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| The exercise below has been developed using an original lesson provided by: |
| Author: | Linda Tisdale  |
| System: | Huntsville City |
| School: | Monte Sano Elementary School |

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| Lesson Plan ID: | 6969  |
| **Original Title:** | African-American Scientists and Inventors |
| **Original Lesson:** | <http://alex.state.al.us/lesson_view.php?id=6969> accessed 7/13/14 |

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| **Modified title** | **African-American Physicists** |
| **Overview/Annotation:** | Neil de Grasse Tyson is a famous African American Astrophysicist, Director of the Hayden Planetarium in New York and current host of the TV show “COSMOS”. Who are some other African American physicists? The class will explore the careers of African American physicists. Also, they will plan and present a slideshow on five of these individuals and explain why each is significant. |
| **Content Standards:** |

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| IL(K-12) | 1. The student who is information literate accesses information efficiently and effectively. |
| IL(K-12) | 8. The student who contributes positively to the learning community and to society is information literate and practices ethical behavior in regard to information and information technology. |
| IL(K-12) | 9. The student who contributes positively to the learning community and to society is information literate and participates effectively in groups to pursue and generate information. |
| TC2(6-8) | 2. Publish digital products that communicate curriculum concepts. |
| TC2(6-8) | 5. Use basic features of word processing, spreadsheets, databases, and presentation software. |
| TC2(6-8) | 6. Select specific digital tools for completing curriculum-related tasks. |
| TC2(6-8) | 9. Practice responsible and legal use of technology systems and digital content. |
| TC2(6-8) | 11. Use digital tools and strategies to locate, collect, organize, evaluate, and synthesize information. |

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| **Local/National Standards:** | ***Social Science Mandate on African American History*** ***Paragraph 27-20.4*** Every public elementary school and high school shall include in its curriculum a unit of instruction studying the events of Black History. These events shall include not only the contributions made by individual African-Americans in government and in the arts, humanities and sciences to the economic, cultural and political development of the United States and Africa, but also the socio-economic struggle which African-Americans experienced collectively in striving to achieve fair and equal treatment under the laws of this nation. The studying of this material shall constitute an affirmation by students of their commitment to respect the dignity of all races and peoples and to forever eschew every form of discrimination in their lives and careers.Taken from: http://www.isbe.state.il.us/ils/social\_science/mandates\_2.htm |
| **Primary Learning Objectives:** | Students will demonstrate knowledge of different African-American physicists by creating a slideshow presentation. Students will utilize technology to conduct research and present findings.  |
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| **Approximate Duration of the Lesson:** | The full unit is greater than 120 Minutes however, a smaller adaptation could involve step 1 |
| **Materials and Equipment:** | Each student must have a journal, blank storyboards, and handouts (see attached). |
| **Technology Resources Needed:** | Classroom computer with Internet access, LCD projector or TV scan converter, computer lab with Internet access, word processing and/or desktop publishing software (optional), presentation software, flash drive |
| **Background/Preparation:** | Students should have a working knowledge of computers to include Internet searches, slideshow presentations with transitions, and inserted picture/clip art. |

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| **Procedures/****Activities:** | 1. 1) Teacher will introduce the lesson by discussing what studying physics entails and telling a brief story about an African-American physicist (Shirley Ann Jackson). A note on the power point presentation (included):
2. The first four slides are geared toward K-8 (*a website about Dr. Jackson is embedded and contains a science activity should a teacher want to combine the literacy with scientific experimentation*). The last slide might be more appealing to older students and can also lead into a discussion about the struggles that African American physicists have had to endure to be successful.

The teacher may want to do a retelling or read it from a hard copy or a website using the computer projector. Time should be spent discussing the importance of contributions made by African American physicists.1a) Abbreviated format:If time is an issue, teacher and class could use the handout on African American physicists (provided) to explore the physicist pictured on the handout and take a short matching quiz (provided). Most of the information about the scientist can be found on the first website in 2a that the class might explore together and then complete the quiz.2) After a class discussion about an African-American physicist, Shirley Ann Jackson, take the students to the computer lab to research one more of interest. The teacher should provide an information sheet for each student to fill in the information they find (see attachment). This step should be done in one trip to the computer lab unless the students need an introduction to the Internet.Some Internet resources:a) <https://webfiles.uci.edu/mcbrown/display/faces.html>*This website explores a great number of African American scientists and inventors. It divides them by specialty as well as notes gender. It is a great starting point for this project*b) <http://www.nsbp.org/> accessed 7/6/2014*This gives a brief history of the National Society of Black Physicists and names some pioneering physicists of the 20th century*c) <http://www.math.buffalo.edu/mad/physics/physics-peeps.html> accessed 7/13/14 *This site is dedicated to physicists of the African diaspora.*d) <http://www.thehistorymakers.com/taxonomy/term/7298>*The History Makers has a section on Science Makers which has information on African American physicists.*e) <http://www.pha.jhu.edu/~jami/bwip.html>*This website is a list of African American Women Physicists*3) Students will meet back in the classroom and share their findings with the class through class discussion and a question/answer session.4) The teacher will explain plagiarism and review the elements of good writing. The students will then take the information collected and write a quality paragraph about the one inventor/scientist they researched.5) Each student or student group will compile a list of five African American physicists about which to make a slide show scrapbook for presentation to the class. The students must have access to library resources including biographies or other books and may research Internet websites. The teacher may allow library or computer lab time for this component, or provide a weekend and assign this portion as homework. Help should be made available before and/or after school. Preferably, students should not choose the same physicists. (Class sizes and total number of students may require some duplicates.)6) After the teacher has approved each student's list, students are given a handout of the requirements for the assignment (see criteria attachment).7) Typically, one class period is dedicated to discussing presentation techniques and showing sample presentations from previous years to the students. The teacher should have the classroom ready for the presentations by having all equipment properly connected and tested prior to the students' arrival. By using a projection device, the class can see the slideshow as it appears on the computer screen (see attachment for sample slide show).8) Students will fill in the slideshow storyboard to determine how their presentation will look. By completing a storyboard, the teacher can make suggestions and answer questions prior to the student going to the computer lab. Allow students to share their storyboards with peers for feedback and constructive criticism (see attached storyboard).9) The lesson culminates with the student presentations. Students are graded using the attached rubric. Allow peers to use rubrics to score student presentations. |
| **Attachments:** \*Some files will display in a new window. Others will prompt you to download. | [Scientist Scrapbook Rubric.doc](http://alex.state.al.us/uploads/6969/Scientist%20Scrapbook%20Rubric.doc)[criteria.dot](http://alex.state.al.us/uploads/6969/criteria.dot)[PowerPoint Storyboard 1.doc](http://alex.state.al.us/uploads/6969/Powerpoint%20Storyboard%201.doc)[AfricanAmericanScientistsandInventors.ppt](http://alex.state.al.us/uploads/6969/AfricanAmericanScientistsandInventors.ppt)[ShirleyAnnJackson.ppt](file:///G%3A%5Cnaacpstemunit%5CMaster%20Unit%5CPhysicsUnitShirleyJackson.pptx)[African-American scientist research form.doc](http://alex.state.al.us/uploads/6969/African-American%20scientist%20research%20form.doc) |
| **Assessment Strategies:** | The teacher will use rubrics (see attachment) and student interviews to assess student knowledge. Students will engage in peer reviews to help each other edit and improve their work prior to teacher's final assessment. |
| **Extension:** | Students who excel in the use of technology tools and resources may exceed project requirements or serve as peer helpers. Also, they may want to produce a broadcast, develop a trivia game using information learned, or any other related activity that would encourage others to explore scientists, inventors or inventions.  |
| **Remediation:** |   |
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| *Each area below is a direct link to general teaching strategies/classroom accommodations for students with identified learning and/or behavior problems such as: reading or math performance below grade level; test or classroom assignments/quizzes at a failing level; failure to complete assignments independently; difficulty with short-term memory, abstract concepts, staying on task, or following directions; poor peer interaction or temper tantrums, and other learning or behavior problems.* |
| [Presentation of Material](http://alex.state.al.us/misc/pres_mat.html) | [Environment](http://alex.state.al.us/misc/environment.html) |
| [Time Demands](http://alex.state.al.us/misc/time_demands.html) | [Materials](http://alex.state.al.us/misc/materials.html) |
| [Attention](http://alex.state.al.us/misc/attention.html) | [Using Groups and Peers](http://alex.state.al.us/misc/grps_peers.html) |
| [Assisting the Reluctant Starter](http://alex.state.al.us/misc/reluctant.html) | [Dealing with Inappropriate Behavior](http://alex.state.al.us/misc/behavior.html) |
| *Be sure to check the student's IEP for specific accommodations.* |
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