



***The Museum
of Underrepresented Scientist and/or Inventors***

by Tenequa Jones, 2018 CTI Fellow
Marie G. Davis IB Candidate School

This curriculum unit is recommended for:
Middle Grades Global Studies

Keywords: Scientist, Inventor, STEAM, Collaboration, History, United States, Culture, Suppression, Identity, Tradition, Learning, Underrepresented, Minority, Research, Exploration

Teaching Standards: See [Appendix 1](#) for teaching standards addressed in this unit.

Synopsis: This curriculum unit will focus on highlighting different underrepresented scientists and/or inventors throughout history. Students will research different underrepresented scientist and/or inventors in the STEM/STEAM (Science, Technology, Engineering, and Math OR Science, Technology, Engineering, Art, and Math) community. Students will research about what the different scientist and/or inventors have done to impact society. This unit will allow my students to learn about different scientist and/or inventors that have similar ethnic backgrounds. Students will focus on research, exploration, and community awareness.

I plan to teach this unit during this current academic school year Spring semester to 48 students in Integrated Science, grades 7.

I give permission for Charlotte Teachers Institute to publish my curriculum unit in print and online. I understand that I will be credited as the author of my work.

Introduction

Can I be a Scientist and/or inventor too? Teaching in a school that is infused with students that come from the same lifestyle I come from gives me motivation to embed in their brains that they can be what they inspire to be. I teach in a high-needs Title 1 school comprised of African-American, and Spanish students. Statistics show that a great percentage of my students (African-American and Spanish) are projected to fail by Charlotte Mecklenburg Schools via reports that come in every year based on standardized test, parent involvement, and Socio-economic conditions. My students have been scientists and problem solvers since birth but they hardly identify with this because many students think scientists are people who work alone in a lab with lots of glassware, chemicals, and microscopes. The perception of who a scientist and/or inventor is to them is troubling because they do not include themselves in the descriptions they give.

What is often neglected, however, is the equal importance of knowing one's own culture, values and beliefs in order to relate more effectively across cultural lines. Awareness of our own culture is important; because it can keep students from projecting their own values in the classroom then you are stripping them of their identity. Culture is a strong part of people's lives. It influences their views, their values, their humor, their hopes, their loyalties, and their worries and fears. Therefore, when I am working with students and building relationships with them, it helps to have some perspective and understanding of their cultures. With that being said, I came up with the idea of students researching, and mimicking scientist and/or inventors from their different cultures.

Rationale

This unit focuses on developing research skills to facilitate a deeper understanding of scientist and/or inventors in their own communities. The unit will promote critical thinking by utilizing the scientific method as the student's research, and mimic the contributions of these underrepresented scientist and/or inventors. This curriculum unit will take approximately two months to complete. This year at Marie G. Davis IB Candidate School I teach 7th grade Integrated Science (B-days), and 6th-7th grade Global Studies (A-days). This curriculum unit will be done during A-days when I teach Global Studies. I teach three blocks of 68-minutes Global Studies classes on A-days. The pacing for this curriculum unit is based on a sixty-eight minute blocks every other day.

School Demographics

Our school is very diverse and made up of unique students who have a plethora of backgrounds and diverse cultures. The makeup of our school is majority African American and Spanish students who come from various socioeconomic backgrounds. Many of my students have not been out of North Carolina let alone Charlotte while others have been out the country on several occasions. Even with the implementation of international studies within our lessons, it is sometimes hard for students to grasp the concept of global issues because they are fixated on what is going on locally. My hope is for students to understand that people just like them in their communities can be innovators and collaborate to resolve global issues.

Academically our school is 50% proficient in English Language Arts, 45% proficient in Mathematics and 71% proficient in Science. My students are already labeled as not being college-ready and incapable of being successful with their futures. I want to provide academic enrichment that will raise the bar for my students and allow them to enhance their academic engagement and critical thinking skills. It is my desire to implement a curriculum that would allow me as an educator to think more critically about the structure of my Global Studies class and introduce new concepts. My unit goals are to encourage students to become global thinkers and problem solvers along with expose them to various concepts that will spark their interest and prepare them for the future. As an IB School, students are required to have a certain amount of community service hours. After completing this unit my students will receive community service points towards their (local and globally) Worldview project.

Objectives

I teach according to the North Carolina Essential Standards for Middle School (Grade 7). During the couple of weeks, the students will focus on exploring and researching about different scientist and/or inventors from their different cultures and communities who has had a contribution to society. Concentrated here is standard 7.H.2, which involves getting students to understand the implications of global interactions. Students will be able to analyze the effects of social, economic, military and political conflict among nations, regions, and groups (e.g. war, genocide, imperialism and colonization). Identify historical events such as invasions, conquests, and migrations and evaluate their relationship to current issues. Explain how increased global interaction accelerates the pace of innovation in modern societies (e.g. advancements in transportation, communication networks and business practices). This alone will mold students into thinking like innovators.

I plan to collaborate with the other teachers to teach cross curriculum standards that will increase the growth of our students. This curriculum will take place during my Global Studies course on A-days, which is a 68-minute session that takes place every other daily. My goal is to encourage my students to explore the interaction between world cultures, to look at ways in which the "world" has an interconnected history and to study the languages of our global community. Understanding the ways in which cultures interact and influence each other is vital to the future success of our students, schools, community and nation. CMS' Strategic Plan provides the framework for educating our students to compete locally, nationally and internationally.

The unit will take about 6-8 weeks depending on the ability levels of students and schools pacing guide.

My Global Studies Classroom

During my Global Studies Class, we do not have a textbook, so therefore we do not utilize textbooks. I use an adopted system called Canvas to display all course material. Canvas is a cloud-based learning management system that makes teaching and learning easier. I have created a Canvas page that covers the importance of learning your own culture, and others. Warm-ups are on Canvas, along with websites students can use to research the different Scientist and/or Inventors. I have created different activities that involve understanding and student responses. I

like my students to work at a certain pace during projects. I like my students to actually understand, and connect to what they are learning about. I also use models and display boards to demonstrate the most common Scientist they learn about in school, and some they do not learn. I treat this class as a project base class, so students complete four projects for the semester dealing with the world. Projects will usually last one month; this specific project will last six weeks.

Prerequisites

Prior to instructing the unit on Scientist and/or Inventors, teachers should instruct students on the history of the education in the United States, and why only certain people are displayed in History books. Teachers should also teach the history of suppression of different Underrepresented (minority) Scientist and/or Inventors. Students should understand the history of their surroundings. The students should also learn about the importance of the world they live in. They should know how special the cultures they descend from are important to their educational growth. These lessons will assist in researching different Scientist and/or Inventors, and understanding why it is important for them to know this information.

Content Research

At the beginning of the unit, students will start with a Gallery Walk as the hook. I will have various boards set up around the classroom displaying different “common” scientist and/inventors. The gallery walk will consist of common scientist that the students should know such as: Henry Ford, Galileo Galilei, Albert Einstein, Isaac Newton Sr., Thomas Edison, Steve Jobs, etc. These are all European scientist and/or inventors that my students should have been exposed to in US schools. During this gallery walk, I will also have a few underrepresented scientist and/or inventors that have similar background to the students displayed such as Andres Alcazar, Jeronimo de Ayanz y Beaumont, George Washington Carver, Madam C.J. Walker, and inventors from the surrounding communities. Displayed on the boards will also be information about that particular underrepresented scientist and/or inventors and their contributions to society. These scientist and/or inventors will be people that my students may not know because of lack of representation in the school’s curriculum. Beforehand I will pass out two different colored (blue and red) stickers to each individual student. I will thoroughly explain to the students how to use the stickers. The students will walk around with the two different colored stickers (blue and red), and start to read each individual poster as they do the gallery walk. The different colors will represent if the students know the scientist and/or inventors (blue dot sticker), and if they do not know the scientist and/or inventors (red dot sticker).

As students are walking around, they will read the different boards set up around the room. The boards displayed will have the different scientist and/or inventors contributions to society on them. Students will indicate if they are familiar with the different scientist and/or inventors with the red and blue stickers. On the different boards, I will include different pictures of each individual, and provide names. This overall goal of this classroom-based active learning strategy is for my students to be encouraged to build on their knowledge about the content on these boards to promote higher-order thinking, interaction and cooperative learning. Once the Gallery Walk is completed, I will pass out to the students a KWL chart. The KWL (Know, Want to Know, and Learned) is a graphical organizer designed to help in learning. The letters KWL are

an acronym, for what students, in the course of a lesson, already know, want to know, and ultimately learn. Directly after the gallery walk, I will have students fill in the column for what they already knew, and what they want to know. After giving students time to fill in the first two columns as a class, we will have a classroom discussion board about the results of the gallery walk. The discussion board questions will allow students to reflect and respond to their classmates within their class. Pre-made reflection questions will be provided to students; students will respond to these questions. After the classroom board discussion, I will start to discuss to my underrepresented students the underrepresentation of different scientist and/or inventors. I will discuss with my students how they can make a difference through awareness in the school, and in their different communities. I want my students to know the difference they can make through representation; this will lead to their introduction lesson.

Activities include:

- Gallery Walks
- KWL Charts
- Discussion board
- Lecture about awareness

Building Content Knowledge

Walk into any low-performing middle school classroom in your district and you may be shocked to find children unable to identify the state or country in which they live. Many may not know the continents or the U.S. president. "By fifth grade kids should at least know what the U.S. Constitution is and the Bill of Rights and know that we have a president, a Congress and a court system." (Zamosky, 2008) However, because basics are not being taught at the elementary level, kids in middle and high school are not performing well. Students start to fall further behind, and by the time they graduate, they still do not know their history. At any low-performing school, they spend most of their days on reading, writing and math. All schools in the Charlotte-Mecklenburg School District are forced to focus on reading, writing, and math. Those three are huge on state standardized test, and that is what they base our student's success on. Science, Social Studies, and most electives are pushed to the short end of the stick in Middle schools.

The school district still expects No Child Left Behind, and social studies has suffered greatly. Given that social studies education is not tied to high-stakes testing, instructional time for, it has taken a significant hit, particularly at the elementary grades. This has educators deeply concerned about their ability to prepare children to become active citizens and about the long-term viability of the nation's democracy." Social studies are a major player in that arena and are integral to teaching a sense of civic duty and how all of the important things about a democratic society work." (Zamosky, 2008)

African Americans, American Indians/Alaska Natives, and Latinos— who have historically comprised a minority of the U.S. population are growing in size and influence. Currently, they constitute 30 percent of the U.S. population, but by 2050, these groups will account for greater than 40 percent of the U.S. population. Underrepresented minorities are particularly underrepresented in the fields of science, technology, engineering, Art, and

mathematics (STEAM). The demand for qualified STEM professionals is high, but the supply of STEM workers to fill these positions is at risk if underrepresented groups are not engaged in these fields. Minorities score lower on their standardized test scores, which can serve as a barrier to college admission.

In general, underrepresented minorities are less likely than whites, and Asians to graduate from high school, enroll in college, and earn a college degree. Women and racial minorities face extreme levels of discrimination in science and technology fields, according to a nationwide study by Pew Research Center. In STEAM (science, technology, engineering, Art, and math), nearly half of women who work in male-dominated environments say that sexual harassment is a problem. Half of women in all STEM environments have experienced some kind of discrimination, ranging from unfair pay to being denied equal assignments. Women of color are without a doubt exposed to this unfair unjust discrimination. Black women face rising obstacles in STEAM fields, and are significantly undervalued compared to their white, female counterparts. Discrimination against black women is not only present in STEAM workplaces; it is also deeply entrenched in all levels of academia. Blacks and Hispanics continue to be underrepresented in STEAM.

In History/Social Studies classes today, students are taught majority “White and/or European” history. The textbooks briefly go over the civil rights movement, and briefly goes over Jewish history. Most history books do not even have Hispanic and or Latino history. With the world even more diverse today, this is something that school districts need to discuss. This information is important for students to understand. Students need to understand the importance of their cultures, and about how people from the same lifestyles can succeed in the STEAM field.

Instructional Implementation

Table Groups (KWL CHARTS)

My students have assigned seats, and I consider these their table groups. I change these groups each quarter for student engagement and success. Group work has been proven to provide opportunity for developing important process skills and attitude in learning. The concept of students working in groups also promotes a setting where collaboration and cooperation are valued and produce better results, teaching the students valuable life-long skills that are important in the professional workplace. Students develop communication and teamwork skills. Students will complete a KWL chart. The KWL (Know, Want to Know, and Learned) is a graphical organizer designed to help in learning. The letters KWL are an acronym, for what students, in the course of a lesson, already know, want to know, and ultimately learn. Directly after the gallery walk, I will have students fill in the column for what they already knew, and what they want to know.

Galley Walks

Students will participate in two Gallery walks during this project. One at the beginning of the project, and one at the end. Gallery walk is a classroom-based active learning strategy where students are encouraged to build on their knowledge about a topic or content to promote higher-order thinking, interaction and cooperative learning. This will help me present the project to my students. I will have various boards set up around the classroom displaying different “common” scientist and/inventors. The gallery walk will consist of common scientist that the students should know such as: Henry Ford, Galileo Galilei, Albert Einstein, Isaac Newton Sr., Thomas Edison, Steve Jobs, etc. These are all European scientist and/or inventors that my students should have been exposed to in US schools. During this gallery walk, I will also have a few underrepresented scientist and/or inventors that have similar background to the students displayed such as Andres Alcazar, Jeronimo de Ayanz y Beaumont, George Washington Carver, Madam C.J. Walker, etc. Displayed on the boards will also be information about that particular underrepresented scientist and/or inventors and their contributions to society. These scientist and/or inventors will be people that my students may not know because of lack of representation in the school’s curriculum. Beforehand I will pass out two different colored (blue and red) stickers to each individual student. I will thoroughly explain to the students how to use the stickers. The students will walk around with the two different colored stickers (blue and red), and start to read each individual poster as they do the gallery walk. The different colors will represent if the students know the scientist and/or inventors (blue dot sticker), and if they do not know the scientist and/or inventors (red dot sticker).

As students are walking around, they will read the different boards set up around the room. The boards displayed will have the different scientist and/or inventors contributions to society on them. Students will indicate if they are familiar with the different scientist and/or inventors with the red and blue stickers. On the different boards, I will include different pictures of each individual, and provide names. This overall goal of this classroom-based active learning strategy is for my students to be encouraged to build on their knowledge about the content on these boards to promote higher-order thinking, interaction and cooperative learning.

Research

Research is a huge part of this project. Students know how to research, and they know how to look for credible information. Research is important for the students to improve practices and at the same time, it helps in improving other subjects. Research in my opinion is the process of solving problems and finding facts in an organized way. I am a seventh grade science teacher, and Global Studies teacher, so I teach my students that research is performing a specific study in order to prove or disprove a hypothesis, or answer a specific question. My students are educated on how to use the scientific method. This is the first thing that I teach my students outside of team building each year. Teachers should employ this process regularly in their classrooms and on teams because this allows students to investigate, and find new ways to expand their knowledge for success. As a school, we encourage research throughout the year. We create an environment where students know how to investigate different areas of their learning without the teacher. As a teacher, of course, I direct my students every step of the way, but I also teach them to be inquiry-based learners. The school promotes research because this is a requirement of our schools International Baccalaureate program (IB). Teachers are encouraged to find new ways to reach these students; research is a great way to get this done.

Discussion Boards

We will have a classroom discussion board about the results of the galley walk. The discussion board questions will allow students to reflect and respond to their classmates within their class. Pre-made reflection questions will be provided to students; students will respond to these questions. After the classroom board discussion, I will start to discuss to my underrepresented students the underrepresentation of different scientist and/or inventors. I will discuss with my students how they can make a difference through awareness in the school, and in their different communities. I want my students to know the difference they can make through representation; this will lead to their introduction lesson.

Teaching Strategies

Underrepresented Scientist and/or Inventors

I believe my students will be able to explore and learn more about these different underrepresented scientist and/or inventors because the majority of my students share the same ethnic and cultural backgrounds. The majority of my students come from underrepresented communities that can relate to the same challenges. I believe it makes a huge difference for my students to research about different scientist and/or inventors that have the same backgrounds as them. These different role models enhance my student's perceptions of such careers and boost their confidence in studying such subjects. When it comes to attracting more of the underrepresented to study and pursue careers in STEM, this could be the formula.

Exploration/Grade-level Project

At this point, students will start to research different underrepresented scientist and/or inventors that interest them. Students will have a strict deadline for choosing their particular person. I teach at a K-8 school, and this coming year I will only have 50 7th grade students; therefore, all students will pick a person. The students can collaborate, and work in groups when researching; however, students will all have personal projects. Students will be expected to research about their selected scientist and/or inventors. Students will be responsible for researching the following: name, born, died, education, known for, significance, historical environmental injustices etc. While researching, students will be able to connect how their selected person is significant to their success in today's society. Students will be able to express their personal opinion about the importance on underrepresented scientist and/or inventors. Students will also be responsible for a 2-3 page essay on their journey during this unit. Students will express their opinion of how underrepresentation is a huge downfall in society. Once all research is completed, students will each be expected to recreate that scientist and/or inventors work (display). Students will be provided with the necessary materials if accessible. The final component of his unit will be *The Museum of Underrepresented Scientist and/or Inventors*. During this museum, students will display their boards, and dress up exactly like their chosen scientist and/or inventor. Students will spend a day as their person while presenting their findings to the entire school in a fair like feel. Students will have their boards displayed along with their recreation of that scientist and/or inventors work.

Social Awareness, Advocacy, and Service Learning

Students will be expected to complete an awareness component, as briefly explained in the previous paragraph. Students will present during *The Museum of Underrepresented Scientist and/or Inventors* (similar to a science fair set up); students will also be required to be that scientist and/or inventor that day. The Museum will be set up like fair allowing community members, students, teachers, administration, all other school staff, and family members to come view work done by the students. The Museum will take place during Quarter 4, since we will be utilizing the first three quarters to conduct research, collect data, and recreate inventors work. Students will complete the items listed below that will touch on major ideas such as critical thinking, creativity, and concepts in perspective. Of course, all students do not work at the same pace, and/or comprehend at the same ability. Therefore, some of my students will have to have guided support, while others will come up with their own ideas without much guided help. Rubrics will be provided to all learners for guided support on the overall process; this will help with organization of the overall project.

Portfolio to include:

- Research paper (mandatory)
- Display boards (mandatory)
- *The Museum of Underrepresented Scientist and/or Inventors* (mandatory)
- Community involvement (this will be the presentations portion at the Museum) (mandatory)
- Dressing up like your specific scientist and/or inventor (mandatory)

Appendix 1: North Carolina State Standards

7.H.2.3 Explain how increased global interaction accelerates the pace of innovation in modern societies (e.g. advancements in transportation, communication networks and business practices).

This standard was utilized during the unit by focusing on highlighting different underrepresented scientists and/or inventors throughout history. Students will research different underrepresented scientist and/or inventors in the STEM/STEAM (Science, Technology, Engineering, and Math OR Science, Technology, Engineering, Art, and Math) community. Depending on the scientist, and/or inventor selected they would discuss their innovations in modern society. In my student's cases, they would look at Innovation in its modern meaning as an idea, creative thoughts, and new imaginations in form of device or method. These different explanations would explain varies underrepresented scientist and/or inventors for advancements in transportation, communication networks and business practices, etc.

7.G.1.1 Explain how environmental conditions and human response to those conditions influence modern societies and regions (e.g. natural barriers, scarcity of resources and factors that influence settlement).

This standard was utilized during the curriculum under the Introduction, and Content sections. In the Introduction, there is a brief explanation of why there is underrepresentation in the "minority" community. There is a long history of inequality in the United States. The Content section of this curriculum goes into details regarding the disparities of certain groups of people. In social science, racial inequality is typically analyzed as "imbalances in the distribution of power, economic resources, and opportunities. Racial inequalities have manifested in American society in ways ranging from racial disparities in wealth, poverty rates, housing patterns, educational opportunities, unemployment rates, and incarceration rates. Students needed to have an overview of the start to finish timeline of inequality in this country before they started the project.

7.G.1.2 Explain how demographic trends (e.g. population growth and decline, push/pull factors and urbanization) lead to conflict, negotiation, and compromise in modern societies and regions.

15

This standard was utilized in the curriculum to cover how discrimination and inequality has an influence on underrepresented scientist and/or inventors. History has shown that when large inequalities in wealth and income persist it may lead to rebellion and conflict. Living in an unequal society causes stress and status anxiety, which may damage your health. In more equal societies people live longer, are less likely to be mentally ill or obese and there are lower rates of infant mortality. Students need to understand the history of disparities to understand where the underrepresentation branches.

7.C.1.1 Explain how culture unites and divides modern societies and regions (e.g. enslavement of various peoples, caste system, religious conflict and Social Darwinism).

This standard is utilized in the curriculum because there is a history of religion separating people; that is a link dealing with underrepresentation as well. Among developed nations, America stands out as an exceptionally religious country. This standard is used more in the Content section of the curriculum. This is students learning more information regarding the topic they were about to embrace. There are a number of unethical reasons why there is so much inequality within the STEAM community for “minorities.”

Project Date: November 1st - December 12th

The Museum of Underrepresented Scientist and/or Inventors

Background: This project is to highlight different underrepresented scientists and/or inventors throughout history. Students will research different underrepresented scientist and/or inventors in the STEAM (Science, Technology, Engineering, Art, and Engineering) community. Students will research about what the different scientist and/or inventors have done to impact society. This project will allow students to learn about different scientist and/or inventors that have similar ethnic backgrounds. Students will focus on research, exploration, and community awareness.

Directions: Each student will research about different underrepresented scientist and/or inventors that interest them. The individual selected will have to be approved by the teacher. Once your person is approved, students will learn all they can about their selected individual using different resources (online search, books, articles, magazines, etc.) Once enough information is gathered, students will start to work on typing their findings/information regarding their selected individual on to power point slides. These PowerPoint slides will be printed to go on display boards. Lastly, students will write a 2-3 page paper regarding their selected individual. In the paper should include: contribution to society, background, rationale, other research. Students will complete display boards, and present during the Museum (similar to Science Fair).

Portfolio to include:

- Research paper (mandatory)
- Display boards (mandatory)
- *The Museum of Underrepresented Scientist and/or Inventors* (mandatory)
- Community involvement (this will be the presentations portion at the Museum) (mandatory)
- Dressing up like your specific scientist and/or inventor (mandatory)

The Museum of Underrepresented Scientist and/or Inventors RUBRIC

Name _____

***** This project will be worth a total of 100 points. The presentation portion will be a total of 20 points. The required research paper will be worth 20 points. Display boards will be worth 10 points. Community involvement and attire will be 10 points each. Lastly, the Museum itself will be a total of 30 points. *****

Points	Ideas and Content	Organization	Voice	Word Choice	Sentence Fluency	Conventions
5 points EXCELLENT !	Interesting, memorable; ideas capture reader's attention; ideas supported by details	Strong intro; ideas effectively presented in appropriate paragraphs; strong topic sentences; strong conclusion	Author's interest and enthusiasm are very clear	Writer uses strong, descriptive vocabulary	The writing clearly flows; sentences have different beginnings and endings	Capitalization, punctuation, and spelling conventions are maintained consistently
4 points WOW!	Biographical details as outlined on template are clearly met; ideas captivate reader; many interesting details	Strong intro; ideas are organized clearly in specific paragraphs; strong topic sentences; strong conclusion	Writer's voice is very enthusiastic and confident throughout	Uses a variety of strong words that create strong images and impressions	Has very well-constructed sentences of different length and beginnings; ideas flow clearly throughout the piece	Has few or no errors in capitalization, punctuation, and spelling
3 points VERY GOOD!	Biographical details are met; ideas hold the reader's interest; some interesting details	Most details are presented in appropriate paragraphs; satisfactory topic sentences and conclusion and intro	Writer's voice demonstrates a satisfactory level of confidence and enthusiasm	Uses words that create some images and impressions	Has some well-constructed sentences; some variety in sentence beginnings and length; ideas make sense	Has few errors in capitalization, punctuation, and spelling
2 points GETTING THERE!	Some of the biographical details are missing, ideas are general; details are scanty	Some details are presented appropriately in some of the paragraphs; intro and conclusion are not generally effective; topic sentences do not generally introduce the paragraph	Writer's voice, at points, does not draw the reader in	Uses words that generally fall short of creating images and impressions	Some evidence of structure in sentence beginnings and length; some appropriate sentences are there, but lack consistency throughout; ideas are sometimes confusing	Too many errors in capitalization, punctuation, and spelling
1 Point MORE EFFORT REQUIRED	Many or none of the biographical details are not evident; ideas are not interesting; few or no details are present	Lacks details supporting the biographical criteria; poor intro and conclusion, ideas are confusing, no topic sentence	Writer's voice shows no presence throughout the writing piece	There is a definite lack of words that create any images or impressions	There is no evidence of correct sentence structure, variety of beginnings and length; ideas are confusing	Errors in capitalization, punctuation, and spelling make it difficult to read writing piece
TOTAL POINTS						

Bibliography

Kerr, William R., The Ethnic Composition of US Inventors (December 22, 2008). HBS Finance Working Paper No. 08-006; Harvard Business School Entrepreneurial Management Working Paper No. 08006. Available at SSRN: <https://ssrn.com/abstract=1010142> or <http://dx.doi.org/10.2139/ssrn.1010142>

This is an ethnic composition of U.S. scientists and engineers that undergoes a significant transformation. It describes the contributions of Chinese and Indian scientists to US technology formation increase dramatically in the 1990s, before noticeably leveling off after 2000 and declining in the case of India. Growth in ethnic innovation is concentrated in high-tech sectors.

John Brooks Slaughter, (2009), African American males in engineering: Past, present, and a future of opportunity, in Henry T. Frierson, James H. Wyche, Willie Pearson (ed.) *Black American Males in Higher Education: Research, Programs and Academe* (Diversity in Higher Education, Volume 7) Emerald Group Publishing Limited, pp.193 – 208
This series explains Black American males in higher education, and specifically addresses the state of Black American males in higher education today. In this volume, the contributing authors, present rich discussions related to reports on research and theoretical views pertaining to Black males in higher education. Further, presented in this volume are significant discussions of intervention programs within or associated with institutions of higher education as well as discourses on critical perspectives regarding the situation for Black males in academe.

Christine A. Victorino, Karen Nylund-Gibson, Sharon Conley. (2013) *Campus Racial Climate: A Litmus Test for Faculty Satisfaction at Four-Year Colleges and Universities*. *The Journal of Higher Education* 84:6, pages 769-805.

This article reports on a study that investigated the relationship between three dimensions of campus racial climate and faculty satisfaction with a large, nationally representative faculty sample (N = 29,169), using a multilevel structural equation model. Results indicate that campus racial climate has a large and highly significant effect upon faculty satisfaction at the individual level.

Bardwell, G., J. Hyde, J. Lewis, C. Morton-McSwain, P. Simoyi, and J. Rye. 2001. Teens take a healthy interest in their communities. *ENC Focus* 8(1): 40–42.

West Virginia, the second most rural state in the nation, has a higher than average prevalence of chronic diseases, especially those related to physical inactivity and obesity. Innovative educational approaches are needed to increase physical activity among adults and youth in rural areas and reduce rural health disparities. This paper describes West Virginia's Health Sciences and Technology Academy (HSTA) Education and Outreach on Healthy Weight and Physical Activity. The project involved teachers and underserved high school students in social science research aimed at increasing physical activity among student and community participants.

Basista, B., and S. Mathews. 2002. Integrated science and mathematics professional development programs. *School, Science, and Mathematics* 102(7): 359–370.

Over the past 5 years, integrated science and mathematics professional development programs for grades 4-10 science and mathematics teachers have been designed and implemented at Wright State University. The primary goals of the programs were to enhance the science and mathematics content understanding and pedagogical knowledge of the participant teachers in order to increase teacher confidence and promote the implementation of standards-based teaching practices in precollege classrooms. In this article, the general program structure developed and implemented over the years is discussed. Focusing on the 1999 program, evidence is presented of enhanced participant content understanding and pedagogical preparation, and specific examples of modified teacher practices are discussed.