

THE INCREDIBLY INNOVATIVE INNOVATORS OF PITTSBURGH

GEORGE WASHINGTON
RACHEL CARSON
 DR. JONAS SALK
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 DR. THOMAS STARZL
 THOMAS EDISON
 GEORGE FERRIS
 ANDY WARHOL
 ANDREW CARNEGIE
HENRY CLAY FRICK
AUGUST MOSES WILSON
 HOOKEE
 JOHN FORBES
 JOHN HARRIS & HARRY DAVIS
 LEWIS AND CLARK
 KENNY CLARKE
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TEACHER'S GUIDE



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THE INCREDIBLY INNOVATIVE INNOVATORS OF PITTSBURGH

A Pittsburgh CLO Gallery of Heroes Musical

Book, Music & Lyrics by:
Jason Coll

11.1.2023

The Incredibly Innovative Innovators of Pittsburgh Teacher's Guide
by Heidi G. Balas, December 2023

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ABOUT MUSICALS

What is a Musical?

The Incredibly Innovative Innovators of Pittsburgh is a **Musical**, but what is a musical? Well, a **Musical** is a play that incorporates **Music** as a part or all of the storytelling. There are many components of a **Musical**. Here are a few:

- **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 to create the musical. The **Playwright** writes the script or the lines that the actors will speak. The script and lines actors say are referred to as the **Book**. The **Lyricist** writes the words that the actors will sing, and the **Composer** writes the **Music** for the show. They share ideas with each other, writing and revising until the show is ready to be produced. For *The Incredibly Innovative Innovators of Pittsburgh*, Jason Coll is the **Playwright**, **Lyricist**, and **Composer**, meaning that he wrote the **Book**, the **Lyrics**, and **Music**.
- **The Artistic Staff:** The **Director** oversees all aspects of the production and has many responsibilities including making sure the show is successful from start to finish. The **Director** reads the **Book** and **Music** carefully and creates **Blocking** for the actors; **Blocking** is the actors' movement on stage. The **Director** also hires the **Choreographer** and the **Music Director** and meets with the **Costume** and **Scenery Designers** to make sure that their designs match the **Writers'** vision for the musical. Assisting the **Director** is the **Stage Manager**, who 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 the dancing or movement for the show. The **Music Director** works with the orchestra or band and teaches all the **Music** to the **Performers**.
- **The Performers:** All **actors** (people who want to perform in the show) need to **audition** (or "try out") to be in a **musical**. During **auditions**, each **actor** must sing and dance for the **Director**, **Choreographer**, and **Music Director**. If the **Artistic Staff** thinks an **actor** may be a good fit for the show, they are invited to a **callback**. A **callback** is a second **audition** in which the **actors** are asked to sing, read lines from the **Book**, and dance in a movement combination taught by the **Choreographer**. The results of the **callbacks** will determine who is chosen to perform in the show.
- **The Stage Crew:** The **Stage Crew** are the people who work backstage to move scenery and help actors with costume changes and props. **Costumes** are what the actors wear in the show and **props** are items they use to help tell the story. The **Stage Crew** even creates special effects throughout the production and makes sure that the sound effects (like volume of the speakers and microphones) and lighting effects happen on time!

- **Rehearsals:** Rehearsals are practices where the **actors** learn their lines, songs, and movement. The final practices of the show are “**Tech Rehearsals**” when the actors practice with the sound, lighting, and special effects and “**Dress Rehearsals**” when the actors practice in their costumes. These special **Rehearsals** occur during the week before the show opens for audiences and are a chance for the **Performers**, the **Artistic Staff**, and **Stage Crew** to complete the final preparations (and adjustments) before opening night!

As you can see, time, energy, and creativity go into making a show like *The Incredibly Innovative Innovators of Pittsburgh*. We hope that this brief overview helps you and your students appreciate the many talents that contribute to making musical theater magic!

Theater Etiquette

The audience is an important part of every performance, whether it is a concert, a play, or a musical like *The Incredibly Innovative Innovators of Pittsburgh*! During live performances, the actors and the 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 show!

- Fun fact: In the performing arts like this musical, you can wish an actor good luck by saying “Break a leg!”

ABOUT THIS MUSICAL

The Incredibly Innovative Innovators of Pittsburgh celebrates the people and innovations that have helped to change our world over the last 250 years. It introduces audiences to the characteristics and mindset of an innovator through the lens of a free-spirited and energetic teenager named Lisa, who loves to procrastinate and who loves a rock band called “The Cement Heads.”

We begin in present-day Pittsburgh when she has decided to attend their concert instead of writing a Social Studies paper. Even though she worries that she will earn a failing grade from her teacher Miss Gumble, meeting her “heroes” is more important.

From the launch of the environmental movement with Rachel Carson and Jonas Salk’s development of the Polio vaccine to professional football’s first game in America and the inventions of the Big Mac and banana split, Lisa *and* members of the audience become part of the action meeting legends like playwright August Wilson and heart transplant pioneer Dr. Thomas Starzl.

Will the stories of these incredibly innovators of Pittsburgh be able to change her mind? Will she be able to write her paper on time?

Cast of Characters

- LISA
 - 14; free-spirited and energetic who loves to procrastinate, but loves The Cement Heads even more
- RAZOR
 - 20s; high-energy lead “almost” British rocker like a young Steven Tyler and Mick Jagger
- SETH
 - 20s; guitarist with a soft-spoken California vibe
- EDDIE
 - 20s; goofy drummer who loves to eat and create rhythm with whatever is in his hands

**The actor playing RAZOR also plays many of the innovators throughout the show*

**The actor playing SETH also plays many of the innovators throughout the show*

**The actor playing EDDIE also plays many of the innovators throughout the show*

Cast of Characters Continued...

- DOUGLAS
 - 20s; nimble keyboardist who creates soulful harmonies and dazzling dance moves

**The actor playing DOUGLAS also plays many of the innovators throughout the show*

- JANET
 - 20s; bassist, environmentally conscious, great at creating harmonies with DOUGLAS, and the grounding force to The Cement Heads

**The actor playing JANET also plays many of the innovators throughout the show*

Setting

Backstage “green room” of an arena in Pittsburgh, PA for The Cement Heads’ tour

BEFORE THE MUSICAL

Historical, Educational, and Geographical References in the Musical

Throughout *The Incredibly Innovative Innovators of Pittsburgh*, various references are made to people, places, and events in American history.

If you want to introduce your students to any of these references, here is a chart that provides references in the order that they appear in throughout the show:

| References | Scene/Song |
|---|------------------------------|
| Mr. Yuk | "It's In You" |
| Coal mines | "It's In You" |
| Oil wells | "It's In You" |
| Robots <i>and</i> robotics (CMU) | "It's In You" |
| George Washington | "1758" |
| General Forbes | "1758" |
| Fort Duquesne | "1758" |
| Pittsburgh's Birthdate | "1758" |
| William Pitt, the Earl of Chatham | "1758" |
| First treaty between American government and native Americans | "1758" |
| First federal hospital | "1758" |
| First suspension bridge | "1758" |
| "The Point" | "1758" |
| Meriwether Lewis | "Making Waves (to the West)" |
| Lt. Moses Hooke | "Making Waves (to the West)" |
| William Clark | "Making Waves (to the West)" |
| President Thomas Jefferson | "Making Waves (to the West)" |
| Corps of Discovery | "Making Waves (to the West)" |
| Louisiana Purchase | "Making Waves (to the West)" |
| First steamboat on the Mississippi | "It's In You" reprise |
| Rolling Mill for Angle Iron | "It's In You" reprise |
| Railroad Tunnel | "It's In You" reprise |
| First piano store | "It's In You" reprise |
| Duff's Business College | "It's In You" reprise |

| | |
|---|------------------------------------|
| First warship constructed here | "It's In You" reprise |
| Mary Cassatt | "It's In You" reprise |
| Labor Union | "It's In You" reprise |
| Turnpike | "It's In You" reprise |
| Factories (iron, shoes, rope, glass, steel) | "It's In You" reprise |
| Bessemer Process | "Steel and Glass" |
| Industrial Age | "Steel and Glass" |
| Andrew Carnegie | "Steel and Glass" |
| Henry Clay Frick | "Steel and Glass" |
| HJ Heinz | "It Starts with Seeds in a Garden" |
| Heinz products (horseradish, celery sauce, pickled cucumbers, ketchup) | "It Starts with Seeds in a Garden" |
| Klondike Bar and Isaly's | "It Starts with Seeds in a Garden" |
| Banana Split and David Strickler | "It Starts with Seeds in a Garden" |
| Big Mac and Jim Delligatti | "It Starts with Seeds in a Garden" |
| A/C (alternating current) | "Westinghouse vs. Edison" |
| George Westinghouse | "Westinghouse vs. Edison" |
| Thomas Edison | "Westinghouse vs. Edison" |
| Rotary engine | "Westinghouse vs. Edison" |
| Air brakes | "Westinghouse vs. Edison" |
| George Westinghouse Bridge | "Westinghouse vs. Edison" |
| Kennywood | "The Wheel of Steel" |
| George Ferris | "The Wheel of Steel" |
| Ferris Wheel | "The Wheel of Steel" |
| Columbian Exposition of 1893 | "The Wheel of Steel" |
| William "Pudge" Heffelfinger | "Sportstown of America" |
| First professional football game | "Sportstown of America" |
| First World Series game | "Sportstown of America" |
| Negro Leagues | "Sportstown of America" |
| Josh Gibson | "Sportstown of America" |
| Pittsburgh Steelers: First to win four Super Bowl games | "Sportstown of America" |
| Ben Roethlisberger | "Sportstown of America" |
| Terrible Towels | "Sportstown of America" |
| Bill Mazerowski | "Sportstown of America" |
| Pittsburgh Pirates | "Sportstown of America" |
| Pittsburgh Pipers | "Sportstown of America" |
| Pittsburgh Penguins | "Sportstown of America" |
| Mario Lemieux | "Sportstown of America" |
| Sidney Crosby | "Sportstown of America" |

| | |
|--|-----------------------------------|
| BINGO and Hugh J. Ward | "Sportstown of America" |
| First movie theater | "Nickelodeon" |
| Harry Davis and John Harris | "Nickelodeon" |
| silent movies and vaudeville | "Nickelodeon" |
| Charlie Chaplin and Buster Keaton | "Nickelodeon" |
| Gulf Oil Company | "Fill 'er Up" |
| First gas station | "Fill 'er Up" |
| KDKA Radio | "Fill 'er Up" |
| Fred Rogers | "Something New" |
| WQED | "Something New" |
| Andy Warhol | "Something New" |
| Andy Warhol Museum | "Something New" |
| Martha Graham | "Something New" |
| August Wilson | "Something New" |
| Hill District neighborhood | "Something New" |
| Atom Smasher | "It's In You" reprise |
| Ice Capades | "It's In You" reprise |
| Bomb Shelter in the home | "It's In You" reprise |
| First Jeep built in Pittsburgh | "It's In You" reprise |
| Pull tab cans | "It's In You" reprise |
| Indoor zoo | "It's In You" reprise |
| Alcoa Building | "It's In You" reprise |
| Rachel Carson and <i>Silent Spring</i> | "Silent Spring" |
| DDT and pesticides | "Silent Spring" |
| The modern environmental movement | "Silent Spring" |
| Scott Fahlman | "Emoticon" |
| The world's first emoticon "The Smiley" J | "Emoticon" |
| Carnegie Mellon University | "Emoticon" |
| EMS | "Love Times Three" |
| Hill District | "Love Times Three" |
| Polio and Jonas Salk | "Love Times Three" |
| First triple transplant and Thomas Starzl | "Love Times Three" |
| Primanti's | "Innovation in Your Own Backyard" |

KWL chart

A KWL Chart is a great way to help young students organize their thoughts about Pittsburgh innovators and history before and after *The Incredibly Innovative Innovators of Pittsburgh*. You can get this started before the show, and have students write what they learned after the show. Here is a template:

| K-W-L Chart | | |
|--|-----------------------|------------------------|
| Topic: Pittsburgh Innovators and History | | |
| What I K now | What I W onder | What I L earned |
| | | |

AFTER THE MUSICAL

CRITICAL THINKING

After the show, you can lead your students in reflection and discussion about the topics, characters, and musical theater aspects. The prompts can also be adapted for journal entries or open-ended written responses. Here are a few suggestions:

1. Lisa is a dynamic character who changes from the beginning of the play to the end. Can you think of some examples from the show that influence Lisa to change her own life? How has her perspective changed over time?
2. There are only a few actors playing multiple parts in *The Incredibly Innovative Innovators of Pittsburgh*. How did the actors help audiences to know they were playing different characters throughout the show? How did they make these characters believable? (possible answers could be acting, costumes, props, etc.).
3. In the song "It Starts with Seeds in a Garden," three of HJ Heinz's quotes are used to convey his personality and approach to innovation:
 - **"Quality is to a product, what character is to a man."**
 - **"It's not what you say, but how, when, and where."**
 - **"To do a common thing uncommonly well, brings success."**

After thinking about these carefully, determine which quote sticks out to you the most and why it does. Can you apply this message to your life? Use supporting details to emphasize your thoughts and ideas!

BINGO

Since BINGO was invented in Pittsburgh, a fun idea is to make a Pittsburgh food BINGO card for students to use over the course of a month or two! Here is a template to get you started:

| | | | | |
|--|---------------------|--------------------------|--------------------|-----------------------------|
| Primanti Brothers Sandwich | A Big Mac | Clark Bar Or Mallow Cups | Pierogies | A Family Recipe |
| Turner's Tea, United Dairy Tea, Or Schneider's Tea | Chipped Chopped Ham | Free | Potato Patch Fries | A Banana Split |
| Klondike Bar | Smiley Cookie | Heinz Ketchup | Fries On A Salad | Cookies From A Cookie Table |

“LEWIS AND CLARK BOAT PROJECT”

(adapted with permission from local educator Bryan Wieclaw, *Elizabeth Forward School District*;
additional expertise provided by local educator Andrea Sisk, *Woodland Hills School District*)

FRONT**Build a Boat for Lewis and Clark**

When Lewis and Clark set out to explore the frontier, they had to take many supplies with them safely on uncharted waters. Boats can only hold so much weight... but how much can they hold exactly? Does the design and weight of the boat affect how much can be loaded onto it? How can the design of the boat keep the items secure?

Supplies needed:

- Fish tank or large clear plastic bin filled 75% with water
 - A metric kitchen or lab scale
 - Metric rulers
 - Dominos (these are Lewis and Clark’s “supplies”)
 - Waterproof materials for building boats like aluminum foil, plastic wrap, paper/plastic straws, corrugated plastic, milk cartons from the cafeteria, duct tape, glue, etc.
- Students can also bring items from home.

Objective:

- Your mission is to create the lightest boat that will hold as many dominos as possible.
- You will consider size, weight, shape, structure, dimensions, and buoyancy (if it can float).

Directions:

- On the back of these directions, brainstorm 3 different ideas with your partner on how you will build and create your boat.
- Include the items you may want to try to use to build the boat and draw a diagram of what the boat should turn out to look like.
- Your grade will be determined based upon how many dominos your boat holds compared to the weight of the boat.
- You should take pictures of all attempts and add them to a Pic collage.
- You will get 3 chances at building a successful boat.
- Upon conclusion we will determine the best boat and discuss what factors (design, structure, size, etc.) made it the best boat.

BACKBoat Design Ideas

- 1.
- 2.
- 3.

Measurements:

- Height:
- Width:
- Length:
- Weight:

Results

Attempt 1:

- Did it float? Y/N
- If yes, for how long?
- How much did your boat weigh?
- How many dominos could it carry? What did these dominos weigh?
- Write the ratio of the weight it carried to the weight of the boat.
- What adjustments need to be made for your next attempt?

Attempt 2:

- Did it float? Y/N
- If yes, for how long?
- How much did your boat weigh?
- How many dominos could it carry? What did these dominos weigh?
- Write the ratio of the weight it carried to the weight of the boat.
- What adjustments need to be made for your next attempt?

Attempt 3:

- Did it float? Y/N
- If yes, for how long?
- How much did your boat weigh?
- How many dominos could it carry? What did these dominos weigh?
- Write the ratio of the weight it carried to the weight of the boat.

Final Thoughts:

Write 3-5 complete sentences about what you learned. Make sure to include which successful attempt had the most favorable ratio and how you know.

ONE PAGER

After the show, you can have each of your students create a “One Pager” to think critically and to organize their thoughts about plot, characters, literary techniques, and themes creatively. Here is a sample template for your consideration:

| <i>The Incredibly Innovative Innovators of Pittsburgh One Pager</i> | |
|--|---|
| <u>In this space, draw a picture of your favorite character from the show and write three adjectives to describe them.</u> | What costumes and props were used in the show to help the audience understand the story better? <u>Make a list of what you remember!</u> |
| The Cement Heads help Lisa to learn about all the wonderful innovators and innovations from Pittsburgh. What are your favorites from the show? Was there one that changed your life? <u>You can draw a picture, explain, or make a list!</u> | |

| | |
|---|--|
| <p>The Cement Heads encourage Lisa to write her paper on time and to avoid procrastinating. <u>What are some ways you can keep yourself on track with your assignments?</u></p> | <p>There are many thematic messages in <i>The Incredibly Innovative Innovators of Pittsburgh</i>:</p> <ul style="list-style-type: none"> • It is important to know the history of where you came from so you can be a part of its future! • Young people make our future bright! • Make the world the way you want it. Be a part of changing the world. • You can forge your own path to reach your dreams. <p><u>Pick one and explain how you can relate this message to your own life. Use complete sentences and details to express your ideas!</u></p> |
|---|--|

SUGGESTED READING LIST

A wealth of information can be found online for the references found within *The Incredibly Innovative Innovators of Pittsburgh*. Here are a few suggestions for continued reading/viewing about Pittsburgh history to get you started:

- [Pittsburgh history overview](#)
- [Pittsburgh facts for kids](#)
- [Pittsburgh Facts & Trivia from Visit Pittsburgh](#)
- [Pittsburgh history videos from PBS](#)
- [Andy Warhol Lessons + Resources](#)
- [Big Mac history](#)
- [Lewis and Clark history](#)

RELATED PENNSYLVANIA ACADEMIC STANDARDS

The following standards are suggestions for making topical/content/skills connections to *The Incredibly Innovative Innovators of Pittsburgh* for Arts & Humanities, English Language Arts, History, and Mathematics:

Academic Standards for Arts & Humanities

9.1. Production, Performance and Exhibition of Dance, Music, Theatre and Visual Arts (9.1.3, 9.1.5)

- C. Know and use fundamental vocabulary within each of the arts forms.
- E. Know and demonstrate how arts can communicate experiences, stories, or emotions through the production of works in the arts.
- I. Describe arts events that take place in schools and in communities.

9.4. Aesthetic Response (9.4.3, 9.4.5)

- D. Explain choices made regarding media, technique, form, subject matter, and themes that communicate the artist's philosophy within a work in the arts and humanities (e.g., selection of stage lighting in Leonard Bernstein's *West Side Story* to communicate mood).

Academic Standards for English Language Arts

1.4 Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

CC.1.4.3.J, CC.1.4.4.J, CC.1.4.5.J Create an organizational structure that includes reasons linked in a logical order with a concluding statement or section./ Create an organizational structure that contains related ideas to support the writer's purpose and linked in a logical order with a concluding statement or section related to the opinion./ Create an organizational structure that contains related ideas to support the writer's purpose; link opinion and reasons using words and clauses; provide a concluding statement or section related to the opinion.

CC.1.4.3.Q, CC.1.4.4.Q, C.C. 1.4.5.Q Choose words and phrases for effect./ Choose words and phrases to convey ideas precisely./ Write an awareness of style.

CC. 1.4.3.S, CC.1.4.4.S, CC.1.4.5.S Draw evidence from literary or informational texts to support analysis, and research, applying grade-level reading standards for literature and informational texts.

Academic Standards for History

8.3. United States History (8.3.3, 8.3.6)

- A. Identify contributions of individuals and groups to United States history.
 - Individuals who are role models
- C. Identify important changes in United States history.
- D. Identify and explain conflict among social groups and organizations in United States History.

Academic Standards for Mathematics

The Standards of Mathematical Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

ADDITIONAL STUDENT ACTIVITIES

The Incredibly Innovative Innovators of Pittsburgh

Find the last names of 22 Pittsburgh innovators! (across, down, and diagonal)



Pitt
Salk
Ward
Clark
Davis
Frick
Heinz
Lewis
Carson
Ferris
Graham
Harris
Starzl
Warhol
Wilson
Fahlman
Lemieux
Carnegie
Primanti
Washington
Heffelfinger
Westinghouse

The Incredibly Innovative Innovators of Pittsburgh

Andy Warhol liked to use bold, bright colors in his art. Color these banana splits using bright, bold colors that pop making each one unique!

