

INVENTOR | BROWNIE BADGE PROGRAM



Overview

The Brownie Inventor badge is designed to help Girl Scouts at the Brownie level learn to think like inventors. Brownies will practice observing the world around them, noticing needs and problems, and brainstorming innovative ways to address them. After working independently and with others to complete all five activities, each participating Brownie will qualify for her Brownie Inventor Badge.

How to Complete

The Brownie Inventor Badge Program is offered to Girl Scouts onsite at the National Museum of Dentistry by appointment. To reserve, contact Elise Petersen (NMD Education Coordinator) at epetersen@umaryland.edu or (410) 706-4819.

National Museum of Dentistry patches are available for purchase. Girl Scout troops should purchase Brownie Inventor badges separately at the following link: <https://www.girlscoutshop.com/BROWNIE-INVENTOR-BADGE>.

Exhibitions & Materials

- Full museum tour
- Inventor's notebooks, pencils, drawing paper, colored pencils/crayons/markers (materials provided)






The Dr. Samuel D. Harris
National
Museum of
Dentistry

Step 1: Warm Up Your Inventor's Mind (Dr. Errol L. Reese Conference Room)

Supplies: inventor's notebook and pencil for each scout

Inventing, like painting, building, or designing, is creative work! As is true about other forms of creative work, it is helpful to begin inventing by first warming up your mind. Think about different tasks you might accomplish using a toothbrush, besides brushing your teeth! Can you think of three? Five? Ten? Write down any ideas you can think of in your inventor's notebook. After about five minutes, stop and discuss your ideas as a troop.

POSSIBLE RESPONSES:

		
<ul style="list-style-type: none"> • Cleaning tile grout • Cleaning household appliances • Cleaning computer keyboards • Cleaning toys • Cleaning fingernails • Cleaning shoe soles • Cleaning hair dryer vents • Cleaning jewelry 	<ul style="list-style-type: none"> • As a paintbrush • As a texture tool for clay 	<ul style="list-style-type: none"> • As an eyebrow brush • As a hair dye applicator

Step 2: Find Lots of Ways to Solve the Same Problem (Dr. Errol L. Reese Conference Room)

Supplies: A/V setup

Across the world and throughout history, people have encountered certain questions, challenges, and problems over and over again. People of different cultures and geographies sometimes meet similar challenges in different ways. For example, in the United States, food is typically eaten with a fork or spoon. In certain Asian countries, including China, Japan, Korea, and Vietnam, many people eat with chopsticks. Chopsticks and forks may look and work differently from one another, but they help people accomplish the same task!

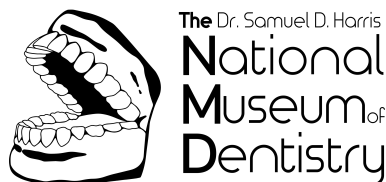
Music is a common human interest, and not only in the modern world: people from different cultures around the world have been making music for thousands of years. Spend 5 minutes thinking about different ways of making music. Can you think of ten? As an added challenge, can you think of at least five ways of making music that involve using your mouth or the mouth or teeth of an animal?

POSSIBLE RESPONSES:

- Singing
- Humming
- Whistling
- Rapping
- Beatboxing
- Playing a wind instrument

Spend a few minutes discussing your ideas with your troop. What ideas did you generate as a group? As a troop, how many ways did you come up with in total for making music using your mouth or the mouth/teeth of an animal?

At the National Museum of Dentistry, we know about a few ways that people across the globe make or have made music using teeth—their own, or the teeth of animals—that might surprise you!



QUIJADA DE BURRO

A Quijada de Burro (Kee-ha-dah de boo-ro) is a musical instrument from Peru. If anyone in your troop speaks Spanish, they may be able to infer what this instrument is made of: the jawbone of a donkey! Sometimes called the quijada for short, it is played by holding the anterior end of the jaw (where the front teeth are located) in one hand and using the other hand to strike the upper jaw, which causes the teeth to make a rattling sound. The quijada may also be played by rubbing a stick against the teeth.



For a demonstration of the *quijada*, watch a video created by the Music Museum Online. Press play or visit the following link:
<https://youtu.be/LUNZrQWyoQ>



GOURD SHAKER

Rattles, shakers, and maracas are present in the music of many cultures across the world. Early shakers originated in Africa and were made of dried gourds filled with small pebbles, seeds, shells, or —you guessed it—animal teeth. Gourd shakers also feature heavily in Latin and Indigenous American music.



Listen to the Richmond Indigenous Gourd Orchestra play gourd shakers made from gourds grown in nearby Virginia! Press play or visit the following link:
<https://youtu.be/S--jv27tBdQ>



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IVORY PIANO

Did you know that piano keys were once made from the tusks (very large external teeth) of elephants? This material, called ivory, is no longer used by most piano manufacturers because of the harm that the ivory industry has caused to the world's elephant population. In fact, in several countries (including the United States), use of ivory is illegal. Nowadays, most piano keys are made out of plastic—but you may have a grandparent or neighbor who still has an ivory piano.



TEETH DRUMMING

Famous rock-and-roll drummer Dave Grohl of the Foo Fighters (and previously Nirvana) is known to practice drumming by clacking drum rhythms with his teeth.



To hear what teeth drumming sounds like, press play or visit the following link:

<https://www.youtube.com/watch?v=c6vJlUo4NY>



THE DENTIST SAYS DON'T!
Teeth drumming can be very destructive to your teeth. Don't try it at home!



The Dr. Samuel D. Harris
**National
Museum
of
Dentistry**

GALLERY TOUR: INVENTION AND INNOVATION

Inventors become inspired to invent something new by first observing the world around them and noticing needs of others that are not being met, or could be met in better ways. Just today, we have discussed needs that could be solved using toothbrushes in innovative ways, as well as inventive ways that people around the world have made music.

Our exhibits at the National Museum of Dentistry tell a story about inventions and innovations that have made it possible for us to have healthy, happy mouths. We have objects from all over the world that represent work inventors have done to help people care for their mouths and teeth, from the earliest civilizations on Earth to modern people living today!

TOUR HIGHLIGHTS:

- Penny Wilson (circus performer)
- Japanese *Ohaguro* (aesthetic and antibacterial tooth blackening)
- Early toothbrushes
- Sophisticated hygiene tools (Queen Victoria's set)
- Fluoridation
- Dentistry and Public Health (Contributions of Dr. Leonie von Meusebach-Zesch)
- Dollhouse cabinet (Contributions of Dr. Minnie Evangeline Jordon)
- Mayan jade inlays (dental ornamentation)
- X-ray imaging
- Evolution of the dental chair
- Dentures: Japanese vs American (including George Washington's denture and replicas)
- Pain relief
- Preservation over extraction
- Creative minds (inventions by dentists)
- Dentistry in the future

Step 3: Make a Needs List (Dr. Errol L. Reese Conference Room)

Supplies: inventor's notebook and pencil for each scout

After your troop has finished the gallery tour, spend 5 minutes on your own thinking about the morning routines of your family members. Does anyone in your family struggle to wake up on time? Does everyone have an easy time brushing their teeth, or do members of your family sometimes forget? Does anyone in your family have a disability that makes toothbrushing or flossing difficult? Is everyone in your family able to access and enjoy a healthy breakfast each day?

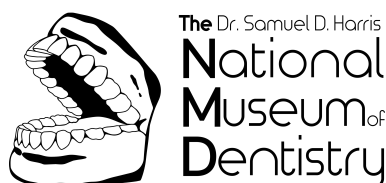
Write down the needs you observe in your family. If you can't think of any needs related to toothbrushing, that's okay! Think about needs they may experience in other areas.

Step 4: Solve a Problem (Dr. Errol L. Reese Conference Room)

Supplies: inventor's notebook and pencil for each scout

Consider the needs you outlined in Step 3. Pick one problem you observed and think about ways to solve it using one of the following methods to organize your thoughts:

1. **Mind Map:** Using the Mind Map template, place the problem you wish to solve in the center circle. Use the outer circles to brainstorm possible ideas for addressing the problem. If you run out of circles, draw more!
2. **Sketch It Out:** Draw 3-5 potential solutions in your inventor's notebook.



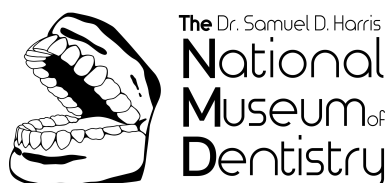
Step 5: Share Your Invention (Dr. Errol L. Reese Conference Room)

Supplies: drawing paper, colored pencils/crayons/markers

Collaboration helps us improve our ideas. Of all of the ideas you collected in Step 4, choose your favorite and draw it out on a full-size sheet of drawing paper. Label its different parts. When everyone is finished (or after 5-10 minutes), take turns sharing your ideas with your troop. Discuss what is awesome about everyone's ideas, and how they could be made even better.

Reflection

Congratulations! You have earned your Brownie Inventor badge. Now that you have earned your badge, you can use your inventor's mind to brainstorm ideas that can help your family, your school, your Girl Scout troop, your community, and yourself! If you wish, spend a few minutes reflecting in your inventor's notebook about your experiences in the Inventor program, and anything you feel inspired about with regard to inventing.



INVENTOR'S NOTEBOOK

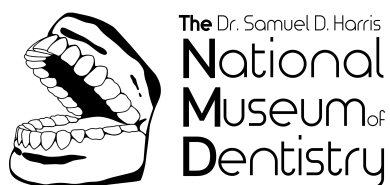
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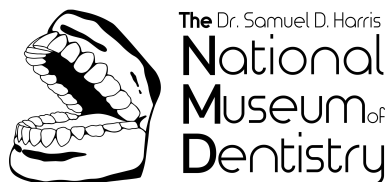
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Step 2: Find Different Ways to Solve One Problem

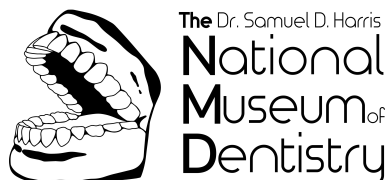
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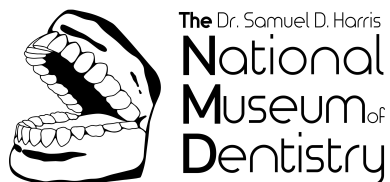


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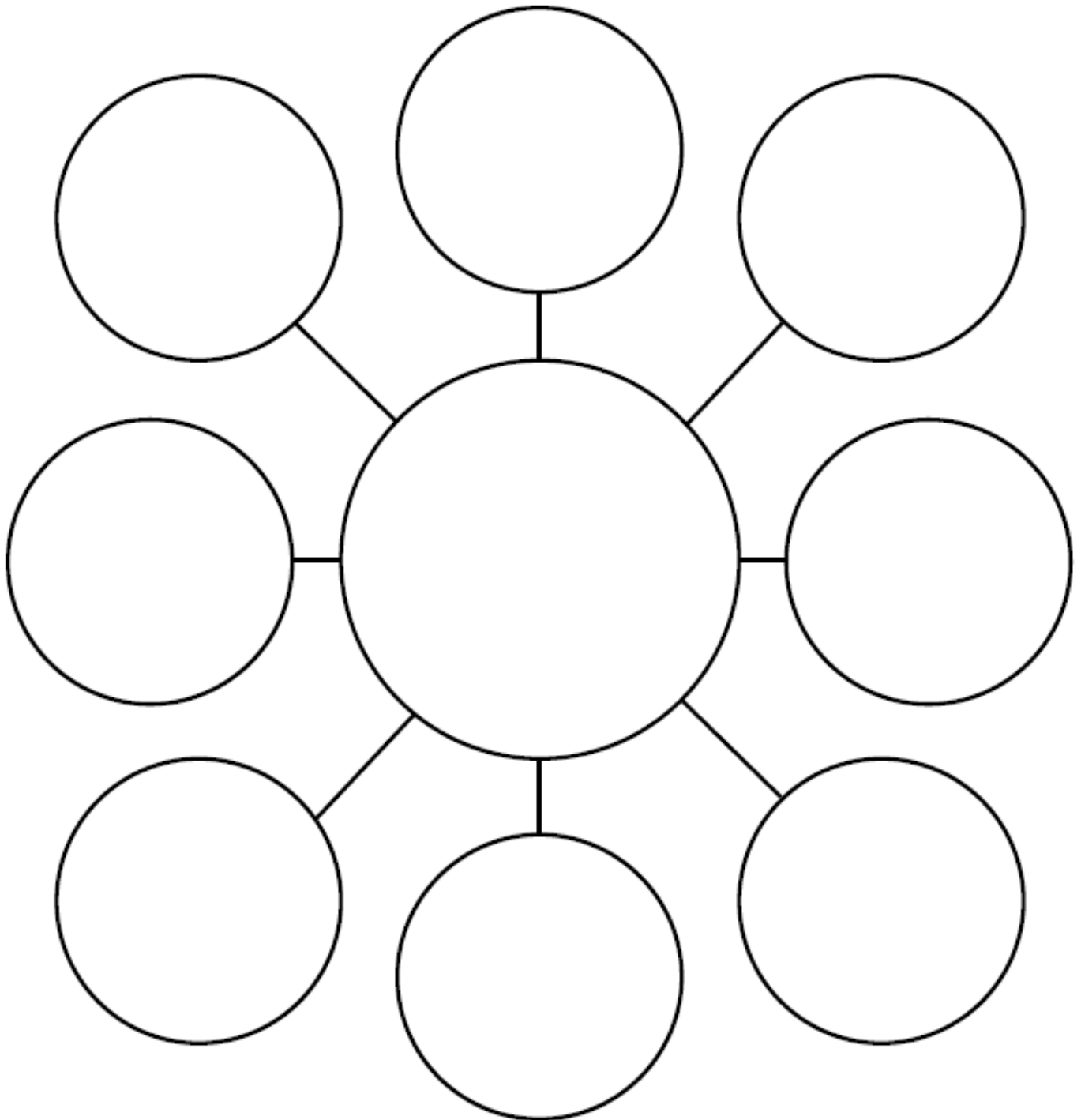
1. SKETCH IT OUT

Draw 3-5 potential solutions in your inventor's notebook.



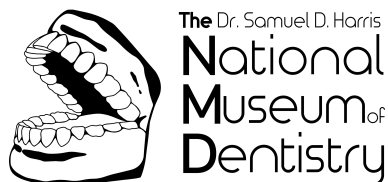
2. MIND MAP

Using this Mind Map template, place the problem you wish to solve in the center circle. Use the outer circles to brainstorm possible ideas for addressing the problem. If you run out of circles, draw more!



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