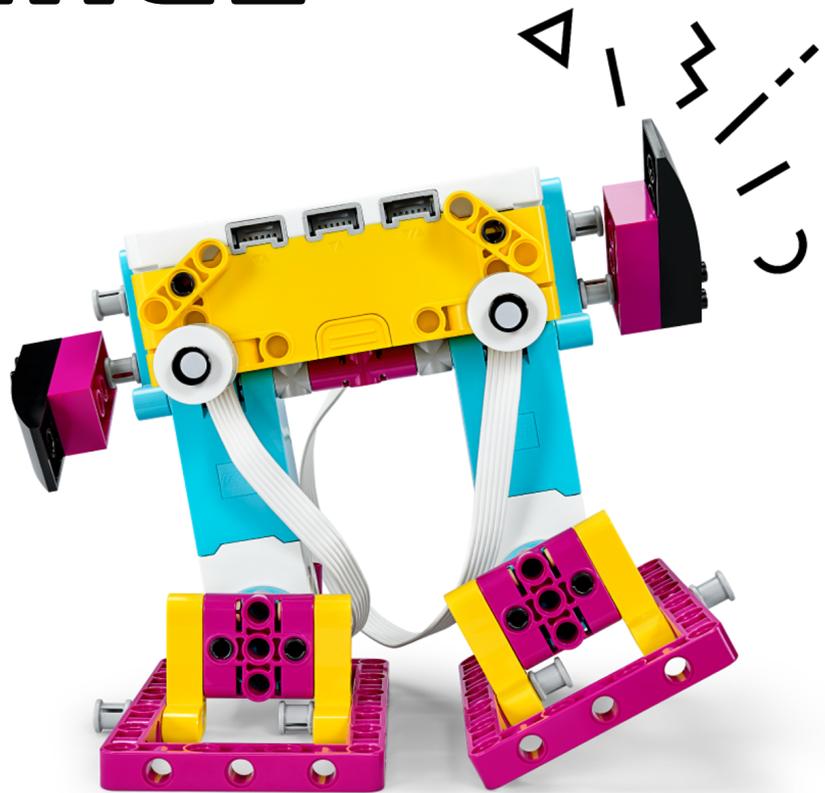




2021 SPIKE™ PRIME DESIGN CHALLENGE



A NEW SPECIAL CHALLENGE ONLY FOR LEGO® EDUCATION SPIKE™ PRIME ROBOTS!

Explore the field of STEM and Robotics and design a robotic pet assistant using the LEGO® Education SPIKE™ Prime set. SPIKE™ Prime kit, \$500 MTA Voucher, \$250 MTA Voucher, & \$100 MTA Voucher up for grabs for the winning entries!

DESIGN BRIEF

Now that we are all returning to school and work, our loyal pets at home will be missing our company and feeling alone. As a caring pet owner and budding engineer, you have been tasked to develop and build a **pet assistant**. This pet assistant could take your pet for a walk, feed or provide water for your pet, groom them or just play games. It's completely up to you so think creatively.

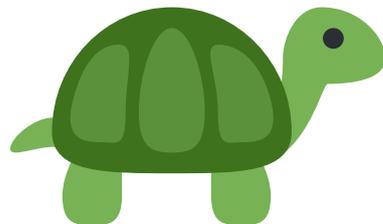
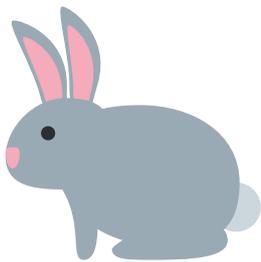
To be successful, you will need to research a range of different pets and their needs and create your very own pet assistant using the LEGO® Education SPIKE™ Prime set (includes Spike expansion set).

You will need to:

- Work as a team to research, design and build a prototype of your robot assistant.
- Document your research, designs and programming (show us your design thinking throughout the process)
- Submit images and video of your robotic pet assistant.
- Present your documentation through a video (include slides, short videos of how it works, the design, explain how it works and looks after your pet).
- Be creative. Showcase how it works and its special features.

This challenge is for LEGO® Education SPIKE™ Prime robots only.

Entries Due: Friday 21st May 2021



SPECIFICATIONS

- 1. This needs to be your own design.** You are encouraged to research and find examples of what others have already done, but your final product should be your own: not a copy of someone else's idea.
- You will create a **LEARNING JOURNAL** to show evidence of:
 - Research
 - show links, images, notes, sketches, your builds (did they change, what features of the LEGO® Education SPIKE™ did you really enjoy using when designing and building your pet assistant).
 - Planning your design and programming (justify your decisions). Think about why you chose a design, how will it work?
 - Features of your pet assistant: what makes it useful and what special features does it have e.g. arms, long legs, or accessories? The robot should have some features that move (e.g. does its arms move, does it carry a leash, what skills does it have).
 - Programming - explain how the motors and sensors are used to add interest to the pet assistant. Anything else that you think would be important.

Remember that your robot will not be remote controlled, you should use the LEGO® SPIKE™ software and write a program that enables it to be autonomous.



SUBMISSION DETAILS

Scoring can be found here: [scoring rubric](#)

- 1. A video** (max 3 minutes) of you demonstrating your robot as it shows off its helpful features. This should include:
 - An introduction/ overview where each team member discusses their role. (What roles did team have during the challenge; engineer, builder? Did the roles change?)
 - A discussion about why you think your robot is a good example of a pet assistant
 - Describe the interesting design features of the pet assistant: did you use motors, sensors, LEGO® elements and how do they add interest?
 - Each team member should discuss what they found challenging and what they enjoyed the most (e.g. the build, designs, research, programming)
 - Your robot in action. Zoom in and out to show your new robotic assistant caring for your pet.
- 2. LEARNING JOURNAL** document (.pdf is best) or shared link to your Google Doc/ Folder with all your supporting evidence, outlined in the specifications. (Make sure sharing permissions are working.)

RESOURCES

SPIKE™ Challenge details on the RCJA website

<https://www.robocupjunior.org.au/spike-challenge/>

RCJA SPIKE™ PRIME showcase

<https://www.robocupjunior.org.au/resources/spike-prime-showcase/>

Get your LEGO® Education SPIKE™ Kit at MTA

<https://www.teaching.com.au/catalogue/mta/mta-lego-education-spike-prime>

LEGO® Education SPIKE™ App Download

<https://education.lego.com/en-us/downloads/spike-prime/software>

SPIKE Prime Building Instructions | LEGO® Education

Find all the instructions you and your primary and early secondary school students need to get building with SPIKE Prime with step-by-step guides and help.

Boston Dynamics: A leading company of biorobotics development

Check out their website and some of the videos they have on their robots.

<https://sites.google.com/view/biobots/home>

<https://www.bostondynamics.com/>

YouTube videos on Biorobotics

- https://bit.ly/biorobotics_harvard - Biorobotic overview
- https://bit.ly/biorobots_tested - Interviews of biomechanical engineers
- https://bit.ly/salamander_ted - TED Talks on the salamander robot
- https://bit.ly/spot_mini_ted - TED Talks on 'Spot' the robot dog

