



Drumthwacket

Unit 1: Lesson 3

Who? What? When? Why? How? Research a NJ Inventor!

Introduction

Now that the students have learned why people invent, what makes a successful invention and how New Jersey has become a place where ideas, inventions and innovations flourish, they will research and present information about a specific NJ inventor!

Objectives

In this lesson, students will work collaboratively (small group or partners) to research the life and accomplishments of a New Jersey inventor. Students will use a variety of resources (books, articles, online, etc.) to gather information. Students will complete a “Facts & Ideas Graphic Organizer” and create a way to present what they have learned about their inventor to their classmates. Students will also prepare a character traits web about their inventor.

Targeted Standards in Lesson 3

Common Core State Standards Grade 4 English Language Arts

- CCSS.ELA-Literacy.RL.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- CCSS.ELA-Literacy.RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- CCSS.ELA-Literacy.RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- CCSS.ELA-Literacy.RI.4.5 Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
- CCSS.ELA-Literacy.RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- CCSS.ELA-Literacy.W.4.1b Provide reasons that are supported by facts and details.
- CCSS.ELA-Literacy.W.4.2b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- CCSS.ELA-Literacy.SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade





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4 topics and texts, building on others' ideas and expressing their own clearly.

- CCSS.ELA-Literacy.SL.4.1c Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- CCSS.ELA-Literacy.SL.4.3 Identify the reasons and evidence a speaker provides to support particular points.

New Jersey Grade 4 Social Studies Standards

- 6.1.4.C.12- Evaluate the impact of ideas, inventions and other contributions of prominent figures who lived in New Jersey.
- 6.1.4.C.16- Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.

Resources

Students will use the following links to learn about the NJ inventor they have been assigned to research. Each inventor brought his or her own unique background, education and skill set to their work in order to become successful. See what your students can discover about these amazing New Jersey Inventors and their ideas, inventions and innovations!

Amazing New Jersey Inventors!

Abram Spanel

- <http://blog.nasm.si.edu/behind-the-scenes/a-trip-to-the-international-latex-corporation-how-space-suit-gloves-are-made/>
- http://www.jewishvirtuallibrary.org/jsource/judaica/ejud_0002_0019_0_18940.html

John Stevens

- <http://www.britannica.com/EBchecked/topic/565923/John-Stevens>
- http://inventors.about.com/od/rstartinventions/a/Steam_Locomotiv.htm

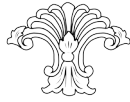
Lillian Gilbreth

- <https://www.sdsc.edu/ScienceWomen/gilbreth.html>
- <http://gilbrethnetwork.tripod.com/bio.html>
- <https://www.asme.org/career-education/articles/management-professional-practice/lillian-moller-gilbreth>

Dr. John Thompson-Dorrance

- <http://tasteful-inventions.blogspot.com/2008/11/dr-john-thompason-dorrance-condensed.html>
- <http://www.rootsweb.ancestry.com/-njcamden/campbell.htm>





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Les Paul

- <http://rockhall.com/inductees/les-paul/bio/>
- <http://invention.smithsonian.org/centerpieces/electricguitar/index.htm>
- <http://www.mahwahmuseum.org/page.cfm?page=178>

Earle Dickson

- <http://web.mit.edu/invent/iow/dickson.html>
- <http://www.anb.org/articles/20/20-01923.html>
- <http://sjmv.org/Campus/Class/scinventors/bandaid/bandaid.html>

Charles Brooks

- <http://inventors.about.com/library/inventors/blbrooks.htm>
- <https://sites.google.com/site/newspaperpage1/c-b-b-inventor-extraordinaire>

Alice Parker

- <http://www.heater-home.com/wall-furnace-history.aspx>
- <http://invent.answers.com/famous-inventors/who-is-alice-parker>

Alfred Fielding and Marc Chavannes

- http://www.stevens.edu/ses/about/history/bubble_wrap.html
- https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Bubble_Wrap.html

Bessie Blount

- <http://web.mit.edu/invent/iow/blount.html>
- http://inventors.about.com/od/bstartinventors/a/Bessie_Blount.htm

Roy Plunkett

- <http://inventors.about.com/library/inventors/blteflon.htm>
- <http://www.humantouchofchemistry.com/roy-j-plunkett-discovers-teflon.htm>

Instructional options include:

- If technology is available, the groups can conduct their own research online utilizing the resource links.
- If the only option is for the teacher to utilize the technology, the teacher can project resources on a Smartboard or screen, and the whole class or small groups can view, read, discuss, etc.
- If no technology is available, teacher can print out and copy online articles so students can read, discuss and highlight the copies.

Assessments:

- "Facts & Ideas Graphic Organizer"
- Rubric for Presentations
- Teacher observations and anecdotal notes, as well as student responses, participation and engagement
- Exit Slips





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Pacing Guidelines:

This lesson will take 4/+ days (one 45-60 minute period per day) depending on how in-depth the research and presentations will be. The teacher may want to collect other resources and reference materials for students to use in addition to the Internet.

Lesson 3 has four parts:

- Part 1- Introduction: Begin research and plan for product & presentation
- Part 2- Conferencing with teacher: Presentation review & continued research
- Part 3- Finalize research and product: Work on & practice presentations
- Part 4- Class Presentations

Possible products include:

- Power Point Presentation
- Newspaper or Magazine
- Poster/Glogster
- Smart Notebook presentation
- I-movie or moviemaker video/documentary
- Interview
- Skit
- Timeline
- Podcast

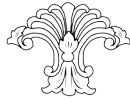
Part 1: Introduction and Beginning Research

Invite students to come to the class discussion area. Explain that they will be researching a New Jersey inventor. Tell them that they will be using the Internet and other resources to gather information. Inform students that after they have gathered information, discussed the facts with their team members and become classroom experts on their inventor, they will be creating a final product that will be shared with the class. Answer questions and clarify expectations.

Step 1: The teacher will randomly assign student teams to research, learn and present about one of the New Jersey Inventors (This is a great opportunity to differentiate and individualize the learning experience based on student needs, abilities & interests).

Step 2: Distribute the Facts & Ideas Graphic Organizer to students. Review. Using the graphic organizer, students will begin their research and gather information about the inventor. They will be analyzing details of their inventor's life to





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understand problems and setbacks as well as identifying important character traits they exemplified.

- Step 3:** Teacher will explain what resources are available. Teacher will review what the students will be using in their research and provide any additional books or handouts. Teacher may want to review the rules/procedures of working in groups as defined in their unique class.
- Step 4:** As the students research their inventors, the teacher will monitor their progress and ask questions to facilitate discussion. Groups will talk about why their inventor developed this item. They will discuss hardships, setbacks and problems. Teacher will ask students to consider how life would be different without these inventions. Teacher will guide the students to make a collaborative decision for their presentation product.
- Step 5:** Bring students together again as the lesson concludes. Ask groups to share what product they will be creating for the class presentation. Make sure students understand what they will need to accomplish during the next work period.

Part 2: Conferencing and Planning

As students continue to research their inventor, teacher will meet with each group for a short “check-in” conference. This will give both students and teacher an understanding of how they are progressing in the project and provide time to modify, adjust and “fine-tune” their product.

- Step 1:** Teacher will meet with each group for a “Progress Conference.” Students will explain where they are in the research process, describe the product they will be developing and clarify their plan for the next few days as they complete the project.
- Step 2:** Students will work on their presentations. Teacher will support student-driven plans/ideas/decisions as needed.
- Step 3:** Students will “visit” other groups and check in with each other. This provides an opportunity for students to ask questions and provide feedback before the product is finalized.
- Step 4:** Students will gather supplies, clean up and confirm their plans for their next work session.





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Part 3: Finalizing Research, Product & Presentations

Students will use this period for finishing up details for the research portion, working on their product, planning and practicing their presentations.

- Step 1:** When students have gathered final information on their inventor, they will work collaboratively on their presentations.
- Step 2:** Students will prepare/practice presentation. Teacher will assist students as needed.
- Step 3:** Utilize as many work sessions as needed for all the student groups to complete their products and prepare their presentations. Students who have completed their group work can journal about their learning experience (optional Reflective Journal Pages are attached), create some artwork about their inventor (such as a comic book or exhibit guidebook or (if technology is available) visit some of the inventing websites such as www.inventionatplay.org

Part 4: Classroom Presentations! Celebrate Amazing NJ Inventors

- Step 1:** Each group will have an opportunity to introduce and present their NJ Inventor product and newly acquired knowledge. After each presentation, the audience will have a chance to ask questions.
- Step 2:** Teacher will assess each group utilizing the attached rubric (or a presentation rubric they currently use in class).
- Step 3:** Class will celebrate their work! Time will be provided at the end so each student can complete a “Project Conclusion Exit Ticket.”

*Post-presentation Option: Group presentations can be videotaped and viewed again during class or as a center activity. Videos could also be added to a protected class webpage and shared with families.

Culminating Activity

Because certain character traits play an important role in inventing and innovating, students will complete a “Character Traits Web” for their inventor. They can review all their research materials, resources, books and articles. Character Traits Webs can be displayed in the classroom or hallway. Students can also complete a Venn Diagram comparing themselves to their inventor.





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Additional Resources for Lesson 3

- “Inventors Handbook” publication From MIT: <http://web.mit.edu/~invent/h-main.html>
- “New Jersey Inventors Hall of Fame” About page on website: <http://www.njinvent.org/publications.html>
- Highly detailed and comprehensively photographed text: DK Eyewitness Books: Invention by Lionel Bender
- Additional non-fiction text: 100 Inventions That Made History Hardcover by DK Publishing
- Additional non-fiction text: A History of Inventing in the Garden State: From Thomas Edison to the Ice Cream Cone Paperback by Linda J. Barth (available from Amazon \$16.70)
- Karnes, Francis, Suzanne H. Bean, and Rose Mary Wallner. Girls and Young Women Inventing: Twenty True Stories About Inventors Plus How You Can Be One Yourself. Free Spirit, 1995. (Grades 3-6)
- Kramer, Stephen P. How to Think Like a Scientist: Answering Questions by the Scientific Method. New York: Thomas Y. Crowell, 1987. (Grades 2-4)
- McCormack, Alan J. Inventor’s Workshop. Belmont, CA: Pitman Learning, Inc. 1981. (Grades 2-6)
- McKissack, Pat and Frederick L. McKissack. African-American Inventors. Millbrook Press, 1994. (Grades 4-7)
- Striker, Susan. Build a Better Mousetrap. New York: Holt, Rinehart & Winston, 1983.
- Taylor, Barbara. Be an Inventor. New York: Harcourt Brace, 1987. (Grades 3 and up)
- Yenne, Bill. 100 Inventions That Shaped World History. Bluewood Books, 1993. (Grades 3-6)

