

Grades 6–8

Day 4 Invention Testing

50~60 minutes (hands-on activity)

Activity Overview

In this activity students will complete the first version of the invention prototype and test with potential users. They will gather feedback from the users and brainstorm how to revise their solutions to better meet the needs. Many of them probably will experience failure and learn how to turn failed experiences into learning opportunities. Students will also refine their storytelling and drawing skills by documenting their prototyping processes in their comic books or digital stories.

Activity Summary

Activity 1: Finishing Invention Prototype (20 minutes)

1. Complete the building of the first invention prototype.

Activity 2: Creating Comic Strips about your Prototyping Journey (20 minutes)

2. Create comic strips to tell the story of building the first invention prototype.

Activity 3: Testing with Users and Analyzing Feedback (15 minutes)

3. Test the prototype with potential users (at least one user besides you).
4. Gather feedback and analyze for future revisions.

Wrap-up (5 minutes)

5. Reflect on the invention experience.

Objectives

The students will:

- ✓ Learn about hands-on skills of invention prototyping and iterative design
- ✓ Practice how to embrace and learn from failure
- ✓ Practice invention prototype testing with beneficiaries
- ✓ Practice invention storytelling and drawing skills

Activity Guide

Materials, Resources, and Prep

- Invention box with common materials and basic tools
- Printed worksheets
- Colored pencils or pens

Activity 1: Finishing Invention Prototype (20 minutes)

- Today you will finish the first prototype of your invention! Ask for help from other people at home (parents, siblings, etc.), if needed.
- Remember that failure and frustration is part of the invention process. It is absolutely normal if your design does not work. In fact, almost all inventors' first trials do not work. Just don't give up! When failure occurs, stay calm and ask yourself these questions:
 - Why doesn't this work?
 - Is it because something is wrong with my initial solution? Or is it because I cut the cardboard to the wrong size?
 - What can I do to avoid similar mistakes? Perhaps I can change my design?
- Once you finish with your prototype, self-evaluate your invention by thinking about whether and how your invention can solve the invention problem you identified. Remind yourself that invention aims to help people.

Activity 2: Creating Comic Strips about your Prototyping Journey (20 minutes)

- Congratulations on completing your first prototype! Now think about your experience in creating this prototype. Draw comic strips or create a digital story about how you worked through the prototyping process. You can draw the steps you have gone through. You can also share the mistakes you made and lessons you learned from this process. Use this [Chapter 3 worksheet](#) to help with your comic strip or digital story.
- Want to see some examples or need some inspiration? Check the examples below:
 - [Creating a robotic arm to grab things from the tree](#)
 - [Making a jetpack](#)
 - [Creating a pinwheel](#)
 - [Making sidewalk chalk](#)

Activity 3: Testing with Users and Analyzing Feedback (15 minutes)

- One important invention process is to invent with the users or beneficiaries of your invention. Therefore, it is critical that you test your prototype with your users. In this activity, you will need to explain and/or show your invention and ask for users' opinions about:
 - whether they think your invention can solve the problem

- whether your invention meets their needs
 - in what ways your invention can better help them
- Collect and record the responses from at least one potential user of your invention. The users could be your family members or friends. Follow the steps in the [User's Feedback worksheet](#) to write down the responses, do a quick analysis of the feedback, and summarize the testing results.

Wrap-up (5 minutes)

- Reflect on the prototyping and testing you've experienced and summarize:
What kinds of revisions or modifications did I make to the invention design during the prototyping process?
Now that I have collected the responses from the users of my invention, what can I do with them?