Building an Environmentally Equitable Community One School at Time

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Unit Content

This unit will explore the elements that make a community function and thrive despite the concerns of our changing climate. Using a project based learning approach students will explore topics such as the Urban Heat Island across several subjects, including ELA, Math, Science and Social Studies. The unit will encourage scholars to increase their knowledge and develop skills through engaging projects that challenge their understanding of their own power and address concerns they are facing within their community and school. Throughout the unit, scholars will identify a problem, agree on and devise a solution to the problem, develop a prototype of the solutions and adapt their potential solutions based on feedback. The launching week will have scholars explore how we are connected to the environment and exposing and exploring the environment. Week 2 will focus on places needed in the school community to make it function and thrive. Week 3 moves to the community members who support us in important community and school community matters such as political matters, economics and civil services. After investigating the idea of what an equitable community looks like, for the first week we will also explore the concepts learned. Week three through four will bring us to the roles of community members and what obligations they share as community members. In week three through four, students will focus on what they want changed in their communities, and how they can achieve the needed goals for change through letter writing campaigns and other forms of advocacy and protest. During weeks five and six, students will plan and build diagrams/models of their versions of an equitable city and write a narrative outlining the life of a community member, each student will receive a role such as senior, child, adult with varied income levels. Text will include varied types of fictional and nonfiction text. As a unit culminating project students will be provided the opportunity to work independently, collaboratively within a small group or partnership and use their research collected over the course of the unit to create a presentation or publish a fictional or informational text highlighting topics such as Urban Heat Islands (UHI).

Keywords: Urban Heat Island Adaptation, Mitigation, Resilience, equity, Environmental Justice, Environmental Racism, Climate Justice/Racism, Sea Level Rise, Green Stormwater Infrastructure

Background

This unit of study spends a number of lessons addressing the concerns of Urban Heat Islands (UHI). Philadelphia has an immediate need to acknowledge, address, and prepare for the increase in global warming related temperature increases. The social, economic, and scientific

components of Urban Heat Islands make for an exciting opportunity to expose students to grade level content. Increased instruction using topical vocabulary is needed for students to meet their goals of increasing reading stamina and gain the rigor needed to be successful in developing the knowledge needed to support future content exposure. Students who are exposed to non fiction text experience an increase in vocabulary exposure which may support the goals of meeting grade level expectations on standardized tests. Using UHIs as the center of this unit's focus will allow students to engage in a topic they unknowingly have prior knowledge of and will aid me in leveraging that knowledge to build links to new content. During the unit, spend a period engaging students in oral questioning and response opportunities. It is in these moments I prompt student development of critical thinking skills and their ability to articulate their thinking using spoken language skills. During those discussions I act as a moderator instead of a lecturer. My goal when introducing students who live in the urban environment is to help them think critically, and use their experiences with UHI as firsthand accounts to expand their knowledge, and help them understand the ecological and social processes that impact them.

As a teacher, it is my responsibility to allow students the opportunity to explore and take ownership of their own learning. Each day within the unit I want my students to increase their higher order thinking abilities, use graphic organizers in meaningful ways and use their time to see the joy in collaborating with peers. In each lesson, I want to embed students' sense of belonging within the classroom and community. I want to create situations that encourage students to talk with one another about what makes urban heat islands so important to our daily lives and use that to create grade level writing and research opportunities. With so few students within the District meeting grade level reading or math skills, these exposure to scaffolds allow multiple entries for students to showcase their understanding of complex subjects. Robyn Jackson, co-author of several texts geared toward helping teachers support students, including *Support Struggling Students,* argues that academic rigor is helping kids learn to think for themselves (Jackson, 2010). I will provide daily opportunities for students to explore and gain the intellectual discipline needed for my students to be competitive locally, nationally and globally. I need to anticipate some difficulty when introducing these practices. Similar to my non-traditional approach of using project centered learning, I will also take a non-traditional approach to remediation in my instruction. I have anticipated areas where students may struggle and have included opportunities for students to both observe modeling but also become the modeler. I also have specifically selected this topic because it not only complements the Districts' units of study for ELA, Math, Social Studies and Science but it is also culturally and socially relevant to my students. This will help me anticipate some misconceptions or confusion students may have and allow me to create objectives to support student growth. One way I have done this in this unit is through the use of graphic organizers. English language learners, those with developmental disabilities and students simply struggling with acquiring and retaining information all benefit from using graphic organizers. The organizers help students see relationships and make connections. I use the organizer in whole group discussions and encourage students to refer back to them when working in their think pair share groups to verbalize their understanding. Once students have learned to form the organizers on paper and use them in discussion the goal is for them to begin to build the organizer organically as they

are exposed to more content within the unit and beyond. I have used the organizers in numerous ways including pre exposing vocabulary, concepts and even skills they will encounter. By doing this, I can help make clear the expectations for things to come for students as well as support my own ability to anticipate student needs as well as organize my thoughts about the topic.

The unit highlights Urban Heat Islands as one of the topic challenges for students to research and experiment with solving. An Urban Heat Island is the increase of temperatures in urban areas that is substantially warmer than in surrounding rural or suburban areas. This increase has been directly related to heat being absorbed by unnatural built and environmental features such as streets, rooftops, and tall buildings. The result of these invasive infractures cause those living in cities to endure uncomfortable temperatures and lead to increased health concerns. This topic is of great importance to students living in cities like Philadelphia because the city lacks sufficient green spaces and tree canopy support cooling residents and increased construction in already congested areas will increase populations. While there are funds available to improve and increase green spaces within cities they are not always accessible to marginalized members of the communities.

Teaching Strategies

Students benefit from repeated exposure to stimulate learning and retention of content within the classroom community. Opportunities for students to practice *productive struggle* leads to students experiencing better understanding, makes learning objectives seem more achievable and encourages students to feel empowered in their learning. Using *productive struggle* in our classrooms will allow students to move past the idea mastery comes after the first attempt. Many students are uncomfortable with the idea of trying new things due to the fear of failing. To encourage *productive struggle* and yield the desired goal of mastering objectives aligned to Common Core standards, teachers must present topics that spark interest and use materials and format content in a variety of ways to encourage students of all academic abilities to remain engaged. This unit of study will explore community planning and obtaining and maintaining resources within an economically socially and culturally diverse city, as well as the roles we play as community members to address critical needs such resolving issues surrounding urban heat islands.

Read Alouds

Reading aloud is an engaging and essential part of the classroom setting.Read Alouds develop and support the development of numerous foundational skills and helps to promote vocabulary acquisition, improves comprehension skills and strengthened fluency skills in our learners. Read Alouds support the developmental skills needed to make connections between the spoken and written word. It also helps to expose scholars to text above their current reading capabilities. During the course of this unit of study, students will have the opportunity to have

fictional stories, articles, and nonfiction text read aloud in the classroom. The readings are centered around community, community members, environmental sustainability and how they can support equitable sustainable practices within their changing environment to help solve concerns surrounding heat islands. The use of science themed readings will help increase student understanding and increase their learning equity. According to Ghouly Muhammad in *Unearthing Joy Equity* (2023) equity has been mis-defined as simply providing rigor or access to all. But it is much more than that. Equity is teaching and learning that is centered on justice, liberation, truth, and freedom, and is free of bias and favoritism. Learning equity helps students increase the opportunity for success by not merely supporting them in areas of struggle but also providing them with rich opportunities to engage with grade level content that exposes them to a diverse range of subject matter. Providing students with the opportunity to engage in learning about culturally relevant content is important but also providing content that is not reliant on race or socioeconomic status is equally as important. Students require exposure to scientific discussions and have the right to take part in scientific inquiry. In a 2008 study conducted by The United States Commission for Civil Rights it was reported minority students entering college were less likely than their white counterparts to pursue careers in STEM(Reynolds, 2007). The reasoning behind the likelihood of entering into related fields was not lack of interest but adequate exposure to basic concepts that would provide them the confidence to attempt entry into the field. The research went on to highlight the opposite was found when students of minority backgrounds were exposed to the same level of content prior to entering college. The research found those minority students with the same credentials as their white counterparts were more likely to enter and complete degrees in STEM. This is important because in addition to wanting our students to reach their full potential, we also want the best minds working on the preservation of our environment.

Culturally responsive teaching

Culturally responsive teaching links lessons and context with students' social, racial and community backgrounds. It leverages students' prior knowledge and leverages that to embed new content and aid students in building richer understanding of unfamiliar areas of study. Throughout the unit students are exposed to concerns facing much of the Philadelphia School District. This is done not to give students a sense of hopelessness, but to lead students to feeling empowered and garner a sense of belonging and hope.

Cooperative learning

Team assignments allow students at various learning levels to work as a unit. Through this students express their ideas and listen to others' ideas as a group. Students develop critical thinking skills, learn to give and receive feedback. Cooperative learning also increases student engagement, with potential activities including role play or whole group presentations.

Think- Pair- Share

The teacher tries to gain students' attention and informally assess students' understanding or prior knowledge of a topic with a question or provides a prompt to simulate thoughts. The students should provide students with a set amount of time (usually 2-3 minutes) to think about the question before they respond with their contribution to the discussion. It should also be noted, each voice should be respected when sharing. Next you should pair using designated partners (it could be preassigned or organically done). Finally, have students share with the entire class. To ensure students are listening to their partners, have them share not what they personally think but what their partner told them. Additionally. recording some of the discussion for use in the share or putting the clips on a digital classroom to keep parents and caregivers engaged in student learning is a great way of incorporating technology into the classroom.

Blended learning

Blended learning incorporates technology and standard approaches to learning. This allows students to take greater ownership and responsibility for pacing their research and ideas. Examples in this unit include creating Story Maps to scale tangible solutions, posting classwork online and using digital libraries for research. A Story Map here is not referring to the outline of characters in the setting of a story but the use of digital technology to link narratives, multimedia contents, graphs and other virtual in one location for people to access. You can find an example of a storymap at storymaps.com. These maps can be especially helpful for early education educators whose students are not ready to explore the internet for a number of reasons. The use of technology can increase student engagement and allow students to reduce paper waste. More effective collaboration among peers can also be seen when incorporating blended learning within the classroom. Teachers are also able to support multiple students more effectively when students are using their strengths and working on a timeline they feel most comfortable with.

Modeling

Modeling encourages demonstrating an intended objective or behavior while narrating the actions and decisions being made throughout the process to help students gain the skills to achieve the model independently. During the lesson, the teacher or peer will model the actions or tasks that students are expected to master and repeat. Students then take the models and run with it to use their critical thinking skills to build their own writing separate from the model.

Demonstrate Mastery using rubric and peer based editing

Teachers will instruct students on how to use informational and fictional text to write persuasive letters and narratives. The writing process will be developed: students would be allowed to draft edit and collaborate with peers to improve their written pieces. Open ended questioning, expert

jigsawing, modeling and scaffolding will be used to support multiple entry points for student engagement. High expectations, reflective writing and formative summative assessments will measure student learning and growth.

Classroom Activities

The activities are a major part of what will be used to provide students with several opportunities to explore the presented topic and meet mastery of grade level expectation for a 3rd grade classroom. Each lesson is intended to run between 30 to 45 minutes. The time allotted should be used to provide students with collaborative and independent learning opportunities. Formal assessments are included with some lessons but teachers should also take notes while meeting with students. Informal assessments though your observation should serve as road maps to where future scaffolds may be needed to reduce misconceptions experienced by students.

The goal of this unit is to present rigorous content in new and exciting ways that encourage engagement and interest. The need for such lessons are pressing because we are building future leaders of tomorrow who need the skills required to be successful leaders and members of society. The unit's outcome should lead to students retaining long-term knowledge of urban heat islands and tools learned to support combating the social and economic outcomes of people like themselves. The unit hopes to promote students to be free thinkers who are able to analyze content critically. Critical thinking involves being objective and open-minded while thinking carefully about what to do or what to believe, based on evidence and reason. When thinking critically, students apply accepted principles. Critical thinking is not a generic set of skills or processes to be developed independent of content and context. Rather if it is to take central place in the curriculum, critical thinking must be seen as a way of teaching the curriculum(Case, R. 2005). Critical thinking consists of seeing both sides of an issue, being open to new evidence that disconfirms your ideas, making reasoned judgments, demanding claims be backed by evidence, deducting and inferring conclusions from available facts, and solving problems (Willingham, D. 2007). Critical thinking involves examining possibilities carefully, fairly, and constructively—focusing thoughts and actions by analyzing, synthesizing, and evaluating possibilities, refining and developing the most promising possibilities, ranking or prioritizing options and choosing certain options (Treffinger, D. 2008). The unit curates the journey through the process of finding need, advocating for change and experiencing the joy of making a lasting difference. The lessons guide students and educators on a journey to see how we can affect systems to upset current social and environmental structures.

Activity 1

1. Students will use Circle Maps (or other graphic organizer) to brainstorm ideas for what a city with adequate resources would look like. During the lesson, the teacher will facilitate a discussion centering on what they feel they need to be happy in a city.

Students will be asked to use the Map to write a one to two sentence template and provide a visual support to support their writing piece. This should take 45 mins and should include: discussion time, sentence development, student editing, and peer share.

Objectives:

- Students will identify the progression of characters and identify the way they change over time.
- The students will understand the author's purpose.
- Identifying the setting within a text and exploring how it can affect the characters within the story.

Materials:

- Book – *The Lorax*
- Chart Paper sized Multi Flow map
- Multi Flow map
- Colored pencils (sparks joy)

Procedure:

1. The lesson will begin with the reinforcement of the roles of characters in a story.
    - The core of a story are the characters.
    - A primary character is a protagonist, the person the book is about -- or, to put it a different way, a character so important that the story could not exist without her/him. An antagonist is usually also a main character, especially if the plot revolves around the conflict between the protagonist and the antagonist.
    - A secondary character has several dimensions of existence the author tries to have the readers identify but s/he/ they are not the center of importance for the plot, and the story does not revolve although s/he/they is vital to the story. A really well drawn secondary character, however, often appears to be as important as a primary character; if the world and the characters have enough substance, then the novel could arguably be told from the point of view of any of the secondary characters, thus changing the focus of the plot.
2. Students will identify the characters in the story: Using the Think-Pair-Share method discuss
    - What was the land of the Lorax like before the Once -ler arrives? Did it seem like a place you would want to live? How would this make you feel if this happened in your community? Has it already happened?
    - Use the Multi- Flow (or organizer of your choice) to highlight greed.
        - The Lorax (the primary character) identifies the Once-ler as greedy. What does it mean to be greedy? Greed means to be selfish, it could be for money, food or stuff over what you need.

3. After the read aloud, direct the students to the "Greed" chart (made on chart paper) that is hanging at the front of the room. Tell the students that you will be using the graphic organizer to support our writing. Each student should have received their own copy of the organizer to complete as the read aloud progresses.
4. Provide students with one of the following or both prompts
    - The Once-ler says "*unless someone like you cares a whole lot nothing is going to ge*t it's not"." Can one person make a difference? Can you?
5. Provide students the opportunity and time needed to write the responses on their own = journal or using a digital writing tool. If the student is not able to write, he/she/they will glue a picture of the correct response in the correct column on their own paper or use a digital tool to orally record their responses.
6. Once all students have completed recording their responses, begin the sharing process. Have them share their work with a partner. If time allows, have some share with the whole group.

Assessment:

Student mastery of the lesson's objective will be measured by teacher observation during lesson discussion and independent contributions, student responses given during the lesson and the responses on the students worksheet or digital writing tool.

Activity 2 Day 1

Objectives:

- Building an ecologically responsible school community collage comparing the present day to a predicted future.
- Comparing nonfiction and fiction text elements

Materials:

- Book – *Reimagining Sustainable Cities* (Chapter How Do We Get to Climate Neutrality?)
- Collage materials; markers, crayons, magazines, images of school building, canvas, poster paper
- Romare Bearden collage image "The Block" (used as inspiration for collage model)

Procedure:

1. Read the text *Reimagining Sustainable Cities* pages 13-18. Frequently stop and discuss to highlight student thinking and understanding of the subject matter. Stop on page 18 to discuss the chart on page 18. During this section discuss the elements of information text. Tell students informational text is nonfiction, written with the intention of informing the reader about a specific topic. In this case, what are the authors of this text wanting to inform us about? Authors will use headers over certain sections, bold key vocabulary, or visual representations with

captions. I am going to give you the opportunity to explore the informational text feature found on page 13 of this text.

One example of an informational text would be a text discussing cause and effect.

2. Using Think- Pair- Share- prompts students to explore the correlation between the proposed strategies highlighted in table one could be applied to the issues seen in the Lorax.

3. Have students share their thoughts with the whole group.

4. Place students into a group for Brain-Hand-Voice. Remind each student they have an important role within the group. The student assigned to be the brain is not going to tell everyone what to think but are going to help organize the thoughts of the group and keep each member on task and topic. The Hand of the group will act as the writer for the group taking notes and placing content onto the paper or digital document the group has agreed upon. Lastly, the Voice will be the lead presenter of the group's thinking, they will field questions about the group's findings. Have students work within the group to use one strategy to solve one of the issues found in *The Lorax*.

5. Have students present their problem and solution to the class.

6. Using Lumio (paper ballots also possible), students vote for which group solution they think would work best.

Assessment:

Student understanding of the material taught will be based on teacher observation, student responses given during the lesson and the effectiveness of the problem and solution presented during the group presentation. Students will also be provided their peer rated ranking collected in Lumio.

Activity 2 Day 2

Materials:

- Book – *Reimagining Sustainable Cities* (Chapter How Do We Get to Climate Neutrality?)
- Collage materials; markers, crayons, magazines, images of school building, canvas, poster paper
- Romare Bearden collage image "The Block" (used as inspiration for collage model)
- Circle Map (or preferred graphic organizer)

Procedure:

1. Inform scholars we will be conducting a Walk Audit of our school. A Walk Audit can help us identify unsafe, inaccessible or unwelcoming spaces On the walk, will identify issues or concerns we have about the exterior of our school building and yard. Questions they should keep in mind are:
    - What do we want to see in our space?
    - How does it currently make you feel?
    - How can we elevate what we currently have?
2. Walk around the building and outdoor spaces students have access to, stop to allow students to take notes in their Circle Map of their noticings and wonderings. The walk should last about 12-15 minutes.
3. Return to class and have students use notes to begin the collage process of the school's current state.
4. Have students take a gallery walk of what peers have completed during the work period. Using sticky notes or note cards have students place feedback for peers.

Assessment:

Student mastery of the lesson's objective will be measured by teacher observation during lesson discussion and independent contributions. Student responses given during the lesson will be used to support discussion. Written responses completed by the students using paper or digital writing tools will be measured by a writing rubric.

Activity 3

2. Using a Tree Map (or other organizer) Students will list places in a city that are important to healthy, happy living and use the map to create a collage of what that would look like in the micro community school level. The lessons will evolve over 4 days in duration and will include meeting the following objectives;

- Comparing nonfiction and fiction text elements
- Using information text to learn information about Heat Islands
- Writing informational text about Urban Heat Islands
- Building an ecologically responsible school community college and narrative exploring our school day in 30 years from now.

Activity 3 Day 1

Procedure:

1. Open the lesson with the video What Makes Cities Hot.
    - Ask students to turn and talk about what the temperatures are like in our community?
2. Introduce students to the term Urban Heat Island;

3. Do a first read of the article Urban Heat Island with students preloaded and exposing them to vocabulary. Identify key features displayed within the informational text.
4. Have students do a second read of the article Urban Heat Island
5. With a peer reader, inform students after reading the article they should be able to to answer questions such as; What is an Urban Heat Island? How do they form? What does that mean for our city? Students should keep a written or computerized account for their notes.
6. Return to the whole group discussion. Have students share their answers.

Activity 3 Day 2 Object: Identify the effect of urban heat islands

Materials:

- Video-Urban Heat Island- San Antonio
- Multi Flow Map or other graphic organizer to highlight the causes and effects of increasing temperatures .
- United States Map
- Beat the Heat Hunting Park

Procedure:

1. Inform students today we will continue to explore Urban Heat Islands. We will continue to explore the cause and effect of increasing temperatures in urban areas. We are going to look at a quick news report from an area in the country called San antonio TX. Show TX on the map of the USA.
2. Watch the video Video-Urban Heat Island- San Antonio
3. Tell students we refreshed our minds on what an Urban Heat Island is. Let's start our discussion. What causes Urban Heat Islands ? allow students to share their knowledge and record it onto the cause and effect organizer.
4. Next, inform students we have collected the causes of the Urban Heat Island together and now you will be using the informational text Beat the Heat Hunting Park. I want you to use the digital PDF to answer what is the effect of Urban Heat Islands. Use the information text features such as table of contents and headings to help guild you to find the effects of UHI.
5. Break students into groups of 3-4. Give each member one of the following roles:- this member will help read the article and organize the groups thinking, VOICE- this member will remember what the groups wants to say and present the groups finding, HAND- will record the groups finding onto the organizer.
6. Provide students 15 mins to look through the report: Beat the Heat Hunting Park. Circulate and ask guided questions to ensure students are on track to complete the research.
7. Have students display their findings and allow students 3-4 minutes to look at others' work.
8. Provide each group 2 minutes to present their groups findings

Assessment:

Completed cause and effect organizer and group presentation. Students' contribution and responses during my observational walk.

Activity 4 Day 1-4 Objective: Create an informative presentation

Materials:

- Student folders with notes and readings from unit
- Project proposal submission form (the form will list project type selected and number of students working together.
- Computers
- Writing tools

Procedure:

- Inform students they are provided the opportunity to select the unit's final project. provide students with a project proposal submission form and review the sections. Section one should list the format of the project; fictional short story, newspaper article, video presentation, etc. Section 2 should list the number of students working on the project.
- Allow students to review and chat with peers to make selections.
- Allow students to meet with you to discuss and receive approval for their selections. Note each student will need to complete their own proposal form and are expected to retain it until the project is completed.
- Students are giving time to work on projects.

Assessment:

Completed proposal form.

Field Trip Lesson options

Activity 1

Materials: notebooks, thermometers

Plan a tour of the surrounding area of Old City

1.While on the tour, visit different sections seeking out green spaces.

2. Have students take the temperature in several different sections during the walk. Have students take notes of what the spaces were like. They should be able to provide information such as; How many trees were in the area? What was the landscaping like? How many buildings were surrounding the area? Do they think the height or length of the buildings made a difference? What kinds of materials were we standing on ?

3. After taking the temperature walk, take students to the 18th Century Garden. Once at the garden, students enjoy sharing their notebook finds and a snack.

4. Call students to formal discussion about what they noticed or wondered about on our walk? What was seen in areas with cooler temperatures? What did you see in areas with warmer temperatures?

5. How could things seen while on the work be used to make our school community a cooler space?

Activity 2

Materials; notebooks

Tour Wissahickon Valley Park- Contact Amelia Marren at marren@fow.org

1. Inform students that we will be going to the Woodlands right here in our city. We will explore some trails and observe our surroundings. We want to keep in mind this land has been protected and preserved to maintain some of the original attributes of the park. Where we are located once had a similar experience.
2. While at the location, participate in the stewardship programs.
3. With the guidance of the steward leader, help maintain and beautify the park.
4. After completion of our stewardship activity, students reflect in their notebooks about how they felt about the experience.

Resources

Light, S. (2014). *Have You Seen My dragon?* Candlewick.

Smith, S. (2019). *Small In The City*. Neal Porter Books.

Brown, P. (2009). *The Curious Garden*. Little, Brown Books for Young Readers.

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Urban Heat Island and What They Can Teach us About Climate Change by Alyssa T Kullberg Johnson, J.C Urcuyo, J Moen C and Stevens, D.R.R 11 2019

Reimagining Sustainable Cities, Book Subtitle: Strategies for Designing Greener, Healthier, More Equitable Communities, Book Author(s): Stephen M. Wheeler and Christina D.

Rosan Published by: University of California Press. (2021) Stable URL: https://www.jstor.org/stable/j.ctv20ds9tz.5 Center for Science Education Education

Community member interview on increasing temperatures https://whyy-od.streamguys1.com/news/01%2020220727SSMOBILE.mp3

Beat The Heat Philadelphia,

Green City, Clean Water

https://scied.ucar.edu/learning-zone/climate-change-impacts/urban-heat-island

A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012)

Heat vulnerability index

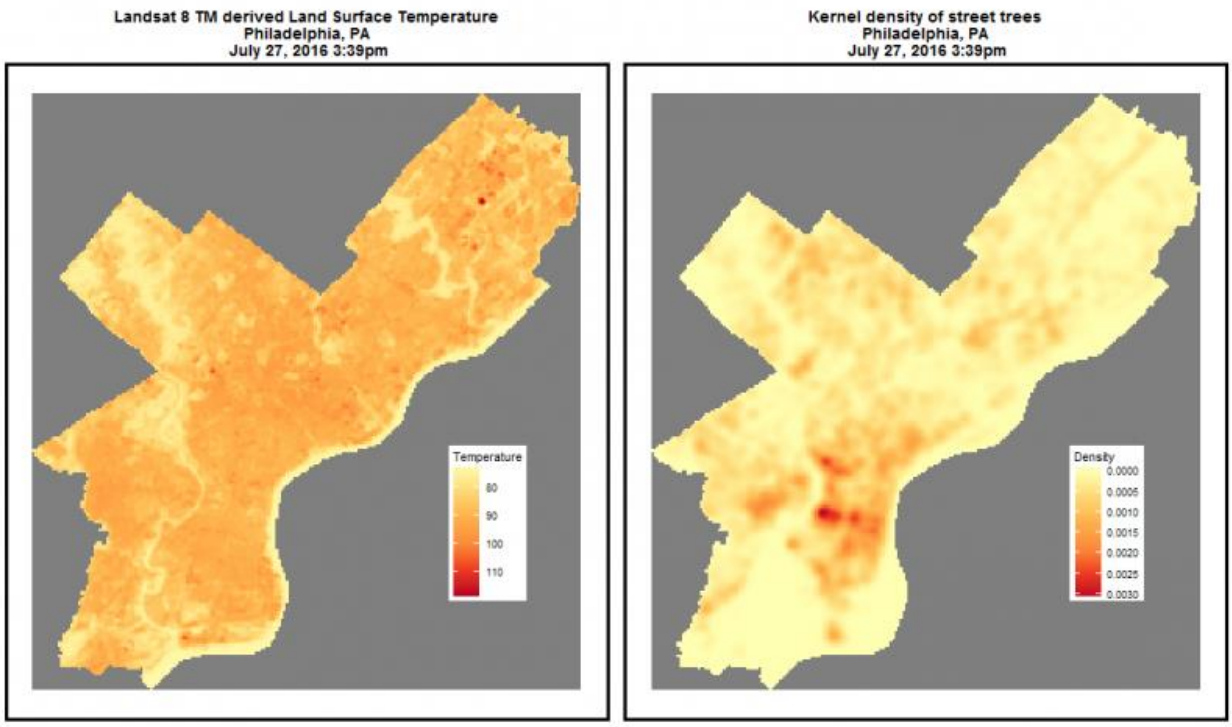
https://phl.maps.arcgis.com/apps/webappviewer/index.html?id=9ef74cdc0c83455c9df031c868083efd

Have students use the map to search the level of vulnerability for the school's zip code. use the information found to create a bar or line graph to display levels of areas of vulnerability.

Urban heat island condition experienced by the Western black widow spider, C40 city, 360cities.com, https://earthobservatory.nasa.gov/world-of-change/global-temperatures

Romear Bearden, Paint in my hands.

Use this interview to have students hear primary resource materials. Encourage whole or small group conversations around the concerns addressed within the interview. Have students provide a written paragraph providing a solution to the problem.



Ken Steif

Use the chart to compare and contrast the effects the increase of green spaces have on the day to day temperatures.

Appendix

A description of how your unit implements the academic standards; and additional materials you wish to provide, such as handouts, evaluation rubrics, etc.

The focus of this unit is to aid students in gaining the understanding that the environment is a high priority that affects all members of a community. Students will identify key ideas and support their thinking orally and using written formats. Foundational skills are prioritized within the unit but the highest leveraged vocabulary and concepts will be explored and scaffold to allow multiple entry points for a diverse group of learners. Students are provided with varied formats of text and given opportunities to practice fluency and accuracy both independently and with peers.

In order to encourage the desire to learn and engage with the subject matter I have embedded culturally relevant articles, videos and teaching strategies to cater to students' learning needs. Some big concepts explored are the increasing temperatures, the impact economics has on our health and environment, and ways we can collaborate with community members and lawmakers to make lasting social impact. At the end of the unit through research, peer collaboration or

independent exploration students will complete a variety of project types. All projects will showcase student ability to make connections to charts, data collection and multimedia research to provide audiences with a clear understanding of how we all can make an impact on our environmental health.

During the first week of the unit it is important to engage students in becoming familiar with the research content we will be covering. It is important that students be familiar with vocabulary they will be using throughout the unit. This will be important for students who are English language learners, those with individualized education plans as well as those who benefit from pre-teaching. This can also be an exciting time for students who will perhaps for the first time make a connection to the power they have as community members. It is in this week we expose students for the first time to environmental norms, racial disadvantages and the impact economics can have on the world around us. In this first week it is important to offer a variety of media for students to review and discuss. Think pair share will be a high priority during this week because you will want to have students gain the mindset their voice is important and what they say has value. During this week it can benefit students to take a walk in a localized nature reserve or trail to provide exposure to environments outside of their current environment. This is practically important for those teaching in economically marginalized communities. During this walk or virtual trail view students may feel less stress from the formal classroom environment and maybe more likely to engage with you and peers.

The unit of study greatly focuses on providing research-based students Standards addressed focusing on informational text exploring key ideas and details. These standards include RI.3.1 Ask and answer questions about who, what,where,when ,and how to demonstrate understanding of key details in a text as entry point and expand to students demonstrating understanding of a text by explicitly using it to provide a response. RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. We also address standard RI.3.3 describing the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time sequence, and cause/effect by exploring sequence events and racial historical factors to outline present day concerns. RL. 3.6 is used several times as students distinguish their own point of view from that of the narrator or those of the characters. Many opportunities to use RL.3.7 are offered by allowing specific aspects of a text's illustrations to contribute to what is conveyed by the words in a story.

Writing standards are also explored throughout the unit and include several standards. W.3.1, write opinion pieces on topics or texts supporting a point of view with reasons. W.3.Write narratives to develop real or imagined experiences or events using effective technique. Several opportunities for students to creatively role play using narrative writing are found throughout the unit of study. Narrative writing prompts will highlight past, current and future experiences of people dealing with concerns such as increasing temperatures and the impact the environment has on our health. To allow students to develop and show character progression,

students will use a journal style format. Student are expected to make a daily entry as their character.

W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. W.3.7 conducts short research projects that build knowledge about a topic. W.3.8 Recall information from experience or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. Note taking will be used by students daily and filing and storage of those notes will be the student's responsibility. Students will use their notes and other resources to create their narratives, support their positions during small and whole group discussions, and provide resource based final projects.

Vocabulary acquisition and use are also supported within the unit through standard L.3.6 acquire and use accurately grade-appropriate conversational, general, academic, and domain-specific words. During the unit's final project students will be asked to use the vocabulary learned fluently within their writings and presentations. To support this growth, development and retention of content vocabulary students create a glossy or dictionary. The tool will be created as each new vocabulary word is introduced. Students are expected to complete some form of writing in each lesson presented throughout the unit. The use of digital and traditional writing tools should be used interchangeably to make students more comfortable with either format.

Math and social studies standards are also highlighted within this project centered unit. 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent a number of people without safe spaces to be during increased temperatures*. The use of graphics in this unit will be a great opportunity to explore reading a variety of graph styles. Through the unit students have the opportunity to both read and create their own graphs and use that information to support their responses. Time analyzing the data should be prioritized each week and should offer opportunity for students to share their interpretations in numerous ways. cooperative learning opportunities should also be used here. It will allow students to investigate and for comfortable exploring expresses their findings. This will also act as a period in which anecdotal notes can be taken. Center activities and small group instruction can also be centered around graph analysis. Procedural and Application M03.D-M.2.1.4 Translate information from one type of display to another. Limit to pictographs, tally charts, bar graphs, tables. Example: Convert tally chart to a bar graph. (PA Only). 3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Another opportunity for students to collaborate and share their thinking is during the city planning and collage making lessons. Students will explore shapes and how spacing and fractions play a role in building communities. Students can survey the correlation between shared resources and what the decrease of resources will mean for feature generations. The Procedural and Application.3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape*. Conceptual and Procedural.

Social Justice Standards D1.K-2.8 I want to know about other people and how our lives and experiences are the same and different. The unit will use this standard several times and will be a major part of the letter writing and resource acquisition campaign we explore through the unit. Race, age, and economics will be the center of many of the articles, videos and articles used during the lessons. It is under this standard topic like redlining, environmental equity, and the ways people used government and economic marginalization to oppress a segment of the population over an extended period of time. Students should be encouraged to explore their feelings and make connections to their own experiences as well as those of their family. Students' ability to recognize the oppression of others and name ways they as children can disrupt that oppression. One topic of interest could be the refinery in Philadelphia. Student analysis of the events should lead to an understanding of how race and money played a role and the community being poisoned over an extended time. Students are able to explore this topic in many ways. First, they will write letters to children currently attending school in the affected community. Second, they will be asked to write a narrative from the perspective of a child living in the refinery community before the fire. Third, create a newspaper article or news segment predicting what will be placed on the site of the refinery and the community's reaction. Student critical thinking skills can be showcased and creativity and collaborative opportunities are plentiful. Opportunities for field trips surrounding mental health and restorative practices should be considered. Also used is JU.K-2.13 I know some true stories about how people have been treated badly because of their group identities, and I don't like.NCSS C3 Standards.D2.Civ.5.K-2.

Explain what governments are and some of their functions. D2.Civ.3.3-5. Examine the origins and purposes of rules, laws, and key U.S. constitutional provisions. Identity 1 ID.3-5.1 I know and like who I am and can talk about my family and myself and describe our various group identities. Action 20 AC.3-5.20 I will work with my friends and family to make our school and community fair for everyone, and we will work hard and cooperate in order to achieve our goals. The before listed standards are all standards used to outline lesson outcomes for objectives centered around the government's role in keeping community members safe. Students will use their understanding of levels of government to understand how change can happen and what they need to do to propel the desired change. Using the school community as a base to experience change, students explore their desires to acknowledge what is not acceptable and how they want it to be corrected. These lessons will lead to a letter requesting a school administrator to meet with students to address their issues. This standard is also a fantastic

opportunity to allow students to engage with their parents by including them in a mock town hall meeting.

It is important during this heavily science-based unit that social injustices do not overshadow students understanding the scientific elements highlighted throughout the unit. Students should be encouraged to explore the unit as a developing researcher and have the opportunity to meet with or learn the roles of various jobs within the field. This can be explored through roleplay and virtual or in person field trips. Students should also be encouraged to follow the effect of topics such as heat islands and the effects of rising temperatures as it relates to current events. This will also allow more incorporation of technology and allow students to practice their oral fluency and written responses using a variety of resources. The more opportunity to explore the topic using wider resource pools the more students will become familiarized with vocabulary and build their own connections to this challenging topic. Science related standards addressed; Science & Engineering Practices (SEPs)Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. Disciplinary Core Ideas (DCIs) ESS2.D: Weather and Climate Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Crosscutting Concepts (CCCs) Patterns of change can be used to make predictions. 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.