

Discovery Theater

presents

Lions of Industry, Mothers of Invention

An original play by Jacqueline E. Lawton

A REPRODUCIBLE LEARNING GUIDE FOR TEACHERS.

This guide is designed to help you and your students prepare for, enjoy, and discuss the play. It contains background information, discussion questions and activities most appropriate for ages 6-11. One activity for ages 12 and up is featured.

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See our website for tickets, location, directions, resources for teachers, and much more!

About the Play

Lions of Industry, Mothers of Invention is Discovery Theater's original and interactive play that honors the creativity and genius of African American entrepreneurs and inventors like beauty innovator Madam C.J. Walker, "peanut man" George Washington Carver, academic giant Booker T. Washington, and potato chip inventor George Crum. The play demonstrates how the featured inventors all solved a problem or fulfilled a need and how great things originate and develop with an idea, imagination, and the belief that you can make it happen.

Meet the Characters! All of the characters in the play are important African American inventors and entrepreneurs that make up a part of American history.



Sarah Breedlove washed other people's clothes by hand before she taught herself to read, invented a hair tonic in her kitchen, and sold it door to door until she became the millionaire businesswoman we know as Madame C.J. Walker. After suffering from a scalp ailment that resulted in her own hair loss, she invented a line of African-American hair care products in 1905. In 1908 Walker opened a factory and a beauty school in Pittsburgh, and by 1910, when Walker transferred her business operations to Indianapolis, the Madame C.J. Walker

Manufacturing Company had become wildly successful, with profits that were the modern-day equivalent of several million dollars. Today, Walker is widely credited as the first American woman to become a self-made millionaire.



George Washington Carver was an African American scientist, botanist, educator and inventor. Born near the end of the Civil War in 1864 in Diamond Grove, Missouri on the farm of Moses Carver, he experienced slavery and segregation. Working on the farm is where George Washington Carver first fell in love with nature and began to experiment with plants. He gained a Bachelor of Science degree in 1894 and a Master of Science degree in bacterial botany and agriculture in 1897 from Iowa Agricultural College. In 1897, Booker T. Washington, founder of the Tuskegee Normal and Industrial Institute for

Negroes, convinced Carver to serve as the school's Director of Agriculture. At Tuskegee Carver developed his crop rotation method, which revolutionized southern agriculture. He educated the farmers to alternate the soil-depleting cotton crops with soil-enriching crops such as; peanuts, peas, soybeans, sweet potato, and pecans. He was able to put the oil from the peanut into every day products such as face cream, rubbing oil and gasoline.



Booker T Washington was the most famous black man in America between 1895 and 1915. He was born on April 5, 1856 as a slave on the 207-acre farm of James Burroughs. He worked as a salt packer and coal miner. After the Civil War, Washington became the first principal of Tuskegee Normal and Industrial School. Later as an adviser, author and orator, his past would influence his philosophies as the most influential African American of his era. His book *Up from Slavery* inspired Madame CJ Walker as well as many other African Americans.

Other key African Americans introduced in the play include:

Alfred Cralle invented the ice cream scoop. A patent was issued in 1897 for this scoop.

George Crum was a mixed race trapper who then became a cook at Moon Lake Lodge. He is known for inventing the potato chip.

Lewis Howard Latimer created the incandescent light bulb.

Jan Matzeliger was an African-American inventor in the shoe industry. He patented a machine that could produce up to 700 pairs of shoes a day.

John H. Murphy was a former slave who founded the Afro-American newspaper in 1892.

Jean Baptiste Point Du Sable set up a trading post and became known as the founder of Chicago.

Maggie Walker was the black woman banker who opened the St Luke Penny Savings Bank and served as president.

What's the Big Idea?

What all these inventors and world-changers have in common is that they solved a problem or filled a need. Sometimes it was a need for information. Sometimes it was the problem of how to do something for the first time ever – like invent the electric light bulb! Other times, it was how to do something people were doing already – but in a way that was faster, easier, cheaper, or simply more fun.

Many of these problem-solvers have been African-Americans who overcame hardships including slavery and segregation, and have creativity and commitment. When creative people see a better way to do things, and work hard to make it happen – the sky can be the limit!

Thousands more Americans like these have changed our world. They believed in themselves and their ideas – and kept on trying to make them happen. The same thing is true for you. If you hear people say: “I wish there was a way to” ...“It isn’t fair that ...” “Somebody ought to fix that” then you’ve just gotten a clue. There’s an idea in the making – and the person who can make it is you!

The Design Process

Inventions often require creating something to solve a problem. This requires a process of identifying the problem and trying out different solutions and improving your idea. It involves asking what the problem is, imagining solutions, creating, and revising them. Inventors often follow the steps below:

Define the problem → Collect Information → Imagine, Brainstorm and analyze ideas → Develop solutions and prototype (create a test model) → Gather Feedback → improve your design

For Discussion Before the Show

- Think of a time when you have had a problem. How did you solve that problem? What skills did you use to solve the problem?
- What does it mean to invent something? Think of one inventor you know. How did their invention make life easier or better for people?
- Have you ever heard the saying, “Necessity is the Mother of Invention”? What do you think it means? Is it true? Can you think of any examples?
- *Lions of Industry: Mothers of Invention* celebrates Black History Month and the accomplishments of African American contributions to society. Discuss the importance of celebrating the accomplishments of different cultures.

For Discussion After the Show

- Why do you think the title of the play is *Lions of Industry*?
- List two inventors you learned about in *Lions of Industry, Mothers of Invention*. What did they invent? What problem did each invention solve?
- List one entrepreneur you learned about in *Lions of Industry, Mothers of Invention*. What or who helped this person achieve their dream?
- What qualities or characteristics are needed for someone to be an inventor or entrepreneur?
- How did the people we met in the play come up with their ideas?
- What is one lesson you learned from the play?

Vocabulary

Plays can introduce audiences to new words they've never heard before. Below are some of the challenging words used in Discovery Theater's *Lions of Industry Mothers of Invention*.

Aspire—to have an ambitious plan or lofty goal

Creativity – the ability to produce something new by using your imagination

Determination—to have a firm drive and not give up

Entrepreneur – one who organizes, manages, and carries the risks of a business or enterprise.

Imagination – the power to create a mental image of something not present to the senses; ability to confront and deal with a problem; resourcefulness.

Innovate – to introduce something new.

Inspiration – something or someone that makes someone want to do something or that gives someone an idea about what to do or create: a force or influence that inspires someone

Invent – to create something for the first time through the use of the imagination or of original thinking or experiment.

Obstacle – something that stands in the way. George Washington Carver's obstacle was that he had weak lungs and couldn't pick cotton in the fields like other children.

Opportunity – a good chance for advancement or progress.

Patent-- a writing granting to an inventor for a term of years the only right to make, use, or sell his or her invention

Proprietor—a person who is an owner

Respiration—taking in air to keep yourself alive; breathing

Visionary—a person who has plans and dream

Activities

Invention Convention

Grade Levels: 1-5

Students will design, create, and display an invention that will make their lives easier. Use the Design Process on page 4 to help guide the process.

Skills: Problem Solving, creativity, design, art and communication

MATERIALS

- scissors
- glue
- tape
- string
- paper clips
- brad fasteners
- shoe boxes
- plastic bottles and other recycled materials
- poster board and construction paper scraps
- paint
- markers
- crayons

INSTRUCTIONS

1. Discuss what an invention is.
2. Brainstorm different inventions we use every day. What would life be like without inventions?
3. Ask students to consider what invention they would like to create to make their lives easier.
4. Draw out a plan or blue print.
5. Use the materials above to construct inventions. Work in teams or individually.
6. Students should present their inventions, describing how they could be used.

Playing with your Food

Grade levels 1-5

After inventors imagine their ideas, they will often **prototype** their invention. A prototype is a model. Often a prototype does not use the real materials you would use in the actual invention. It is often created on a smaller scale, or with cheaper materials. Food can make a great building material for creativity! For example---if designing a house, pretzels makes make wonderful windows and wafers make nice bricks.

Skills: Art, Design, creativity, problem solving

MATERIALS

Food items especially good for design include: pretzel sticks, icing (for mortar or glue), gumdrops, wafers, spaghetti pasta, beans, candy and more.

INSTRUCTIONS

Imagine the invention you will build

Draft your design

PROTOTYPE your model by using a set amount of food.

Exhibit all the food models as a “Museum of Inventions” in your classroom.

Ensemble Building and Imagination: “This is a.....”

Grade levels 1-5

George Washington Carver took the lowly peanut and turned it into amazing things – like linoleum and shaving cream! See if you can do the same thing.

Skills: theater, creativity, team building, and communication

MATERIALS: an object easy to pass

INSTRUCTIONS

- Instruct the class to sit in a circle
- Pick one object. Example: hair brush
- Pass the object. Each student says “This is a hair brush but it’s also a _____”. Rather than saying the word of what it could be the student pantomimes how it would be used until someone in the circle guesses. Example: This is a hair brush but it’s also a *demonstrate strumming a guitar*
- Continue to pass the object until your class runs out of ideas
- Try with a new object!

SIDE COACHING: Encourage students to **SHOW** not **TELL** their ideas. Encourage students to be as specific as they can with their actions.

Mock Trial

Grade Levels 4-5

There are three legal ways people can use to make sure they get credit for certain kinds of ideas. Hundreds of the objects you see or use each day are protected in one of these ways.

- What’s a **patent**?
- What’s a **trademark** (and what is its symbol)?
- What is **copyright** (and what is its symbol)?

DISCUSS: How is each of these different? What does it mean to **infringe** on one of these legal protections?

RESEARCH: How does the **intellectual property** (creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce) relate to businesses? There was a long trial of Barbie vs. Bratz®. The creator of Bratz® was still employed by Mattel, Inc. (the owner of Barbie) while creating the idea of Bratz®. Whose intellectual property does the idea belong to?

REENACT: Turn your classroom into a courtroom. Assign a judge, jury, defense lawyer, prosecuting lawyer, and a defendant and prosecutor. See what happens when you empathize with each side of the case. Try with a different case related to patents, copyrights (music infringement) or trademarks.

Invigorate your Inner Entrepreneur!

Grade Level 6-12

Madam CJ Walker understood the basic premise of successful business: how to find a need and meet it. Entrepreneurs have good ideas and are able to plan and execute them. They also have business savvy skills. In this activity you will transform from innovator to entrepreneur.

Often innovators need to market their own products.

Skills: economics, creativity, communication, art/design

INSTRUCTIONS:

1) Use the design process outlined on page 4 to invent an object that will solve a problem. Prototype your invention using simple model materials (see the activity Invention Convention on page 6 for material ideas).

2) Now it's time to become an entrepreneur! Create a marketing plan:

Address the following issues with a written plan:

Consumer: who is target market for this product? What are the consumer needs and wants?

Convenience: How easy is the product to use? What is its availability?

Communication: What is your plan to advertise the product? What is the promotional and public relations plan? How will you use social media to address your audience?

Cost: what will the price point for this product be? What is the price point of similar products? Think about your expenses in developing the product. You want to be able to make a profit. Revenue (what you earn from each product you sell) – expenses (materials, labor, advertising costs) = Profit.

3) Once you have developed your marketing plan, develop a visual advertisement (such as a print ad), webpage, or a commercial. Visual advertisements must have an element of both visual art (graphic design or photography, 2D painting or drawing) and may use words. A commercial should use video or power-point, and may use student actors or graphics. The commercial should have an audio element as well (dialogue or music).

ASSESSMENT: Regardless of your medium, your product should be well represented and your marketing plan should advise your advertisement or commercial.

Related Resources

Up From Slavery: The Autobiography Of Booker T. Washington. The book that inspired Madame C. J. Walker is one of the great American autobiographies.

The Kids' Invention Book, by Arlene Erlbach. Profiles 11 inventors and entrepreneurs aged 8 to 15. For ages 9-12.

Kids Inventing! A Handbook for Young Inventors, by Susan Casey. Ages 9-12.

The History of Everyday Life, by Elaine Landau. Describes the inventions that revolutionized the household, like central heating, indoor plumbing, washing machines, and microwave ovens. Ages 9-12.

Brainstorm!: The Stories of Twenty American Kid Inventors, by Tom Tucker. Tales of young inventors from colonial to modern times, including girls and kids from ethnic minorities. Ages 9 & up.

Girls Think of Everything : Stories of Ingenious Inventions by Women, by Catherine Thimmesh and Melissa Sweet. "A inspired ode to women inventors" for ages 8 & up.

www.invention.smithsonian.org

Smithsonian's Lemelson Center for the Study of Invention and Innovation contains stories, activities, lesson plans, and more to help kids learn about past inventors and inventions, and think like an inventor themselves.

www.uspto.gov/go/kids

The U.S. Patent and Trademark Office Kid's Page has games and more for students, teachers and parents.

www.emeagwali.com/african-american/upscale/african-american-inventors.html

Stories of today's African-American inventors

www.inventors.about.com/od/blackinventors/a/Black_History.htm

lists hundreds of African-American patent holders, with links to biographies and other information

www.invent.org/about_invent_now/4_3_1_ptomuseum.asp

United States Patent and Trademark Office Museum – located in Alexandria, VA, this museum showcases inventions and inventors.

www.invent.org/hall_of_fame/1_0_0_hall_of_fame.asp

Inventors Hall of Fame: search by invention, inventor, or decade.



Visit the Museums!

National Museum of American History
<http://americanhistory.si.edu/>

Coming Soon to Smithsonian....

Lemelson Hall of Invention
<http://invention.smithsonian.org/centerpieces/lemcen-exhibits.aspx>

Smithsonian Arts and Industries Building
<http://www.si.edu/Museums/arts-and-industries-building>

National Museum of African American History and Culture
<http://nmaahc.si.edu/>

About the Playwright, Jacqueline F. Lawton

Actress, dramaturge, playwright and teaching artist Jacqueline E. Lawton received her MFA in Playwriting from the University of Texas at Austin in 2003. She currently resides in Washington DC, where she has worked with Active Cultures, Arena Stage, African Continuum Theatre Company, Folger Shakespeare Library, Ford's Theater Society, Journeymen Theater Ensemble, John F. Kennedy Center, Rorschach Theatre Company, Round House-Theatre, Shakespeare Theater Company, Source Theater, Theater Alliance, Woolly Mammoth Theatre Company, and Young Playwrights' Theater.

About Discovery Theater

The mission of The Smithsonian Institution: "The increase and diffusion of knowledge." The Smithsonian Associates advances the Institution's mission to "increase and diffuse knowledge" through life-enriching educational and cultural experiences inspired by the Smithsonian's research and collections for DC-region students, families, and adults, and for learning communities nationwide.



The Smithsonian Associates

Discovery Theater has been presenting DC-area children with live educational performances for more than 30 years. As a program of The Smithsonian Associates (TSA), Discovery Theater serves as a child's gateway to the exhibitions, collections, and cultures contained in the museums on the National Mall and beyond. Each year, almost 50,000 Washington-area children and their adults visit Discovery Theater to explore American history and cultures, folk tales from around the world, and exciting, accessible science and math programs in the company of puppeteers, storytellers, dancers, actors, musicians and mimes. Discovery Theater performances unite ideologies, enact themes that reflect the diversity of its audiences, open avenues of self-reflection, and offer an enjoyable means for parents and teachers to demonstrate life's lessons.

Visit us online www.DiscoveryTheater.org or connect with us on Facebook and Twitter for more information.

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