SCIENCE BIOGRAPHIES: A POSTER APPROACH

Grade Level or Special Area: 2nd Grade
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Length of Unit: Four lessons (one lesson = four days, 5-10 minutes each and one day 60-80 minutes split) spread over the school year

I. ABSTRACT

This unit is an overview of the lives of four people, from the *Core Knowledge Sequence*, who greatly impacted science. For each person, students will learn key facts, place them on a timeline, listen to a story about them and write and illustrate their own mini-biography prior to a final, formal assessment. The poster approach combined with daily review in this unit maximizes class time and is easy and fun for students.

II. OVERVIEW

A. Concept Objectives
   1. Students will develop an awareness of the impact of specific historic individuals on science and technology.
   2. Students will understand time and chronology as it applies to the lives of historic individuals in science.

B. Content from the *Core Knowledge Sequence*
   1. 2nd Grade Science: Science Biographies (p. 61)

C. Skill Objectives
   1. Students will write legibly.
   2. Students will know and use age-appropriate spelling, grammar and sentence structure.
   3. Students will summarize and illustrate what they have learned.
   4. Students will recall key facts they have learned.

III. BACKGROUND KNOWLEDGE

A. For Teachers
   1. Hirsch, E.D., Jr. *What Your 2nd Grader Needs to Know*

B. For Students
   1. Grade 1: The Human Body: Germs, Diseases, and Preventing Illness, page 38
   2. Grade 2: The Human Body: Cells, page 60
   3. Grade 2: The Civil War: The Underground Railroad, page 50

IV. RESOURCES

A. *What Your 2nd Grader Needs to Know*, by E.D. Hirsch, Jr. (Lessons One, Two, Three and Four)

V. LESSONS

Lesson One: Anton van Leeuwenhoek (four lessons 5-10 minutes each, plus two 30-40 minutes lessons)

A. *Daily Objectives*
   1. Concept Objective(s)
      a. Students will develop an awareness of the impact of specific historic individuals on science and technology.
      b. Students will understand time and chronology as it applies to the lives of historic individuals in science.

2. Lesson Content
    a. Science Biographies: Anton van Leeuwenhoek
3. Skill Objective(s)
    a. Students will write legibly.
    b. Students will know and use age-appropriate spelling, grammar and sentence structure.
    c. Students will summarize and illustrate what they have learned.
    d. Students will recall key facts they have learned.

B. *Materials*

1. One large sheet of Post-It chart paper
2. Color copy of Appendix A, Poster Title, prepared as suggested in step two
3. Color copy of Appendix B, Poster Title, prepared as suggested in step two
4. Color copy of Appendix C, Poster Statements, prepared as suggested in step two
5. Color copy of Appendix D, Poster Statements, prepared as suggested in step two
6. Color copy of Appendix E, Poster Quote, prepared as suggested in step two
7. Photos of Anton Van Leeuwenhoek and his microscope from the web site: http://www.ucmp.berkeley.edu/history/leeuwenhoek.html ,prepared following directions in step two
8. Double stick tape for mounting the poster pieces
9. Timeline on display in classroom, this can be a continuation of one already in use (best choice) or made specifically for this lesson
10. Globe or world map
11. *What Your Second Grader Needs to Know*, pp. 334-335
12. Color copy of Appendix F, Cover for Student Book on Anton van Leeuwenhoek, one for each student
13. Colored paper to match or coordinate with book cover, one for each student
14. Three sheets lined paper per student
15. One sheet plain copy paper per student
16. Appendix G, Rubric for Scoring Student Books, one per student
17. Appendix H, Science Biographies Test: Anton van Leeuwenhoek, one per student
18. One copy of Appendix I, Science Biographies Test Key: Anton van Leeuwenhoek
19. Optional: one color copy of Appendix II, Sign for Second Grade Display, to be used throughout the year

C. *Key Vocabulary*

1. Anton van Leeuwenhoek: pronounced "lay-wen-hook"
2. Microscope: an instrument with powerful lenses; a microscope magnifies very small things so that they look large enough to be seen and studied
3. Bacteria: microscopic living things that exist all around you and inside you; many bacteria are useful, but some cause disease

D. *Procedures/Activities*

1. **Note:** This lesson is designed to be taught in several small segments over a five consecutive day period. On Monday you will introduce the poster with the title and a photo of Leeuwenhoek, then add the first statement. As part of the introduction you will establish the pattern which will be used in your classroom each of the five days for the poster activity. I suggest you set a specific time. In my classroom it worked out to do the poster as part of the early morning "morning math meeting" time. On Monday you will also begin a timeline as a class. Once during the week you will be reading aloud. I prefer to do this while students have a milk break so that I don't use class time, use a time best for your

schedule. On Friday students will construct a book and take a formal assessment in addition to their poster activity.

2. Prior to beginning this lesson you will need to prepare the pieces about Leeuwenhoek for the poster. Color copy the title and statements, Appendices A, B, and C then cut them out. If desired, mount them on a coordinating colored paper with a ½ inch border all around. The last name is in two boxes, carefully trim off the colored ends and match the letters to form one box. A picture of Leeuwenhoek and one of his early microscopes can be found at http://womenshistory.about.com, Print one of each and mount them on paper to match the poster statements.
3. **Day One:** Have the poster (see materials above), with the title and photo already attached, hanging in a high traffic area of the classroom at students' eye level. Introduce the activity by telling students that you will be studying a scientist who has made a major impact on all of our lives although his name is not well known. Move to the poster area and point out, then pronounce, the name. Ask students to join you in saying Anton van Leeuwenhoek a couple of times, letting them know that it is a difficult name to pronounce. Thereafter encourage students to use his name by asking "Who is our scientist this week?" at the beginning of each session. Let them answer in unison prompting only as long as necessary.
4. Show students the first statement about Leeuwenhoek. (He lived in Holland in the 1600's.) Attach the statement to the chart using double stick tape. Read the statement to the students. Ask students to repeat this important information with you beginning with the name. Using a globe or world map point out where Holland is to the students. If time allows let students share what they already know about that country.
5. After completing the poster activity on the first day, move to the area of the classroom where the timeline is on display. If this timeline has been used throughout the school year an explanation will not be necessary. If not, explain to students the use and purpose of a timeline. Tell them that we can understand the order things happen in, and understand what was going on in other parts of the world at the same time. If using a pre-existing timeline be sure to point out events they have already posted as part of other units and review them briefly. Depending on student's experience with large time frames you may want to expand this discussion on time to help them understand such a distant date. Mark Leeuwenhoek's life span using a color coded arrow to encompass the years 1632-1723, or in a way consistent with other markings already on the line. Point out that our country was being colonized during Leeuwenhoek's life but did not declare independence until fifty-three years after his death. Label the timeline with van Leeuwenhoek's name and attach the picture of one of his early microscopes. A classroom helper could do the actual labeling with assistance.
6. **Days Two through Five:** The pattern you established on day one with the poster will continue for the five days of this lesson. Each day review the title and previous statements in unison. Introduce the new statement, attach it to the poster and review all the statements in unison. Watch to make sure that all students are participating as this is an easy way to learn key material. Use these statements in the order found in the appendices as they build on one another. The poster addition on day five is a quote by Leeuwenhoek, it is important to save the quote until last since the quote will not be included in the formal assessment. When you present the statement for day three do a quick review of material students have retained from their study of cells. As an additional review of this lesson's material, I often ask questions as we pick up to go home or line up for

lunch or recess. Correct answers may earn a small piece of candy or a front position in the lunch or recess line.

7. At some point during the week, prior to Friday, read the information and poem about Anton van Leeuwenhoek from *What Your Second Grader Needs to Know* pp. 334-335 to the students. After reading, discuss briefly with your students the key facts relating them to the statements on the poster. Emphasize the fact that Leeuwenhoek made up for lack of training because of his curiosity, inventiveness and perseverance. Point out to students that contrary to the poem, Leeuwenhoek did not invent the microscope. You should also encourage students to think about what the world would be like if no one had ever discovered things like bacteria. Some students will reply that someone else would have eventually. Let them know that they are correct, but that the world would still have benefited from an individual's work. If students have not yet studied germs and disease you will want to go over what they do know in a discussion format. Students who have studied germs and disease this year will only need a review.
8. **Day Five:** Students will construct a book using knowledge they have acquired this week on Anton van Leeuwenhoek. For best management of classroom time I suggest that books be put together prior to class time. To construct the book make a stack beginning at the bottom with one colored sheet of paper, three sheets of lined paper, one sheet of white paper, and the copied book cover, Appendix F. Holding sheets together with edges aligned staple three times evenly spaced, inside the left edge of the book cover. Holding firmly by the right side to maintain alignment cut out using the cover borders as your guide. You may want to make a blank book for yourself as well.
9. Prior to the writing process remove the poster from the classroom. Retire all of your posters to a display in the hallway to share with others. If you have not done so already there is a sign at the end of this unit to display with the poster collection. Print it in color and mount it in the hall where the posters will hang. Conduct a retirement ceremony where you remove the current poster, a class member carries it to the hall and hangs it up. Review some or all of the previous posters depending on the number in the collection and time restraints. This year long display has created more positive comments from visitors than any other display we have had.
10. Give blank books to students and explain that they will be recalling information about Anton van Leeuwenhoek, their Scientist of the Week. Tell them that they will be writing a biography. The word biography is big, but it is actually just a report of the facts about someone's life and why they are important. Point out the area for placing their name and date on the cover. Allow students to fill in that information before going on. Tell students that how much space they use is not important, but that the rubric which will be used to score their work is based on neatness, complete sentences (review expectations if necessary), the number of true facts they have recalled, and the correct spelling of common words. Let them know that in addition to the facts presented on the poster during the week they may also use information from the read-aloud and discussions. You may choose to put words such as Anton van Leeuwenhoek, microscope, and bacteria on the board. If your students are familiar with the use of rubrics you may choose to pass out the rubric and go over it in detail prior to the writing process. In that case, have students put their name on the rubric and turn it in with their completed books. However, students who are not experienced with rubrics will focus better on the writing process if you only tell them the key points that will be evaluated. Let students know that an illustration is part of the expectations for

this book, showing them the blank sheet of paper in your copy of the book. Ask them to wait to draw and color that page until their writing is complete then draw what they feel is one of the important parts of their biography. Allow adequate time for students to write and illustrate their books. Circulate as students begin the writing process checking to see that everyone has understood and are following the directions. When students are finished collect their books for scoring.

E. *Assessment/Evaluation*
   1. Score the student's biographies using the rubric found in Appendix G. Record the score before returning the book and rubric. Do not write the score in the book as students enjoy sharing these books with others.
   2. Administer the Science Biographies Test: Anton van Leeuwenhoek, Appendix H, and score it using the answer key found in Appendix I.

Lesson Two: Elijah McCoy (four lessons 5-10 minutes each, plus two 30-40 minute lessons)

A. *Daily Objectives*
   1. Concept Objective(s)
      a. Students will develop an awareness of the impact of specific historic individuals on science and technology.
      b. Students will understand time and chronology as it applies to the lives of historic individuals in science.
   2. Lesson Content
      a. Science Biographies: Elijah McCoy
   3. Skill Objective(s)
      a. Students will write legibly.
      b. Students will know and use age-appropriate spelling, grammar and sentence structure.
      c. Students will summarize and illustrate what they have learned.
      d. Students will recall key facts they have learned.

B. *Materials*
   1. One large sheet of Post-It chart paper
   2. Color copy of Appendix J, Poster Title, prepared as suggested in step two
   3. Color copy of Appendix K, Poster Statements, prepared as suggested in step two
   4. Color copy of Appendix L, Poster Statements, prepared as suggested in step two
   5. Color copy of Appendix M, Poster Quote, prepared as suggested in step two
   6. Photo of Elijah McCoy from the web site: http://www.princeton.edu/~mcbrown/display/mccoy.html , prepared following the directions in step two
   7. Double stick tape for mounting the poster pieces
   8. Timeline on display in classroom, this can be a continuation of one already in use (best choice) or one made specifically for this lesson or unit
   9. Map of the United States and Canada
   10. *What Your Second Grader Needs to Know*, pp.338-340
   11. Color copy of Appendix N, Cover for Student Book on Elijah McCoy, one for each student
   12. Colored paper to match or coordinate with book cover, one for each student
   13. Three sheets lined paper per student
   14. One sheet plain copy paper per student
   15. Appendix O, Rubric for Scoring Student Books, one per student
   16. Appendix P, Science Biographies Test: Elijah McCoy, one per student

17. One copy of Appendix Q, Science Biographies Test Key: Elijah McCoy

C. *Key Vocabulary*

1. Slave: someone who is owned by another person and though of as property
2. Engineer: someone who is trained to design and build machines

D. *Procedures/Activities*

1. **Note:** If you are doing these lessons out of sequence please read the note found in Lesson One, procedure one.
2. Prior to beginning this lesson you will need to prepare the pieces about McCoy for the poster. Color copy the title and statements, Appendices J, K, L, and M then cut them out. If desired mount them on a coordinating colored paper with a ½ inch border all around. A picture of McCoy can be found at http://womenshistory.about.com , you may also want to use a clip art picture of a train for use on the timeline. Print one of each and mount them on paper to match the poster statements.
3. **Day One:** Have the poster (see materials above), with the title and photo already attached, hanging in a high traffic area of the classroom at students' eye level. Introduce the activity by telling students that you will be studying a scientist who helped to change the way machines with moving parts are made. Ask if anyone has ever heard, or said, "That's the real McCoy." Tell them that this week's scientist is the person that phrase is based upon. Encourage students to learn the name Elijah McCoy by asking "Who is our scientist this week?" at the beginning of each session. Let them answer in unison, prompting them only as long as necessary. Attach the statement each day using double stick tape.
4. Show the students the first statement about McCoy. (He was born in Canada in 1844.) Tell students that at that time blacks were usually slaves in the southern part of the United States. McCoy's parents had escaped on the underground railway to get away from slavery, but that blacks still did not have the same advantages and opportunities that white people had. Point out that the Civil War would begin seventeen years after McCoy's birth. Show students on a map where the United States and Canada can be found. This would be a good job for helper since the location of the U.S. and Canada should be common knowledge in second grade. Point out the state of Michigan and the city of Detroit. Tell students that after the Civil War McCoy's family returned to the United States.
5. After completing the poster activity on the first day, move to the area of the classroom where the timeline is on display. If this timeline has been used previously an explanation will not be necessary. If not, explain to students the use and purpose of a timeline. Tell them that we can understand the order things happen in, and understand what was going on in other parts of the world at the same time. If using a pre-existing timeline be sure to point out events students have already posted as part of this or other units and review them briefly. Mark McCoy's life span using a color coded arrow to encompass the years of his life, 1844-1929, or in a way consistent with other markings already on the line. Label the timeline with McCoy's name and the clip art train to represent his work. A classroom helper could assist with this activity.
6. **Days Two through Five:** The pattern you established on day one with the poster will continue for the five days of this lesson. Each day review the title and previous statements in unison. Introduce the new statement, attach it to the poster and review all the statements in unison. Watch to make sure that all students are participating as this is an easy way to learn key material. Use these statements in the order found in the appendices as they build on one another. When discussing the phrase "That's the real McCoy" tell student that it means

the original. They may enjoy finding ways to use this once common phrase that is probably new to them. The poster addition on day five is a quote by McCoy, it is important to save the quote until last since the quote will not be included in the formal assessment. When you present the statement for day two do a quick review of material students have retained about slavery and the Underground Railroad. As additional review of this lesson's material I often ask questions as we pick up to go home or line up for lunch or recess. Correct answers may earn a small piece of candy or a front position in the lunch or recess line.

7. At some point during the week, prior to Friday, read the information and poem about Elijah McCoy from *What Your Second Grader Needs to Know* pp.338-340 to the students. After reading discuss briefly with your students the key facts relating them to the statements on the poster. Emphasize the fact that McCoy strived for something more than people expected of him. Sometimes he found himself among people who did not think a black man was as capable as a white man but he overcame those obstacles. Remind students that McCoy's parents took the first step to his success when they were brave enough to escape from slavery.
8. **Day Five:** Students will construct a book using knowledge they have acquired this week on Elijah McCoy. For best management of classroom time I suggest that books be put together prior to class time. To construct the books, make a stack, beginning at the bottom with one colored sheet of paper, three sheets of lined paper, one sheet of white paper and the copied book cover from Appendix N. Holding sheets together with edges aligned staple three times evenly spaced, inside the left edge of the book cover. Holding firmly by the right side to maintain alignment cut out using the cover borders as your guide. You may want to make a blank book for yourself as well.
9. Prior to the writing process remove the poster from the classroom. Retire all of your posters to a display in the hallway to share with others. Then conduct a retirement ceremony where you remove the current poster, then place it in a hallway display. Review some or all of the previous posters depending on the number in the collection and time restraints.
10. Give blank books to students and explain that they will be recalling information about Elijah McCoy, their Scientist of the Week. Let them know that they will be writing a biography and explain what a biography is if you haven't already. Point to the area where they are to place their name and the current date on the cover. Allow them to finish that information before going on. Let students know that the amount of space they use is not as important as the content. Encourage them to use things they remember from the read-aloud as well as class discussions. If students are familiar with the use of rubrics you may choose to pass out the rubric found in Appendix O and go over it with them in detail. The students may put their names on the rubric then turn them in with the completed book so that the rubric can be used as a reference. However, students who are not familiar with rubrics will focus better on the writing process if you only tell them the key points that will be evaluated. Let them know that you are looking for neatness, complete sentences (review if necessary), the number of true facts they have recalled, and the correct spelling of common second grade words. Let students know that an illustration is part of the expectations for this book. Show them the bland sheet in your copy of the book. Ask them to wait to draw and color that page until their writing is complete, and then they should draw what they feel in one of the important parts of their biography of McCoy. Circulate as students are beginning the writing process checking to see that everyone has

understood and is following the directions. When students are finished collect their books for scoring.

E. *Assessment/Evaluation*
   1. Score the student's biographies using the rubric found in Appendix O. Record the score before returning the book and rubric. Do not write the score in the book as students enjoy sharing these books with others.
   2. Administer the Science Biographies Test: Elijah McCoy, Appendix P, and score it using the answer key found in Appendix Q.

Lesson Three: Florence Nightingale (four lessons 5-10 minutes each, plus two 30-40 minutes lessons)

A. *Daily Objectives*
   1. Concept Objective(s)
      a. Students will develop an awareness of the impact of specific historic individuals on science and technology.
      b. Students will understand time and chronology as it applies to the lives of historic individuals in science.
   2. Lesson Content
      a. Science Biographies: Florence Nightingale
   3. Skill Objective(s)
      a. Students will write legibly.
      b. Students will know and use age-appropriate spelling, grammar and sentence structure.
      c. Students will summarize and illustrate what they have learned.
      d. Students will recall key facts they have learned.

B. *Materials*
   1. One large sheet of Post-It chart paper
   2. Color copy of Appendix R, Poster Title, prepared as suggested in step two
   3. Color copy of Appendix S, Poster Statements, prepared as suggested in step two
   4. Color copy of Appendix T, Poster Statements, prepared as suggested in step two
   5. Color copy of Appendix U, Poster Quote, prepared as suggested in step two
   6. Photo of Florence Nightingale form the web site: http://womenshistory.about.com , prepared following the directions in step two
   7. Double stick tape for mounting the poster pieces
   8. Timeline on display in classroom, this can be a continuation of one already in use (best choice) or one made specifically for this lesson or unit
   9. Globe or world map
   10. *What Your Second Grader Needs to Know*, pp. 336-337
   11. Color copy of Appendix V, Cover for Student Book on Florence Nightingale, one for each student
   12. Colored paper to match or coordinate with book cover, one for each student
   13. Three sheets lined paper per student
   14. One sheet plain copy paper per student
   15. Appendix W, Rubric for Scoring Florence Nightingale Book, one per student
   16. Appendix X, Science Biographies Test: Florence Nightingale, one per student
   17. One copy of Appendix Y, Science Biographies Test Key: Florence Nightingale

C. *Key Vocabulary*
   1. Disease: sickness in general, or a specific illness
   2. Enunciate: to speak or pronounce words

D. *Procedures/Activities*

1. **Note:** If you are doing these lessons out of sequence please read the note found in Lesson One, procedure one.
2. Prior to the beginning of this lesson you will need to prepare the pieces about Nightingale for the poster. Color copy the title and statements found in Appendices R-U then cut them out. If desired mount them on a coordinating colored paper with a ½ inch border all around. However, be consistent with the posters you have previously created. A selection of pictures is available at http://womenshistory.about.com. Choose one to copy and mount. Choose a clip art design to represent nursing to copy and mount as well.
3. **Day One:** Have the poster with the title and photo already attached hanging in a high traffic area of the classroom at the students' eye level. Introduce the activity by telling students that you will be studying another scientist who helped to change the way hospitals are run and the general health of people everywhere. Ask if anyone has ever heard of Florence Nightingale. Encourage students to learn her name by having them repeat it when you give the prompt "Who is our scientist this week?" at the beginning of each session. Have them answer in unison but say it with them only until they know it.
4. Show the first statement about Nightingale. (She was born in England in 1820.) Tell students that at that time women, especially rich women, had limited opportunities. Nightingale's parents would have expected her to grow up and marry a rich Englishman then run a house and raise a family. Each day use double stick tape to attach the statement to the poster.
5. After completing the poster activity on the first day, move to the area of the classroom where the timeline is on display. If this timeline has been used previously an explanation will not be necessary. Have a helper mark the life span of Florence Nightingale as established in pervious lessons. Review other events on the timeline that overlap Nightingale's life.
6. **Days Two through Five:** The pattern you established on day one with the poster activity will continue for the five days of the lesson. Each day continue to review the title and previous statements in unison as this is an ideal way for students to learn key facts. Watch to make sure that all students are participating. Use these statements in the order found in the appendices as they build on one another. When discussing the need for hospital cleanliness point out that we take things like that for granted today, but that it was not common in the world at that time. When you reach the quote you will want to point out that the quote uses a word we do not normally use today. The word is enunciate and actually just means to speak or say. After this brief explanation read the quote, attach it to the poster and repeat all the information on the poster in unison.
7. During the week, but prior to Friday, read the information about Florence Nightingale in *What Your Second Grader Needs to Know* pp. 336-337 to the students. After reading, discuss briefly with your students the key facts, especially those that relate to the poster statements. Emphasize that Nightingale's position as a woman was her biggest obstacle to overcome. Remind students that her parents wanted what they felt was best for her.
8. **Day Five:** Students will construct a book using knowledge they have acquired this week on Florence Nightingale. For best time management in the classroom put together the books prior to class. To construct the book make a stack, beginning at the bottom with one colored sheet of paper, three sheets of lined paper, one sheet of white paper and end with the copied book cover from Appendix V. Holding the stacked sheets together with the edges aligned, staple

three times, evenly spaced, inside the left edge of the book cover. Hold firmly by the right side to maintain alignment and cut out using the cover borders as your guide.

9. Prior to beginning the writing activity, remove the poster to the hallway display following the retirement ceremony you have established. Review some or all of the previous posters depending on your circumstances.
10. Give the blank books to the students and explain that they will be recalling the important information about Florence Nightingale who was the Scientist of the Week. Let them know that the writing will be a biography and explain what that means if this is their first biography writing experience. Point out where their name and current date should be written. Allow time for that process before you move on. Let students know that the amount of space they use in not as important as the content. If students are familiar with rubrics share the rubric found in Appendix W so that they can use it as a guide while writing. If not, tell them that you will be using a rubric to grade their work and will be looking for neatness, complete sentences, correct spelling an the use of the facts presented during the week on the poster as well as any additional facts they may remember from the read-aloud or discussion. Let students know that an illustration is part of the expectations for this book. Show them the blank page in the book and ask them to wait to draw and color that page until their writing is complete, then they should draw what they feel is one of the important parts of their biography of Florence Nightingale. As students begin their work circulate to make sure that everyone has heard and understood the directions. When students are finished, collect their books for scoring.

E. *Assessment/Evaluation*

1. Score the student's biographies using the rubric found in Appendix W. Record the score before returning the book and rubric. Do not write the score in the book as students enjoy sharing these books with others.
2. Administer the Science Biographies Test: Florence Nightingale, Appendix X., and score it using the answer key found in Appendix Y.

Lesson Four: Dr. Daniel Hale Williams (four lessons 5-10 minutes each, plus two 30-40 minute lessons)

A. *Daily Objectives*

1. Concept Objective(s)
   a. Students will develop an awareness of the impact of specific historic individuals on science and technology.
   b. Students will understand time and chronology as it applies to the lives of historic individuals in science.
2. Lesson Content
   a. Science Biographies: Daniel Hale Williams
3. Skill Objective(s)
   a. Students will write legibly.
   b. Students will know and use age-appropriate spelling, grammar and sentence structure.
   c. Students will summarize and illustrate what they have learned
   d. Students will recall key facts they have learned.

B. *Materials*

1. One large sheet of Post-It chart paper
2. Color copy of Appendix Z, Poster Title, prepared as suggested in step two
3. Color copy of Appendix AA, Poster Title, prepared as suggested in step two

4. Color copy of Appendix BB, Poster Statement, prepared as suggested in step two
5. Color copy of Appendix CC, Poster Statement, prepared as suggested in step two
6. Color Copy of Appendix DD, Poster Quote, prepared as suggested in step two
7. Photo of Dr. Daniel Hale Williams from the web site: http://www.princeton.edu/~mcbrown/display/williams.html prepared following the directions in step two
8. Double stick tape for mounting the poster pieces
9. Timeline on display in classroom, this can be a continuation of one already in use (best choice) or one made specifically for this lesson or unit
10. Map of the United States
11. *What Your Second Grader Needs to Know*, pp. 337-338
12. Copy of Appendix EE, Cover for Student Book on Dr. Daniel Hale Williams, one for each student
13. Colored paper to match or coordinate with book cover, one for each student
14. Three sheets lined paper per student
15. One sheet plain copy paper per student
16. Appendix FF, Rubric for Scoring Student Books, one per student
17. Appendix GG, Science Biographies Test: Dr. Daniel Hale Williams, one per student
18. One copy of Appendix HH, Science Biographies Test Key: Dr. Daniel Hale Williams

C. *Key Vocabulary*

1. Surgery: medical treatment that involves repairing, removing, or replacing injured or diseased parts of the body; surgery is done by cutting the patient open

D. *Procedures/Activities*

1. **Note:** If you are doing these lessons out of sequence pleas read the note found in Lesson One, procedure one.
2. Prior to the beginning of this lesson you will need to prepare the pieces about Williams for the poster. Color coy the title and statements found in the Appendices Z through DD and cut them out. If desired you may mount them on a coordinating colored paper with a ½ inch border all around. Be consistent with the previous posters. Copy a photo of Williams at the web site: http://www.princeton.edu/~mcbrown/display/williams.html. Mount it as done previously. Choose and print a piece of clip art for the time line.
3. **Day One**: Have the photo and title already on the poster and the poster hung in a high traffic area of the classroom. Introduce the activity as you have in the past by telling the students that they will be beginning a study of a new scientist. This scientist is in the area of health just as Florence Nightingale was. Read the full name, Dr. Daniel Hale Williams, and ask students to join you in unison as you repeat it.
4. Show the first statement about Williams to the students. (He was born in Pennsylvania in 1856.) Remind students that this was before the Civil War, but that Williams and his family lived in the north where blacks could be free. They had many more opportunities for work and advancement than black slaves. Attach the statement to the poster with double stick tape. Point out on a U.S. map the location of Pennsylvania.
5. After competition of the poster activity move to the area of the classroom where the timeline is on display. Continue the timeline process previously established or refer back to step five in Lesson One.
6. **Days Two through Five**: You will continue the pattern established in earlier lessons as you add a statement each day. Do not skip the two times of reciting

the facts each day; this is important to the student's memorization process. When you get to the quote let students know that this is about Williams, not by him. The newspapers of the day were quick to realize what a valuable leap in medicine had just taken place.

7. Prior to Friday read the information on Williams found in *What Your Second Grader Needs to Know* pp. 337-338. Discuss the information on Williams and continue to focus on key facts such as the ones used on the posters. Make sure that students understand the impact of Williams being raised as a free black man.
8. **Day Five**: Students will be constructing a book on Williams this week based on the facts they can recall. Put the books together prior to class to make the best use of time. To construct the book make a stack, beginning at the bottom with the one colored sheet, three sheets of lined paper, one sheet of white paper and the color cover from Appendix EE. Align the edges of the paper, and holding firmly staple the book three times along the left side inside the borders of the book. Hold firmly by the right side to maintain alignment and cut out the book using the cover's borders as a guide.
9. Retire the poster to the hallway display as in pervious lessons prior to the writing process. Do not overlook the value on continuing to review previous historic figures.
10. Give out the blank buts and ask students to place their name and the correct date on the front cover in the appropriate area. After they have filled out those areas ask them to recall the facts they learned this week about Dr. Daniel Hale Williams as they write their biographies. Go over the expectations for their writing, telling them that neatness, complete sentences, correct spelling on common words and recall of facts will each be scored. Remind students that the illustration is important to the finished book, but to do that after they have completed the writing so that they may choose the most important or interesting part of their book to illustrate. Tell students that the amount of space used is not critical, but the content is. Following the procedures you have established you may either hand out to the students for their use while writing or save for the scoring process. As the students begin their writing circulate the room to make sure everyone has understood the directions and is following them. When students have finished their books collect them for scoring.

E. *Assessment/Evaluation*

1. Score the student's biographies using the rubric found in Appendix FF. Record the score before returning the book and rubric. Do not write the score in the book as students enjoy sharing these books with others.
2. Administer the Science Biographies Test: Dr. Daniel Hale Williams, Appendix GG and score it using Appendix HH the Science Biographies Test Key: Dr. Daniel Hale Williams.

VI. CULMINATING ACTIVITY

A. Near the end of the school year, sponsor a Historic People Day. You may either let each student choose a poster from the hallway display, or pass them out randomly. Allow students to take the poster home, if desired. On the Historic People Day students should dress at they think their person would have, and may choose to bring an item to reinforce who they are portraying. In turn allow each student to come to the front of the classroom, show their poster and tell about the person they are being. This activity may also be held in conjunction with a Social Studies Fair or Spring Concert so that families may attend.

VII. HANDOUTS/WORKSHEETS

A. Appendix A: Poster Title for Lesson One
B. Appendix B: Poster Title for Lesson One
C. Appendix C: Poster Statement for Lesson One
D. Appendix D: Poster Statement for Lesson One
E. Appendix E: Poster Quote for Lesson One
F. Appendix F: Cover for Student Book on Anton van Leeuwenhoek
G. Appendix G: Rubric for Scoring Student Books: Anton van Leeuwenhoek
H. Appendix H: Science Biographies Test: Anton van Leeuwenhoek
I. Appendix I: Science Biographies Test Key: Anton van Leeuwenhoek
J. Appendix J: Poster Title for Lesson Two
K. Appendix K: Poster Statements for Lesson Two
L. Appendix L: Poster Statements for Lesson Two
M. Appendix M: Poster Quote for Lesson Two
N. Appendix N: Cover for Student Book on Elijah McCoy
O. Appendix O: Rubric for Scoring Student Books: Elijah McCoy
P. Appendix P: Science Biographies Test: Elijah McCoy
Q. Appendix Q: Science Biographies Test Key: Elijah McCoy
R. Appendix R: Poster Title for Lesson Three
S. Appendix S: Poster Statements for Lesson Three
T. Appendix T: Poster Statements for Lesson Three
U. Appendix U: Poster Quote for Lesson Three
V. Appendix V: Cover for Student Book on Florence Nightingale
W. Appendix W: Rubric for Scoring Student Books: Florence Nightingale
X. Appendix X: Science Biographies Test: Florence Nightingale
Y. Appendix Y: Science Biographies Test Key: Florence Nightingale
Z. Appendix Z: Poster Title for Lesson Four
AA. Appendix AA: Poster Title for Lesson Four
BB. Appendix BB: Poster Statement for Lesson Four
CC. Appendix CC: Poster Statement for Lesson Four
DD. Appendix DD: Poster Quote for Lesson Four
EE. Appendix EE: Cover for Student Book on Dr. Daniel Hale Williams
FF. Appendix FF: Rubric for Scoring Books: Dr. Daniel Hale Williams
GG. Appendix GG: Science Biographies Test: Dr. Daniel Hale Williams
HH. Appendix HH: Science Biographies Test Key: Dr. Daniel Hale Williams
II. Appendix II: Sign for Second Grade Display

VIII. BIBLIOGRAPHY

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D. Princeton [on-line] Available URL: http://www.princeton.edu/~mcbrown/display/williams.html http://womenshistory.about.com
E. Women's History [on-line] Available URL: http://womenshistory.about.com

Appendix A

Poster Title for Lesson One

Appendix B

Poster Title for Lesson One

Appendix C

Poster Statements for Lesson One

He lived in Holland in the 1600's.

He made microscopes that magnified over 200 times.

Appendix D

Poster Statements for Lesson One

He discovered bacteria, blood cells and more.

He had no higher education and was a tradesman, but was curious.

Appendix E

Poster Quote for Lesson One

. . .my work, which I've done for a long time, was not pursued in order to gain the praise I now enjoy, but chiefly from a craving after knowledge. . .

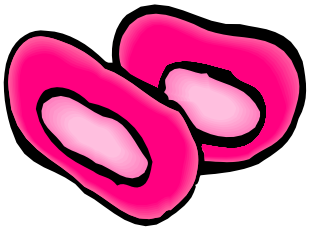
Anton van Leeuwenhoek, June 12, 1716

Appendix F

Cover for Student Book on Anton van Leeuwenhoek

Student Written Science Biographies

Anton Van Leeuwenhoek



Red Blood Cell

Name _____ Date _____

Appendix G

Rubric for Scoring Student Books: Anton van Leeuwenhoek

Name _____

	3	2	1	Score
Neatness	Text and illustration of book are done neatly. Cover of book is flat and not torn.	Text and/or illustration of book shows some smudges or cross outs. OR Cover of book is wrinkled or torn.	Two or more parts of the book are messy or torn.	
Complete Sentences	All sentences are complete. They have both a naming part and an action part. It ends with an end mark.	More than half of the sentences are complete. They include a naming part, action part and an end mark.	More than half of the sentences are missing a naming part, an action part or an end mark.	
Use of Facts	Sentences referenced all four facts plus information from the text or poem.	Sentences referenced all four facts.	Sentences referenced less than four facts.	
Spelling	Book contains no spelling errors in words at the second grade spelling level.	Book contains five or fewer errors in words at the second grade spelling level.	Book contains six or more errors in words at the second grade spelling level.	
			Total Score:	**__/12**
Teacher's Comments:				

Science Biographies Test: Anton van Leeuwenhoek

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

Bacteria	Holland	1600
microscope	blood	1800

1. Anton van Leeuwenhoek made his own _____.
2. _____ are all around us but some of them can make us sick.
3. Leeuwenhoek lived in the country of _____.
4. He was born in about _____.
5. People had never seen _____ cells before Leeuwenhoek discovered them.

Answer the following questions with a T for true and an F for false.

6. _____ Magnify means to make things smaller.
7. _____ Leeuwenhoek had many attended a lot of colleges.
8. _____ Leeuwenhoek called the little creatures he found “animalcules.”

Science Biographies Test: Leeuwenhoek (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without Leeuwenhoek's discoveries.

10. On the timeline below show where Anton van Leeuwenhoek's life fits.

1500	1550	1600	1650	1700	1750	1800

Science Biographies Test Key: Anton van Leeuwenhoek

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

Bacteria	Holland	1600
microscope	blood	1800

1. Anton van Leeuwenhoek made his own _microscope_.
2. Bacteria _____ are all around us but some of them can make us sick.
3. Leeuwenhoek lived in the country of Holland _____.
4. He was born in about 1600 _____.
5. People had never seen _blood_____ cells before Leeuwenhoek discovered them.

Answer the following questions with a T for true and an F for false.

6. F____ Magnify means to make things smaller.
7. F____ Leeuwenhoek had many attended a lot of colleges.
8. T____ Leeuwenhoek called the little creatures he found “animalcules.”

Science Biographies Test Key: Leeuwenhoek (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without Leeuwenhoek's discoveries. Answers will vary.

10. On the timeline below draw an arrow to show where Anton van Leeuwenhoek's life fits.

← 1632 ---- 1723 →

1500	1550	1600	1650	1700	1750	1800

Appendix J

Poster Title for Lesson Two

Appendix K

Poster Statements for Lesson Two

He was born in Canada in 1844.

His family escaped slavery on the Underground Railroad.

Appendix L

Poster Statements for Lesson Two

He made the first self- lubricator for moving parts in trains.

"That's the real McCoy" is thanks to his hard work and inventions.

Appendix M

Poster Quote for Lesson Two

He was well known at home in Detroit, Michigan for encouraging kids to use both energy and imagination. "If you do this you can accomplish anything."

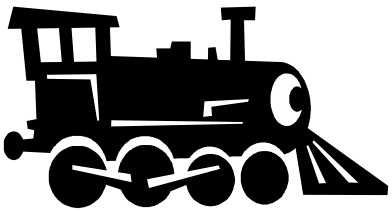
Elijah McCoy

Appendix N

Cover for Student Book on Elijah McCoy

Student Written Science Biographies

Elijah McCoy



Name _____ Date _____

Appendix O

Rubric for Scoring Student Books: Elijah McCoy

Name _____

	3	2	1	Score
Neatness	Text and illustration of book are done neatly. Cover of book is flat and not torn.	Text and/or illustration of book shows some smudges or cross outs. OR Cover of book is wrinkled or torn.	Two or more parts of the book are messy or torn.	
Complete Sentences	All sentences are complete. They have both a naming part and an action part. It ends with an end mark.	More than half of the sentences are complete. They include a naming part, action part and an end mark.	More than half of the sentences are missing a naming part, an action part or an end mark.	
Use of Facts	Sentences referenced all four facts plus information from the text or poem.	Sentences referenced all four facts.	Sentences referenced less than four facts.	
Spelling	Book contains no spelling errors in words at the second grade spelling level.	Book contains five or fewer errors in words at the second grade spelling level.	Book contains six or more errors in words at the second grade spelling level.	
			Total Score:	**__/12**
Teacher's Comments:				

Science Biographies Test: Elijah McCoy

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

original	United States	1844
machines	Canada	1934

1. Elijah McCoy was born in _____.
2. McCoy invented ways to make _____ run better.
3. McCoy returned to the _____ after the Civil War.
4. He was born in the year _____.
5. When we say something is the "Real McCoy" that means that the item is the _____ .

Answer the following questions with a T for true and an F for false.

6. _____ People thought blacks should be engineers.
7. _____ McCoy a self-lubricator for moving parts in train engines.
8. _____ McCoy's family escaped slavery on the Underground Railroad.

Science Biographies Test: McCoy (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without McCoy's inventions.

10. On the timeline below draw an arrow to show where Elijah McCoy's life fits.

1700	1750	1800	1850	1900	1950	2000

Science Biographies Test Key: Elijah McCoy

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

original	United States	1844
machines	Canada	1934

1. Elijah McCoy was born in Canada.
2. McCoy invented ways to make machines run better.
3. McCoy returned to the United States after the Civil War.
4. He was born in the year 1844.
5. When we say something is the "Real McCoy" that means that the item is the original.

Answer the following questions with a T for true and an F for false.

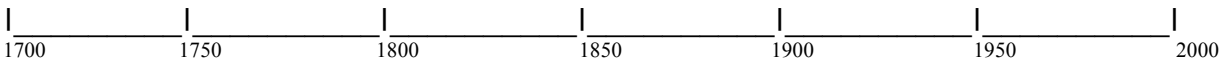
6. F People thought blacks should be engineers.
7. T McCoy invented a self-lubricator for moving parts in a train engine.
8. T McCoy's family escaped slavery on the Underground Railroad.

Science Biographies Test: McCoy (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without McCoy's inventions. Answers will vary.

10. On the timeline below draw an arrow to show where Elijah McCoy's life fits.

← 1844 — 1929 →



Appendix R

Poster Title for Lesson Three

Appendix S

Poster Statements for Lesson Three

She was born in England in 1820.

When she grew up she wanted to be a nurse in a hospital.

Appendix T

Poster Statements for Lesson Three

She knew that hospitals should be kept clean to stop disease.

Nursing is a respected profession today thanks to her

Appendix U

Poster Quote for Lesson Three

"It may seem a strange principle to enunciate as the very first requirement in a Hospital that it should do the sick no harm."

Florence Nightingale, 1859

Appendix V

Cover for Student Book on Florence Nightingale

Student Written Science Biographies

Florence Nightingale

Name _____ Date _____

Appendix W

Rubric for Scoring Student Books: Florence Nightingale

Name _____

	3	2	1	Score
Neatness	Text and illustration of book are done neatly. Cover of book is flat and not torn.	Text and/or illustration of book shows some smudges or cross outs. OR Cover of book is wrinkled or torn.	Two or more parts of the book are messy or torn.	
Complete Sentences	All sentences are complete. They have both a naming part and an action part. It ends with an end mark.	More than half of the sentences are complete. They include a naming part, action part and an end mark.	More than half of the sentences are missing a naming part, an action part or an end mark.	
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Spelling	Book contains no spelling errors in words at the second grade spelling level.	Book contains five or fewer errors in words at the second grade spelling level.	Book contains six or more errors in words at the second grade spelling level.	
			Total Score:	**__/12**
Teacher's Comments:				

Science Biographies Test: Florence Nightingale

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

nurse	hospitals	1820
respected	England	1910

1. Florence Nightingale was born in _____.
2. She wanted to make _____ cleaner and better.
3. Her parents did not want her to be a _____ .
4. He was born in the year _____.
5. Nightingale helped to make nursing a _____ profession.

Answer the following questions with a T for true and an F for false.

6. _____ Florence Nightingale loved mathematics.
7. _____ Many people did not get well because hospitals were dirty.
8. _____ Rich women did not work for a living.

Science Biographies Test: Nightingale (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without Nightingale's contributions to nursing and health.

10. On the timeline below draw an arrow to show where Florence Nightingale's life fits.

1700	1750	1800	1850	1900	1950	2000

Science Biographies Test Key: Florence Nightingale

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

nurse	hospitals	1820
respected	England	1910

1. Florence Nightingale was born in England_____ .
2. She wanted to make hospitals_____ cleaner and better.
3. Her parents did not want her to be a nurse_____ .
4. He was born in the year 1820_____.
5. Nightingale helped to make nursing a respected_____ profession.

Answer the following questions with a T for true and an F for false.

6. T____ Florence Nightingale loved mathematics.
7. T____ Many people did not get well because hospitals were dirty.
8. F____ Rich women usually worked as nurses.

Science Biographies Test Key: Nightingale (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without Nightingale's contributions to nursing and health. Answers will vary.

10. On the timeline below draw an arrow to show where Florence Nightingale's life fits.

← 1820 --- 1910 →

|1700|1750|1800|1850|1900|1950|2000|

Appendix Z

Poster Title for Lesson Four

Appendix AA

Poster Title for Lesson Four

Appendix BB

Poster Statement for Lesson Four

He was born in Pennsylvania in 1856.

His parents lived in a free state and had never been slaves

Appendix CC

Poster Statement for Lesson Four

He was a doctor's assistant, went to medical school then became a doctor.

He was the first doctor to perform heart surgery successfully.

Appendix DD

Poster Quote for Lesson Four

Sewed Up His Heart!

A quote from newspapers around the world when Dr. Daniel Hale Williams successfully performed the world's first heart surgery in 1893.

Appendix EE

Cover for Student Book on Dr. Daniel Hale Williams

Student Written Science Biographies

Dr. Daniel Hale Williams

Name _____ **Date** _____

Appendix FF

Rubric for Scoring Student Books: Dr. Daniel Hale Williams

Name _____

	3	2	1	Score
Neatness	Text and illustration of book are done neatly. Cover of book is flat and not torn.	Text and/or illustration of book shows some smudges or cross outs. OR Cover of book is wrinkled or torn.	Two or more parts of the book are messy or torn.	
Complete Sentences	All sentences are complete. They have both a naming part and an action part. It ends with an end mark.	More than half of the sentences are complete. They include a naming part, action part and an end mark.	More than half of the sentences are missing a naming part, an action part or an end mark.	
Use of Facts	Sentences referenced all four facts plus information from the text or poem.	Sentences referenced all four facts.	Sentences referenced less than four facts.	
Spelling	Book contains no spelling errors in words at the second grade spelling level.	Book contains five or fewer errors in words at the second grade spelling level.	Book contains six or more errors in words at the second grade spelling level.	
			Total Score:	**__/12**
Teacher's Comments:				

Science Biographies Test: Dr. Daniel Hale Williams

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

surgery	Pennsylvania	1856
medical	doctor	1956

1. Daniel Hale Williams was born in _____.
2. He worked as a Doctor's assistant before going to _____ school.
3. Williams went to school to become a _____ .
4. He was born in the year _____.
5. He was the first Doctor to successfully perform _____ on a heart.

Answer the following questions with a T for true and an F for false.

6. _____ Williams's father and mother were both doctors.
7. _____ Even in the north, many white people did not think blacks should be Doctors.
8. _____ Williams's parents were slaves in the cotton fields.

Science Biographies Test: Williams (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without the medical work done by Dr. Daniel Hale Williams.

10. On the timeline below draw an arrow to show where Dr. Williams's life fits.

|1700|1750|1800|1850|1900|1950|2000|

Science Biographies Test Key: Dr. Daniel Hale Williams

Name_____

Date _____

Use the words in this word box to fill in the blanks below.

surgery	Pennsylvania	1856
medical	doctor	1956

1. Daniel Hale Williams was born in Pennsylvania_____.
2. He worked as a Doctor's assistant before going to medical_____ school.
3. Williams went to school to become a _doctor_____ .
4. He was born in the year 1858_____.
5. He was the first Doctor to successfully perform _surgery_____ on a heart.

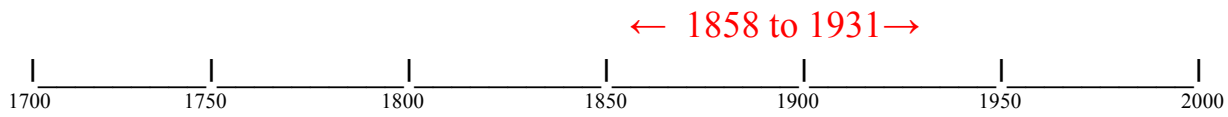
Answer the following questions with a T for true and an F for false.

6. F____ Williams's father and mother were both doctors.
7. T____ Even in the north, many white people did not think blacks should be Doctors.
8. F____ Williams's parents were slaves in the cotton fields.

Science Biographies Test Key: Williams (con't)

9. On the following lines use three or more lines to tell how you think our world would be different without the medical work done by Dr. Daniel Hale Williams. Answers will vary.

10. On the timeline below draw an arrow to show where Dr. Williams's life fits.



Appendix II

Sign for Second Grade Display

SECOND GRADE'S HISTORIC PEOPLE

These people made our world what it is today!