

LESSON 3: Brainstorming

Lesson Script

THIS SCRIPT IS TO BE USED AS A GUIDE TO ACCOMPANY THE SLIDE DECK FOR THIS YIP LESSON FOR PRESENTATION IN PERSON OR VIRTUAL (SYNCHRONOUS OR ASYNCHRONOUS-PRE-RECORDED).

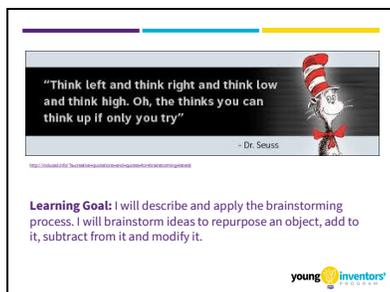
TEACHER MAY ADD SPECIFIC GREETINGS AND COMMENTS AS NEEDED AND MAKE CHANGES TO MEET CLASS NEEDS USING THE LESSON PLAN IN THE YIP CURRICULUM.



[TEACHER MAY MODIFY INTRODUCTION TO LESSON AS NEEDED.]

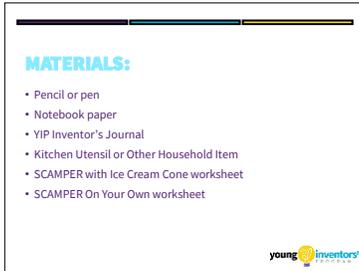
Welcome to the third session of our invention unit with the Young Inventors' Program.

Today we are going to cover YIP Lesson 3: Brainstorming



By the end of today, you will be able to brainstorm and apply your new skills as you consider a unique solution to a problem. You will be able to take an object and analyze it, find another use for it (repurpose it), and modify it so that it can do something different or improve how it functions.

LESSON 3: Brainstorming



Before we start, you will need the following materials.

- Pen or pencil
- Notebook paper
- YIP Inventor's Journal
- Kitchen utensil or other household object
- SCAMPER with Ice Cream Cone worksheet
- SCAMPTER On Your Own worksheet

IF PRE-RECORDING YOU MAY SAY:

If you want to pause the video while you collect your things, go ahead and press Pause. Then hit Play when you are ready.

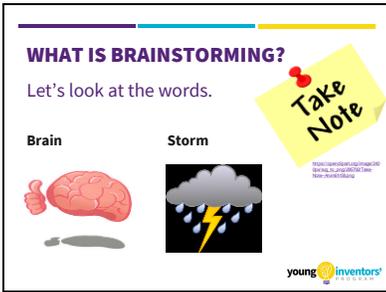


Invention ideas often start with existing objects and then someone thinks of a new or better way to use it. Think about items around the classroom or the room you are in now. How might you change them? Let's look at this backpack. Can we change this bag so it can be easier or more comfortable to use? Or can we use it for some other purpose besides carrying supplies?

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND BEGIN A DISCUSSION. BEGIN SLIDES WHEN READY TO RESUME.

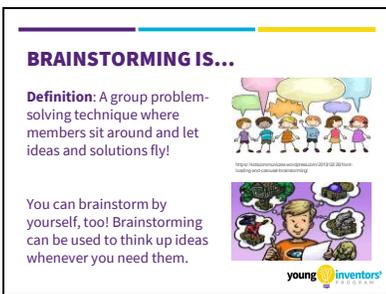
LESSON 3: Brainstorming



What does it mean to “brainstorm”? Brainstorming requires quick thinking and creativity. Many ideas are produced, but value judgements are avoided in a brainstorming process. That means that when we brainstorm, we shouldn’t take time to talk about if an idea is good or bad, but just get our ideas out so that later we can look at them more carefully.

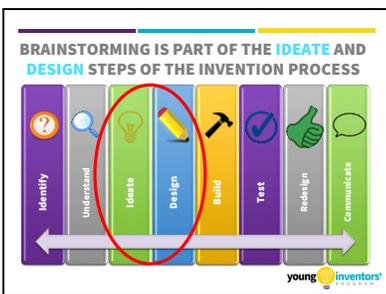
NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, PAUSE AND ALLOW STUDENTS TO SHARE IDEAS. BEGIN SLIDES WHEN READY TO RESUME.



Here is a more formal definition of the word brainstorm. Brainstorm is a group problem-solving technique where members of a group sit around and let ideas and solutions fly.

Brainstorming is a great tool to use in all kinds of situations, not just for invention. Perhaps you have brainstormed an idea for a story to write, or maybe to think of a team name. We brainstorm all the time, sometimes when we don’t even know we’re doing it.



Brainstorming is an important step in the Invention Process. Can you think back to our last session? In what part of the Invention Process do you think Brainstorming happens?

ALLOW STUDENTS TO RESPOND.

Brainstorming is part of the “Ideate” and “Design” processes.

LESSON 3: Brainstorming



IDEATE

Use creative problem-solving to turn an idea into a solution.

Inventors must turn their ideas into a solution using creative problem-solving. As the idea is developed, inventors must continue to research to learn if their solution is original.



Let's think back. In the Ideate process, we use creative problem-solving to turn an idea into a solution.



DESIGN

Draw the design and label the parts and movements.

Inventors act as engineers and designers when sketching out their prototypes. Sketches can be hand-drawn or done on a computer. The drawings should include labels to show important features or movements.



In the Design process, we draw and design our ideas, labeling the parts and movement so that we can create an image of them to help us think about them further.

HOW DO I BRAINSTORM?

Here are the rules:

- We want a **lot of ideas**: fluency
- We want **wild and crazy ideas**: flexibility
- You can build on **someone else's idea**: elaborate
- **Everyone's** ideas are important: originality




NOTE:
AS YOU INTRODUCE A BRAINSTORMING SESSION TO THE CLASS, TEACHER MAY WISH TO ESTABLISH GROUND RULES TO CREATE A SAFE SPACE FOR STUDENTS TO THINK AND SHARE IDEAS. SEE YIP LESSON 3 LESSON PLAN FOR RECOMMENDATIONS.

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND CREATE YOUR CLASS RULES.

IF PRE-RECORDING, TEACHER MAY WISH TO STOP SCREEN SHARE AND SLIDES TO SHARE A LIST OF CLASS RULES FOR CLASS TO SEE BEFORE MOVING AHEAD. BEGIN SCREEN SHARE WITH SLIDES WHEN READY TO RESUME.

Before you begin a brainstorming session, if you are working in a group, it's a good idea to create some basic ground rules so that everyone feels comfortable sharing all sorts of ideas.

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Here are some good rules to start with:

- We want as many ideas as possible
- Wild and crazy ideas are ok. There are no limits to what you think of as you start.
- If you hear a good idea from someone, it's ok to expand on it, combine ideas or add to them
- Everyone Participates- all students should be involved in the brainstorming process.

A few more ideas whether you are brainstorming alone or in a group:

- Defer Judgement- accept all ideas without comment in first stage of brainstorming.
- And of course, all ideas are important and valued.



What does it mean to brainstorm?

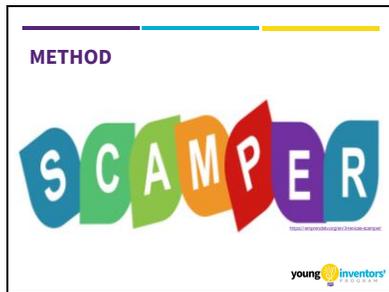
NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ALLOW STUDENTS TO SHARE IDEAS. BEGIN SLIDES WHEN READY TO RESUME.

Brainstorming requires quick thinking and creativity. Many ideas are produced, but value judgements are avoided in a brainstorming process.

Today, we will practice brainstorming and thinking out-of-the-box as we think of new ways to look at problems and their solutions.

LESSON 3: Brainstorming



There are many ways to brainstorm. We are going to focus on a specific method: SCAMPER. SCAMPER is one tool to structure a brainstorming session. If you are feeling overwhelmed or stuck, having a system to help you generate ideas can be really useful. SCAMPER is great and it's a lot of fun too.



In SCAMPER, we use each letter from the word “SCAMPER” to prompt ways of thinking and spark new ideas. Let’s go through it together.

S= SUBSTITUTE: Can we take an object and substitute it for something else? You can look at the whole or the parts. Maybe there is just one piece of the object that can be substituted give it new or improved purpose.

C= COMBINE: Can this object be combined with another object to make something new? Have you heard of a “spork?” It’s a combination of a spoon and a fork which can be really useful when eating something like cake and ice cream.

A= ADAPT: Can the object be adapted to be used for another purpose? Can you make a small change to it and use it for something new?

M= MODIFY: What can be modified or changed on the object to allow it to do something different or improve its function? Again, you can look at the object as a whole or just modify a part. Make it bigger or smaller, slower or faster.

P= PUT TO OTHER USE: Keep the object as it is, but find a new way to use it. For example, if you’ve taken a paper plate to wave away flies or fan yourself at a summer picnic. The plate became a fly swatter and a fan- how versatile.

E= ELIMINATE: What if you take something away from the object, like remove a part? Think about a candle stick. If you remove the candle, can the stick be used to hold something else?

LESSON 3: Brainstorming

R= REARRANGE: Can parts of your object be switched around or flipped? What if you took a toothbrush and added bristles to the back of the head as well as the front. You have a tool that now brushes your teeth more efficiently- you can get your tops and bottoms at the same time. What an idea!



Let's watch this video to see how an idea that popped up on the fly, out of pure necessity, became one of the world's most popular treats.

[PLAY VIDEO] (2:56 minutes)

Link: <https://www.youtube.com/watch?v=7OcfzMIZsxA>

Have you heard this story before? It's time of need like these that create ideas that lead to our best innovations and inventions, like the ice cream cone.

LESSON 3: Brainstorming



Look at these cones- they all display modifications to the standard ice cream cone that make them different and possibly improved depending on your point of view and how you like to eat your ice cream. Some are made of different ingredients, people have played with shapes and sizes. I'm sure you've seen and eaten all sorts of variations of cones yourself.

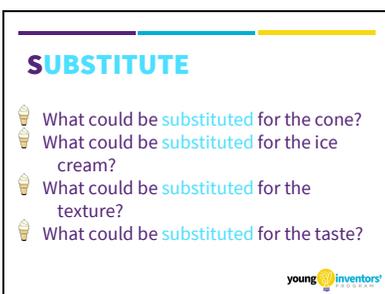
So let's practice together by SCAMPERing the ice cream cone.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP THE SLIDES. TEACHER MAY HOLD UP AN ICE CREAM CONE, USE THE ICE CREAM CONE TEMPLATE, OR SHOW ANOTHER PICTURE OF A CONE. TEACHER MAY ALSO WISH TO DISTRIBUTE ICE CREAM CONES TO THE CLASS OR ASK STUDENTS TO USE A CONE AT HOME FOR THE ACTIVITY. BEGIN SLIDES WHEN READY TO RESUME.

IF PRE-RECORDING, ASK STUDENTS TO GET AN ICE CREAM CONE FROM HOME OR PROVIDE DIGITAL ACCESS TO THE ICE CREAM CONE TEMPLATE.

Take a minute and look at your ice cream cone carefully. If you are holding a cone, feel it, turn it in your hands, look at it from all angles.



So we're going to SCAMPER the cone together. Let's start with S for SUBSITUTE. Think about these questions:

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

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. BEGIN SLIDES WHEN READY TO RESUME.

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COMBINE

-  What could be combined with the cone?
-  What could be combined with the ice cream?
-  Could the cone be combined with other foods?
-  Could the cone be combined with other non-foods?

Now, C for Combine. Again, think about this:

- What could be combined with the cone?
- What could be combined with the ice cream?
- Could the cone be combined with other foods?
- Could the cone be combined with other non-foods?

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. BEGIN SLIDES WHEN READY TO RESUME.

ADAPT

-  How could the cone be adapted so it won't drip?
-  How could the cone be adapted so it will keep the ice cream cold?
-  How could the cone be adapted so it won't get soggy?

A for Adapt. Again,

- How can the cone be adapted so it won't drip?
- How can the cone be adapted so it will keep the ice cream cold?
- How can the cone be adapted so it won't get soggy or break?

Take a few notes if you wish.

NOTE:

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MODIFY

-  Modify the ice cream cone.
-  What is it like after **modification**?
-  If it were *magnified*, what might it be used for?
-  If it were *minimized*, what might it be used for?

How can you modify the ice cream cone? Think about it. What does the cone look, feel or taste like after your modification? If it were made larger, what might it be used for? And if it shrunk, what could you do with it?

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. BEGIN SLIDES WHEN READY TO RESUME.

PUT TO OTHER USE

-  What else could an ice cream cone be **used** for?
-  Who else might **use** it?
-  Where else might it be **used**?

P stands for Put to other use. So, let's brainstorm.

- What else can this cone be used for?
- Who else might use it?
- Where else could you use it?

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. BEGIN SLIDES WHEN READY TO RESUME.

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ELIMINATE

- 💡 What could be *removed* from an ice cream cone?
- 💡 How could the ice cream cone be *streamlined*?
- 💡 How could the ice cream cone be made *lighter*?

E is for Eliminate.

- What can be removed from the ice cream cone?
- How can the ice cream cone be made more efficient or streamlined?
- Can it be made lighter? What might that do?

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. BEGIN SLIDES WHEN READY TO RESUME.

REVERSE OR REARRANGE

- 💡 What if the ice cream cone were *upside down*?
- 💡 What if the ice cream cone were *inside out*?
- 💡 What other *shape* could the ice cream cone be?

And now for our last letter, R for Reverse or Rearrange.

- What if you turn the ice cream cone upside down?
- What if you could turn the cone inside out?
- What other shape could it be?

Take a few notes if you wish.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES AND ASK STUDENTS TO RESPOND. THEN, USING ALL OF THE BRAINSTORMING PROMPTS, ASK THE CLASS TO DISCUSS SOME OF THEIR TOP IDEAS AND SELECT ONE NEW IDEA FOR USING THE ICE CREAM CONE. BEGIN SLIDES WHEN READY TO RESUME.

We have now finished our brainstorm. Great job. You are ready to use this method on your own as you think of your problem and the invention you want to design.

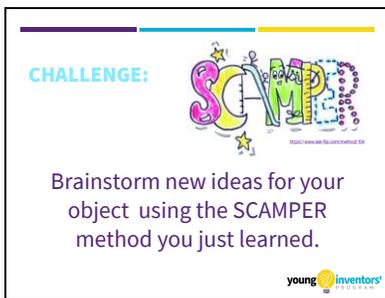
STUDENT PROVING BEHAVIOR ACTIVITY:

NOW IS A GOOD TIME TO INSERT ONE OF THE RECOMMENDED STUDENT PROVING BEHAVIOR ACTIVITIES FROM LESSON 3 PLAN INTO THE LESSON. STOP SLIDES AND/OR SCREEN SHARE TO LEAD ACTIVITY. BEGIN SLIDES WHEN READY TO RESUME.

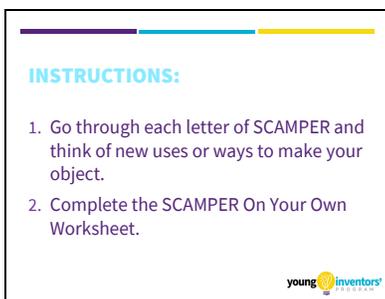
LESSON 3: Brainstorming



It's time to SCAMPER on your own.



Choose an object from around the house- maybe a kitchen utensil or something from your room. Using SCAMPER, I want you to brainstorm a new use for this object.



You may use the SCAMPER On Your Own Worksheet to guide you as you think through each of the letters in the word SCAMPER.

NOTE:

IF IN-PERSON OR SYNCHRONOUS RECORDING, STOP SLIDES. TEACHER MAY WISH TO SHARE AN OBJECT YOU HAVE ALREADY SCAMPERED TO SHOW AS AN EXAMPLE. BEGIN SLIDES WHEN READY TO RESUME.

IF PRE-RECORDING, STOP SCREEN SHARE AND SLIDES. TEACHER MAY WISH TO SHARE AN OBJECT YOU HAVE ALREADY SCAMPERED TO SHOW AS AN EXAMPLE. BEGIN SCREEN SHARE WITH SLIDES WHEN READY TO RESUME.



LESSON 3: Brainstorming

TEACHER MAY CHOOSE TO CLOSE THE LESSON BY GIVING A RELEVANT ASSIGNMENT OR ASKING STUDENTS TO REFLECT ON THE ACTIVITY. SEE THE YIP LESSON 3 PLAN FOR SUGGESTIONS.