

SCAMPER Part 1

Invention Step: Identifying
Grade Level: 6-8
Base Lesson Time: 55 minutes

Driving Question

How can the SCAMPER technique be used to brainstorm new and better ways to use everyday objects?

Learning Objectives

Students Will Be Able To:

- Engage in brainstorming techniques by themselves and with peers.
- Apply the SCAMPER technique to brainstorm new and improved inventions.
- Understand the value of collaboration during the brainstorming.

Why This Matters

When challenged with the concept of creating a new invention, many students will get stuck in the “Identifying” step. Teaching students to examine everyday objects will help open their minds to the creative possibilities of making something new and better. This takes time and practice, so beginning with common objects can be fun and feel less academically risky. Practicing brainstorming will encourage students to imagine new ideas rapidly and to work together as a team to improve those ideas.

Standards

Next Generation Science Standards:

- MS-ETS1-1
- MS-ETS1-2

Common Core ELA Standards:

- CCSS.ELA-Literacy.SL. 6.1 (7.1, 8.1)

Materials

- A collection of everyday items for brainstorming practice
- A box of paper clips

Prep Activity

Using a paper clip, challenge students to imagine a new purpose for it (other than holding paper).

Core Activity

Students will practice the SCAMPER brainstorming technique with a selection of everyday objects.

Post Activity

Students will begin brainstorming problems or needs to solve for their invention. They can record notes in their logbooks.

Homeschoolers or Virtual Learners

All activities can be easily replicated at home, though it is best to work with a partner or small group.

Model i Connectors

If using [The Henry Ford's Model i Innovation Learning Framework](#), the activities in this lesson connect to the following Habits and Actions: Stay Curious, Collaborate, Take Risks, Uncover

Model i Connectors

Throughout this lesson, there will be opportunities to practice and develop Model i's Habits of an Innovator and Actions of Innovation. Listed below are the Habits and Actions that students will develop and practice for this lesson.

Developing Habits of an Innovator



Stay Curious

Learn something new. Ask questions.



Collaborate

Share what we know.
Respect what others bring.



Take Risks

Think BIG. Embrace uncertainty.

Practicing Actions of Innovation



Uncover

Connect with user to identify needs,
develop insight and gain perspective.

Prep Activity

Invention Step: Identifying
Grade Level: 6-8
Prep Activity Time: 15 minutes

Imagine a New Purpose

Explain to students that they are about to think outside the box or exercise their creative brains.

Begin by giving each student one paper clip. Students should work independently. Challenge students to brainstorm new ways to use the paper clip other than holding paper. They can manipulate the paper clip in any way they see fit. Encourage crazy ideas. Have them write down as many different ideas as they can on a piece of paper.

After 2 minutes, students should find a partner to work with and complete the same task. Can they come up with more ideas by working together?

After another 2 minutes, ask for volunteers to share their ideas. Remind students that this is a brainstorming session, so all ideas are valued. No one laughs at anyone's idea.

The students might only have a few ideas to share. That's OK.

Still working with a partner, give each duo 5 paper clips. Like last time, they should brainstorm as many ways to use some or all of the paper clips for a purpose other than holding paper. They can be combined in any way.

After 2-3 minutes, encourage students to share their ideas. It is likely they have more ideas now.

Then ask them to evaluate their process and share observations of what they have learned. Discuss teamwork, collaboration and brainstorming. When did they struggle and how did they get unstuck? Did they get better at thinking outside the box?

Explain to students that thinking creatively (Model i: Take Risks and Stay Curious) takes practice and working with others inspires the best ideas.

Adjustments for Virtual Learning

- Students can work with paperclips at home, then collaborate and share in virtual breakout groups.

Core Activity

Invention Step: Identifying

Grade Level: 6-8

Core Activity Time: 30 minutes

SCAMPER

Give students a copy of the SCAMPER worksheet. Explain that SCAMPER is an acronym for a technique to support creative brainstorming. Review the worksheet and discuss what SCAMPER stands for.

Using an item found in the classroom (or continue using the paper clips), complete one letter of the SCAMPER worksheet as a class. Again, encourage crazy ideas.

Break students into groups of 3-4 to continue completing the worksheet. Each group can use the same item or find different items.

If you'd like to really challenge the students, you could give them an item that they are unfamiliar with. For some fun inspiration, try sharing these artifacts from The Henry Ford Archive of American Innovation:

- [Electrical Artifact](#)
- [Winding](#)
- [Unidentified Object](#)

Allow a few minutes at the end for students to share their ideas.

Remind students that the more they look at objects and challenge how they operate, what they are used for and how they could be made differently, the easier it will get to see the world as an opportunity for innovation.

Adjustments for Virtual Learning

- Student could write in Power Point with SCAMPER embedded.
- Use Google Keep, where students can find an image of item, write SCAMPER ideas, and draw their solution.

Post Activity

Invention Step: Identifying Grade

Level: 6-8

Post Activity Time: 10+ minutes

Brainstorming

Now that students have practiced brainstorming new inventions and innovations, they should begin looking around at their own environments for ideas to inspire their inventions. Use the SCAMPER worksheet as a guide.

Have students write their brainstorming ideas in their logbooks under Invention Step: Identifying and Understanding.

Questions to Get Students Started

- What are some common problems you encounter throughout your day?
- What are some common problems your family and friends encounter throughout their day?

Is there something in your neighborhood or community that could be made better? Ask others for their ideas, too.

Name _____

SCAMPER

Directions: Your teacher will show you an item or have you choose one. It might be one you use every day or one you might not recognize. Try to look at the item in different ways. Use the SCAMPER technique to help you think of different ways to look at the item. If you do not know what the item is, that's OK. You can still do SCAMPER, because whatever the object is, you are looking at it differently.

Action	How would it change and what can you do with it now? Draw and write out your ideas.
Substitute Think of a scenario. How could you use this item? Could you use different materials to make it?	
Combine What could you add to this object? What happens if you use more than one of the item?	
Adapt Can you change a small part of the item to use it for something else? Can you think of another product and make the item more similar to it?	

<p>Modify Add parts or change the shape.</p> <p>Magnify Make it bigger, higher, longer or stronger.</p> <p>Minimize Make it smaller or take parts away.</p>	
<p>Put to Other Use Can you use this item as it is for anything else?</p>	
<p>Eliminate What happens if you take pieces or parts away?</p>	
<p>Rearrange Move parts around or change their order.</p> <p>Reverse Switch the direction of the item.</p>	