Introduction
This lesson will introduce students to the Rokenbok ROK Blocks STEM Module. Students will become familiar with the different components located within the system and discover how each can be used to design and engineer new things.

Learning Outcome
See Like a Designer, Think Like an Engineer: Students experience convergent and divergent STEM explorations, and learn scientific and engineering processes in applying technology. These explorations focus on intuitive concepts, like how to make things strong and how to make things move. These experiences give students confidence in their ability to learn technical skills and to use technology to create solutions of their own design.

Learning Objectives
- Become familiar with different components in the ROK Blocks STEM Module.
- Understand the basics of connecting and disconnecting ROK blocks and other Rokenbok components.
- Use Rokenbok components to complete a series of design challenges.
- Understand how to correctly organize and inventory components in a module.

Activity Time: 60 Minutes

Educational Standards
NGSS
K-5-ETS1-3 Engineering Design
MS-ETS1-4 Engineering Design

ITEEA
STL8- Attributes of Design
STL9- Engineering Design
STL12- Use Technological Systems

Resources
The following resources will be used to complete this lesson.

1. Rokenbok STEM-Maker Curriculum
   - Introduction to ROK Blocks
     a. Teacher Lesson Plan
     b. Student Inventory Mats (Located in ROK Blocks Module)

2. Rokenbok Module or Lab (Pictured Right)
Procedure
Complete the following steps to introduce students to the ROK Blocks STEM Module.

1. Grouping
Before class, arrange students in teams of up to 4. Group students that will work effectively together.

2. Disperse Materials (2 Minutes)
Provide teams with correct Rokenbok resources. (ROK Blocks Lab and Student Inventory Mats)

3. Review Learning Objectives (1 Minute)
Review learning objectives with students.

4. Organize ROK Blocks Components (15 Minutes)
The ROK Blocks STEM Module consists of a variety of unique building components that are easy to use and provide an excellent system for building models and prototypes.

To help students learn about all of the building components included in the ROK Blocks STEM Module, locate the Rokenbok Student Inventory Mats that were included. These mats will be used to identify, organize, and discover all of the components that are located within the system. There are a total of fifteen mats included. Examples of the student inventory mats are pictured below.

Instruct each group to lay the mats out on a table, desks, or the floor. Students should carefully place all building components onto the mats until every piece is accounted for.
5. Connecting/Disconnecting: ROK Blocks (3 Minutes)
The ROK Blocks STEM Module includes four different types of large ROK blocks that are easy for anyone to design and engineer with. ROK blocks are designed with a pyramid and opening system that can be connected by inserting the pyramid sections into the openings.

Hold up a ROK block and point out the pyramids and openings on the block. Use another ROK block to demonstrate how to connect and disconnect the blocks. Demonstrate to students how blocks can be connected in multiple ways. Instruct students to practice connecting and disconnecting the ROK block building components.

6. Connecting/Disconnecting: Rokenbok Components (3 Minutes)
All remaining Rokenbok components connect slightly different than the ROK blocks. These components use a tab and opening system to connect. These components are more difficult to snap together, so using the correct technique will make things much easier.

Hold up a Rokenbok half beam and connector block. Demonstrate to students how the smaller Rokenbok components connect. Inserting the tabs of the half beam at an angle to the opening of the connector block, and snap into place. Next, demonstrate how the Rokenbok key is used to disconnect components. Insert the key into the slot and twist to separate components. Instruct students to practice connecting and disconnecting Rokenbok components.
7. Building with ROK Blocks - Blue ROK Blocks (5 Minutes)
The Blue ROK blocks are shaped like a square and can be combined with other blocks to make different patterns and structures.

Hold up a Blue ROK block and instruct each student to grab one. Ask students how many openings there are on the Blue ROK block. Ask them how many pyramids there are. Challenge students to make the first letter in their name using only the Blue ROK blocks.

8. Building with ROK Blocks - Green ROK Blocks (5 Minutes)
The Green ROK blocks are shaped like a rectangle and can be combined with other blocks to make different patterns and structures.

Hold up a Green ROK block and instruct each student to grab one. Ask students how many openings there are on the Green ROK block. Ask them how many pyramids there are. Challenge teams to build a staircase that is five blocks high using only the Green ROK blocks.

9. Building with ROK Blocks - Yellow ROK Blocks (5 Minutes)
The Yellow ROK blocks are the largest building block in the ROK Blocks STEM Module. They are also shaped like a rectangle.

Hold up a Yellow ROK block and instruct each student to grab one. Ask students how many openings there are on the Yellow ROK block. Ask them how many pyramids there are. Challenge teams to build a skyscraper building that is at least five blocks high using only the Yellow ROK blocks.

10. Building with ROK Blocks - Red ROK Blocks (5 Minutes)
The Red ROK blocks are shaped like a wedge. They can be used to create angles, curves, arches, or complete circles.

Hold up a Red ROK block and instruct each student to grab one. Ask students how many openings there are on the Red ROK block. Ask them how many pyramids there are. Challenge teams to build a full circle using only the Red ROK blocks.

Note: When using Red ROK blocks, connect logo to logo to form a perfect 90° angle, complete arch, or circle.
11. Building with ROK Blocks and other Rokenbok Components (6 Minutes)
ROK blocks can also be used with all other Rokenbok components to build custom designs. Demonstrate how different Rokenbok components can be snapped into a ROK block. Challenge teams to build a small vehicle using at least two ROK blocks and ten other Rokenbok components.

Explain to students that throughout upcoming Rokenbok lessons, they will learn how each of the Rokenbok building components can be used to design and engineer new things. This will include how these components can be used to measure, make strong structures, create different types of movement, and create custom solutions of their own design. Have a couple of examples built to show the students. Creating aspirational objects to demonstrate new components or possibilities for students is an important aspect of early STEM Mentoring.

12. Organizing The ROK Blocks Module (10 Minutes)
To keep the ROK Blocks Module clean and organized, students should have an understanding of how to correctly pack the module once they are finished using it. Have students locate the ROK Blocks Inventory and Organization Guide that was included in the module. Instruct students to pack the module back exactly as it shows in the guide.