

Rescue, Redesign, Repeat — Engineering with VEX GO


Aimee DeFoe
Senior Education Developer



Workshop Goals

- **Create basic builds using pieces from the VEX GO Kit**
- **Experience a VEX GO Activity Series that can be used to introduce building with GO to your students**
- **Apply the engineering design process to solve open-ended challenges with VEX GO**
- **Explore how using reflection questions at each stage of the engineering design process can help students think more deeply about design choices, leading to stronger understanding and better final designs**

The VEX Continuum



VEX 123
Coding Starts Early

Ages 4+



VEX GO
STEM Starts Early

Ages 8+



VEX AIM
Real World Coding

Ages 8+



VEX IQ
Applied STEM Learning

Ages 11+



VEX EXP
Real World STEM for Classrooms

Ages 14+



VEX VS
Real World STEM for Competition

Ages 14+



VEX CTE
Workforce Readiness

Ages 14+



VEX AIR
STEM Skills Take Flight

Ages 14+

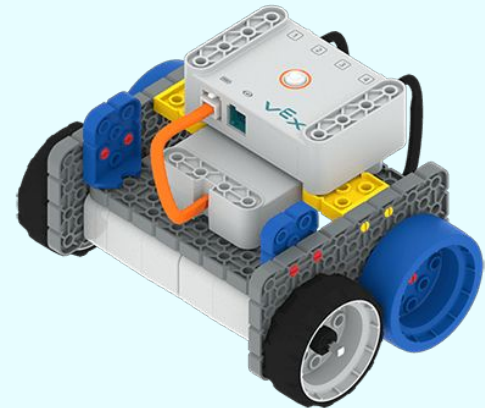


VEX CODE VR
Virtual Robot Coding

Ages 8+

Introducing VEX GO

- Hands-on, minds-on learning
- Integrated STEM
- Teach multiple STEM classes
- Easy to learn and easy to teach
- [Free curricular materials and teacher support resource](#)



What is an Activity Series?

Engineering

Animal Rescue



Grades 3-5 | Ages 8+ | 3 Activities

Explore building techniques to design and build a Ladder, Raft, and Mobile Rescue Vehicle to save the day!

Activities in this Series

- Ladder Rescue
- Raft Rescue
- Mobile Rescue

[Google Doc >](#) [.docx >](#) [.pdf >](#)

Science

Fun with Formations



Grades 3-5 | Ages 8+ | 4 Activities

Explore landform formation by building models of canyons, sand dunes, and deltas with your VEX GO Kit!

Activities in this Series

- Colossal Canyons
- Drifting Dunes
- Dynamic Deltas
- Formation Creation

[Google Doc >](#) [.docx >](#) [.pdf >](#)

Engineering

Creature Feature



Grades 3-5 | Ages 8+ | 4 Activities

Meet and investigate the unique VEX GO Creatures that live on an island, and prepare for the Creature Feature Race in this Activity Series.

Activities in this Series

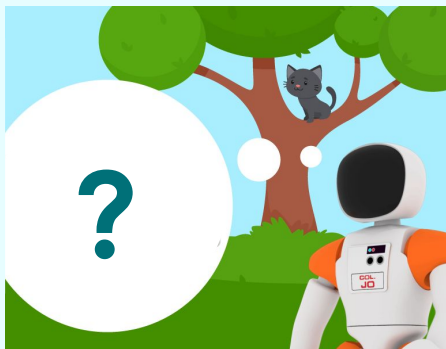
- Meet Crawler
- Meet Ed
- Meet Flopper
- Creature Feature Race

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Animal Rescue Activity Series

Ladder Rescue Activity

Goal: Design and Build a Ladder for Colonel Jo to use to rescue an animal stuck in a tree!



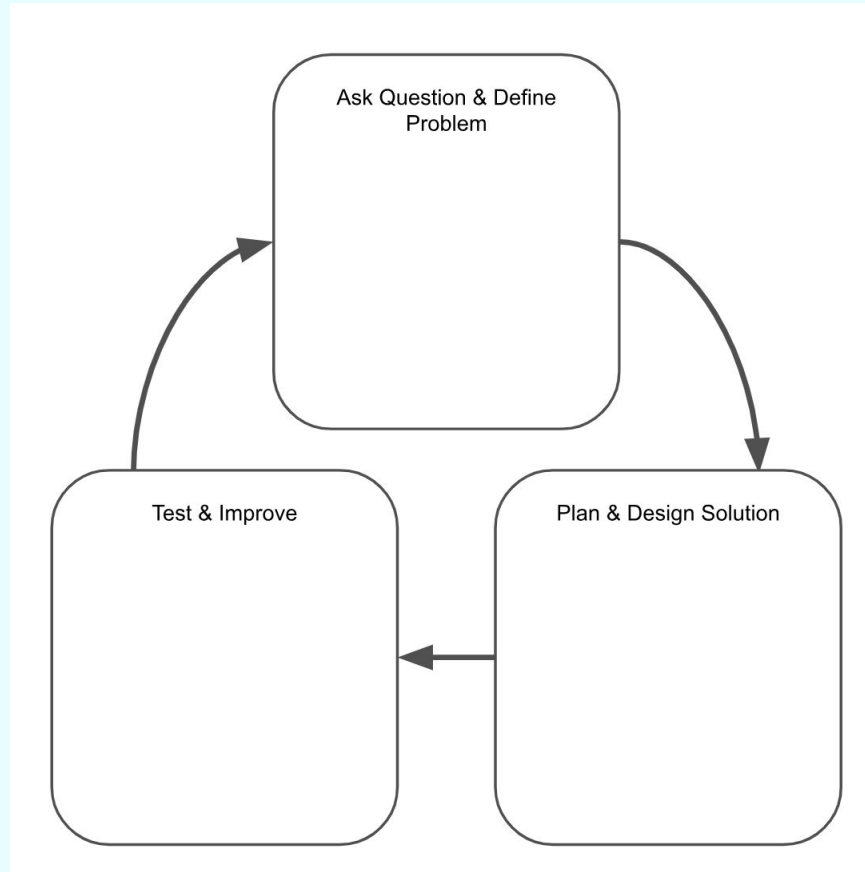
Criteria:

- Your ladder must reach the animal, which is 25cm off the ground.

Constraints:

- You can use only beams, standoffs, and connectors from the VEX GO Kit.
- The space between your ladder rungs cannot be greater than Colonel Jo's height.

Engineering Design Process



Animal Rescue Activity Series

Raft Rescue Activity

Goal: Design and build a ladder to help Colonel Jo rescue an animal stranded on the water!



Criteria:

- You must attach your ladder to your ramp.
- The ladder must be attached at a 45 degree angle.
- Your ladder must include a storage container of some sort for supplies.

Constraints:

- Use only pieces from the VEX GO Kit

Defining the Problem

- ❑ What do I know about this challenge?
- ❑ What questions do I have about this challenge?
- ❑ What *don't* I know about this challenge?
- ❑ How can I find answers to my questions?
- ❑ What are some initial steps I can take towards this challenge?
- ❑ Who can help me if/when I am stuck?

Brainstorming

- ❑ What are all the different ideas you have for your rescue mechanism?
- ❑ What if you combine your ideas with someone else's idea?
- ❑ What if you took the best parts of several ideas in your group and combined them?
- ❑ What if you tried to solve this problem in a completely new way that nobody else has suggested?

Choosing an Idea to Start With

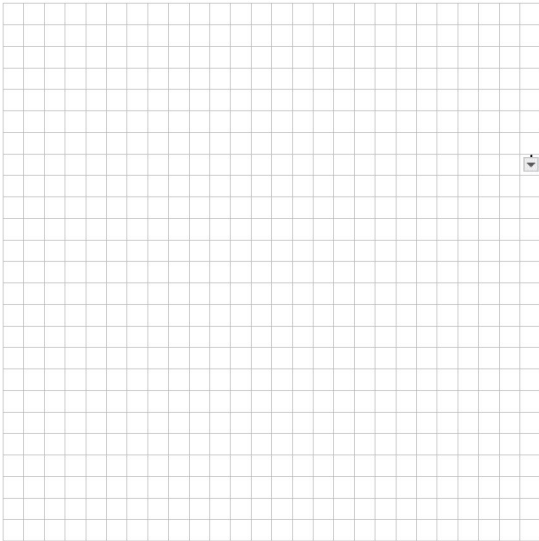
- Does this idea meet the criteria and constraints?
- Share your ideas with another group. What feedback do they have for you?
- What feedback would you provide another group's strategy idea?
Can you apply that feedback to any of your own ideas
- Can you see a way to modify any of the ideas to make them even better?
- Which idea do you like best, and why?
 - My choice and reasoning are recorded on a Blueprint Worksheet.

Make a sketch

- Sketch your initial design idea
- Choose pieces from the kit to build with
 - Use the [interactive parts poster](#) to help you
 - Compare your pieces to your design
- Label each part

Blueprint Worksheet

Blueprint for: _____
Name: _____ Date: _____



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VEX GO

Build, Test and Debrief

- **Use your sketch to build your design**
- **Test or evaluate your design using these debrief questions:**
 - **What was the goal of your design?**
 - **Did you reach it?**
 - **How did you build your design?**
 - **What worked well?**
 - **What didn't work well ?**
 - **What would you like to change about your design to make it better?**

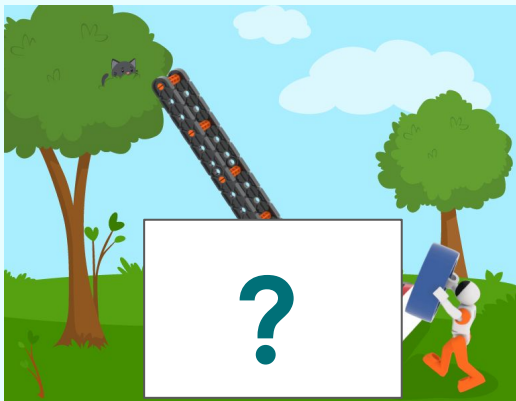
Iterate

- **Do some scouting!**
- **Choose *one* improvement to make to your design**

Animal Rescue Activity Series

Mobile Rescue Activity

Goal: Make your raft mobile! Add wheels so it can roll.



Criteria:

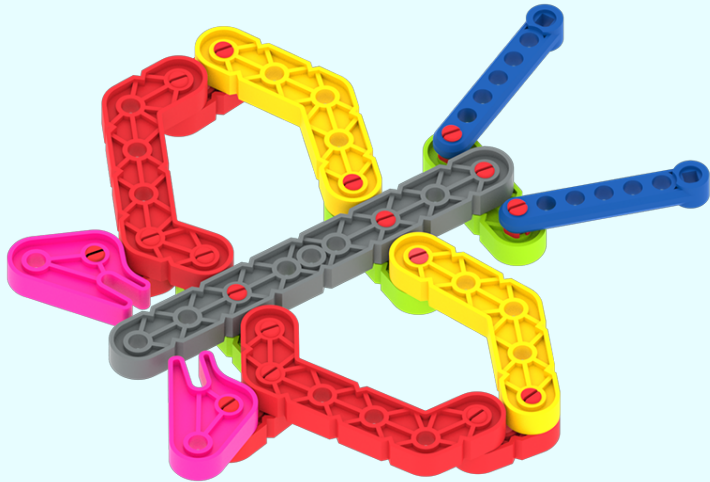
- Your ladder's wheels must stay on while moving.
- The raft must be able to roll forward on its own when pushed.

Constraints:

- Use only pieces from the VEX GO Kit

Creature Creation Challenge

Use the remaining pieces in the VEX GO Kit to create an animal!



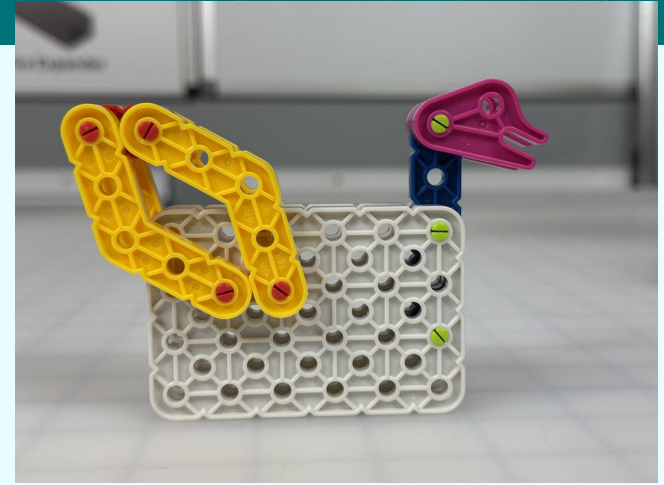
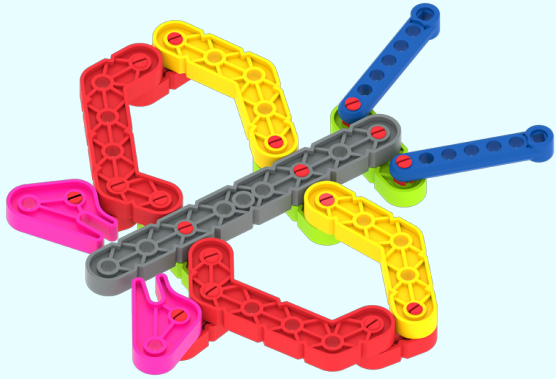
Criteria:

- Use the engineering design process.
- Your animal design must incorporate some form of movement

Constraints:

- Use only the remaining pieces from the VEX GO Kit

GO Creature Examples



Wrap Up

- **What are some of the cognitive processes that you had to use to create these builds?**
- **Did scouting spark any new ideas for you when you began to iterate? How could you introduce scouting in your classroom?**
- **How do you think the reflection questions at each stage of the edp could help students engage more deeply with the design process?**

Stay Connected

Let's Connect!

Tag me in the **VEX PD+ Community!** @Aimee_DeFoe

Want to Learn More?

- Schedule a **1-on-1 Session** in VEX PD+
- [Insights Article: A New Way to Define “Defining the Problem”](#)

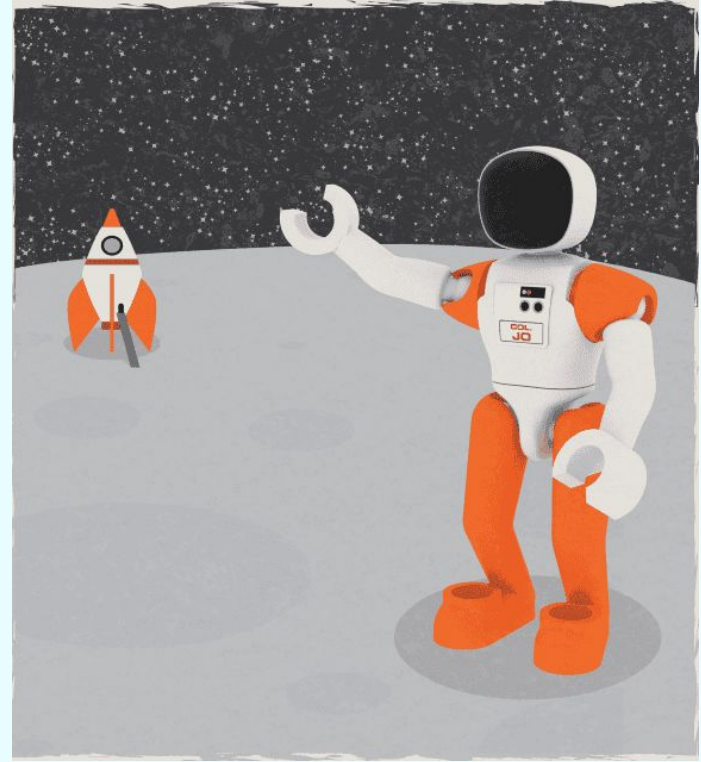
Animal Rescue Challenge

Criteria	Constraints
<ul style="list-style-type: none">• Your design must be able to rescue an animal approximately 12 inches below the table	<ul style="list-style-type: none">• Only pieces from the VEX GO Kit can be used in your design.
<ul style="list-style-type: none">• Your rescue mechanism must be attached to the Tile on the table	<ul style="list-style-type: none">• The animal must remain attached to the mechanism as it is lifted up out of the crater.
<ul style="list-style-type: none">• You can use your hands to attach the animal to the mechanism when it reaches the bottom of the crater.	

Animal Rescue Challenge

Oh no! Colonel Jo has found an animal that has fallen into a crater and needs our help!

- Apply the engineering design process to create a rescue mechanism to lift the animal out of the crater and back to safety!



Animal Rescue Activity Series



Ladder Rescue

Design and build a ladder to help Col. Jo rescue the trapped animal!

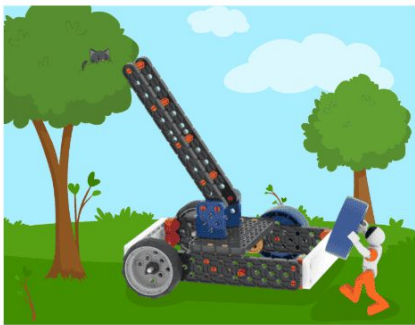
Using VEX GO pieces, create your very own ladder to save the animal from the tree.



Raft Rescue

Design and build a raft to help Col. Jo rescue an animal stranded on the water!

Build a raft, attach your ladder, and save the stranded animal on the pond.



Mobile Rescue

Make your raft mobile to help your neighbors!

Attach wheels to your raft to turn it into a fire truck, and use it to save the day in the town over.