Prototyping for a Change Maker

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Grade Level

3rd Grade

Lesson Overview

In this lesson, the students will use their empathy and needfinding skills to brainstorm solutions and build and test prototypes-- key components of the design thinking process. The students will use a bio and poster they created about their selected change maker and incorporate the change maker's needs into the design of their prototype.

Learning Objectives

Students will:

- Brainstorm solutions
- Build prototypes
- Test prototypes

Standards

CCSS.ELA-Literacy.RL.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CCSS.ELA-Literacy.RL.3.2: Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.

CCSS.ELA-Literacy.RL.3.7: Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting)

CCSS.ELA-Literacy.RL.3.9: Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series)

NGSS MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

NGSS MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Preparation

- Prep empathy map and needs chart graphic organizers.
- Prep design stations with post-its for brainstorming and materials for prototyping.
- Set up slide 6, Rules for Brainstorming

Materials and Resources

- 15+ square feet of cardboard
- Scissors
- Duct tape
- Paper
- Pens
- Colored markers, pencils, or crayons
- String
- Twist ties
- Post-its
- Pipe cleaners

Activity 1: Empathy Map & Needs Chart (*10 minutes*)

- Review slide 6, which defines an empathy map, and discuss the different quadrants.
- Have the groups jot down information on an empathy map graphic organizers.
- Review slide 7 that explores the user needs chart.
- Pass out a prepped needs chart based on the template below.

User (adjectives)	Needs (verbs)	Because (insights)

Activity 2: "Yes And" Brainstorming (*15 minutes*)

- Practice thinking BIG. Go over slide 9 that has the rules for brainstorming.
- Review the "yes and" attitude. It is important to build off of others ideas, and when you say "no" it shuts people down. Demonstrate with students the brainstorming process for a problem based on you, e.g. "Miss Bulkin's active puppy needs to learn a tool to let Miss Bulkin know when it has to go to the bathroom, so it stops having accidents in the house."
- Demonstrate the process with post-its as the students will do in their own brainstorming groups.
- Have the students put their POV statements on chart paper and have the groups spread out. Tell the students that you are going to set the timer, and tell them to think big and use a "yes and" attitude. Tell the students that you want to see 50 solutions!
- At the 10-minute mark, tell the students to choose one solution to design and prototype.

Activity 3: Prototyping (*15 minutes*)

- Tell the students that they now have 15 minutes to use materials to prototype their solution.

Activity 4: Closure (*10 minutes*)

- Tell the groups that they have 3 things that they need to share:
    - POV statement
    - Design
    - How their POV statement relates to the design

Troubleshooting

- Circulate during the brainstorm phase to give potential restraints:
    - "You have a billion dollars."
    - "You have to design a tool."
    - "You have to design a service."
    - "You need to use technology."
    - "You only have $100 dollars."

Assessment

Assess by comparing the POV statement with the final design and evaluating how the students were able to connect the two.