

# Engineering & Design: Makerspace



Horizon Learning STEAM Kit #2: Makerspace 2-5

## Description

The **Makerspace 2-5** kit allows students to use their creativity and imagination while finding solutions to problems. Students can use the razor learning links provided in the kit, as well as other optional design materials, to complete the grab-and-go **STEAM Challenges**. The kit also includes a variety of picture books to introduce students to the idea of a Maker Mindset through **Story Workshop**.

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| <b>Grade:</b> Gr 2-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | <b>Difficulty:</b> Beginner                                                                                                                                                                          | <b>Time:</b> Approx. 1-3 hours |
| <b>Subjects and Strands</b> <ul style="list-style-type: none"><li>● ELA</li><li>● Arts Ed</li><li>● Math</li><li>● Other (Please note, outcomes vary based on lessons)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | <b>Computational Thinking Dimensions</b> <ul style="list-style-type: none"><li>● Decomposition</li><li>● Pattern Recognition</li><li>● Abstraction</li><li>● Algorithm Thinking and Design</li></ul> |                                |
| <b>Materials Included in the Kit</b> <ul style="list-style-type: none"><li>● <i>Rosie Revere Engineer</i> Book</li><li>● STEM Challenge Grab &amp; Go Cards Seasonal and Grades 2-5</li><li>● Other Anchor Text Books (See list in Activity 2)</li><li>● RAZOR Learning Links (class set of 24)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                   |                                |
| <b>Materials Supplied by the School</b> <ul style="list-style-type: none"><li>● <a href="#">Loose Parts</a> for Story Workshop</li><li>● Materials for STEAM Challenges</li><li>● Optional Makerspace Materials</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                  |                                |
| <b>Prior Learning</b> <p><b>What is STEAM and Makerspace?</b></p> <p>STEAM connects students to Science, Technology, Engineering, Arts, and Math. Makerspace allows students to dive into any of these areas through the design process. Students work together to solve problems and set goals, allowing them to imagine, explore, create, test, and improve. STEAM also often includes reading, thus <b>STrEAM</b> is trending now!</p> <p><b>What is a Story Workshop?</b></p> <p>In Story Workshop (MacKay, 2021) students respond to playful provocations to build stories with loose parts. After reading a rich mentor text aloud, teachers orally coach students as they play and build stories with loose parts. After building, students draw and then write their stories (at their instructional level). Finally, students share their stories by telling classmates about their pictures and/or writing.</p> |  |                                                                                                                                                                                                      |                                |

# Lesson Ideas: STEAM, Story Workshop, & Makerspace

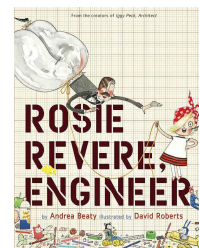
Horizon Learning STEAM Resources: Makerspace 2-5



## Activity 1: Story Workshop & STEAM

### Part 1: Makers Build Stories

1. Through **Story Workshop**, students will be introduced to the elements and perspectives of Makerspace and Design Thinking.. Select a text from the collection to inspire story creation. This will be your Anchor Text throughout Activity 1.
  - a. Connect to literacy skills at your students' instructional level such as rhyme, rhythm, and new vocabulary.
  - b. Choose a story focus skill such as Setting.



### Part 2: Makers Design

1. Students will listen, build, draw, write, and share through the process of Story Workshop. They will listen to the story, build with loose parts, draw their creations, write their ideas, and share their stories. At each stage of the process, teachers orally coach students to try new literacy skills such as drawing shapes, writing initial letter sounds, or adding detail.
2. As students are taking part in the imagination and creation process, introduce students to the idea of a Maker Mindset by reminding them of the following:
  - a. We are all makers.
  - b. We can all make stories.
  - c. We can share our stories.



### Part 3: Makers Build & Share Their Story

1. Students will use the loose parts within their story, such as building a structure for the setting or designing a scene for an event in the story. They can share their creations in multiple ways (i.e. pictures, videos, or other technology tools such as Stop Motion).



## Extensions & Cross-Curricular:

Read *Be a Good Ancestor* aloud and continue another cycle of Story Workshop using natural elements and materials. Encourage students to share their stories and to respect each others stories.



- For more information about [Story Workshop](#), google *Story Workshop: A How-to Guide*. For more information about STEAM and Makerspace, contact Jim Swan - Horizon Learning's STEAM Curriculum Coach.

## Activity 2: Maker Mindset

Below you will see a list of some of the read-aloud books that are included in the kit. With these books, students are encouraged to cultivate a mindset of inquiry, problem-solving, critical thinking, creativity, collaboration, and communication.

| Makerspace Anchor Texts                                                                                                      | Maker Mindset Characteristics                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rosie Revere, Engineer (Grades 2-5)</b>  | <ul style="list-style-type: none"> <li>• Innovation</li> <li>• Persistence</li> <li>• Imagination</li> <li>• STEM Careers</li> </ul>       |
| <b>The Most Magnificent Thing</b>           | <ul style="list-style-type: none"> <li>• Creativity</li> <li>• Problem-Solving</li> <li>• Perseverance</li> </ul>                          |
| <b>Iggly Peck, Architect</b>                | <ul style="list-style-type: none"> <li>• Passion</li> <li>• STEM Careers</li> <li>• Resourcefulness</li> <li>• Inquiry</li> </ul>          |
| <b>Ada Twist, Scientist (Grade 2-5)</b>     | <ul style="list-style-type: none"> <li>• Innovation</li> <li>• Inquiry</li> <li>• Curiosity</li> <li>• STEM Careers</li> </ul>             |
| <b>Be a Good Ancestor</b>                   | <ul style="list-style-type: none"> <li>• Social Responsibility</li> <li>• Social Activism</li> <li>• Indigenous Ways of Knowing</li> </ul> |

### Part 1:

- First, select a book from the list considering your learners. This will be your Anchor Text for your Makerspace design challenges. As you are choosing a book to read with your students, carefully consider the following:
  - Who are my learners?
  - What characteristics of a Maker Mindset does this text highlight?
  - What is my purpose?
- Students will use classroom constructor kits, cardboard or other materials to collaboratively design, build, and share their creations. To reinforce the Maker Mindset, encourage students to use and evaluate their designs through the Engineering Design Process. ➡



### Part 2

- Use the **STEM Challenge Grab and Go Cards** or the Constructures Mini Foam Blocks to extend the Makerspace and design challenge activities.



Youth Engineering Solutions

Many thanks to Regina  
Public for sharing resources!

- Extend the use of RAZOR Learning Links into Math concepts. Gr. 2 - Patterns, number sense, and measurement. Gr. 3 - Multiplication (visually), fractions, perimeter and area. Gr. 4 - Factors and multiples, symmetry and transformations, data collection & graphing. Grade 5 - Decimals and fractions (ie. compare and order decimals by chain lengths), probability.