



A Pittsburgh CLO
Gallery of Heroes Musical
Created in partnership with the Senator John Heinz History Center

The Incredibly Innovative **INNOVATORS** of Pittsburgh

Book, Music and Lyrics by Jason Coll
Inspired by "Pittsburgh: A Tradition of Innovation" Concept by Andy Masich



Sponsors



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TEACHER'S GUIDE

MAJOR SUPPORT FOR THE GALLERY OF HEROES IS PROVIDED BY:

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SENATOR JOHN HEINZ
HISTORY CENTER
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION

The Senator John Heinz History Center is an affiliate of the Smithsonian Institution and the largest history museum in the commonwealth of Pennsylvania.

Devoted to the history and heritage of Western Pennsylvania, the History Center is a 275,000-square-foot museum and educational facility that is located in the city's historic Strip District. The History Center's home combines the former Chautauqua Lake Ice Company building with the five-story Smithsonian wing that opened November 13, 2004.

Original artifacts and interactive exhibits appeal to newcomers, long-time residents and people of all ages, revealing the fascinating scope and impact of the region's past. The History Center is also a great place to explore family roots, including photographs, maps, books and manuscripts relating to Western Pennsylvania history that are found in our Library & Archives.

The History Center operating in association with the Smithsonian Institution since 2000 also operates Meadowcroft Rockshelter and Museum of Rural Life in Avella, Washington County, PA and the Western Pennsylvania Sports Museum, a museum-within-a-museum located on the History Center's second and third floors.

Clash of Empires: The British, French & Indian War – Following record-breaking runs at the Canadian War Museum and the Smithsonian Institution, highlights from this award-winning exhibit recently returned to the History Center. ***Clash of Empires*** features nine life-like figures of the war's most fascinating characters that help put a human face on the war that led American colonists on the road to revolution.

Heinz 57 – It's the story of the Pittsburgh-born food industry giant H.J. Heinz Company told through artifacts, vintage photos, advertisements and TV commercials.



See how a business that started in a home kitchen just outside Pittsburgh grew to offer 57 varieties of food to the more than 5,700 products it makes around the world today.

Pittsburgh: A Tradition of Innovation
November 2008

Beginning 16,000 years ago at Meadowcroft Rockshelter in Avella, Pa., through George Washington's first experiences in the French & Indian War, and Lewis & Clark's groundbreaking expedition, ***Pittsburgh: A Tradition of Innovation*** celebrates our historic accomplishments all the way through our 21st century role as a leader in medicine, higher education, and robotics.



The History Center and Sports Museum are located at 1212 Smallman Street in the city's Strip District and are open every day from 10 a.m. to 5 p.m. Regular admission includes both the History Center and Sports Museum: \$9.00 for adults, \$7 for seniors over 61, \$5 for students with ID, \$5 for children ages 6-18 and free to members and children under 6. Special rates are available for students and youth groups. For more information visit heinzhistorycenter.org.

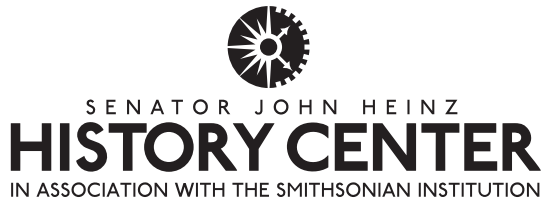


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Through dramatic sketches and musical vignettes, Pittsburgh CLO's Gallery of Heroes program takes its 50-minute mini-musicals to area schools to educate and enlighten students about great historical figures such as Roberto Clemente, the Wright Brothers and Harriet Tubman. Highlighting the lives and accomplishments of significant historical figures, the Gallery of Heroes program offers an entertaining alternative to traditional lectures and books.

PITTSBURGH CLO EDUCATION PROGRAMS

Pittsburgh CLO Academy - Creative Vision - Gallery of Heroes
The Gene Kelly Awards - Mini Stars - Internships - New Horizons

Information About Musicals

The Writers: Most musicals are broken into three parts: the Book, the Lyrics and the Music. These are usually divided among three people who work together in a collaboration. The **Playwright** writes the script or the lines that the actors speak. This is referred to as the **Book**. The **Lyricist** writes the words the actors sing, and the **Composer** writes the music for the show. Each writer works independently, then together they share ideas and revise the show until they decide it is ready to be produced. In *The Incredibly Innovative Innovators of Pittsburgh*, all three parts: Book, Lyrics and Music, were written by one person.

The Artistic Staff: The **Director** oversees all aspects of the production and has many responsibilities including making sure the show has a successful run from start to finish. The Director hires the **Choreographer** and the **Music Director**. He also meets with the **Costume** and **Scenery Designers** to make sure that their designs match the writers' vision.

Assisting the Director is the **Stage Manager**. The Stage Manager schedules the meetings between the Designers and Director and obtains any materials or props that may be needed for the show.

The Choreographer creates and teaches all of the dancing or stylized movement for the show. The **Music Director** works with the orchestra and teaches all of the music to the performers.

The Performers: All actors need to audition to perform in a musical. During auditions, each performer must sing and dance for the Director, Choreographer and Music Director. If the artistic staff thinks an actor may be right for the show, he is invited to a callback. A callback is a second audition in which the actors are asked to sing, read from the script and dance a movement combination taught by the Choreographer. The results determine who is chosen to perform in the show.

The Rehearsals: Rehearsals are intense practices where the actors learn their lines, songs and blocking — their movements on the stage — for the show. During rehearsals, the stage crew works backstage to move scenery and help the actors with costume changes.

The final practice for the show is called the **Dress Rehearsal**. Here, the actors, artistic staff, stage crew and designers showcase the finished product. The Dress Rehearsal is usually the first and only time they get to run the completed show on stage without an audience. After the dress rehearsal — it's opening night!

As you can see, there is a lot of work that goes into making a musical. We hope that this brief overview has helped you appreciate all the many talents that contribute to creating and mounting a show.

Turn to
Pages 8-9 for
Classroom
Activities that
will lend
a hand in
fulfilling your
PA Academic
Standards.

About this Musical

Story:

After putting off doing her social studies homework assignment, a teenage girl suddenly has her favorite rock band magically appear in her game room. To help her with her neglected assignment, they take her on a musical journey exploring the historical innovators from Western Pennsylvania over the past 250 years.

Setting:

Lisa's game room in her house. Through imagination, we travel through time to various sites in Pittsburgh and beyond.

Characters:

Lisa: a teenage girl who doesn't want to do her homework

Razor: the wild lead singer of the Cement Heads, our guide

Seth: the drummer with good hair

Eddie: the screwball bassist

Douglas: the groovy guitarist

Janet: percussionist and back-up vocalist, also an environmentalist

The band members portray historical figures including: Rachel Carson, George Westinghouse, Jonas Salk and more.

Theater Etiquette

The audience is an important part of every performance, whether it is a symphony, a play or a musical. During live theater, the performers and audience members react with each other in a way that is not possible when seeing a movie or watching television. Your actions affect the success of the theater production.

The Incredibly Innovative Innovators and Inventions of Pittsburgh

Ferris Wheel

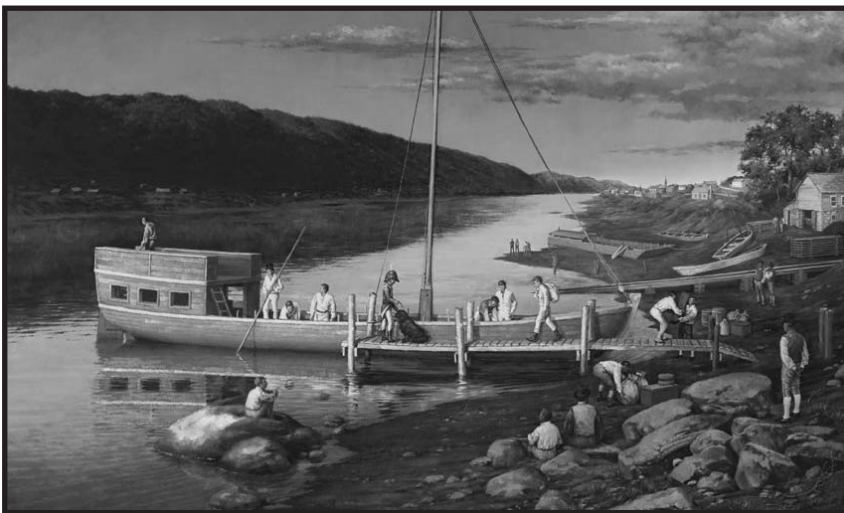
At the Paris Expo in 1889, Gustave Eiffel wowed the world with his tower of steel. In 1892, the American organizers of the World Columbian Exposition in Chicago searched for a signature structure that would eclipse the Eiffel Tower. George Ferris, a 33-year old Pittsburgh engineer, proposed a mammoth revolving wheel of steel that would carry as many as 2,000 passengers in railroad car-sized gondolas to the dizzying height of 250 feet. The Ferris Wheel was unanimously dubbed the "mechanical wonder of the fair." The Ferris Wheel demonstrated the principles of the cantilevered bridge and American engineering prowess, astounding visitors from around the globe.



Lewis & Clark

One of the greatest scientific explorations in U.S. history began in Pittsburgh on August 31, 1803, when Meriwether Lewis launched the Lewis & Clark expedition from a point near the Mon Wharf and today's Liberty Bridge. Lewis and William Clark first met near Pittsburgh during the Whiskey Rebellion in 1794. Following the purchase of Louisiana from Napoleon, Emperor of France, in 1803, President Thomas Jefferson commissioned Lewis and Clark to find a water route to the Pacific, make contact with American Indian nations and identify the vast resources of the American West. Jefferson and Lewis recognized that Pittsburgh's thriving boat-building industry and its location at the headwaters of the Ohio River made it the natural "gateway to the west."

It was the logical place to begin the journey of discovery.



Jonas Salk

At the height of the polio epidemic in 1952, nearly 60,000 Americans were struck by the crippling disease. Water was contaminated, children were quarantined and thousands of afflicted people were left paralyzed and confined to mechanical ventilators known as iron lungs. But in 1955, Pittsburgh medical researcher Jonas Salk introduced the first polio vaccine. As head of the University of Pittsburgh's Virus Research Lab, Salk developed and refined a polio vaccine that built immunity by introducing the patient to an inactive dose of the virus. After administering the experimental vaccine to monkeys, himself, the lab staff, his wife and his children, the vaccine was formally tested on students at the Arsenal Elementary School in Lawrenceville and the Watson Home for Crippled Children in Leetsdale. These young study participants would later be known as the "polio pioneers." By the mid-1950s, Salk's vaccine was used to vaccinate 1.8 million children in 44 states, and as a result, polio cases in the United States dropped by 90% in just two years. Today, Salk and his team are remembered as the innovators who rid much of the world of this devastating disease.



**Hope lies in
dreams, in
imagination,
and in the
courage of those
who dare to
make dreams
into reality.**

~ Jonas Salk

Nickelodeon

More than 100 years ago, America fell in love with the movies...and it all happened inside a tiny room on Smithfield Street in downtown Pittsburgh. By the end of the late 1890s, moving pictures were being screened in venues all over the country, but the short films were sideshows, never the main attraction. It was Pittsburgh entertainment entrepreneur John P. Harris who, in 1905, opened the first theater dedicated entirely to movies. His makeshift Pittsburgh cinema was dubbed a "nickelodeon": a combination of the admission price (a nickel) and "Odeon," the Greek word for theatre. A shrewd entrepreneur, Harris quickly built an enthusiastic audience. By its second day of business, 1,500 Pittsburghers paid their nickel to view Harris' moving pictures. Nickelodeons sprang up across the country featuring movies like "The Baffled Burglar," "Poor but Honest," and the popular "Great Train Robbery." Despite the limited seating and flickering images cast by the primitive projectors, people from all walks of life escaped to the Nickelodeon and found magic at the movies.

Fooling around with alternating current is just a waste of time. Nobody will use it, ever.

~ Thomas Edison,
American inventor, 1889

(Edison often ridiculed the arguments of competitor George Westinghouse for AC power)

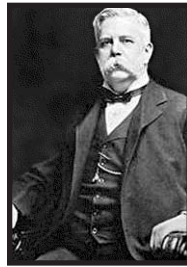
Apple in the mid-1930s, he collaborated with dozens of Jazz greats, including legendary performer Dizzy Gillespie. Together, the musicians developed the fundamental rhythms used in the emerging bebop style. Traditionally, drummers were used as timekeepers, but Clarke used cymbals to keep the song's tempo, allowing him to unleash his creativity on the snares and high-hats. Clarke's unusual beats were known as "dropping bombs" and "klook-mops," earning him the nickname "Klook." By freeing drummers from their predictable roles, Clarke finally put his instrument in the spotlight. Eventually, audiences caught on to the new, exotic bebop sound, and today, Clarke's innovative rhythms can be heard throughout a wide variety of music, including modern jazz, spoken word poetry and contemporary rap.

Kenny Clarke

Pittsburgh drummer Kenny Clarke help put the "bop" in bebop music by creating the innovative tempos that paved the way for this new musical genre. Clarke, who was born in 1914, grew up on Wylie Avenue in Pittsburgh's Hill District. He came from a musical family and developed an early love for the piano, trombone and drums. After heading to the Big



Ward copyrighted the game that took the nation by storm. So why do we call it Bingo? Legend has it that the game was originally played with beans and was called "Beano," but in a fit of excitement, a winner yelled out "Bingo!" instead and changed the name forever. And the rest...is history.



George Westinghouse

In the 1860s, railroads criss-crossed the nation and helped drive America's industrial boom, but train crashes were common and came at a high cost in lives and lost business. To stop a train, engineers and brakemen had to pull levers and turn wheels on individual cars. But an ingenious device introduced in 1869 by a 22-year old inventor in Pittsburgh's Strip District revolutionized

railroad transportation. George Westinghouse's air brake provided the first reliable means of stopping trains, making it possible to operate longer, heavier, faster locomotives than ever before. The invention used compressed air, allowing the engineer to simultaneously and safely stop all of the cars with a single control. Soon, the Westinghouse Air Brake Company had factories all around the world.



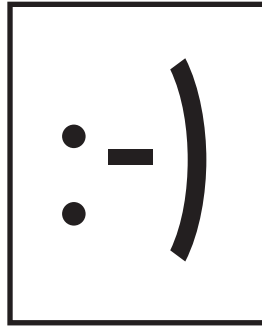
Bingo

From county fairs to church basements, the classic game of Bingo is a national favorite. Did you know a Pittsburgher helped introduce it to America nearly 90 years ago? The path to Bingo's American debut can actually be traced several hundred years back to Renaissance Italy and the Italian national lottery in the 1530s. Over the next several hundred years, versions of lotto

spread throughout Europe and eventually made their way to Canada. It was in Toronto, in 1916, that Pittsburgh resident Hugh J. Ward noticed Canadian soldiers playing the popular game. Ward brought the idea back to the United States, and in the early 1920s began hosting Bingo under large tents at carnivals and fairs. A decade later,

Emoticons

Carnegie Mellon University scientists are at the heart of today's technology revolution. Did you know that in 1982 a CMU computer wiz gave millions of people a way to express their feelings online by inventing the first Internet emoticon? In a moment of online whimsy, Scott Fahlman suggested to colleagues that they type the keystrokes colon, dash, right parentheses to mimic the smiley face symbol, then popular on t-shirts and bumper stickers. His smiley face symbol immediately caught on and helped soften the tone of e-mail messages worldwide. More emoticons followed, communicating everything from a "wink" to an "oh no." Today, emoticons have become so universal that even Microsoft Word and Outlook, the world's most popular software programs, automatically convert Fahlman's original key strokes into the smiley face emoticon. While emoticons seem simple, they revolutionized e-mail communication by imparting a human touch. Now that's something for Pittsburgh to smile about. :-)



Ice Capades

One of sport's loveliest spectacles began in 1932 at an unassuming ice rink in Pittsburgh's Oakland neighborhood. There, Pittsburgh entertainment entrepreneur John H. Harris invented the Ice Capades. Eager to expand upon his father's movie theater business, Harris leased Duquesne Gardens, a garage turned skating rink located at 110 N. Craig Street near Fifth Avenue. He scheduled boxing matches and rodeos, but needed a hook to draw large crowds to Ice Hockey games during the Depression. He hit on the idea of hiring Olympic skater Sonja Henie to entertain the audiences between periods. The performances were a huge success, so Harris



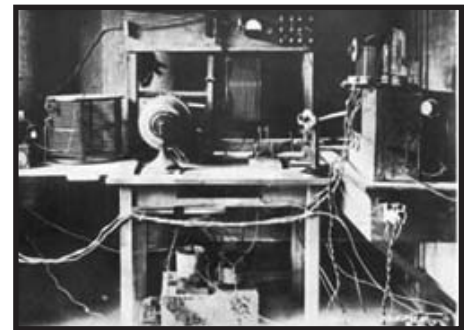
set out to create an ice show to rival the song and dance spectaculars, then popular on Broadway. Harris' Ice Capades premiered in 1940 and brought together hundreds of performers decked out in some of the period's most expensive and elaborate costumes. For decades, the Ice Capades traveled throughout the U.S. and Canada and paved the way for the ice skating extravaganzas that today entertain millions.

Jeep

In 1940, the US Army was in search of a motorized vehicle that would replace the horse. The War Department issued a request for proposals to 134 car makers in America. The big makers laughed off the 49-day deadline for the production of a prototype vehicle that had to weigh less than 2,000 pounds, climb a 30 degree grade, pull a cannon, and go anywhere a horse could go. Only the tiny American Bantman Car Company of Butler, PA met the Army's deadline and requirements. The Jeep was born on the eve of World War II. When the United States entered the War, Bantam, a smaller size production facility, could not meet the production demands and the Army contracts for nearly 700,000 jeeps went to Willys Overland and Ford. Bantam, the little company with "can-do" spirit, passed into history.

KDKA

On November 2, 1920, in a shack atop a Westinghouse building in East Pittsburgh, KDKA Radio sent out the world's first commercial radio broadcast, forever changing the way Americans received



their music and news. On that day, eager radio owners tuned in their crystal sets to hear the 1920 Election Day results of the Harding-Cox presidential race hours before the daily newspapers hit the streets. Dr. Frank Conrad, a successful Pittsburgh amateur radio operator, and the Westinghouse Company made the commercial station a reality. KDKA was such a new-fangled idea that its assigned call letters began with a "K" - before the federal government standardized "K" for Western stations and "W" call letters for stations in the East. KQV, Pittsburgh radio station, licensed in 1922, was also grandfathered in with its "K" designation. Listeners loved KDKA station's regular broadcasts, and soon radio transmissions developed into an important form of mass communication and entertainment. Pittsburgh's success inspired more than 600 commercial radio stations around the country, and by 1927, the U.S. Congress established the Federal Radio Commission to assign frequencies to broadcasters in order to avoid jammed airways. Thanks to Pittsburgh's radio pioneers, breaking news and the latest tunes became available to households everywhere - and the rest is history.

**Intuition
will tell the
thinking
mind where
to look next.**

~ Jonas Salk

Rachel Carson

As a young girl growing up in Springdale, Pennsylvania, Rachel Carson led a quiet, simple, rural life. But she lived in the shadow of Pittsburgh's belching smokestacks, polluted rivers and smoky skies. Her environment and her love of nature inspired her to change the world. Disturbed by the use of chemical pesticides, Carson wrote *Silent Spring* in 1962, challenging prevailing practices and calling for a change in the way people viewed the natural world. Even in the face of ridicule and resistance by the United States Department of Agriculture and the pesticide industry, *Silent Spring* focused unprecedented attention on the issue of unrestricted chemical



spraying and resulted in the eventual ban of DDT. 2007 marked Rachel Carson's centennial, and many organizations honored her with programs, publications and special events, including her birthplace, the Rachel Carson Homestead, which celebrated her life and lasting legacy as the woman who sparked the modern environmental movement.

If someday they say of me that in my work I have contributed something to the welfare and happiness of my fellow man, I shall be satisfied.

~ George Westinghouse

Transplants

Led by skilled surgeons and a top-flight medical staff, UPMC has developed into one of the world's preeminent medical centers and the world leader in innovative organ transplants. In 1968, UPMC surgeons performed Pennsylvania's very first heart transplant, and have completed more than 1,000 heart transplants since then. With the arrival of Dr. Tom Starzl – a pioneer in the field of organ transplantation – UPMC's famous liver transplant program was established in the early 1980s. The

program continues to be the most successful in the world with a history of more than 7,000 surgeries. In 1984, UPMC doctors performed the first heart/liver transplant, and in 1989, the first heart/liver/kidney transplant. For nearly half a century, UPMC researchers and surgeons forged the way for some of the field's most important advances. Today, doctors continue to make ground-breaking medical advances in our own backyard, as UPMC performs more types of organ transplants than any other institution in the world.



The Robotics Institute at Carnegie Mellon University

Two things are necessary to build robots: steel and intelligence. Pittsburgh has both.

With that in mind, Carnegie Mellon University professor Herbert A. Simon, "the father of artificial intelligence," established The Robotics Institute in 1979. As a division of the School of Computer Science, the Robotics Institute made CMU the first university in the world to offer a Ph.D. in Robotics. Pittsburgh quickly became the world leader in robotics, even attaining the nickname "Roboburgh" when the city was named one of the hottest high-tech regions in the country by *The Wall Street Journal*. The Robotics Institute has developed a number of



significant robots for land, sea, air and space that have been used by the Department of Defense, NASA and the National Science Foundation. The Robotics Institute created the world's first outdoor navigation robot, first autonomous digging machine, robots to inspect contaminated materials and radioactive areas and even a van propelled by computers and lasers that traveled from Washington, D.C. to Los Angeles - without a driver! Today, CMU's Robotics Institute is still regarded as the world leader in robotics research and continues to assist in military and civilian applications.

Images courtesy of:
The Senator John Heinz History Center

CMPack'02 research team: Manuela Veloso, Scott Lenser, Douglas Vail, Maayan Roth, Ashley Stroupe and Sonia Chernova. Photo by Debra Tobin.

Classroom Activities & Pennsylvania Academic Standards

How can YOU become an Incredibly Innovative Innovator of Pittsburgh?

Rationale

Students will become better aware of the everyday inventions that surround them and how these inventions affect their lives. Working together they will learn about brainstorming and inventing new ideas.

Objectives

Students will:

- Examine everyday objects from a different perspective.
- Use cooperative learning to brainstorm new inventions.
- Explore how to brainstorm new products.

Task 1

Explore the inventions around you!

Take a look around you – many of the products you see were once an idea that became a patent before finally becoming the every day item you use.

Make a list of common items found in the classroom and research the patent number, the inventor and date it was patented. The information can be found at www.uspto.gov.

As a class or in groups, discuss the following points:

- How many different versions of the invention exist?
- Did this invention lead to another invention(s)? Which one(s)?
- How could this product be improved?

Homework

As individuals, students should research the history of an everyday invention found in their homes and why it important to us today. Did the inventor have any other inventions? What motivated him/her to create the product? They should also elaborate upon the points from the classroom discussion.

In class, students will present their chosen invention to the class from the point of view of the inventor, as if they were selling the product to a group of investors.

Task 2

Students will form groups to brainstorm new inventions. Before beginning, set the following rules for the discussion.

- **No Criticism!** Write each idea down as it is spoken and then move on!
- **Quantity instead of Quality.** The more ideas, the better.
- **'Copying' IS allowed.** It is okay to use one idea to spark inspiration for another!
- Think outside of the box... and then some! No idea is too crazy.

Begin by writing down suggestions for the following:

- What does not work as well as you would like?
- What is the most annoying problem you regularly encounter?

Next, groups should discuss the following for each idea:

- **PROBLEM:** What is the dilemma?
- **WAYS TO SOLVE IT:** What can improve or solve the situation?

Now that your students have ideas for inventions, visit pittsburghCLO.org for further lesson plans on how to be "Incredible Innovators".

Applies to this Academic Standard

RWLS

- 1.4. Types of Writing
- 1.5. Quality of Writing
- 1.6. Speaking and Listening
- 1.8. Research

HISTORY

- 8.1. Historical Analysis and Skills Development
- 8.2. Pennsylvania History
- 8.3. United States History

CAREER, EDUCATION & WORK

- 13.1 Career Awareness and Preparation

SCIENCE & TECHNOLOGY

- 3.8. Science, Technology and Human Endeavors

Classroom Activities & Pennsylvania Academic Standards

How Electricity is Made and Affects Our Lives

George Westinghouse's innovations quite possibly have had more impact on our modern lives than those of any other inventor of the late nineteenth and early twentieth centuries. Westinghouse was a pioneer in producing electricity for home and industry and creating appliances to exploit electricity's usefulness and versatility. In our homes we think nothing of using a toaster, refrigerator, radio, washing machine, computer, lighting, or electric range which would be impossible without the availability of low cost and accessible electrical energy. In industry, electricity has increased production through sophisticated machinery powered by electricity and decreased much of the back-breaking work of previous generations.

Rationale

The students will learn about and better understand Westinghouse's contributions to the production and transmission of electrical energy; identify the myriad of modern society's uses of electricity; and become aware of one of the most controversial and vicious battles of corporate America and its adversaries, George Westinghouse and Thomas Edison.

Objectives

Students will:

- Learn of Westinghouse's background and early accomplishments.
- Become familiar with the scientific terms *voltage*, *current* and *power*.
- Understand the basic theory of generating and distributing electrical energy.
- Generate alternating current through the use of a bar magnet and a coil of wire.

Task 1

Using the internet, visit memory.loc.gov/ammem/papr/west/westgorg.html.

Read the introductory comments on Westinghouse's life and answer the following questions about his earlier years.

1. From an early age George had a creative mind. How did his upbringing and the city of Pittsburgh environment help in his investigations?
2. At the young age of 22, George patented his first major invention. What was the device and what gave him the idea to invent it? Think of members of your family or acquaintances who are about the age of 20. Westinghouse, in his early 20s, already had a reputation as an inventor.
3. How did Westinghouse contribute to the following:
 - a) Railroad traffic
 - b) Home heating
 - c) Information/Entertainment
 - d) Hydroelectric power
 - e) Employee benefits

Task 2

Go to www.eia.doe.gov/kids/energyfacts/sources/electricity.html and then answer the following questions.

1. Why is electricity considered a secondary energy source?
2. What purpose does a transformer serve in a modern electrical system?
3. Name nine forms of mechanical or chemical energy used to produce electricity.

Activity: Obtain a length of wire, bar magnet and an electrical meter. Fashion the wire into a coil (you can wrap the wire loosely around the magnet). Connect the ends of the wire to the meter. Place the magnet into the coil and wiggle it back and forth. The needle will move back and forth as you change the motion of the magnet. This is alternating current. Relate this activity to how electricity is generated commercially by studying the diagram "Turbine Generator" in the reading.

To learn more about George Westinghouse and how Electricity affects us, visit heinzhistorycenter.org for additional lessons and activities.

Applies to this Academic Standard

RWLS

- 1.4. Types of Writing
- 1.8. Research

HISTORY

- 8.1. Historical Analysis and Skills Development
- 8.2. Pennsylvania History
- 8.3. United States History

SCIENCE & TECHNOLOGY

- 3.4 Physical Science
- 3.8. Science, Technology and Human Endeavors

ENVIRONMENT & ECOLOGY

- 4.2. Renewable and Nonrenewable Resources

Suggested Resources

INNOVATIONS AND INVENTORS

FERRIS WHEEL

www.hydeparkhistory.org/newsletter.html

LEWIS & CLARK

www.lewis-clark.org

JONAS SALK

www.salk.edu

NICKELODEON

www.clpgh.org/exhibit/neighborhoods/downtown/down_n71.html

KENNY CLARKE

www.musicanguide.com/biographies/1608003101/Kenny-Clarke.html

GEORGE WESTINGHOUSE

www.westinghouse.com/timeline.html

EMOTICON

www.cmu.edu/homepage/beyond/2007/summer/happy-25th-emoticon.shtml

ICE CAPEDES

www.slate.com/id/2114927

JEEP

www.jeep.com/jeep_life/legends/heritage

KDKA

www.kdkaradio.com/pages/15486.php

RACHEL CARSON

www.rachelcarson.org

THE ROBOTICS INSTITUTE OF CARNEGIE MELLON UNIVERSITY

www.ri.cmu.edu

THE EDISON PAPERS

edison.rutgers.edu

NASA – ELECTRICITY ACTIVITIES FOR KIDS

scifiles.larc.nasa.gov/text/kids/D_Lab/acts_electric.html

THE LEMELSON CENTER FOR THE STUDY OF INVENTION & INNOVATION

invention.smithsonian.org

HOW TO BECOME AN INCREDIBLY INNOVATIVE INNOVATOR

THE ACADEMY OF APPLIED SCIENCE

www.aas-world.org

BY KIDS FOR KIDS

www.bkfk.com

INVENTNOW.ORG

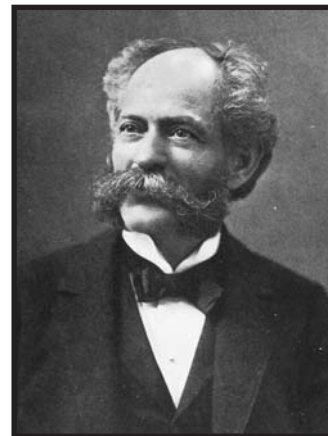
www.inventnow.org

©®EA™

www.inventnowkids.com

For additional information about Heinz and other Pittsburgh innovators visit:

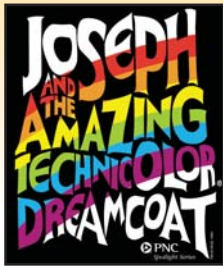
heinzhistorycenter.org



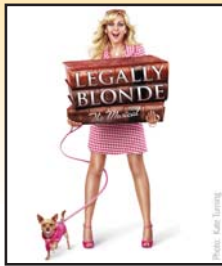
H J Heinz

To do a
common
thing,
uncommonly
well, brings
success.

~ HJ Heinz



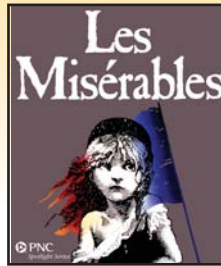
MAY 26 - JUNE 7



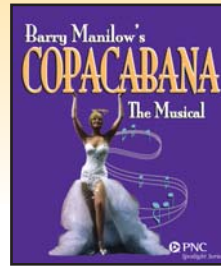
JUNE 9-14



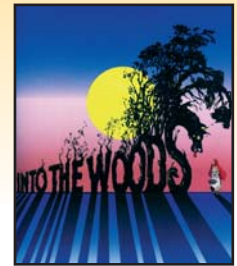
JUNE 20-26



JULY 7-19



JULY 21 - AUGUST 2



AUGUST 4-9

PITTSBURGH CLO EDUCATION PROGRAMS

Pittsburgh CLO Academy - Creative Vision - Gallery of Heroes
The Gene Kelly Awards - Mini Stars - Internships - New Horizons

The CLO Academy of Musical Theater Just a few blocks from the bright lights of the Benedum Center, the sound of booming pianos bounces off the brightly painted walls of the Pittsburgh CLO Academy of Musical Theater as children of all ages enthusiastically train for their moment in the spotlight. Providing the finest dance, music, and acting training, and affiliated with one of the most respected musical theater organizations in the country, the CLO Academy encourages both an appreciation for musical theater and a well-rounded education through professional quality courses.

The CLO Academy's Summer Camps, Pittsburgh CLO Academy's two and three week summer performance camps are designed to present students with a professional environment that combines creativity with skill development and performance opportunity. Working with professional Directors, Music Directors and Choreographers, students will be involved with a musical theater experience that will last a lifetime!

The CLO Mini Stars, sponsored in part by the CLO Guild, is an ultra-talented troupe of young performers who showcase their high-energy Broadway song and dance extravaganzas throughout the Tri-State area. Their special brand of musical theater magic has excited hundreds of thousands in their 26-year history.

Through dramatic sketches and musical vignettes, Pittsburgh CLO's **Gallery of Heroes** program takes its 50-minute mini-musicals to area schools to educate and enlighten students about great historical figures such as Roberto Clemente, the Wright Brothers and Harriet Tubman. Highlighting the lives and accomplishments of significant historical figures, the Gallery of Heroes program offers an entertaining alternative to traditional lectures and books.

The Pittsburgh CLO Gene Kelly Awards presented in partnership with the University of Pittsburgh, is a Tony® Awards-style celebration of excellence in high school musical theater in Allegheny County. High School theater programs are the clear winners as show business veterans and community celebrities help spread the word about the achievements of area high schools and their musical theater programs. Originated in 1991, the Kelly Awards have become a Pittsburgh tradition.

New Horizons is the CLO's musical theater training program for students with physical and developmental disabilities. Barriers are broken down as the participants realize the power of art, music and theater and their own untapped abilities.

Creative Vision is CLO's Partnership with the Pittsburgh Public School System and Propel Schools. Training in Dance, Voice and Acting combine with student creativity and accountability to promote participants' interest not only in the arts, but in themselves, their own lives and futures.

"A" In Arts is the CLO's way of recognizing excellence in school arts programs. Students trade in A's in high school arts classes for tickets to CLO's exciting mainstage productions and dress rehearsals.

Student Coupons are another way the CLO makes theater accessible to young people... Students see all five shows for only \$10 each (not applicable to *Legally Blonde The Musical*). For more information call 412-281-2822.

For more information about these programs call 412-281-2234.

PITTSBURGH CIVIC LIGHT OPERA

The Benedum Center ■ 719 Liberty Avenue ■ Pittsburgh, PA 15222 ■ 412-281-3973 ■ Fax 412-281-5339
Academy of Musical Theater ■ Penn Avenue Place ■ 130 CLO Academy Way ■ Pittsburgh, PA 15222 ■ 412-281-2234 ■ Fax 412-281-2232
The Construction Center for the Arts ■ 415 Bingham Street ■ Pittsburgh, PA 15203 ■ 412-381-8185 ■ Fax 412-381-8214
The CLO Cabaret ■ 655 Penn Avenue ■ Pittsburgh, PA 15222 ■ 412-325-6766 ■ Fax 412-325-6768
mail@pittsburghCLO.org