Coming Out of the Shadows: Stories We Should Have Known

Nura Abdur-Rahim

Grades: 6 – 8

Spring/Summer 2017

II. Introduction

Rationale – Why are the skills, content and concepts presented in this unit important for students to learn?

I had never heard of the “human computers” who worked at NASA (formerly known as NACA). The stories of Katherine Johnson, Mary Jackson and Dorothy Vaughn were not shared in any of my history classes. President Barack Obama presented Ms. Johnson with the Presidential Medal of Freedom in 2015. I did not see the presentation or hear of this great accomplishment. I watch documentaries, view television shows such as CBS Sunday Morning and 60 Minutes and I do not remember these women being featured in these programs.

This past November, I started hearing stories about the book Hidden Figures and a movie based on the movie premiering in December. I was surprised that Hollywood would feature a movie about black women who had made significant contributions to American History. Our school arranged to have every student and many teachers see the movie. I was thoroughly inspired and brought to tears by the story of these women and their accomplishments. Then I became angry. Why hadn’t I learned about these women and the role they played in the Space Race? Why hadn’t my history teachers shared their stories? Why were we not told that gifted black women worked as mathematicians at NASA?

I decided to create this unit because it is important for students to know this story. It is important for American students to realize that people of color and women have the capacity to contribute to society and help the nation make great strides. It is important for children of color and young girls to believe they can dream big and explore careers that may not have been available to their mothers.

It is also important for others to understand that people of color and women have made amazing contributions to society. Students need to know that the face of intellect and achievement is not always white and male. Students need to understand the effects of exclusion and discrimination and how it can lower the aspirations of young women to pursue fields in science, technology, engineering and math (STEM). Students also need to understand that women are underrepresented in STEM careers and they face significant implicit bias in these fields.

The skills, content and concepts presented in this unit important for students to learn so they will be able to recognize and describe the many forms of injustices that existed in the past and still is prevalent today. They must be able to recognize injustice when it presents itself in the attitudes, behaviors, practices and laws past and present.

Differentiation for Gifted Learners

III. Goals and Outcomes

IV. Assessment Plan

Performance Task

You are a mathematics professor at a local university. You have just read the book “Hidden Figures” and it disturbs you that the stories of these remarkable, courageous, and intelligent women had not been shared with the world before now. You take your concerns to a book publisher who suggests you start a mission to identify a modern day “hidden figure”. Your publisher has agreed to select fifteen of these remarkable people to highlight in a new book.

Your modern day “hidden figure” must be someone who has tremendous accomplishments and has made a significant contribution in the field of science, technology, engineering or mathematics. The individual selected should exhibit the character, intellect and perseverance as the “hidden figures” before him or her despite the hardships of discrimination and exclusion.

Your final submission must include an explanation why your person should be considered a modern day hidden figure, a description of his or her accomplishments and details of their contribution(s). For the final product, you may choose any format you wish (biography, resume, storyboard, interview, etc.) as long as it is interesting, creative, and accurate.

Student Work Samples

Laura McDow

Mathematics Professor

Laura McDow
2017 SPARK Camp
Durham, NC 12345

21 June 2017

Andy Wright, Publisher

New York Times Magazine
620 Eighth Avenue
New York City, NY 12345

Dear Mr. Wright,

I am writing to you today to inform you I have finished my research for my piece on hidden figures in Mathematics. I am just going to share some facts about the hidden figure I chose. I chose Käte Sperling Fenchel who is a German Algebraist. Käte was born on December 21, 1905 and she died December 18-19, 1983. Kätes parents separated when she was young leaving her sister and her in semi poverty. Käte learned to read sooner than most kids leading her to skip a few grades. She won many scholarships that allowed her to go to an all girls private school. Fenchel went to the University of Berlin's mathematical institute where she studied mathematics along with physics and philosophy.

As an adult, another obstacle Käte faced was when she had the chance to write a thesis to one day earn her doctorate degree but she did not believe she would make it very far because she was a girl and she didn't have enough money to pursue the degree. So instead Käte became a high school math teacher but was dismissed two years later because she was a jew and there was a growing fear of the Nazis.

Käte and Werner Fenchel, her fiancé, moved to Denmark and got married shortly after. In Denmark Käte worked as a secretary for a math professor. She did not want to give up on her math career so she continued to work on her algebra research. In 1937 Käte published her first paper on Vectormodules. 3 years after that she gave birth to her only son, Tom.

Käte had to put her work on hold as the Nazis took over Denmark. Her family fled to Sweden. At the end of the war the Fenchel family moved back to Denmark. Kate didn't publish another paper until 1962. Her 2 papers were on odd order groups and group decomposition. The other on structure matrix and group representation theorem. Soon after the articles were published Käte went back to teaching at Aarhus University. She published her last paper in 1978 on theorem and group theory. Käte Fenchel died during the night of December 18-19, 1983.

Thank you for working with me on my book. If you have any comments feel free to email me back. I look forward to meeting with you next week.

Sincerely,

Laura McDow

HIDDEN FIGURE

Erin Winick

Contributions

Erin Winick is an entrepreneur in the making. She encourages young women and girls in STEM (Science, Technology, Engineering and Math). Erin started SciChic on a mission.

Career

Erin is the CEO of SciChic, a company that makes 3D printed jewelry and accessories. All of the items they sell are made when the customer orders them.

SciChic also has monthly subscription boxes that have a different theme each month. There is a kid´s box and an adult fashion one too.

Other Info

- She earned the Governor's Young Entrepreneur Award
- She was born on May 13, 1994

By: Erin Winick

MODERN-DAY HIDDEN FIGURE

Mayim Bialik

"Being a scientist is like being in love with every aspect of the universe."

- Mayim Bialik

Born: December 12, 1975

Full name: Mayim Hoya Bialik

Family: She has two sons;

Miles Roosevelt Bialik Stone, 11, and

Frederick Heschel Bialik Stone, 8.

Why I selected her

- Bialik holds a PhD in neuroscience.
- She has written three books.
- Among many other things, she's worked to get more girls in STEM.
- She even designed a neuroscience curriculum for homeschooled middle-schoolers.

Biography

Name: Mayim Bialik

Childhood: The actress and neuroscientist was born December 12, 1975 to Barry and Beverly Bialik, in San Diego, California. She was raised Reform Jewish, but now is Modern Orthodox Jewish.

Education: She got her B.S in Neuroscience with a minor in Hebrew and Jewish studies from UCLA. Bialik was accepted to Yale and Harvard to earn her doctorate, but completed her PhD at UCLA, wanting to remain closer to home.

Accomplishments: Bialik received a PhD in Neuroscience from UCLA. Her dissertation was an investigation of hypothalamic activity occurring in those with Prader–Willi syndrome (PWS). Bialik is the only cast member of The Big Bang Theory with a Ph.D! She taught for five years. It's been reported that her IQ is between 150-163.

Career: Although she taught, Bialik mostly acts. She currently stars on the CBS show, The Big Bang Theory.

Obstacles: As a girl she didn't have anyone encouraging her in STEM. As a teenager,

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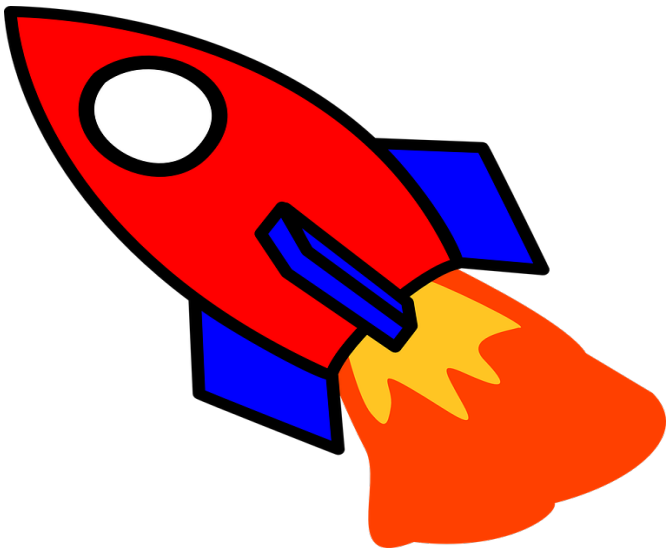
Fun Facts

1. She can play the piano, bass guitar, trumpet, and harp.
2. She plays Amy Farrah Fowler on *The Big Bang Theory*.
3. She is a Sagittarius.
4. Bialik is 5' 4" tall.
5. Mayim means "Water" in Hebrew.
6. Bialik is a vegan
7. She loves hairless animals, especially the naked mole rat. Her cat, Esau, is a hairless cat.

By**:** Isabel Kagan

Olympia LePoint



LePoint was born in Los Angeles,California where she got the chance to study at Alexander Hamilton Music Academy. After graduating from Alexander Hamilton high school at age 16 she left her hometown to enter California State University, Northridge then a accident happened. Soon after LePoint got enrolled the campus collapsed with 8,700 injured and 56 other dead with LePoint rising up from the rubble Determined she continued getting degrees at California State University. After age 21 she got a job as a mathematician for The Boeing Company.

Accomplishments and Contributions

-The youngest woman to present information at NASA of that scale as an African American where you have the racist card played as well.

-Helped design rockets and spaceships.

-Started the national education program Olympia´s - End Mathophobia

-Made a book which help people with the disability called Mathophobia

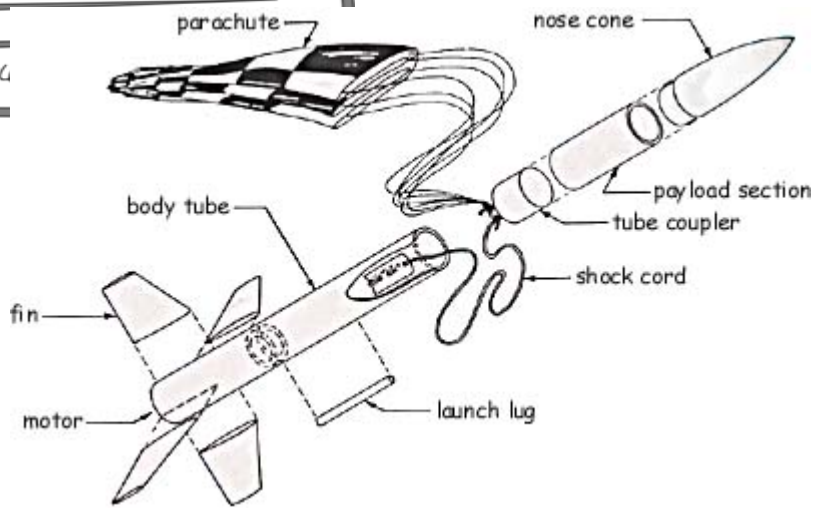
-Help launch NASA´s Endeavour,Discovery,Columbia,and Atlantis space shuttles

http://people.com/human-in

LePoint should be a hidden figure because she overcame the obstacles of being an African American woman in one of the hardest fields for a woman, to be in rocket science and to have a award given by the Chief Technology Office.While LePoint was growing up she had been abused a a little girl and was not encouraged to go into STEM program. Also her story was not told until 2017 which tells her inspiring story for people in the world. Her team was majority of Caucasian male´s and that leads to the struggle of gender and racial factors. When it came down to rockets LePoint used mathematics to calculate the problems of space travel. Plus LePoint ran into a situation where she had to fight hard for her own work because a guy tried to take credit for LePoint´s work.

- When Olympia was 6 years old she went on a field trip that changed the way of her life.
- At 10 years old she was sliced in the face at the hand of a gang member.
    - In eighth grade LePoint was failing Math despite it being her favorite subject

● Before LePoint got into a airplane company she was financially struggling with one parent and her siblings.



By: Grady DuPree-Isaac

Olympia LePoint: A Hidden Figure

By:Benton Jones

Olympia LePoint was born November 29, 1976, in Los Angeles, California. She grew up in a house with her mother and three sisters, along a street run down with gang violence and poverty. Her mother struggled to feed the family, and sometimes Olympia´s biggest meal of the day was the one from the school cafeteria. She and her sisters had to learn to be careful on the street because gangs lurked around the corners. Her mother said ¨the only way to get out of poverty was through education." There was a lemon tree in the family's backyard, and Olympia would try to make lemonade with the lemons that had fallen to the ground. With the help of her siblings she eventually was able to make lemon meringue pie, which really opened her up. She says that baking was her escape from all the problems around her. When her teacher began talking about fractions she immediately recognized the measures from her experience in baking. Once, her first grade class went on a field trip to the NASA Jet Propulsion Laboratory in Pasadena. From that day on she had a dream of launching rockets into space.

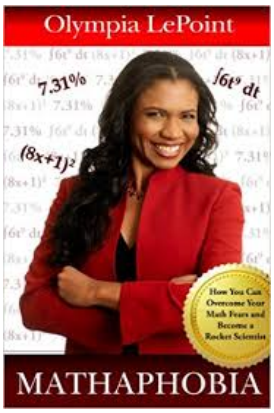
Fifth Grade was a turning point for Olympia. She had been doing fine in her school, but still life at home was the same. A boy who was in her class was in a gang. He would torment her, but Olympia used her mouth to defend herself. The boy wore a ring that had knife-like points on it. One day, after the boy had ripped up her paper, he punched her in the face, while wearing the ring. It left a gash on the left side of her face, dangerously close to her eye. After many stitches, she was told she was lucky to still have the eye. Her mother fought for the boy to be expelled, but after the school system rejected it, she took Olympia out of school for the rest of the year, for she was worried about her safety. The next year, Olympia would find herself in a new school, one for gifted children. She had to wake up at five in the morning just to get to school. She had not been prepared for what was to come. She fell behind the other kids in school, and even failed Algebra 1. She realized that the kids she went to school with were expected to succeed, whereas where she came from, nobody was supposed to make it out. She told herself that when she was done, she would be able to buy whatever she wanted. This pushed her to become a better student.

Even after failing many grades throughout her schooling, she was able to find a safe haven in school. She had a math tutor in high school that would help her out for free over winter break, turning the poor grades around. She was accepted into California State University at Northridge. She chose math as her major because of her professor, and even became a math tutor. In January of 1994, things were finally looking up for Olympia, but disaster struck. A magnitude 6.7 earthquake hit Northridge. Two of her sisters were visiting. Her dorm was ripped apart by the quake, and shook again by an aftershock that put them back in the rubble. She and her sisters were forced to jump from the second story. Luckily, none of them were seriously injured. Their mother came to pick them up. Despite this tragedy, classes continued in trailers around the campus. She graduated in the top-five of her class of sixty-five hundred. After two months of searching for a job, she happily accepted a job at Boeing as a quality analyst.

While working a full-time job she went back to night-school to earn her masters in applied mathematics. She learned so many new things working at Boeing, and with the help of so many mentors at Boeing she received the title of rocket scientist within a few months. She used mathematics to calculate the possibility of catastrophic explosions after takeoff. Her findings were used to understand the risk of flying a space shuttle in space. Her mentors supported her and that made her work twice as hard to be the on giving the go-ahead for launch. She remembered her first day, walking into a room of one hundred people and being the only woman. On her second day, a man walked around her, admiring her like she was a piece of art. She recalls that some fellow women, some executive assistants, pulling her into the bathroom and sharing advice with her, telling her that if she ever needed help to get them. She says that the problem was an escape, where she could really let herself out. Just like in Hidden Figures, a man tried to take credit for her work and research. She worked with someone to counter and take back her work.

She was nicknamed the “rocket science news reporter” as she was known for presenting her information in a such a way that it was like a news report. She became the youngest person ever to present that much information to NASA. She began to see a lot of female engineers lose themselves and begin to change, really diminishing their importance. She promised herself that she wouldn’t do that, and strive to get better in her field. She won the 2003 National Black Engineer of the Year “Modern Day Technology” Award, and the 2004 Boeing Company Professional Excellence Award. Through hard work she was able to achieve these things and become the person she was in 2004. She served on the team for 28 Space Shuttle launches. Though, she may have had a calling somewhere else.

She loved her job at Rocketdyne (Boeing), but she was brought to a more pressing matter. She had known that there was a deficit in math and science in the United States, but it was getting worse. As well as being one of the youngest in her division, she was one of the few Americans. Many of her mentors and co-workers came from another country. A study of sixty five countries ranked US students thirty sixth in math and twenty eighth in science. She had worked at a junior college one-on-one with students while she thought about a bigger way to help her community. In 2008, LePoint was struggling financially, and considered going back into aerospace,but then the economy crashed. She had to rework her brain, and wanted to help others do the same as they weren't in the work force because of the crash. She began to write her own book to help kids get over their fear of math. She wasn't sure how she was going to pay her rent, but she knew that she would need to focus on her book and she would be okay.



Then, a miracle happened. A friend of hers, Maureen Tepedino, invited her to a meeting of the Rotary Club of Los Angeles. She was greeted by fellow business people and knew that this was the place that she needed to be. She joined the club and the last piece of the puzzle was complete. She had everything she needed except for the courage and entrepreneurship. She was complete. She met Paul Richey, a man that had forty years of experience, and asked for advice. Paul gladly helped her promote her business, and in 2013 published her book *Mathaphobia*. She used it to explain her life and struggle with math. It also explains how kids who have the same problem can deal with it. Many have praised her for her work. Richey pushed her to bring her ideas and information to the public. She signed up for Tedx Talk and in 2013 her lecture on "Reprogramming Your Brain To Overcome Fear" has received over 100,000 views on Youtube. She believes that anyone can be anything despite their background and life outside of education.

Today, Olympia LePoint is trying to power young people to try their best in science and math. She travels the country as a professional speaker, as well as hosts her radio show *Answers Unleashed*, and teaches mathematics at Pasadena City College.

In conclusion, Olympia LePoint has been a trailblazer in rocket science, as well as being accomplished in many other areas. She grew up in poverty and struggled to get through education and school. Despite all of this, she never got discouraged. She persevered and became who she is today. She loves to help others and does so in a meaningful way. Olympia LePoint, a modern day Hidden Figure.

Resources

-http://www.csmonitor.com/World/Making-a-difference/Change-Agent/2015/0112/Olympia-LePoint-showed-courage-on-her-path-from-poverty-to-rocket-scientist

-http://people.com/human-interest/modern-day-hidden-figure-olympia-lepoint-shares-journey/

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https://www.google.com/search?q=olympia+lepoint+birth+date+and+city&rlz=1CADEAC_enUS750US750&oq=olympia+lepoint+birth+date+and+city&aqs=chrome..69i57.11546j0j4&sourceid=chrome&ie=UTF-8&safe=active&ssui=on#safe=strict&q=olympia+lepoint+birth+date

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https://www.google.com/search?q=reprogramming+your+brain+to+overcome+fear&rlz=1CADEAC_enU

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- https://www.google.com/search?q=answers+unleashed&rlz=1CADEAC_enUS750US750&source=lnms&tbm=isch&sa=X&ved=0ahUKEwim6ZHFhNLUAhUMcT4KHej6ANwQ_AUICigB&biw=1366&bih=630&safe=active&ssui=on#imgrc=3QToJlwRfIgUuM:

- https://www.google.com/search?q=pasadena+city+college&rlz=1CADEAC_enUS750US750&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiy6oL5hNLUAhXJbz4KHTqDCuEQ_AUIDCgD&biw=1366&bih=630&safe=active&ssui=on#imgrc=AZu14XH5-YE9AM:

HIDDEN FIGURE

Olympia LePoint

Born: November 29, 1976 in Los Angeles, California

College: Olympia went to California State University, Northridge

Occupation/Career

Ever since Olympia was 6 she wanted to be a part of rocket science. She went on a field trip and it changed her life. She viewed a mission control room and jet engines at the Jet Propulsion Laboratory in California.

Contributions

Olympia used her mathematical skills to find the probability of a catastrophic explosions while in flight. She used her information to help other people the risk of flying a space shuttle into space.

Accomplishments

Bachelor of Science in Mathematics at California State University, Northridge. She felt that this was her greatest accomplishment because she held a steady job while attending school. She also modeled part-time. Olympia was also awarded scholarship

money.

She said ¨It was uplifting for me. I told myself I wanted to be like the men I saw on the walls who were launching rockets.¨ Olympia said she is grateful for the women who came before her. She says that they opened up a door of confidence and intelligence. Her story is a lot like the movie and book ¨Hidden Figures¨

Obstacles/Barriers

Olympia struggled to overcome a the challenges women face in STEM careers. She began making big strides in rocket science. When she was growing up she grew up in poverty and lived next to a crack house. When Olympia was 10 a gang member slashed her face. Because of this tragedy, her mom enroll her in a school 2 hours away from her home. She struggled with the 5 o'clock wake up which affected her education. In 8th grade she failed math even though she loved the subject.

Adison Gurley

Marjorie Lee Browne

Contribution -

Marjorie Lee Browne was born to Mary Taylor Lee and Lawrence Johnson Lee in Memphis on the 9 of september 1914 !!!! Marjorie liked math a lot she study is with father and step mom . Her mom died when Marjorie was 2 . She was the FBW to earn a doctorate in Mathematics on OCT . 19 1979

Accomplishments - Marjorie Lee Browne was a teacher at North Carolina council of teachers mathematics which is known as NCCTM honored for her first W.W rankin memorial award in 1974 in mathematics Marjorie Lee Browne served as a member of various educational boards such as WRS . American mathematics are international of math association of america

Quotes -¨ Girls compete with each other. Women empower one another¨ .

¨Time decides who you meet in life, your heart decides who you want in life in your life, and your behavior decides who stays in your life¨.

Challenges - Marjorie Lee Browne in september 9 1914 - October 19 1979 was a noted math educator she was one of the first African American women to receive a Ph.D in math.

Career - Marjorie Lee Browne was born in 1914 tennessee. Her mother died when she was only two years old and she was raised by her stepmother and her father Lawrence Johnson Lee . Her father is a railway postal clerk , was also a math wizard who shared his passion for math .

Hidden Figures - Marjorie Lee Browne is a hidden figure because she master math and was the first black women that had a ph.d and to be hidden figure you have to have master in stem which is science technology engineering mathematics .

Dominic

Shirley Ann Jackson

Physicist

By: Imari Deloatch

June 20, 2017

Spark Camp

BRIEF OVERLOOK

Shirley Ann Jackson is an African-American Physicist and also the eighteenth president of the Rensselaer Polytechnic Institute in Troy, New York or also known as RPI. In 1995, former president Bill Clinton appointed Dr.Shirley Ann Jackson as a chairman on the Nuclear Regulatory Commission (NRC). She has also been inducted into

many societies and been awarded many certificates and medals.

SHORT BIOGRAPHY

- Born on August 5, 1946 in Washington, DC
- 70 years YOUNG
- Attended Massachusetts Institute of Technology TWICE . She attended MIT in 1968 and her doctorate in 1973
- Married a physics professor from RPI and had one son

EDUCATION

Massachusetts Institute of Technology , Cambridge, MA- *Bachelor's : graduated in 1968*
Massachusetts Institute of Technology , Cambridge, MA - *Doctorate : graduated in 1973*

QUOTE

¨*I thought Hidden Figures was going to be "The Help" in space. I'm so glad I watched the movie; it taught me something I never knew. Black women helped astronauts go to space.* ¨

CONTRIBUTIONS

- Invented Call Waiting & Invented Caller ID
- Invented the Touch-Tone Phone
- Raised $1 million in donations for RPI to expand and construct a Experimental Media and Performing Arts Center

ACCOMPLISHMENTS

- First African American Woman To Graduate With A Doctorate From MIT
- Nuclear Regulatory Commission Chairwoman
- First African American To Serve As A President At A Top-Ranked Research University
- Received Several Honorary Doctorate Degrees
- National Medal Of Science Award Winner
- Appeared in THE Black Enterprise Magazine

- Graduated Valedictorian of Her High School Class

DISCRIMINATION AND EXCLUSION

While attending MIT, Shirley was excluded from study groups, seating areas, etc. In the time period that she went to college many caucasians were unfamiliar with integration and shunned her. She was one of the few African-Americans on the campus which made her feel isolated by her classmates.

OVERCOMING DISCRIMINATION AND EXCLUSION

Because she dealt with these things she wan
others like her {African Americans} get thr
by having someone who cares by their side.
difference Shirley help found the Black Stu

MIT.

AWARDS

- She has 53 honorary doctorate degrees
- Awarded the National Medal of Science in 2015

- Women of Power Award Legacy Winner
- New Jersey's Governor Award in Science
- National Women's Hall Of Fame Inductee
- Women In Technology Hall Of Fame Inductee

Lesson Plans

TEACHER NAME			Lesson #
Nura Abdur-Rahim			1
MODEL	**CONTENT AREA**	**GRADE LEVEL**	
Taba Concept Development	History	6 - 8	
CONCEPTUAL LENS		**LESSON TOPIC**	
Exclusion		Hidden Figures	

LEARNING OBJECTIVES *(from State/Local Curriculum)*

6.H.2.2 Compare historical and contemporary events and issues to understand continuity and change.

8.C&G.2.2 Analyze issues pursued through active citizen campaigns for change (e.g. voting rights and access to education, housing and employment).

8.C&G.2.3 Explain the impact of human and civil rights issues throughout North Carolina and United States history.

DL.6-8.10 Explain how treatment of groups of people today and in the past has shaped their group identity and culture.

JU.6-8.12 Recognize and describe unfairness and injustice in many forms including attitudes, speech, behaviors, practices and laws.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	**THE ESSENTIAL QUESTION** *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Exclusion reveals discrimination	How does exclusion reveal discrimination?
CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)	**PROCESS SKILLS** (What will students be able to do as a result of this lesson?)
Students will know: • African-American women faced many challenges to be accepted as valuable members of society	Students will be able to: • analyze why the story of Katherine Jackson, Dorothy Vaughn and Mary Jackson has not been included in the stories of American history

• Women are undervalued and underrepresented in STEM careers. • the achievements and contributions of many women were not considered important • discrimination is the unjust or prejudicial treatment of different categories of people or things, especially on the grounds of race, age, or sex	• prove that there are many other hidden figures past and present whose stories are excluded • cite evidence of the many contributions these women made to our society and the world • cite evidence that exclusion reveals discrimination

GUIDING QUESTIONS

What questions will be asked to support instruction?

Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:
• Who has seen the movie "Hidden Figures"? • If you have not seen the movie, what can you infer about the meaning of the title? • If you have seen the movie, who or what does the title "Hidden Figures" refer to? • Who or what is being hidden? • How do you think the title "unsung hero" applies to the mathematicians In "Hidden Figures"?	• How do items in the list relate to one another? • How are the items similar? • What labels would you give the new groups you have formed? • Why did you decide to group particular items together? • What words or phrases in your list characterize "exclusion"? • What obstacles did the women of Langley face? • What was the impact of these obstacles?	• How does exclusion reveal discrimination? • How does the relationship between exclusion and discrimination relate to the story of the "hidden figures"? • What conclusions could you draw about the relationship between discrimination, prejudice, bias and exclusion?

• What were some important aspects of this story? • Who are the main characters? • What do they do? • Why are they important to this story? • What does exclusion mean? • What is discrimination? • What are some types of discrimination?	• How were they able to successfully meet the challenges? • How would you describe the character of Johnson, Jackson and Vaughn? • What evidence would support your claim?	

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
	Students will have the opportunity to use critical thinking skills to share their perspective on the issues presented in Hidden Figures.		

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

After formal introduction of students, the teacher will ask how many students have seen the movie "*Hidden Figures".* Ask students who have not seen the movie to make a conjecture of what the movie is about based on the title. Ask students who have seen the movie to give a brief summary of what the movie is about. Ask: What was some of the themes represented in the movie. Teacher will list these themes on the board.

The teacher will then show a video clip https://www.youtube.com/watch?v=cjxHwRiSCfc&feature=youtu.be (The Stream –"NASA's "Hidden Figures")

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

Listing

After viewing the clip, the teacher will have the class pair up. Teacher will ask the students to list **words and or phrases which relate to discrimination and/or exclusion**. Each pair will work together to create a list. Students will share their lists and the teacher will create a comprehensive list on the board.

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Grouping and Labeling

Group students together in groups of three. Ask students to select about 20 words from the list created and write them on post-it notes. Students will create smaller word lists based on similarities. The groups will work together in order to decide which items from the comprehensive can be grouped together based upon their similarities in relation to discrimination and/or exclusion. Students must create at least three different groups with at least three different items in each. They may not use any item more than once.

The teacher will walk around the classroom checking on each group. The teacher will guide the discussion amongst partners, if necessary, but students must be allowed to come to their own conclusions. When

students have finished grouping the items, they must label the newly defined groups. Each group will explain why they grouped the items the way they did. The teacher will ask the group to describe the similarities and differences between the groups.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

Subsuming, Regrouping, Renaming

Student groups will be challenged to regroup the items once again. The new groups must be new categories. Rules for regrouping should include: items may be used again, categories must be new, each category needs at least four items. Teacher reminds students that categories must be based on some aspect of discrimination and/or exclusion.

Students will share their new categories and explain why the items were grouped this way.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

The teacher will end this portion of the lesson by asking students to think about the relationship between exclusion and discrimination. Students will then be asked to write a paragraph answering the question "How does discrimination reveal exclusion?" Students will be asked to share their answers with the class.

Lesson Part 2:

The teacher will distribute copies of the book "Hidden Figures". Students will be divided into three groups. Each group should receive chart paper and markers. Students will be asked to do research on the main characters: Katherine G. Johnson, Mary Jackson and Dorothy Vaughn. The research should include a brief personal biography, descriptions of their character, their contributions and the obstacles (discrimination and exclusion) they overcame. Each group will present their research to the class and explain why these women were known "hidden figures".

TEACHER NAME			Lesson #
Nura Abdur-Rahim			2
MODEL	**CONTENT AREA**	**GRADE LEVEL**	
Visual Thinking Strategy	History	6 - 9	
CONCEPTUAL LENS		**LESSON TOPIC**	
Exclusion		The Effects of Racism	

LEARNING OBJECTIVES *(from State/Local Curriculum)*

6.H.2.2 Compare historical and contemporary events and issues to understand continuity and change.

8.C&G.2.2 Analyze issues pursued through active citizen campaigns for change (e.g. voting rights and access to education, housing and employment).

8.C&G.2.3 Explain the impact of human and civil rights issues throughout North Carolina and United States history.

DL.6-8.10 Explain how treatment of groups of people today and in the past has shaped their group identity and culture.

JU.6-8.12 Recognize and describe unfairness and injustice in many forms including attitudes, speech, behaviors, practices and laws.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	**THE ESSENTIAL QUESTION** *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Exclusion reveals discrimination	How does exclusion reveal discrimination?
CONTENT KNOWLEDGE **(What factual information will students learn in this lesson?)**	**PROCESS SKILLS** **(What will students be able to do as a result of this lesson?)**
Student will know:	Students will be able to: º infer examples of bias from visual content.

° bias is an inclination for or against a person, idea or thing, especially in a way the is considered to be unfair ° bias results in unfairness and has had a harmful impact in the world (past and present) ° prejudice is a preconceived opinion that is not based on actual experience or reason ° prejudice results in discrimination (racial, gender-based, etc.) ° people are excluded or mistreated because of their identities ° perseverance is steadfastness in achieving a goal despite difficulty or delay in achieving success	° analyze the experiences of others to develop their personal ideas and beliefs about bias and prejudice. ° examine diversity in social, cultural, political and historical contexts ° analyze the harmful impact of bias and injustice on the world, historically and in present times ° judge examples to determine when people are excluded or mistreated due to discrimination and/or identity

GUIDING QUESTIONS ***What questions will be asked to support instruction?*** ***Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding***		
Pre-Lesson Questions:	**During Lesson Questions:**	**Post Lesson Questions:**

° What is discrimination? ° What are some examples of discrimination? ° Who is the target of discrimination? ° What are effects of discrimination? ° What is exclusion? ° How would you recognize discrimination? Exclusion? ° When have you seen or experienced discrimination? ° How might you show empathy to a person who is being discriminated against? ° What would you do if you witness discrimination? ° What is the relationship between discrimination and exclusion?	° What do you see in the picture? ° What else do you see? ° Why do you say that? ° What do you see first when you look at this painting? ° What do you think is happening? ° What do you think the girl is seeing? ° What do you think the girl is feeling? ° What do you think she is hearing? ° What do you think is happening just beyond this painting? ° What do you think the stain on the wall is? ° Who do you think threw this? ° Why do you think they threw it? ° How do you think it made the little girl feel? ° Point out the grownups in the picture. ° Ask, what do you notice about the men in the painting? ° Why do you think they are there? (to escort and protect the little girl) ° Why do you think she needs protection? ° Why do you think she is walking alone? ° Where are her parents? ° What would you like to say	° What is the problem Rockwell is referring to? ° Who is the "we"? ° Is this still a problem we live with today? ° How does this image represent a problem in today's world? ° In what ways is this problem displayed in the past? ° How is it displayed today? ° How was discrimination displayed in the 1950s? ° How is discrimination displayed today? ° How would you relate the concept of discrimination and exclusion to the women portrayed in "Hidden Figures". ° How does exclusion reveal discrimination?

	to the girl? º What message do you think the artist was trying to convey in this painting?	

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
		Students will have choice in selecting a "hidden figure" that is not described in the book. They will research their person and create a product to showcase that person's achievement. Each product will be unique based on the student's choice.	

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

To begin the lesson, the teacher will read the following poem to the class. The students will listen carefully to the poem.

I lived a life of social pain,
Many heartaches and strain;
No one ever seemed to care
Of the torment I had to bare.

I lived with a bundle of emotional trouble,
My hopes and dreams seemed to crumble.
I encountered vocal and biased receptions,
Persevered, but never gained acceptance.

Every day I tried my very best,
But I am not treated like the rest.
I shed many tears in the dark,
Skeptical of being a member of the ark.

Bias people look down at me as less,
But I think I am as good as the rest.
I was always told to knit my brow;
It seems I could never learn how.

It is if I was born disfigured and scarred,
A restless soul stained and marred.
A body adorned with dastardly marks,
My life dominated by discriminating remarks.

Yet, I firmly believe in faith and hope
And pray each day for the strength to cope
To eliminate the stain of bias and discrimination,
Urging all people to accept tolerance with no hesitation. (poem by Joseph T. Renaldi)

After the poem is read, the teacher will ask students the following questions:

- *Who is speaking in the poem?*
- *What does the poem describe?*
- *Why do you think the poet was discriminated against?*

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

Teacher projects this painting on the wall and asks students to observe the painting without speaking.

(The Problem We All Live With, Norman Rockwell. 1952 ©1952 SEPS: Licensed by Curtis Publishing, Indianapolis, IN)

After allowing time for students to view the painting, the teacher asks the following questions):

- What do you see in the picture?
- What else do you see?
- Why do you say that?

The teacher will ask these broad questions several times before continuing with more specific questioning about the image.

The teacher will continue the discussion by asking the following questions:

  - What do you see first when you look at this painting?
  - What do you think is happening?
  - What is significant about the girl in the painting?

- What do you think the girl is seeing?
- What do you think the girl is feeling?
- What do you think she is hearing?
- What do you think is happening just beyond this painting?
- To encourage conversation you might point out the tomato and ask. Who do you think threw this? Why do you think they threw it? How do you think it made the little girl feel?
- Point out the grownups in the picture. Ask, what do you notice about this significant about these figures? Why do you think they are there? (to escort and protect the little girl)
- Why do you think she needs protection?
- Why do you think she is walking alone? Where are her parents?
- What would you like to say to the girl?
- What do you believe is the most important detail of the painting? Explain.
- What message do you think the artist was trying to convey in this painting? (adapted from http://www.nrm.org)

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Teacher will begin a group discussion by revealing the name of the painting and the artist.

This painting is called "The Problem We All Live With." by an American artist Norman Rockwell.

- The teacher asks:
- What is the problem Rockwell is referring to?
- Who is the "we"?
- Is this still a problem we live with today?
- In what ways is this problem displayed in the past?
- How is it displayed today?
- Discuss how the problem has it remained the same? Explain and give examples.

Student conversations should include the concepts of bias, racism, discrimination, prejudice, segregation.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways.*

After viewing the painting, the teacher will lead a discussion about discrimination? The teacher will repeat the question "What is discrimination?" The student responses may include the terms: bias, stereotypes, prejudice, racism, gender-bias and others.

The teacher will ask students to think about the relationship between discrimination (action), stereotype/bias (idea) and prejudice (feeling). The teacher also asks "Where would exclusion fit in your organizer?" Students will be asked to create a graphic organizer that will visually help others understand the relationship.

The students will share and explain their graphic organizers with the class.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

Students will be asked to write responses to the question "How does discrimination reveal exclusion?"

TEACHER NAME			Lesson #
Nura Abdur-Rahim			3
MODEL	**CONTENT AREA**	**GRADE LEVEL**	
Questioning	History	6 - 8	

CONCEPTUAL LENS	LESSON TOPIC
Exclusion	Gender-Bias: Why There are So Few Women in STEM

LEARNING OBJECTIVES *(from State/Local Curriculum)*

6.H.2.2 Compare historical and contemporary events and issues to understand continuity and change.

8.C&G.2.2 Analyze issues pursued through active citizen campaigns for change (e.g. voting rights and access to education, housing and employment).

8.C&G.2.3 Explain the impact of human and civil rights issues throughout North Carolina and United States history.

DL.6-8.10 Explain how treatment of groups of people today and in the past has shaped their group identity and culture.

JU.6-8.12 Recognize and describe unfairness and injustice in many forms including attitudes, speech, behaviors, practices and laws.

THE ESSENTIAL UNDERSTANDING *(What is the overarching idea students will understand as a result of this lesson?*	THE ESSENTIAL QUESTION *(What question will be asked to lead students to "uncover" the Essential Understanding)*
Exclusion reveals discrimination	How does exclusion reveal discrimination?
CONTENT KNOWLEDGE **(What factual information will students learn in this lesson?)**	**PROCESS SKILLS** **(What will students be able to do as a result of this lesson?)**
Students will know: • Stereotypes can lower girls' aspirations for science and engineering careers. (AAUW)	Students will be able to: • explain why there are so few women in STEM careers • assess a plan of action that encourages more girls and women to consider careers

• Women in science, technology, engineering and math fields face significant implicit bias on the basis of their gender. (AAUW) • women continue to be underrepresented in the fields of STEM • gender barriers are high for girls and impacts their attitudes toward STEM careers • often women do the work, but do not receive the recognition, title or equity in pay	in STEM • explain why discrimination leads to the exclusion or limited interest of some groups in STEM careers

GUIDING QUESTIONS

What questions will be asked to support instruction?

Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:
• What is gender-bias? • What discriminatory practices were used against the women at Langley? • What stereotypes about girls in science and math exist today? • Does a person's attitude about math and science effect their beliefs about their abilities to do math or science? • What bias attitudes exist when it comes to women and girls and math and science?	• What stereotypes exist about girls pursuing careers in science, technology, engineering and math? • Do these stereotypes affect only certain groups of girls? • What factors encourage girls to pursue STEM careers? • What beliefs and expectations are expressed about girls pursuing STEM careers? • How are men in science and math careers different from women in those fields?	• Compare the biases the women faced in Hidden Figures to the biases women interested in STEM careers face today. • What recommendations would the women of Hidden Figures give to girls interested in a STEM career today? • What does the limited interest of girls and women in science, technology, engineering and math reveal about society's attitudes about this problem today? • How does exclusion reveal

	•	discrimination?

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.

Content	Process	Product	Learning Environment
Students will have the opportunity to determine behaviors that reflect bias, prejudice, and/or discrimination.			

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

The teacher will have students listen to the commentary of the movie Hidden Figures. Students will be asked to listen for commentary as to people's beliefs about women in STEM careers.

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

Students will be grouped in twos or threes and receive a copy of *Excerpts from "Generation Stem"* or *Why So Few? Women in Science, Technology, Engineering and Math.*

Students will be assigned selected readings from the text, read and discuss it with their partners and then prepare a brief presentation for the rest of the class.

The answers to the following questions should be included in the presentation:

a) What is the title and author of your article?
b) What is the purpose of the article? Give a brief summary of your portion of the article.
c) Is the article relevant to the topic about few women in STEM?
d) What evidence do you have to support this claim?
e) Was the author's point of view clear?
f) Do you agree or disagree with the author's point of view? Explain
g) Would you recommend this article to other classmates? Why?

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Students will provide answers to the guiding questions above. They should offer opinions about the article or the subject of women in STEM of the exclusion of women in science and math. The class will have an opportunity to ask questions about the information shared.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

Have students write an essay comparing and contrasting the opportunities and interest in STEM careers today and those of the women recognized in Hidden Figures. The essay should also include the similarities and differences in the opinion of society about women in math and science then and now and the challenges presented to both groups.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

Have students write a letter to a female friend who has an interest in a STEM career but may be hesitant to pursue her dream. Students should include in their letter any factor(s) that would encourage any girl or woman to pursue a STEM career.

Resources:

1. http://www.tolerance.org/lesson/girls-attitudes-about-stem-careers-similarities-and-differen

Girls' Attitudes about STEM Careers: Similarities and Differences among Race/Ethnic Groups

2. http://www.tolerance.org/sites/default/files/general/Female%20Identity%20_L2.pdf

Excerpts from Generation STEM: What Girls Say about Science, Technology, Engineering and Math

3. http://www.makers.com/katherine-g-johnson

4. https://newsela.com/articles/gender-stereotypes-stem-indiana/id/27124/

*5. https://hbr.org/2015/03/the-5-biases-pushing-women-out-of-stem

6. file:///C:/Users/nura_abdur-rahim/AIG%20Licensure/Recruiting%20and%20Supporting%20Women%20and%20Girls%20in%20Science,%20Technology,%20Engineering%20and%20Mathematics%20(STEM)%20Careers%20_%20HuffPost.html

*7. file:///C:/Users/nura_abdur-rahim/AIG%20Licensure/7%20Things%20Keeping%20Women%20Out%20Of%20Science%20-%20Business%20Insider.html (*These are the 7 things Keeping Women Out of Science Careers*)

*8. http://www.nytimes.com/2013/10/06/magazine/why-are-there-still-so-few-women-in-science.html

*9. https://www.sciencenewsforstudents.org/article/women-science-girls-STEM (*A Woman's Place is in Science*)

*10. https://www.sciencenewsforstudents.org/blog/eureka-lab/confidence-math-predicts-girls-participation-stem (*Confidence in Math Predicts Girls' Participation in STEM*)

TEACHER NAME			Lesson #
Nura Abdur-Rahim			4
MODEL	**CONTENT AREA**	**GRADE LEVEL**	
Socratic Seminar	History	6 - 8	
CONCEPTUAL LENS		**LESSON TOPIC**	
Exclusion		The Immortal Life of Henrietta Lacks	

LEARNING OBJECTIVES *(from State/Local Curriculum)*

6.H.2.2 Compare historical and contemporary events and issues to understand continuity and change.

8.C&G.2.2 Analyze issues pursued through active citizen campaigns for change (e.g. voting rights and access to education, housing and employment).

8.C&G.2.3 Explain the impact of human and civil rights issues throughout North Carolina and United States history.

DL.6-8.10 Explain how treatment of groups of people today and in the past has shaped their group identity and culture.

JU.6-8.12 Recognize and describe unfairness and injustice in many forms including attitudes, speech, behaviors, practices and laws.

THE ESSENTIAL UNDERSTANDING ***(What is the overarching idea students will understand as a result of this lesson?***	**THE ESSENTIAL QUESTION** ***(What question will be asked to lead students to "uncover" the Essential Understanding)***
Exclusion reveals discrimination	How does exclusion reveal discrimination?
CONTENT KNOWLEDGE **(What factual information will students learn in this lesson?)**	**PROCESS SKILLS** **(What will students be able to do as a result of this lesson?)**
Students will know: • that informed consent is a legal procedure to ensure that a patient or	Students will be able to: º analyze events to determine unfairness and injustice

client knows all of the risks and costs involved in a treatment. • that in order for informed consent to be considered valid, the client must be competent and the consent should be given voluntarily. • Ms. Lacks' case has been the subject of debates about the legal and ethical rights an individual has to his/her genetic material and tissue.	° formulate and opinion based on evidence about ethics and legalities ° dialog collaboratively and listen with an open mind considering all perspectives

GUIDING QUESTIONS

What questions will be asked to support instruction?
Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	**During Lesson Questions:**	**Post Lesson Questions:**
• When is it ever right to take something that does not belong to you? • What does immortal mean? • Who is the main character in your article? • How might a doctor engage in discriminatory or	• Why did the author of *The Immortal Life of Henrietta Lacks* have Ms. Lacks photo on her wall? • What are HeLa cells? • Why were these cells important? • What ethical responsibility does the doctor have in	• What was the main idea or argument of the article(s)? • In what ways was Ms. Lacks a victim of discrimination? Explain. • Why do you think the author of *The Immortal Life of Henrietta Lacks* felt it necessary to share her story now?

exclusionary practices? • For what reasons might a doctor exclude a patient from knowing facts about their treatment? • How would you feel if someone took something of value from you without your permission?	informing patients of their rights when it involves their treatment? • How could doctors take Ms. Lacks cells without her consent? What suggests that their decision to do this was ethical? • What are the doctors going to do with her cells? • Why hasn't this story been told before now? • For what reasons might this event have happened to Ms. Lacks? • Which of those reasons would cause you to have made the same decisions about Ms. Lacks which caused her to be a victim of discrimination?	• Who profited from the cells taken from Ms. Lacks? Why do you think this was done without her knowledge? • What factors do you think were responsible for Henrietta's cells being taken from her without her permission? • What factors do you think contributed to her family not being told that her cells were taken? • What impact do you think the telling of this story now has had on her family? • What was the impact of doctors taking Ms. Lacks cells without her knowledge? • How would you define "ethical" or "unethical"? • What is your opinion of Ms. Lack's children receiving compensation for the use of Ms. Lacks' cells? Explain. • How can we relate the story of Ms. Lacks with the heroines of "Hidden Figures"? • Based on what you have read, was Ms. Lacks a victim of discrimination and if so how was she excluded? • Based upon the events of this story, how does exclusion reveal discrimination?

DIFFERENTIATION ***(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.***			
Content	**Process**	**Product**	**Learning Environment**
	The Socratic Seminar will provide students the opportunity to participate in a dialogue between others that will stimulate critical thinking, exposure to different perspectives and allows for a deeper understanding of ideas presented in the text.		

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

The teacher will inform students that today they will be introduced to another "hidden figure". This woman is not a mathematician, aeronautical engineer or aeronautical research scientist. However, she made a notable contribution to the global society and these contributions were not revealed for about 19 years.

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

The teacher will tell students that they will participate in a Socratic Seminar (SS). Ask:

- What is a Socratic Seminar?
- In your opinion, what is the purpose of a Socratic Seminar?

If students are unfamiliar with this type of discussion, tell them SS is a method of discussion that allows students to examine text, share your ideas about the topic and listen to the perspective of others to get a deeper understanding of the topic presented.

Teacher will share some rules for the discussion. They may include –

- giving everyone a chance to express their views
- raising your hand to talk is not necessary, however allow one person to speak at a time
- focus on the main speaker
- express agreement or disagreement in a courteous manner; keep an open mind
- refer to the text when needed during the discussion

Teacher will give students the opportunity to request additional rules that would help facilitate the discussion.

After the rules are shared, the teacher will pass out the articles about Henrietta Lacks.

- *The Immortal Life of Henrietta Lacks,* Excerpt: Prologue
- *Henrietta Lacks*, www.biography.com/people/henrietta-lacks-21366671#legal-and-ethical-implications
- *5 Important Ways Henrietta Lacks Changed Medical Science*, www.statnews.com/2017/04/14/henrietta-lacks-cells-science/

Ask students to read the articles quietly and while reading they should annotate (talk to) the text. They may underline key points or sentences (phrases) that speak to them. They may circle key words or phrases. Students should write questions that come to mind as they are reading the articles.

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

After students have had time to read and annotate the text, they should arrange their seats in a circle. The teacher will remind students of the rules for discussion in the seminar. The teacher will act as the facilitator and may begin the discussion by asking a question. For example, "How do exclusions occur?" "What is the relationship between exclusion and "hidden figures"? The teacher may also elect to have a student begin the conversation.

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways.*

The conversation should continue until all questions have been asked. All questions should be answered.

They teacher may ask:

- What was the main idea or argument of the article(s)?
- Do you believe Ms. Lacks was a victim of discrimination? Explain.
- Why do you think the author of *The Immortal Life of Henrietta Lacks* felt it necessary to share her story now?
- Who profited from the cells taken from Ms. Lacks? Why do you think this was done without her knowledge?
- What factors do you think were responsible for Henrietta's cells being taken from her without her permission?
- What factors do you think contributed to her family not being told that her cells were taken?
- Do you believe it was ethical for doctors to take her cells without her permission? Why or Why not?
- How would you define "ethical" or "unethical"?

- Do you believe the family should receive compensation for the use of Ms. Lacks' cells? Explain.
- How can we relate the story of Ms. Lacks with the heroines of "Hidden Figures"?
- Based on what you have read, was Ms. Lacks a victim of discrimination and if so how was she excluded?"

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

The teacher will ask students "How has this seminar helped you draw conclusions about discrimination and exclusion? What can you infer about the experiences of the women of Langley and Ms. Lacks? Students answer these questions by writing a reflection in their journals.

Resources:

Skloot, R. (2010) The immortal life of Henrietta Lacks. New York City, NY: Broadway Books

http://libguides.library.ncat.edu/content.php?pid=132289&sid=1180100 (Skloot discussion questions)

http://fyb.umd.edu/2011/informed.html (definition of informed consent)

https://www.prestwickhouse.com/press-articles/press-articles-blog/2015/07/how-to-teach-the-immortal-life-of-henrietta-lacks

U Curriculum Unit Rubric

Components	Does Not Meet Standard	Sometimes Meets Standard	Meets Standard	Exceeds Standard	Score
Introduction (5)	Rationale and population description are not present (0)	Rationale and population description are incomplete (1-2)	Rationale and population are adequately defined (3-4)	Rationale and population are clearly defined and supported with pertinent data (5)	**5**
Goals & Outcomes (5)	Goals and Outcomes are not present (0)	Goals and Outcomes are incomplete (1-2)	Goals and Outcomes are adequately presented (3-4)	Goals and Outcomes are clearly presented and appropriate for gifted learners (5)	**0**
Assessment Plan (5)	An assessment plan is not included (0)	An evaluation plan is included, but is incomplete. (1-2)	An adequate evaluation plan is included (3-4)	A well-developed evaluation plan is presented (5)	**0**
Lesson Plans (30)					
General (5)	No lesson plans are included (0)	Lesson plans are included, but are incomplete, do not encompass 10 hours of instruction, do not include all elements, or are not appropriate for the gifted. (1-2)	Lesson plans are included and adequately cover 10 hours of instructional time, include most/all elements, and are adequately differentiated for the gifted. (3-4)	Lesson plans are included that are clear and creative, encompass 10 hours of instruction, include all elements, and are appropriately differentiated for the gifted. (5)	**5**
Conceptual Lens (10)	A concept(s) for the unit is not identified (0)	A concept(s) is identified, but is not adequately connected to the content of the unit. Inconsistent focus throughout lessons. May diverge from original concept. (1-7)	A concept(s) is identified that is appropriately connected to the content of the unit. The concept remains the focus throughout most of the unit. (8-9)	A concept(s) is identified that strongly connects to the content of the unit as demonstrated through well-articulated big ideas/essential understandings. Each lesson revisits the concept and fosters deeper student understanding of the concept (10)	**10**
	Lesson activities do not include a “hook” to engage students. (0)	A few of the lessons include details for engaging and/or “hooking” the students. (1-7)	Many of the lessons include “hooks” to engage students. Lesson activities are student-centered and encourage active participation by students. (8-9)	Every lesson begins with an engaging “hook” to focus students. Activities are incorporated throughout the unit to foster active participation by students.	**10**

				(10)	
Student Engagement (10) Questioning (5)	No evidence of questioning within plans (0)	A few of the lessons have planned questions, but limited in depth and complexity, are not connected to the conceptual lens, and/or do not require higher level thinking. (1-2)	Many of the lessons include planned questions that are appropriate for gifted learners and help students explore the identified concept(s). (3-4)	Questions are included in every lesson plan. Planned questions require higher level thinking and engage students in rich discussions of the identified concept(s). (5)	**5**
Performance Task (10)	Performance task with rubric is not included (0)	A performance task and rubric are included, but are incomplete. It is unclear how the task will allow students to demonstrate their understanding of identified concept, skills, and knowledge. The rubric may also lack clarity. (1-7)	An adequate performance task with rubric is included. It is evident that the teacher will sufficiently be able to determine students' understanding of concept, skills, and knowledge through the planned task. (8-9)	A well-developed performance task is included that clearly allows students to demonstrate their understanding of the identified concept(s), mastery of identified skills, and knowledge of content. The task is paired with a well-articulated, clear rubric for assessing student performance/knowledge/skills (10)	**10**
Unit Resources (5)	References not included (0)	An incomplete list of references is included (1-3)	An adequate list of references is included (4)	A comprehensive list of references is included in appropriate APA format with annotations.(5)	**5**
TOTAL					

Total: 50/60 Nura Abdur-Rahim

Comments:

Unit Resources