Curriculum Guide

Fun Float Facts

This incredible float celebrates the energy innovations created in the Menlo Park laboratory by Thomas Edison and his famed assistant, Louis Latimer. More than 800 bricks are needed to create the backdrop of this impressive 33-foot long recreation of Thomas Edison's Menlo Park laboratory featuring 10-foot tall versions of Thomas Edison and his famed assistant Louis Latimer, a 7-foot tall incandescent electric light bulb, a 6-foot tall phonograph, and a 12-foot tall gas lamp set among other inventions, various experiments and research materials.

Energy Innovators

the PARADE COMPANY

	Big Red Chair					Celebrate Detroit					Energy Innovators					It's a Michigan Thing					The Parade Company			
	Sam I Am Rhyming Game	I Can Read	Counting with Curious George	Telling Time with Thomas	Shapes with Spot	We Need YOU – Migration to Detroit	How did you get here – Migration to Detroit II	Cadillaqua	The Anna Scripps Whitcomb Conservatory	Name that Landmark	Invention – Timeline	Name that Invention	Telegraph Station	Thank you, Mr. Edison	Flip Books	Mackinac Bridge – Timeline	Citizen Involvement in Building the Mackinac Bridge	Caring for the Great Lakes	Great Lakes through History	Fruity Maps	Save our Lighthouses!	Public Service Announcement	Float Creation	You've got a BIG head	WE NEED YOU	Parade Primary Documents 1	Citizen Involvement in the Parade	Parade Primary Documents 2
Math																												
Geometric shape, properties, and mathematical arguments				★																		★						
Location and spatial relationships																						★						
Spatial reasoning and geometric modeling			★																			★						
Transformation and symmetry														★								★						
Problem solving involving measurement														★														
Meaning, notation, place value, and comparisons			★	★																								
Number relationships and meaning operations			★																									
Techniques and formulas for measurement				★																								
Units and systems of measurement				★																								
English Language Arts																												
Writing																												
Genre		★				★	★									★	★				★	★			★			
Process		★				★	★					★				★	★				★	★			★			
Personal Style						★	★					★										★						
Grammar & Usage						★	★					★				★	★				★	★						
Spelling		★				★	★					★										★						
Handwriting		★				★	★															★						
Writing Attitude		★				★	★															★						
Reading																												
Comprehension		★								★						★	★											
Critical Standards																★	★											
Informational Text		★														★	★											
Word Recognition and Word Study	★	★																										
Reading Attitude	★	★																										
Fluency		★																										
Speaking																												
Conventions	★	★				★										★	★				★	★			★			
Discourse	★	★				★										★	★				★	★			★			
Social Studies																												
Values and Principles of American Democracy																					★	★*						
Living and Working Together						★	★	★		★	★					★	★		★				★		★			
Michigan History						★	★	★	★	★		★				★	★		★				★**		★			★
Role of Citizen in American Democracy																★	★				★				★			
Identifying and Analyzing Public Issues																★	★				★				★			
Persuasive Communication																★	★				★				★			
Citizen Involvement																★	★	★			★				★			
Inquiry																												★
Public Discourse and Decision Making								★																				★
The World in Spatial Terms																★	★	★		★								
Places and Regions						★	★			★						★	★	★	★	★								
Human Systems						★	★									★	★	★	★									
Environment and Society																★	★	★	★									
Market Economy						★	★									★	★			★								
National Economy						★	★									★	★											
Use historical thinking to understand the past											★																	
Understand the effects of human-environment interactions											★																	
Purposes of Government								★																				
Science																												
Inquiry process																		★		★								
Inquiry Analysis and Communication																		★	★									
Reflection and Social implications											★	★		★				★	★									
Fluid Earth																		★										
Earth Systems																★	★	★	★									
Heredity																				★								
Evolution																				★								
Ecosystems																★	★			★								
Energy												★		★														
Science Processes																												
Inquiry Process									★																			
Reflection and Social Implication									★																			
Organization of Living Things									★											★								

* If the class is required to complete their floats on a topic being explored in social studies the lesson would integrate into those glce's in countless ways.

** Michigan or United States History (dependent on the figures)

Dear Educator,

Thank you for considering a field trip with The Parade Company. We have worked extensively with Eastern Michigan University's College of Education to design lessons and classroom extensions that align with the Michigan Department of Education's Core Curriculum framework. Within this book you will find activities that you can utilize before or after your field trip that will focus students on important components of the "Energy Innovators" float. You will also discover lesson extensions that meet the GLCEs, as well as references and resources you can use in your classroom. If we can be of any further assistance as you plan your trip to the Parade Company, please don't hesitate to contact us!

the PARADE COMPANY

EASTERN MICHIGAN UNIVERSITY

Education First

Energy Innovators!

Grade Level 3RD – 4TH
Invention – Timeline

Description

Students will create a chronological timeline of the creation of Thomas Edison and Louis Latimer's many inventions. This timeline can be utilized in the next several lessons as well.

Time Frame

Three to four lessons

Learning Objectives

1. Students will be able to identify that Thomas Edison was raised in Michigan.
2. Students will identify Thomas Edison and Louis Latimer's important inventions by creating a chronological timeline.
3. Students will analyze the impact of Thomas Edison and Louis Latimer's inventions on their lives.

Supplies

Access to the Internet and a printer, library books about Thomas Edison and Louis Latimer and their inventions (see resource section), a long sheet of bulletin board paper, markers and glue.

Extension activity that meets the GLCEs

Have each small group build a replica of the invention using blocks, legos, and scrap materials

Procedure

1. Read Young Thomas Edison by M. Dooling.
2. Discuss how Thomas Edison was raised in Michigan and how much of his early inventions were based on experiences he had in Michigan.
3. Divide students into small groups of two or three students.
4. Assign each small group one of Thomas Edison and Louis Latimer's inventions to research and answer the following questions:
   - When did Edison and Latimer create their invention?
   - How did the invention impact society?
   - Are we still using the invention today?
5. Allow students plenty of time (30 – 45 minutes) to complete research and to download pictures of the invention. (Use the websites found in the resource section of this plan).
6. Provide each small group with an 8 ½ x 11 sheet of paper and have them write the facts regarding the invention and glue on a picture of the invention.
7. Have each small group attach their 8 ½ x 11 sheet chronologically on a long sheet of bulletin board paper – display in the classroom or hallway.

Michigan Content Standards and Benchmarks Alignment

Social Studies

- Living and Working Together in Communities
- Use historical thinking to understand the past
- Understand the effects of human-enviroment interactions

Science

- Reflection and Social Implications

English Language Arts

- Reading Comprehension

Energy Innovators!

Grade Level 3RD – 4TH
Name that Invention!
Timeline activity #2

Time Frame
One lesson

Learning Objectives
Students will identify the inventions of Thomas Edison and Louis Latimer.

Supplies
Game cards found in the Resource section.

Extension that can meet the GLCEs:
Thomas Edison has many meaningful quotes that students could reflect on. Make game cards similar to those used for Name that Invention and have students take turns reading them to each other. Ask them to determine in their own words what the quotations could mean in their own life.

Description
After students have completed their timeline research on Thomas Edison and Louis Latimer's inventions, they can extend their knowledge by playing Name that Invention!

Procedure
1. Copy enough of the Invention game cards to distribute one set to each set of partners.
2. Divide students into partners.
3. Ask them to divide the cards evenly between the two of them. Stress that they need to be careful to not allow their partner to see their cards.
4. Provide them with the following directions:
   - Divide the cards equally between the two of you, making sure your partner can not see your cards.
   - Determine who is going to be the first guesser.
   - The other student will take the first invention card and ask the first question on the card. Provide your partner a few minutes to guess what invention it could be. Proceed with the questions until your partner guesses or you run out of questions.
   - Switch roles.

Michigan Content Standards and Benchmarks Alignment
Science
- Reflection and social implications
- Energy

Energy Innovators!

Grade Level 3RD – 4TH
Thank you, Mr. Edison!
Timeline activity - #3

Time Frame
Two lessons

Learning Objectives
1. Students will identify which of Thomas Edison and Louis Latimer's inventions has the most effect on their lives.
2. Students will identify which of Thomas Edison and Louis Latimer's inventions has the most effect on citizens in Thomas Edison's home State of Michigan.
3. Students will be able to write a thank you letter.

Supplies
Notebook paper and pencils.

Extension that can meet the GLCEs:
- ❍ Write a report on Louis Latimer.
- ❍ Write a poem (haiku, diamante, cinquain, or other form) in honor of Thomas Edison and Louis Latimer and their inventions!

Description
Students will write a thank you letter to Thomas Edison and Louis Latimer. The letter will thank them for the students' favorite invention and explain how that invention impacts both their life and the State of Michigan.

Procedure
1. Ask students to reflect on what invention Thomas Edison and Louis Latimer invented has the most effect on their daily lives.
2. Ask them to then reflect on what invention Thomas Edison and Louis Latimer invented has had the most effect on the citizens of Edison's home State – Michigan.
3. Ask students to compare the life of citizens in Michigan before and after these inventions.
4. Explain that they will be writing a letter to the two men to thank them for these inventions.
5. After this initial brainstorming and prewriting activity, review the basic writing process:
   - ❍ The students will first write a rough draft of their letter, emphasizing content.
   - ❍ After rereading their own writing with a partner, students will revise their work.
   - ❍ Later, the students should work in pairs to proofread and edit their letters.
   - ❍ Finally, the letters should be published and gathered together in a book.

Michigan Content Standards and Benchmarks Alignment

Social Studies
- ❍ History of Michigan

English Language Arts

Writing
- ❍ Process
- ❍ Personal Style
- ❍ Grammar & Usage
- ❍ Spelling

Energy Innovators!

Grade Level 2nd – 4th
Telegraph Station

Description

Students will be able to create secret messages to one another using Morse code.

Procedure

1. Before lesson begins, set up a "telegraph station" in the classroom. Include several laminated copies of the Morse code alphabet found at: **ling.ucsc.edu/~hank/morseabc.html**
2. Share with students that a telegrapher tapped out messages in Morse code, and others on the receiving end of the messages could translate the coded dots (short electrical impulses) and dashes (long electrical impulses) into letters and words.
3. Tell the students that they will be making individual notes to each other utilizing Morse code.
4. Assign each student a peer to write to, insuring that each child has a message.
5. Throughout several days students can go to the "telegraph station" and create their message. Collect all notes to make sure each child has one.
6. Once every child has a message, have one of the students deliver them.
7. Place the Morse code on the overhead and provide students time to decipher their messages.

Time Frame

Three to four lessons

Learning Objectives

1. Students will be able to explain what a telegraph machine is and why it is important.
2. Students will produce secret messages to one another utilizing Morse code.
3. Students will identify what their notes say by reading Morse code.

Supplies

Table set aside in the classroom as a telegraph station, books on Morse code, paper, pencil, "telegraph machine".

Michigan Content Standards and Benchmarks Alignment

Science

- ❍ Energy
- ❍ Reflection and Social Implications

Extension that can meet the GLCEs:

You can find additional Morse code lesson plans here: **www.terrax.org/teacher/lessons/morseplan/morseplan.aspx**

As a fun addition to this lesson, you might introduce students to one of the Morse code translators that are available on the Web. Students can input a message and click a button to translate that message into code, or students can input the code and have the message translated into words with translators.

Energy Innovators!

Grade Level 4th Grade
Flip Books!

Description

Thomas Edison and Louis Latimer produced the very first movie images. Although those images are very different from the ones we see today, students will perceive how the earlier invention led to present-day ones. Students will make a flip book with the action on each page advancing slightly so that when students flip through the book it creates a "movie".

Time Frame

Two to three Lessons

Learning Objectives

1. Students will discover the basics of flip book animation.
2. Students will be able to describe the process that animation contains a tiny increment of change in each frame.
3. Students will sequence changes in drawings to change one picture into another.

Supplies

Note pads, pencils, crayons.

Extension that can meet the GLCEs:

- Students could video tape their flipbooks moving through the story.
- Create a play on Thomas Edison and Louis Latimer and video tape it.

Procedure

1. Have children make small pads of paper, or purchase small notepads from the dollar store in your area.
2. Ask students to think about what they would like to draw. It needs to be something that they would like to see move. For example, an airplane, birds, bugs, butterflies, or stick figures going about a task.
3. Students need to plan how they would want the drawing to move. They need to think about how the motion will start, and how it will end. They will also need to think about how many pages it will take to complete the action.
4. Once their plan is made they make their first drawing on the bottom of the page and their last drawing will be on the top. It is a good idea to draw the first and last pictures before you complete the ones in between.
5. Draw the next drawing on the next page just above the place you drew on the page before. Work from the bottom page of the pad toward the top page. Explain to students that the more pictures they have the slower their movie will go. Fewer pictures will create a faster movie.
6. Once students have completed their drawings have them color them in.
7. Have students take the finished project and flip through the pages. The image will appear to move because each drawing progresses the motion slightly from page to page.

Michigan Content Standards and Benchmarks Alignment

Math

- Problem solving involving measurement
- Transformation and symmetry

Resources for Energy Innovators!

Children's Books

- Adler, D. (1999). ***A picture book of Thomas Alva Edison***. New York: Holiday House.
- Carlson, L. (2006). ***Thomas Edison for kids: His life and ideas, 21 activities***. Chicago: Chicago Review Press
- Dooling, M. (2005). ***Young Thomas Edison***. New York: Holiday House.
- Frith, M. (2005). ***Who was Thomas Alva Edison?*** New York: Grosset & Dunlap.

There are many children's books on the subject or Thomas Edison and his inventions. The list above is a few of the more recent books.

Web Resources

- Rutgers, The Thomas A. Edison Papers – A comprehensive history of Edison, including original documents, inventions, chronology, companies, and patents. **edison.rutgers.edu/inventions.htm**
- Edison National Historic Site – For Kids – Inventions, timeline, biography. **www.nps.gov/edis/forkids/index.htm**
- Adventures of Cyber Bee – Edison Cylinder Recordings – A history and lesson plan of recordings – with mp3s of cylinder recordings. **www.cyberbee.com/edison/cylinder.html**
- Inventing Entertainment – Digitized motion pictures and sound recordings from **Edison. memory.loc.gov/ammem/edhtml/edhome.html**
- Phonograph Videos on Youtube - The sounds of a phonograph and how they work. **www.youtube.com/watch?v=ayld6Yl3n54** **www.youtube.com/watch?v=QEBs3WgmRMQ&NR=1**
- Smithsonian Museum's "Edison Invents" - An interactive history "game". Very well done! **http://invention.smithsonian.org/centerpieces/edison**
- PBS – Edison's Miracle of Light - A history of Edison and his experiments. Includes a timeline, photo gallery, and sound clips from recordings. **www.pbs.org/wgbh/amex/edison**
- America's Story – Library of Congress – Thomas Edison History **www.americaslibrary.gov/cgi-bin/page.cgi/aa/edison**
- Edison After Forty - A photo Gallery with captions of Edison's work and life. **americanhistory.si.edu/edison/index.htm**
- Lighting a Revolution – Explores the process of invention, mainly with regard to the light bulb. **americanhistory.si.edu/lighting/index.htm**

Automatic Telegraphy

This was very fast.
What could it be?

This was often used to send long news reports.
What could it be?

Could send between 60-120 words per minute.
What could it be?

Cement

This invention started with ore milling process to concentrate low-grade iron ore. *What could it be?*

This invention began with rock-crushing technology. *What could it be?*

This invention used a long rotary kiln. *What could it be?*

It was used to build Yankee Stadium. *What could it be?*

Electric Lamp

This invention all began with a successful carbon-filament lamp in a vacuum. *What could it be?*

He made this discover in October and by December he was demonstrating it to the public in Menlo Park. *What could it be?*

This is what Thomas Edison is most often known for. *What could it be?*

Electric Light and Power System

This was created so that the electric lamp could work on a large scale.
What could it be?

He used the gas lighting systems in large cities as a model for this.
What could it be?

Central stations, underground conductors, meters, and lamp fixtures were all part of this invention. *What could it be?*

Electric Pen

This was designed to assist professions, such as bankers and lawyers, who had a great deal of duplication in their work. *What could it be?*

It was operated by a messy battery that caused it to not be overly successful.
What could it be?

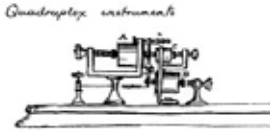
Later, it became the first electronic tattoo needle. *What could it be?*

Motion Pictures

Edison stated that this was "an instrument that does for the eye what the phonograph does for the ear." *What could it be?*

What Edison created was the first commercial system for this invention.
What could it be?

This invention relied heavily on photography.
What could it be?



Quadruplex Telegraph

This took an invention that Edison use to work with as a young boy and improved it.
What could it be?

It could do its job FOUR times faster. *What could it be?*

Its invention provided Western Union a way to send large numbers of messages without building new lines. *What could it be?*

Tinfoil Phonograph

This invention was so exciting people began to call Thomas Edison the "Wizard of Menlo Park"! *What could it be?*

This invention used tin foil. *What could it be?*

This invention has something to do with the nursery rhyme Mary had a little lamb!!!
What could it be?

Vote Recorder

This invention was actually never used! *What could it be?*

It was taken to Washington D.C. and shown to Congress but they weren't happy with it? What could it be?

Wax Cylinder Phonograph

Thomas Edison felt that one of his most important contributions was the clear and accurate recording of music.
What could it be?