

Be a Maker!

A Kindergarten Language Arts and STEAM Lesson Plan on Problem Solving

Note to Teachers: as with all lesson plans, this is meant to be a guide. Please adapt it to meet the needs of your students and classroom. Note that this is a multi-day lesson plan.

1. Essential Question

How can we solve problems?

2. Standards

Common Core Language Arts Standards:

- RL.K.1—With prompting and support, ask and answer questions about key details in a text.
- RL.K.10—Actively engage in group reading activities with purpose and understanding.
- RF.K.1—Demonstrate understanding of the organization and basic features of print.
- RF.K.2—Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
- RF.K.4—Read emergent-reader texts with purpose and understanding.
- W.K.2—Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- W.K.8—With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- SL.K.1—Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.
- SL.K.2—Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- SL.K.5—Add drawings or other visual displays to descriptions as desired to provide additional detail.
- SL.K.6—Speak audibly and express thoughts, feelings, and ideas clearly.
- L.K.1—Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.K. 6—Use words and phrases acquired through conversations, reading and being read to, and responding to texts.

Next Gen Science Standards:

- K-2-ETS1-1— Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2—Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

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3. Instructional Objectives

- * Given a read aloud of *Be a Maker* by Katey Howes and a handout, the students will write down at least one thing they can make.
- * Given a discussion on problem solving, the students will identify one problem they can solve and brainstorm ways to solve it.
- * Given materials, students will build an item to solve the problem.

4. Resources Needed

Be a Maker by Katey Howes; *I Can Make* handout (available at <https://kateyhowesdotcom.files.wordpress.com/2018/11/i-can-make-hand-out.pdf>); Design Thinking poster for problem-solving (such as https://commons.wikimedia.org/wiki/File:Design_thinking.png); materials for building such as construction paper, tape, markers, string, balloons, cardboard boxes, plastic cups, glue, and so on.

5. Lesson Elements

Introduction/Motivational Device

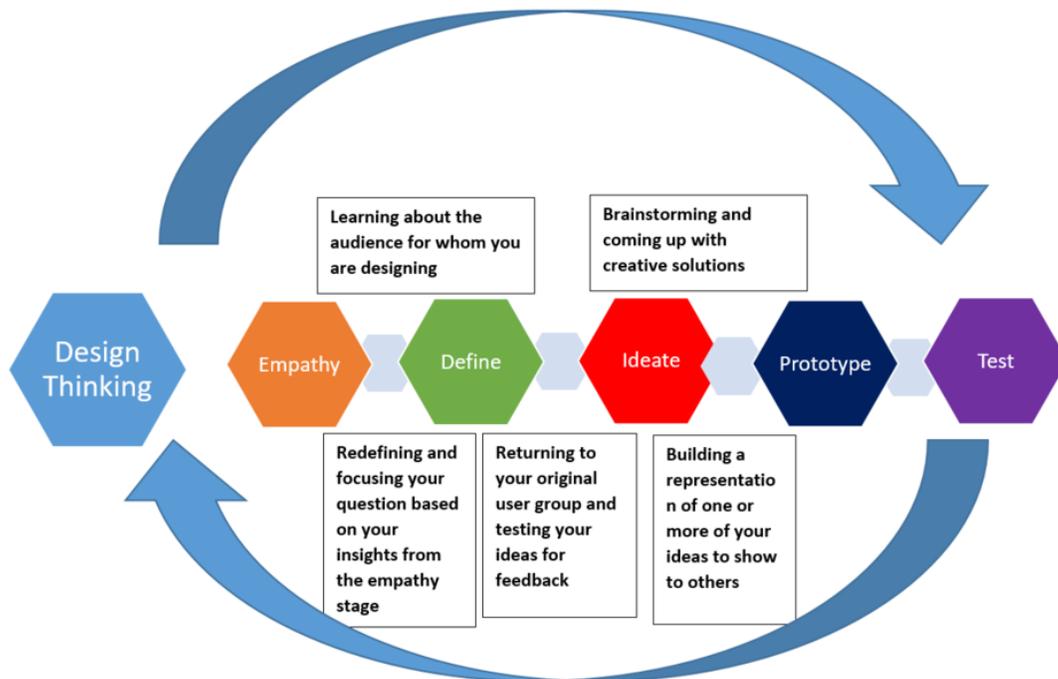
- Write the question, “How can we solve problems?” on the board. Explain that today we’re going to explore this question with a special book, *Be a Maker*.
- Hold up *Be a Maker* and ask students to join you for a whole-group read aloud.
 - Preview the book by showing the cover and a few images.
 - Ask students how they think the characters in the book will solve problems.
 - Tell students that they’ll learn about what people can make in a day—from small to large—and after, we’re actually going to make things just like the characters in the book.

Follow-Through

- Read the story aloud, pausing periodically to ask students:
 - Would you like to make this?
 - Why do you think the character(s) is making this/these?
 - Is this solving a problem or helping people?
- Once the story is finished, revisit the question, “How can we solve problems?” Using think-pair-share, ask students to identify some problems the characters in the book solve or try to solve.
 - Call on a few pairs and add their answers to the board.
 - Some possible problems from the book include wanting to make a tower, wanting to hear a song, or wanting to look through a telescope.
 - Ask how the characters in the book solved these problems. Acknowledge student responses.



- Distribute [I Can Make handout](#) to students and explain that it's their turn now to make something. To help students get started, list things the character(s) made in *Be a Maker*. These include:
 - a tower
 - a mess
 - a universe inside your head
 - rhythm
 - a telescope
 - a blueprint
 - your way to play outside
 - a spaceship
 - a ride
 - a map to journey's end
 - a friend
 - a snack (and make a spare. Make enough for both to share.)
 - a plan
 - a sign
 - lemonade
 - Have your neighbors make a line
 - a gift of what you made
 - a smile from lemonade
 - a pledge to help some more
- Have students brainstorm items they can make in the box on the handout. They can use items from *Be a Maker* or come up with their own ideas. Then, have them finish the sentence at the bottom of the page ("I can make...") and share it with a friend.
 - As students work, hang up a Design Thinking chart like the one below. (You may want to rename the components for ease of language.)



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- Tell students that just like in *Be a Maker*, sometimes we make items for fun that may or may not be used to solve problems, and other times we make things specifically to solve problems.

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- Ask students if any of them wrote something on their *Be a Maker* handout that solves a problem. If so, have them share that item and problem with the class. Write these on the board.
- Tell students that we'll be making one of these items to solve a problem, and we'll use a process called Design Thinking to help us.
 - Go over Design Thinking
 - Empathize: understand the situation and people involved
 - Define: Identify the specific challenge you are addressing
 - Ideate: Brainstorm solutions
 - Prototype: Build/try out your idea(s)
 - Test: see if it works
- Vote as a class which item would be most helpful to create. Identify who it would help (empathize) and what challenge we'll be addressing (define). Write these on the board for all to see and remember.
- On the back of their *Be a Maker* handouts, allow students to brainstorm ideas on how to make this thing (ideate). They may work individually or in partners.
- Once students have brainstormed solutions, allow them to use whatever materials you have provided to build a prototype and test it.

Closure

- Have students share their items that they created.
 - Ask students if they're proud of what they made. Why or why not?
- Revisit the question, "How can we solve problems?"
 - Allow time for class discussion and reflection about what problems we choose to solve, the role of pride in these creations, and what each person can do to contribute—how each creation can be helpful.
- Take a photo with all of the students and their creations. Add the caption, "We Are Makers!" and send a copy to each family with the request that the students share what they learned about how to be a maker and how makers solve problems.

6. Differentiated Learning Activities

- This lesson is differentiated by process. Students used different materials to solve the problem and develop their own creation. It is also differentiated by learning environment, as students are allowed to work individually or in partners.

7. Formative Assessment

Look at students' drawings and creations as they work. Engage in informal discussion when necessary.

8. Enrichment

Some students may want to continue making things. You can download activities (such as a flashlight template) on Katey Howes' website at <https://kateyhowes.com/kateys-books/>.



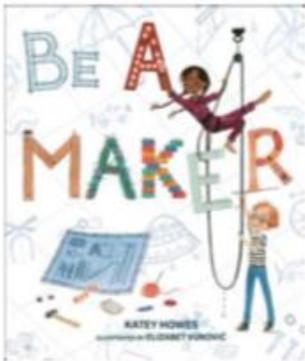
There are a number of additional resources available online, in stores, and in libraries. You may want to search using the terms *maker space activities*, *design-based learning*, and *STEAM activities*.

A couple fun activities include “Rainbow Jar” experiment (<https://www.playdoughtoplato.com/rainbow-jar-st-patricks-day/>) and a Recycled Book Art Gallery (<http://ideas.demco.com/blog/3-design-challenges-low-tech-makerspace/>)

8. Reflection - Completed after implementation of lesson plan

- Analyze assessment data and explain to what degree instructional decisions made an impact on student learning and achievement of lesson objectives.
 - To be completed by teacher
- Describe modifications for redesigning your lesson plan that would improve student learning outcomes.
 - To be completed by teacher





"Ask yourself this question in the morning when you wake:
In a world of possibilities, today,
what will YOU make?"

I can make _____.

