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# Help Your Students Visualize Their Ideas With Rapid Prototyping

## What is Rapid Prototyping?

Prototyping is the process of giving an idea a physical form so that it can be tested and improved.

Entrepreneurs use rapid prototyping to quickly try out different versions of their product or service. This allows them to test a number of hypotheses about how customers will interact with the product or service, what they will find most and least valuable about it, and what improvements are required.

Rapid prototypes are research tools - not finished products. Their value is measured by how quickly they can be created, and by the usefulness of the feedback they can elicit. They can come in the form of sketches, simple 3D models, modifications of found objects or spaces, and any other way that an idea can be demonstrated physically.

## Why is it Valuable?

- **It helps focus ideas.** This is because a simple prototype will only contain the most essential components of the idea.
- **It anchors ideas to the real world.** Creating a physical prototype forces you to start addressing the practical challenges of executing your idea.
- **It promotes resilience.** Prototyping clearly identifies areas that require improvement and challenges your initial assumptions about your idea.

### MaRS VIDEO RESOURCES

Revelo Bike founder Henry Chong discusses how he prototyped his company's Electric Bike.

This two-minute video is located in the Idea Development section of the Entrepreneurial Thinking Toolkit.

## Rapid Prototyping in Your Classroom

**Introduce the rapid prototyping process using the short activity on the back of this page.**

- This activity demonstrates the process and value of the rapid prototyping process, and engages students in the design of their learning environment.
- This is an ideal companion activity to the design thinking exercise in the "Getting Started" section of the toolkit.

**Have students complete project rough work as a series of evolving prototypes.**

- For example, an essay could be prototyped on a series of index cards, with different colours for arguments, supporting evidence, quotations, key phrases and so on. Different arrangements and combinations of these cards could be shown to both the teacher and peers to gather a range of feedback.

**Help students prototype different formats for class activities.**

- Give your students a small list of curriculum expectations that must be met, then collaborate with them to prototype a variety of activities that could satisfy those expectations.
- Start by sketching out ideas as paper prototypes. Ideas that prove their value at this stage can be developed into more detailed prototypes, then actually engaged in as a class.

# Rapid Prototyping Exercise

Activity Time: 25-35 minutes

## Exercise Description

In groups of three to four, students have 25 minutes to design an ideal collaborative workspace for their peers.

STUDENTS SPEND FIVE MINUTES ON EACH OF THESE STEPS

### Discover

Put two groups together. These groups have five minutes to interview each other in order to better understand the problems they each experience when getting group work done at school.

HINT: TO EXPLORE THIS IN MORE DETAIL, SEE THE CUSTOMER DISCOVERY ACTIVITY IN THE RESEARCH AND DISCOVERY SECTION OF THE TOOLKIT.

### Hypothesize

The groups separate. Their task now is to propose potential solutions for the group they just interviewed. How could their workspace be redesigned to solve their problems with group work?

HINT: STUDENTS SHOULD NOT BE CENSORING THEMSELVES AT THIS POINT. GO FOR QUANTITY, AND ENCOURAGE CRAZY IDEAS.

### Build

As a group, select the most promising solution(s). Now, turn the solution(s) into an easy-to-understand visualization. This may involve sketching, using found objects to create a simple model or rearranging classroom furniture.

HINT: THESE REPRESENTATIONS DON'T NEED TO BE NEAT - BUT THEY SHOULD CLEARLY ILLUSTRATE THE KEYS IDEAS OF THE PROPOSED SOLUTION.

### Test

The two groups who interviewed each other come back together. They take turns sharing their prototype workspaces. To what extent do these solutions solve the other group's problems?

HINT: STUDENTS RECEIVING FEEDBACK SHOULD BE ACTIVELY INVOLVED, ASKING QUESTIONS LIKE "WHY IS THAT?" AND "WHAT IF WE CHANGED THIS?"

### Iterate

The groups separate. Based on the feedback they received, the groups modify their model or sketch. After five minutes, have each group share their prototypes, and describe the process by which they created them.

HINT: TO REINFORCE THE VALUE OF THIS PROCESS, ALLOW STUDENTS TO IMPLEMENT IDEAS GENERATED DURING THIS ACTIVITY.

## What Success Looks Like

**Students adapt their ideas based on what they learned from their peers**

- Throughout the exercise, students make frequent reference to what they were told by the other group, ask thoughtful follow-up questions and change their proposed solution in response to feedback.

**Students express their ideas in multiple ways**

- Throughout the exercise, students use analogies, sketches, key words, gestures, and simple models to express and test their ideas.