

TEACHER DIRECTED ADAPTATIONS FOR VIRTUAL CONSIDERATION

LESSON 3: Brainstorming

LESSON OVERVIEW
<p>This lesson, students will look at a variety of objects (both familiar and unfamiliar) in different ways. They will repurpose the objects by adding materials, subtracting from the designs, and thinking of different uses for the objects. This lesson is important in introducing students to brainstorming, thinking outside of the box, and using household items in different ways, skills which may help them in the creation of their own invention.</p>
OBJECTIVE
<p>Students will be able to describe and apply the brainstorming process. They will brainstorm and analyze and object and repurpose it, add to it and subtract from it.</p>
MATERIALS
<p>Resources Provided by Teacher:</p> <ul style="list-style-type: none"> • Slide Deck: Brainstorming • Video: History Channel Time Out: <i>The Origin of Ice Cream Cone</i> https://www.youtube.com/watch?v=7OcfzMIZsxA (2:56) • PDF: SCAMPER with Ice Cream Cone • PDF: SCAMPER On Your Own • PDF: Ice Cream Cone Template • Optional: Ice Cream Cone • Optional: Kitchen utensil or household object <p>Materials from Home:</p> <ul style="list-style-type: none"> • Pens/pencils • Notebook or paper • Optional: Kitchen utensil or household object

VIRTUAL CONSIDERATIONS
<p><i>Teacher may lead the following lesson plan with flexibility to adapt as needed to fit technology and class format:</i></p>
<p><u>Instruction: Understanding Invention Process</u></p>
<ol style="list-style-type: none"> 1. Share Slide Deck- Brainstorming Teacher may use slides to explain process of brainstorming and guidelines for a safe space in the classroom for students to brainstorm. Suggested ground rules to create a positive and open

sharing space include:

- Defer Judgement- accept all ideas without comment in first stage of brainstorming.
- Work for Quantity- all ideas should be recorded and allow ample time for everyone to contribute.
- Piggy-Back- encourage students to combine or improve ideas that may already be on the list.
- Freewheel- encourage crazy ideas. The most creative are often dismissed, but should be considered.
- Everyone Participates- all students should be involved in the brainstorming process.

Depending on format of class, teacher may post a list of “Ground Rules for Brainstorming” where everyone can see them and review them throughout the invention unit.

2. Teacher will begin by asking if students know what it means to “brainstorm”. Allow students to share ideas. Brainstorming requires quick thinking and creativity. Many ideas are produced, but value judgements are avoided in a brainstorming process.
3. Teacher will tell students that brainstorming is an important step in the Invention Process- it is part of the “Ideate” and “Design” processes. Teacher will introduce the SCAMPER method of brainstorming. SCAMPER is one tool to structure a brainstorming session. SCAMPER lists the kinds of thinking and doing cues that spark ideas. Discuss these strategies to guide the class through a brainstorm together. Teacher will present the vocabulary and help students by prompting them with the questions and suggestions for each letter of SCAMPER.
4. Share the video from the History Channel’s Time Out: *The Origin of Ice Cream Cone* (link: <https://www.youtube.com/watch?v=7OcfzMIZsxA>, 2:56 minutes). Teacher will then use the ice cream cone as an example for doing a SCAMPER brainstorm together with the class. Teacher will show an ice cream cone and ask students to use the PDF: SCAMPER with Ice Cream Cone to follow along as the group SCAMPERS together. Alternatively, teacher may screen share the SCAMPER with Ice Cream Cone worksheet and complete it in a group session so that all can see the notes as they are recorded. Teacher will read each letter of SCAMPER and then prompt students to consider questions in their approach to brainstorming.

Example: S= SUBSTITUTE

- What could be substituted for the cone?
- What could be substituted for the ice cream?
- What could be substituted for the taste? The texture?

After going through all of the letters, ask students to discuss the ideas and select one new idea for using the ice cream cone. Teacher will finish the activity by telling students they have just completed a brainstorm. This method can now be used as they approach their own identified problems as they think of an invention to build.

Ideas for Virtual Instruction:

1. Give students the PDF: Ice Cream Cone Template. Ask students to draw a new use for the ice cream cone by modifying the cone in the picture using SCAMPER and illustrating its new function. Students can submit work using the teacher's virtual platform of choice.
2. Ask students to think of a new use for an ice cream cone and to describe how the cone must be changed to serve the new function. Students can submit work using the teacher's virtual platform of choice.
3. Teachers may create a class gallery such as a blog or virtual sharing space where students can post their new ideas for the ice cream cone and make comments as they view the submissions by their peers.

Activity: SCAMPER ON YOUR OWN

Students will find a kitchen utensil or other object from home.

1. Teacher will share PDF: SCAMPER On Your Own with students.
2. Teacher will guide students to SCAMPER using a kitchen utensil or other household object of their choice. Again, teacher will talk through each letter of SCAMPER and prompt with questions to help students focus their brainstorm for a new use for their objects. Teacher may choose to share their own example using a kitchen tool or household object.
3. Students should complete the PDF: SCAPER On Your Own as they do the activity.
4. At the end of the SCAMPER, students may share their new ideas with the class. Teacher may follow with a reflection about the brainstorm process. What was fun? What was challenging? What can students do when they feel "stuck" and they cannot think of anything?

Ideas for Virtual Instruction:

1. Teacher may choose a specific object or allow students to choose from a list of 2-3 objects for their SCAMPER On Your Own activity. Students will then SCAMPER that object and complete the worksheet at home.
2. Teacher may choose to SCAMPER On Your Own as an entire class activity. Teacher may show an object or several objects and then ask students to submit their brainstorm ideas using a virtual sharing tool.
3. Ask students to SCAMPER an object at home and then use other materials to re-design the original item into its new use. Students may then draw a picture or take a photo or video to share with the class using a blog, class meeting, or other virtual sharing tool.
4. Use a Zoom breakout room or Google Classrooms to allow small groups to virtually SCAMPER an object together. Bring groups back for a class share session.

CHECK FOR UNDERSTANDING

Teacher may wish to do one of the following to check for understanding:

1. In the format of the teacher's choice, ask students to share their independent brainstorming ideas in a class gallery and then ask students to comment on the submissions of their peers by offering one positive comment and one constructive idea.
2. In a virtual pair-share, pair students and then send them the brainstorm idea of their partner. Ask them to make one additional modification to the idea.

3. Ask students to share how many ideas for a new use for the ice cream cone they came up with using the SCAMPER method. How might an inventor use this method and how might they use this activity in real life?