

Five Notable Inventors by Wade Hudson. New York: Scholastic, Inc., 1995. ISBN: 0-590-48033-2

Literature Annotation: This book acknowledges inventions designed, created and envisioned by five Black inventors: Elijah McCoy (machinery oiling equipment); Madame C. J. Walker (hair products for Black women); Granville T. Woods (electrical signals for trains); Garrett Morgan (gas masks and traffic signals); and Jan Matzeliger (shoe last machinery).

Grade Level: 4

Maryland State Curriculum

Economics Standard: Students will develop economic reasoning to understand the historical development and current status of economic principles, institutions, and processes needed to be effective citizens, consumers, and workers participating in local communities, the nation, and the world.

4.A.3.a Describe how changes in technology, such as refrigeration, impacted the lives of consumers

Reading Standard: Comprehension of Informational text- Students will read, comprehend, interpret, analyze, and evaluate informational text.

2.A.4.c State and support main ideas and messages

2.A.4.f Identify and explain relationships between and among ideas

2.A.4.g Draw conclusions and make generalizations from text to form new understanding

Objective: Students will be able to explain how each inventor improved a good or service by re-telling information about the inventor and the good or service that was invented.

Vocabulary

technology: tools, machines, methods, and other things used to perform activities

entrepreneur: one who draws upon his/her skills and initiative to launch a new business venture with the aim of making a profit; often a risk-taker, inclined to see opportunity when others do not

Additional Vocabulary: machinery, patent

Teacher Materials

- *Five Notable Inventors* by Wade Hudson and illustrated by Ron Garnett. Scholastic: New Jersey, 1995. ISBN 0-590-48033-2

Student Materials

- 1 copy of *Five Notable Inventors*
- 1 copy of Resource 1: *African American Inventors*
- 1 copy of Resource 2: MSA-Like Activity a-e (one sheet associated with their inventor)

Motivation

Have students examine the cover of the book and read the names of the five inventors. Then have students select one of the inventors to read about in the book. Explain to students that they will be sharing information that they learn with other students so that everyone will know about all five inventors.

Have students preview the chapter of the book about their inventor and complete Part A of Resource 1: *African American Inventors*.

Development

1. Have students read the chapter associated with their inventor and complete Part B of Resource 1.
2. Have students re-read the chapter. Then, have students complete the copy of Resource 2: *MSA-Like Activity* associated with their inventor. Collect their work.
3. Assign all students who read about the same inventor to small groups of 2 or 3. Have each student orally re-tell information learned about the inventor: what he or she did and how the inventor affected the way people lived, worked, or played. Since these students have read about the same inventor they will be able to check each other's information for accuracy.

Conclusion

Conduct a jig-saw activity by re-assigning each student to a small group with other students that read about different inventors. Within their group, have each child re-tell what they learned about their assigned inventor: what he or she did and how the inventor affected the way people lived, worked, or played.

Application

- For more information about each inventor, have students conduct additional online research. All five inventors have a short biography and picture at the Scholastic website: <http://teacher.scholastic.com/activities/bhistory/inventors/mccoy.htm>

Jan Matzeliger: <http://www.uh.edu/engines/epi522.htm> (has an audio button which reads the entire page about Matzeliger)

Elijah McCoy: http://inventors.about.com/od/mstartinventors/a/Elijah_McCoy.htm

Granville T. Woods:
<http://inventors.about.com/od/wstartinventors/a/GranvilleTWoods.htm>

Madam C. J. Walker: <http://www.madamcjwalker.com/>

Garrett A. Morgan: <http://www.uh.edu/engines/epi1624.htm> (has an audio button which reads the entire page about Morgan)

- Have students think of a good or service that they use frequently. Ask students to find out what changes have been made to that good or service over time. Then have students think about how that good or service improves the way they live, work, or play. For example, mechanical pencils and regular pencils, toothpaste dispensers and tubes, thermos and drink boxes, etc. Students can create an ad for the new, improved product. This ad could be for a magazine, radio, TV, or billboard.

Resource 1

Name: _____ Date: _____

African American Inventors

Part A: To be completed before reading about the chapter about the inventor.

1. Before you read about the inventor you selected, read the subheading and the year of birth and death under the name. Write the subheading on the line below.

“ _____ ”

2. Preview the pictures of the chapter. With what good or service might this inventor be associated? _____

Do you or your family use this good or service today? _____ How? _____

Part B: To be completed after reading the chapter about the inventor.

1. What did this inventor do? _____

2. How did this inventor improve the way people lived or worked? _____

3. Write one interesting fact that you learned about this inventor's life. _____

Resource 2a

Name: _____ Date: _____

MSA- Like Activity
Jan Ernst Matzeliger pp. 5-13

1. The article “Jan Ernst Matzeliger” is mostly about how Jan:
 Ⓐ traveled around the United States.
 Ⓑ produced shoes that last a long time.
 Ⓒ learned how to make shoes in a factory.
 Ⓓ created a machine to last shoes together.

2. First Jan made a model of his machine out of:
 Ⓐ scrap metal. Ⓑ cigar boxes. Ⓒ pew metal. Ⓓ cardboard boxes.

3. The leather was stretched over a wooden model of a foot called a:
 Ⓐ sole. Ⓑ forge. Ⓒ last. Ⓓ lathe.

4. The author included the drawing on page 12 to show:
 Ⓐ how to make a lasting machine. Ⓑ how to make a shoe.
 Ⓒ how to repair a shoe machine. Ⓓ how Jan got a patent.

5. Explain how Jan’s invention helped to improve the production of shoes.

Answer Key: 2a
MSA-Like Activity
Jan Ernst Matzeliger pp. 5-13

1. The article “Jan Ernst Matzeliger” is mostly about how Jan -

- Ⓐ traveled around the United States.
- Ⓑ produced shoes that last a long time.
- Ⓒ learned how to make shoes in a factory.
- Ⓓ created a machine to last shoes together.

Reading 2.A.4.c

State and support main ideas and messages.

2. First Jan made a model of his machine out of -

- Ⓐ scrap metal.
- Ⓑ cigar boxes.
- Ⓒ chew metal.
- Ⓓ cardboard boxes.

Reading 1.E.4.b

Identify and explain what is directly stated in the text.

3. The leather was stretched over a wooden model of a foot called a -

- Ⓐ sole.
- Ⓑ forge.
- Ⓒ last.
- Ⓓ athe.

Reading 1.E.4.b

Identify and explain what is directly stated in the text.

4. The author included the drawing on page 12 to show

- Ⓐ how to make a lasting machine.
- Ⓑ how to make a shoe.
- Ⓒ how to repair a shoe machine.
- Ⓓ how Jan got a patent.

Reading 2.A.2.b

Use graphic aids.

5. Explain how Jan’s invention helped to improve the production of shoes. Be sure to include facts from the reading.

Responses will explain how Jan’s invention helped to improve shoe production and cite several details from the article. Details might include the following:

- The shoe-lasting machine helped workers produce shoes quicker and cheaper.
- In a ten-hour day the machine could last 300-700 pairs of shoes instead of 50 pairs by hand.
- Companies could make shoes faster.
- Their shoes were less expensive.
- More people could afford to buy shoes.

Social Studies-Economics

Identify improvements in technology (factories, machinery, transportation, communication) over time.

Reading 2.A.4.d

Summarize the text or a portion of text.

Resource 2b

Name: _____ Date: _____

MSA-Like Activity
Elijah McCoy pp. 15-21

6. Elijah studied and trained for several jobs. Which job did Elijah **not** study?
 A drafter B engineer C inventor D mechanic
7. Elijah studied hard in school. In which sentence below does the word hard mean the same thing?
 A The pond was frozen hard. B It rained so hard yesterday.
 C Bob works hard on the farm. D The baseball hit him hard.
8. Explain how Elijah’s “lubricating cup” invention improved trains. Be sure to include facts from the reading.

9. Today the expression “The Real McCoy” means:
 A the real person. B his real home.
 C his real nickname. D the real thing.
10. The author included the drawing on page 19 because it shows:
 A how to fix the lubricator. B how Elijah got a patent.
 C how Elijah oiled a train. D how to make an oil cup.

Resource 2c

Name: _____ Date: _____

MSA-Like Activity
Granville T. Woods pp. 23-29

11. Which of the following things we have today does not come from a Granville Woods invention?
- A amusement park rides B the telephone
 C egg incubators D modern trolleys
12. Granville's invention of the railway telegraphy was important because:
- A it helped stop accidents. B it made trains go faster.
 C it ran trains on electricity. D it made subway trains safer.
13. The reading on Granville T. Woods is mostly about:
- A his jobs. B his inventions. C his family. D his schooling.
14. Explain how Granville's electrical inventions improved the way people lived and worked. Be sure to use information from the reading in your explanation.

15. Which one of the following statements about Granville is an opinion?
- A People have called Granville "The Greatest Electrician."
 B Granville invented a safety device called the "third rail."
 C Many of Granville's patents were sold to large companies.
 D Granville loved learning new things and went to school at night.

Answer Key: 2c
MSA-Like Activity
Granville T. Woods pp. 23-29

11. Which of the following things we have today does not come from a Granville Woods invention?

- A amusement park rides ● the telephone
 C egg incubators D modern trolleys

Reading 1.E.4.b
Identify and explain what is directly stated in the text.

12. Granville's invention of the railway telegraphy was important because.

- it helped stop accidents. B it made trains go faster.
 C it ran trains on electricity. D it made subway trains safer.

Reading 2.A.4.c
State and support main ideas and messages.

13. The reading on Granville T. Woods is mostly about:

- A his jobs. ● his inventions. C his family. D his schooling.

Reading 2.A.4.c
State and support main ideas and messages.

14. Explain how Granville's electrical inventions improved the way people lived and worked. Be sure to use information from the reading in your explanation.

Responses will explain how Granville's inventions helped people and cite details from the article. Details might include some of the following:

- a. improved steam boiler furnaces so they heated homes and buildings better
- b. invented a new telephone transmitter that sent sounds over a longer distance and the sounds were much clearer and louder
- c. invented the "amusement apparatus" which was used
- d. for many, new rides were set up at amusement parks
- e. invented an incubator that can hatch as many as 100,000 baby chicks at once
- f. invented the railway telegraphy which allowed engineers, conductors, station operators and operators on trains to talk to each other
- g. improved trains by inventing an overhead electric system to run trains
- h. invented a "third rail" safety device

Social Studies-Economics

Identify improvements in technology (factories, machinery, transportation, communication) over time.

Reading 2.A.4.g

Draw conclusions and make generalizations from text to form new understanding.

15. Which one of the following statements about Granville is an opinion?

- A People have called Granville "The Greatest Electrician."
 B Granville invented a safety device called the "third rail."
 C Many of Granville's patents were sold to large companies.
● Granville loved learning new things and went to school at night.

Reading 2.A.4.h
Distinguish between a fact and an opinion.

Resource 2d

Name: _____ Date: _____

MSA-Like Activity
Madam C. J. Walker pp. 31-39

16. Madame C. J. Walker invented her hair growing cream when she was working:

- Ⓐ at a beauty parlor.
- Ⓑ as a cook and laundress.
- Ⓒ in a cotton field.
- Ⓓ as a door-to-door saleslady.

17. Which one of the following did Madame Walker not use to sell her hair products?

- Ⓐ door-to-door
- Ⓑ telephone
- Ⓒ mail-order
- Ⓓ beauty parlors

18. Which of the following statements is an opinion about Madame C. J. Walker?

- Ⓐ She always found time to donate money and help the needy.
- Ⓑ She became the richest black woman in the United States.
- Ⓒ She set up factories and laboratories to make hair products.
- Ⓓ She enjoyed having a very successful hair products company.

19. Madame C. J. Walker had beauty parlors in cities in the United States and:

- Ⓐ South America.
- Ⓑ Europe.
- Ⓒ Africa.
- Ⓓ Asia.

20. Explain how Madam C. J. Walker’s products satisfied the economic wants of consumers. Be sure to include information from the reading in your explanation.

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Answer Key: 2d
MSA-Like Activity
Madam C. J. Walker pp. 31-39

16. Madame C. J. Walker invented her hair growing cream when she was working-

- Ⓐ at a beauty parlor. ● as a cook and laundress.
 Ⓒ in a cotton field. Ⓓ as a door-to-door saleslady.

Reading 1.E.4.b.

Identify and explain what is directly stated in the text.

17. Which one of the following did Madame Walker not use to sell her hair products?

- Ⓐ door-to-door ● telephone Ⓒ mail-order Ⓓ beauty parlors

Reading 1.E.4.b.

Identify and explain what is directly stated in the text.

18. Which of the following statements is an opinion about Madame

- Ⓐ She always found time to donate money and help the needy.
 Ⓑ She became the richest black woman in the United States.
 Ⓒ She set up factories and laboratories to make hair products.
 ● She enjoyed having a very successful hair products company.

Reading 2.A.4.h

Distinguish between a fact and an opinion.

19. Madame C. J. Walker had beauty parlors in cities in the United States and:

- South America. Ⓑ Europe. Ⓒ Africa. Ⓓ Asia.

Reading 1.E.4.b.

Identify and explain what is directly stated in the text.

20. Explain how Madame C. J. Walker's provided goods and services for consumers. Be sure to include information from the reading in your explanation.

Responses will explain how Madame Walker provided goods and services for her consumers (customers) and give a number of details from the article. Details might include the following:

- invented a mixture to grow hair for people who were losing their hair
- created more hair products
- started her business in her attic where she made the mixture and filled the jars to sell
- went door-to-door selling her product and giving free demonstrations
- sold products by mail
- set up her own factories and laboratories to make the products

Social Studies –Economics

Explain how producers combine resources to provide goods and services to satisfy economic wants.

Reading 2.A.4.d

Summarize the text or a portion of the text.

Resource 2e

Name: _____ Date: _____

MSA-Like Activity
Garrett A. Morgan pp. 41-48

21. Garrett Morgan’s first discovery was-
- Ⓐ the “gas inhalator” for rescues.
 - Ⓑ a chemical to straighten hair.
 - Ⓒ an electric traffic light signal.
 - Ⓓ the *Cleveland Call* newspaper.
22. How is the text of “Garrett A. Morgan” organized?
- Ⓐ problem and solution
 - Ⓑ cause and effect
 - Ⓒ description
 - Ⓓ similarities-differences
23. People wearing the “gas inhalator” got cleaner air because the long tube -
- Ⓐ made dangerous smoke, dust, and gas rise.
 - Ⓑ could reach the air closer to the ground.
 - Ⓒ had holes at the end to clean the air.
 - Ⓓ was connected to a clean air machine.
24. The captions on page 45 help the reader to know that Garrett Morgan -
- Ⓐ earned a gold medal for bravery.
 - Ⓑ wrote a book on fire safety.
 - Ⓒ got a patent for a breathing device.
 - Ⓓ made an ad for his helmet.
25. Explain how the inventions of Garrett Morgan have helped to keep people safer.

Answer Key: 2e
MSA-Like Activity
Garrett A. Morgan pp. 41-48

21. Garrett Morgan's first discovery was:

- Ⓐ the "gas inhalator" for rescues. ● a chemical to straighten hair.
Ⓒ an electric traffic light signal. Ⓓ the *Cleveland Call* newspaper.

Reading 1.E.4.b.
Identify and explain what is directly stated in the text.

22. How is the text of "Garrett A. Morgan" organized?

- Ⓐ problem and solution Ⓑ cause and effect
● description Ⓓ similarities-differences

Reading 2.A.3.a
Identify and analyze the organizational patterns of texts.

23. People wearing the "gas inhalator" got cleaner air because the long tube:

- Ⓐ made dangerous smoke, dust, and gas rise.
● could reach the air closer to the ground.
Ⓒ had holes at the end to clean the air.
Ⓓ was connected to a clean air machine.

Reading 1.E.4.c.
Identify and explain what is not directly stated in the text by drawing inferences.

24. The captions on page 45 help the reader to know that he:

- Ⓐ earned a gold medal for bravery. ● wrote a book on fire safety.
Ⓒ got a patent for a breathing device. Ⓓ made an ad for his helmet.

Reading 2.A.2.c
Use informational aids.

25. Explain how the inventions of Garrett Morgan have helped to keep people safer.

Responses will explain how the inventions of Garrett Morgan have helped to keep people everywhere safer and cite a number of details from the story. Details might include the following:

- His safety mask allowed firefighters to walk into a smoke filled tunnel and rescue people.
- Fire departments could use the masks to rescue people from fires.
- His mask saved lives in World War II.
- The U.S. government changed his "gas inhalator" a little and made it a gas mask.
- They used it to protect soldiers from poisonous gases.
- His electric traffic light helped to prevent crashes and saved lives.

Social Studies –Economics

Identify improvements in technology (factories, machinery, transportation, communication) over time.

Reading 2.A.4.g

Draw conclusions and make generalizations from text to form new understanding.