



Grab Bag Inventing

What is *Grab Bag Inventing*?

Grab Bag Inventing is an activity that allows participants to try playful inventing and helps them recognize their own creative abilities. Participants work together in small groups to design inventions using common materials.

Who can participate?

Anyone! This activity is easily adaptable to almost any age level and can be used in many different settings. Participants are split into working groups of three to five.

How long does it take?

Grab Bag Inventing can take 30 minutes to an hour, depending on the age and interest of the group, and allowable time.

What are the objectives of *Grab Bag Inventing*?

By the end of the workshop, participants will understand that:

- Inventions help us do things more easily or solve a problem.
- Invention is a process, rather than a single “Eureka!” moment.
- Inventing combines creativity, good communication skills and the ability to work in a team with a range of disciplines, such as math, science, history and technology.
- Everyone is inventive!

Supplies

- Common & uncommon items for brainstorming alternate uses (e.g. egg carton, clothes hanger, mystery items from the kitchen drawer)
- Pre-made grab bags (one per group) containing items such as paper clips, string or yarn, pipe cleaners, craft sticks, rubber bands, balloons, paper cups, etc. (6-7 items in all)
- Sketchbooks & pencils
- Roll of tape for each group
- Pair of scissors for each group
- Colored markers

Program Plan

1. Warm-up: Thinking like an inventor

- Hold up a familiar object (e.g. egg carton) and brainstorm possible alternate uses OR use an unfamiliar object and see if participants can figure out its purpose.
- Ask participants: What is an invention? Why do people invent? What are some characteristics of inventors?
- Discuss inventors as problem-solvers and people just like us, and that inventions are intended to improve our lives.

Next, discuss the process of invention. How does an inventor go from a great idea to a finished product? The process is not always linear, but usually includes steps like these:

- Identify a problem/need
- Research solutions and other inventions that might already exist
- Sketch ideas
- Build a model (prototype)
- Test the model
- Refine the invention
- Market it to the public

2. Explanation of *Grab Bag Inventing* activity

- Distribute grab bags, sketchbooks, pencils and other supplies and invite participants to become inventors.
- Explain that one of the most important aspects of being an inventor is being imaginative and playful.
- Tell participants “You have an opportunity to try inventing with the materials in this paper bag. You may use everything in the bag, but you don’t have to. Your task is to work together to figure out what problem you want to solve, what you are going to invent, and then make a model of your invention.”
- Have participants begin sketching ideas for their invention in the sketchbooks and brainstorming solutions.

3. Inventing

- Once participants have preliminary sketches of what they want to invent, they can begin the creative process of inventing.
- While participants are inventing, facilitator provides additional supplies as requested and encourages each member of the group to contribute to the invention.

4. Wrap Up

- After 20-25 minutes, even if the inventions are not complete, call a halt to the process and ask each group of inventors to tell about their invention, what problem it solves, how it will work and what it is called. Also ask that they share any sketches and talk about the ways in which their invention changed (or didn’t) from the original concept.
- If they were going to prototype their invention, what materials would they use? Who would be their customer? How would they market their invention?
- Congratulate the inventors and encourage them to keep their inventions and continue to refine their idea or use it to inspire future inventions.
- After each group has presented, the facilitator can ask the groups to swap inventions. Each group must make an innovation or improvement on the invention they receive. After 15-20 minutes, groups can present the enhancements they have made. **(This is an optional step and works best with older students and adults.)**

Sample Scenarios:

The U.S. Patent Office has issued thousands of patents for mousetraps, more than any other machine. How would you build a better mousetrap? Try your hand at creating your own mousetrap prototype.

What will the car of the future look like? How will it run? Use the materials provided to build a prototype of the vehicle of tomorrow!

You are working on a strawberry farm in the heat of the sun. It is hot and your back is sore from bending over to pick from the small plants. Invent a device that will ease your work.

All inventions solve problems or address a need, but not every invention offers a completely new solution. Many inventions are improvements on previous ones. Can you find ways to improve a paper cup? Think of things that you don’t like about the paper cup or think could be better. Use scissors, tape, and other materials provided to create a better cup.