values Addressed

| Science                            | Math   | Literacy                  | Social Studies                                       | Computer Science |
|------------------------------------|--|---------------------------|--|------------------|
| Motion, Forces, Physics, Mechanics | Measurement, 2D/3D modeling, Geometry, Spatial Reasoning | Research, Content Reading | Career Connections, Engineering for social solutions | Pseudocode       |
| Discovery                          | Innovation   | Impact                    | Inclusion  | Teamwork         |

FUN! Our last core value should always be used when doing any FIRST activities.

### KEY VOCABULARY

|               |           |              |                            |
|---------------|-----------|--------------|----------------------------|
| Pseudocode    | Robots    | Motion       | Magnets                    |
| Gyroscope     | Mechanics | Animatronics | Engineering Design Process |
| Brainstorming | Sensors   | Pneumatic    | Droid                      |

### MATERIALS & SUPPLIES NEEDED FOR THIS ACTIVITY

FIRST Galactic Builders Design Brief, assorted materials for building a solution (not required)

## GUIDANCE SET-UP

| Description – Action – Guidance   | Notes   |
|---|---|
| Provide students with the <i>FIRST</i> Galactic Builders Design Brief.  | The design brief document is for the students and is in a separate link.  |
| Review the problem statement and criteria/constraints with the students. Remind students they will be using the engineering design process to work towards a solution.  | Review the age appropriate engineering design process with your students.   |
| Have students watch the Galactic Builders: A Visit to Lucasfilm video on Star Wars Kids YouTube. Following watching the video, they can answer the questions on their own, as a group, or as part of a larger discussion. | <a href="#">a visit to Lucasfilm</a>  |
| Determine how students will complete the engineering activity, what their length of time will be, how to collaborate together and how to share their solutions. Have students work on their solutions.                    | Solutions can be built and designed using materials around the house or it can be a drawing or computer aided design (CAD). |
| Review <i>Evidence of Achievement</i> rubric (on next page) and create assessments if needed.   | Sample rubric provided.   |
| Explore the <i>Go Further!</i> opportunities  | See below   |
| Wrap up – Have students complete their core values self-assessment and review.  | Core Values self assessment is found in the Galactic Builders Design Brief document.  |

## STUDENT OR TEAM ACTIONS

1. Review the Galactic Builders design brief, problem statement and criteria/constraints.
2. Watch the A Visit to Lucasfilm video.
3. Research the questions and discuss.
4. Create a solution to solve the challenge.
5. Share your solution and reflect on your learning.
6. Explore the Go Further! opportunities.
7. Complete your *FIRST* core values self-assessment.

## GO FURTHER!

Hear from Matt Denton himself and host Libby Kamen during Galactic Builders Live! Join us on May the 4<sup>th</sup> 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](mailto:GBLive@firstinspires.org).

## EVIDENCE OF ACHIEVEMENT

| Evaluation Rubric |   |  |   |
|-------------------|---|--|---|
| Category          | 3 points  | 2 points   | 1 point   |
| Requirements      | All requirements on the design brief were met.                                  | Some of the requirements on the design brief were met.     | Only a few requirements on the design brief were met. |
| Design            | Clearly showed how the solution would help others.                              | Showed how the solution would help others.                 | Not clear how the solution would help others.         |
| Collaboration     | Demonstrated collaboration by sharing information or working with team members. | Shared some information or with team members.              | Respect and inclusion being developed.                |
| Knowledge Gained  | All the questions are answered completely.                                      | All the questions are answered but could have more detail. | The questions are not answered.                       |