

Back-to-School Design Challenge

2nd Grade

Unit 1 – A Season for Chapters

Text Connection: *Any Back to School Book* of Teacher's Choice

This design challenge is intended to introduce the Engineering Design Loop process that will be used throughout the year.

Design Challenge Summary

Challenge: What will the students be required to do?

Using the Engineering Design Loop process, design a supply container to hold your group's materials.

Standards: What standards are addressed?

Science:

NS.1.2.1 Communicate observations orally, in writing and in graphic organizers

NS.1.2.2 Develop questions that guide scientific inquiry

NS.1.2.3 Conduct scientific investigations as individually and in teams

NS.1.2.5 Collect measurable empirical evidence in teams and as individuals

NS.1.2.6 Make predictions in teams and as individuals based upon empirical evidence

NS.1.2.7 Use age-appropriate equipment and tools in scientific investigations

NS.1.2.8 Apply lab safety rules as they relate to specific science lab activities

Math:

Mathematical Practice Standards

Other:

W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points and provide a concluding statement or section

W.2.7 Participate in shared research and writing projects

SL.2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups

SL.2.3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information or deepen understanding of a topic or issue

SL.2.4 Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences

SL.2.6 Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification

Result: What will students know, value, and be able to do as a result of the lesson? What's the big idea?

Know and apply the engineering design loop process.

Demonstrate ability to modify designs based on observations and predictions.

Work collaboratively on solving a problem.

Assessment: What evidence will be used to determine student learning?

Did they successfully create a supply container holding all of their school supplies?

Did they follow the design loop process?

Did they work collaboratively?

Back-to-School Design Challenge

Prior Knowledge/Experiences: What prior content knowledge and skills will the students need?

Experience with the Engineering Design Loop process
Connections to the Mathematical Practices
Investigations/inquiry in Science
Experiences with knowledge of the uses of containers

Summary/Connections: How will this design challenge connect with new/future learning, other content areas, real world experiences, etc.?

This lesson will help students develop problem solving skills and collaboration skills that are essential in succeeding in the 21st century. It will allow student the opportunity to transfer and apply skills from various content areas within one task.

As a summary activity, you could engage students in:

W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points and provide a concluding statement or section

Extensions: As a group create a name plate for your table (use the “Write Tools” Task/challenge from the Science Webpage).

Materials/Equipment/Preparation: What materials and equipment will students need to successfully complete this design challenge?

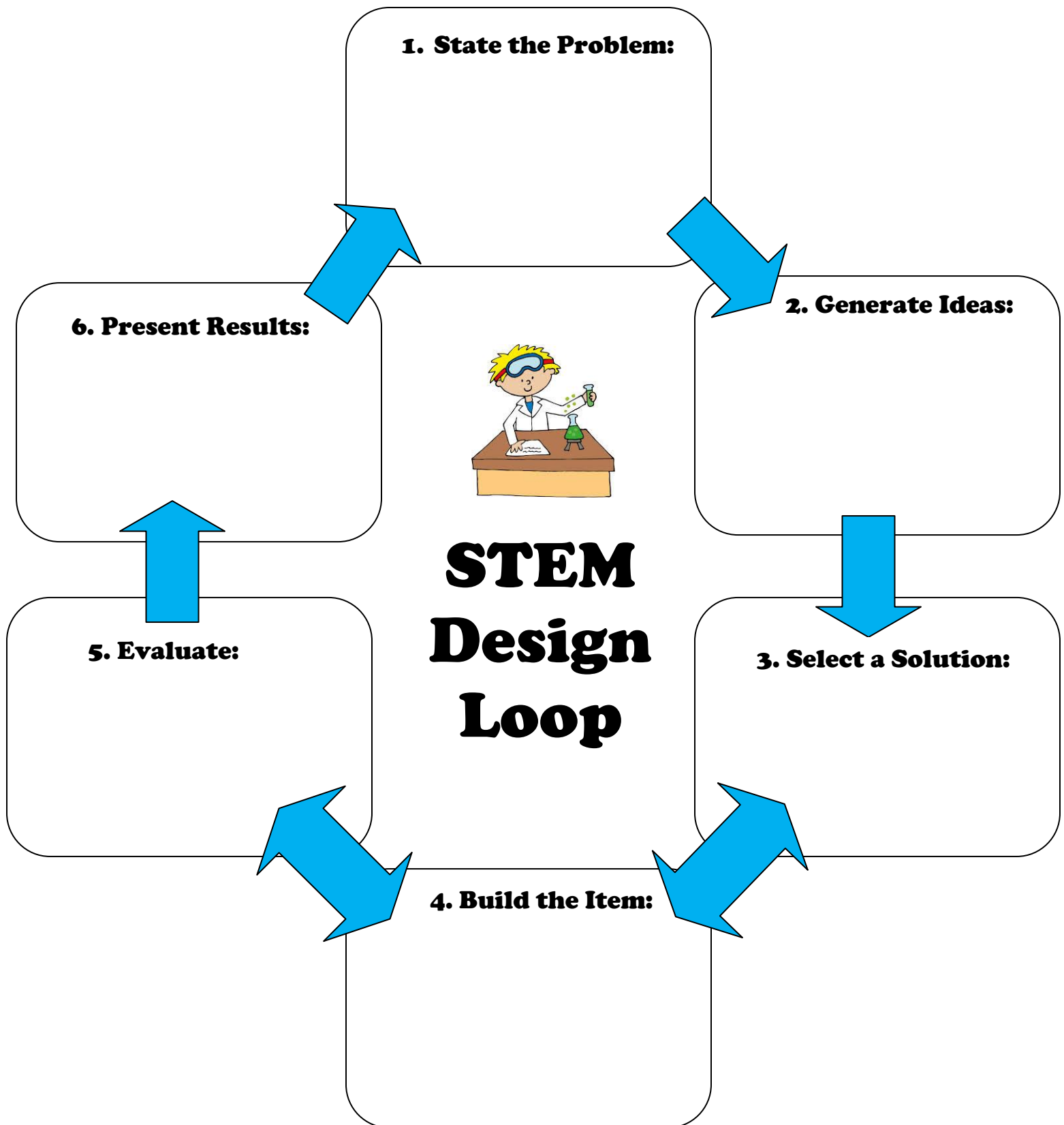
6 inch piece of duct tape
5 paper clips
Small piece of cardboard
Toilet paper roll
2 rubber bands
4 straws
2 pieces of paper

ADDITIONAL INFORMATION

- A student page is attached
- Student page could be used as an anchor chart, placed into interactive notebook, used for students to jot notes and reference back to when facing new challenges throughout the year
- There are no specific mathematical or scientific standards because this challenge is designed to get students familiar with the engineering design loop.

Back-to-School Design Challenge

Using the Engineering Design Loop process, design a supply container to hold your group's materials.



Back-to-School Design Challenge

Using the Engineering Design Loop process, design a supply container to hold your group's materials.



Group Supplies:

- 6 inch piece of duct tape
- 5 paper clips
- Small piece of cardboard
- Toilet paper roll
- 2 rubber bands
- 4 straws
- 2 pieces of paper