

Climate Justice and *Jurassic Park*

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Abstract

This unit is for a high school English Language Arts class reading of Michael Crichton's science fiction thriller *Jurassic Park*. The unit incorporates the novel and research on local environmental and climate justice issues and culminates in students writing their own narrative nonfiction story on a local topic of their choice. *Jurassic Park* is a high interest text for students to use an entry point into climate justice. The novel brings up themes like humans attempting to control nature and hubris as it relates to human-environment interaction, which is an interesting entry to students thinking critically about their relationship with their environment. This unit incorporates real-world experiences and trips in an effort to help students engage in authentic learning. The novel is also a useful way to teach about suspense, foreshadowing, and imagery. There are also several informational texts to pair with the unit that deal with its different themes.

Keywords: high school, ELA, English, Jurassic Park, Michael Crichton, climate justice, environmentalism, climate change, science fiction

“You decide you’ll control nature, and from that moment on you’re in deep trouble, because you can’t do it.... You can make a boat, but you can’t make the ocean. You can make an airplane, but you can’t make the air,” (Crichton 392)

Unit Content

This unit uses Michael Crichton's novel *Jurassic Park* as a jumping off point for a high school English Literature unit on climate change and environmental justice. Literature allows us to imagine other worlds and to reflect on our present; the themes of human hubris and our interactions with technology and nature in *Jurassic Park* allow modern readers to think about the way we live with our environment and prompt us to reflect on how we can act now to preserve our planet. As Christopher Schaberg writes in his book, *Pedagogy of the Depressed*, “...throughout [environmental humanities] is the humanities at its most basic and best, which is about reminding people what matters” (53).

This unit takes a hyper-local approach and many of the resources are centered around Philadelphia. It is my hope that teachers in different parts of the country can use the ideas and resources presented as a jumping off point for their own cities and towns. While some of the specific places, maps, and readings are specific to Philadelphia, the ideas behind them can be applied to other places.

This unit has two major parts: reading and interpreting the novel and a narrative nonfiction story on a topic of students' choice. The teaching strategies will have both the traditional ELA approach to teaching a novel and guidelines for student completion of the narrative nonfiction story based on research.

Essential Questions and Enduring Understandings

- How do we work to improve our city and world?
- How have we tried and failed to control nature?
- The human-environment interaction and hubris
- Elements of action and adventure

Text Analysis and Context

Even people who have not read the book or seen the movie know the plot to *Jurassic Park*: scientists visit a theme park populated by live, cloned dinosaurs; things quickly spiral out of control. The book, published in 1990, is speculative science fiction. Dr. Grant, a paleontologist, and Dr. Satler, a paleobotanist, join Ian Malcolm, a mathematician, and Donald Gennaro, a lawyer, on a private tour of eccentric millionaire John Hammond's secret island off the coast of Costa Rica. On the island, they meet Lexie and Tim, Hammond's grandchildren; Ed Regis, the head of marketing; Dennis Nedry, computer programmer-slash-saboteur; Dr. Wu, genetic scientist; and a few others on the first ever tour of Jurassic Park. Drs. Grant and Satler are skeptical but largely awed; Gennaro is fed up with Hammond's eccentricities, and Malcolm is waiting for the whole park to fail. There were already hints that things were going wrong: the Prologue and First Iteration foreshadow that the dinosaurs are out of control and have also escaped from the island. After security failures and the discovery that the dinosaurs are breeding, all of the characters find themselves fighting for their survival against the dinosaurs.

Although Crichton himself was a climate change denier and skepticism of the scientific community is a common theme in his works, it is hard to read *Jurassic Park* as anything other than a critique of humans meddling with the natural world, hubris, and greed. Indeed, as the Introduction of the novel states, "Genetic research continues, at a more furious pace than ever. But it is done in secret, and in haste, and for profit," (Crichton PDF 3). The narrator of the Introduction, perhaps Crichton himself, then is not surprised that anyone refused to talk about, "...the remarkable events leading up to those final two days in August 1989 on a remote island off the west coast of Costa Rica" (Crichton PDF 3). The most delusional and greedy character is the CEO of the fictional InGen, John Hammond, who has created Jurassic Park purely for profit with no regard to the safety concerns. As he brings the visitors to Isla Nublar, Hammond says, "And we can never forget the ultimate object of the project in Costa Rica - to make money....Lots and lots of money" (Crichton 67). As well, many other characters responsible for creating Jurassic Park are motivated by greed, pride, and overconfidence in their own abilities.

Through these characters and the “good guy” foils of Malcolm, Sattler, and Grant, Crichton makes his skepticism of the scientific community clear. Nedry, the computer scientist who helped create the park, tries to steal dinosaur embryos for profit, and is responsible for the park’s electrical and security failures, is poisoned and ripped apart by a variety of dinosaurs (Crichton 219). Ed Regis, in charge of promoting the park and responsible for covering up the danger of the park before it opens, is eaten by a T-Rex (Crichton 242). Arnold, the chief engineer, is killed by raptors, and Hammond is attacked and killed by compys, bringing the tragedies of the park full circle, as those are the creatures seen off the island at the very beginning of the novel (Crichton 441).

In contrast, Malcolm, Sattler, Grant, and to an extent, the children, Tim and Lex, are saved from a dinosaur mauling and act as a stand-in for Crichton’s own feelings on genetic engineering and society’s deference to scientists. In between scenes of Tim and Lex almost being eaten by the T-Rex, Malcolm, who is out of commission because of another T-Rex attack, opines to Hammond, “And because you can stand on the shoulders of giants, you can accomplish something quickly. You don’t even know exactly what you have done, but already you have reported it, patented it, and sold it” (Crichton 343). Here, Crichton puts himself in his characters, giving a sharp critique of the hubris of the scientific community and technology run amok. This is most likely what fueled his global warming skepticism.

Environmental Context

Addressing climate change is of the utmost importance. Levels of carbon dioxide in the atmosphere have skyrocketed since the Industrial Revolution (Climate). Carbon dioxide traps heat on the Earth’s surface and contributes to global temperature rise. Species are dying, ice sheets are melting, and extreme weather is becoming more prevalent (Climate). How do we fix this when wholesale systemic and economic changes are needed, and there is only so much reducing one’s environmental impact can do?

There is interesting research into children and the idea of ecophobia, or the fear of environmental disasters and nature in general. David Sobel argues that ecophobia in children is a result of being, “...disconnected from the world outside their doors,” and being burdened with environmental crises around the world instead. This separates children from their own environment instead of offering them a stake in it. Sobel and researchers have largely focused on younger children, but Sobel argues that it is important for young children to understand their local environment so that they are empowered and called to protect it when they enter their teenage years. As part of this unit, it is important that students have several opportunities to engage with their local natural environment through field trips and independent research.

Philadelphia has many of the same environmental challenges as other American cities, and some challenges that are more pronounced. Environmental and urban ecology

focuses for this unit are urban heat islands, air pollution, water quality, litter and garbage, transportation, and the intersection of gun violence and the environment, although the unit allows students to choose any area of the environment they want. The Philadelphia Heat Vulnerability index shows that some low-income and minority communities are over 20 degrees hotter than others (Philadelphia). These neighborhoods have dark roofs and less tree cover, fewer parks, and have been systematically ignored and disinvested. Increased respiratory illnesses, heat illness, and heat death will continue to rise if these issues are not addressed. As well, aging, energy-inefficient buildings are the leading contributors to climate change in the city (Philadelphia).

Anne Whiston Spirn's ideas about landscape literacy inspired much of this unit's approach to the novel and is an early introduction for students into the idea of humans trying to control nature. In West Philadelphia, Mill Creek existed above ground until the late 1800s, when, "...armies of men leveled hills, filled in valleys, and buried streams in sewers" (Spirn 113). Since then, the area has been plagued by building and home collapses. In teaching local middle school students about the failure of taming the creek under a giant sewer pipe, Spirn found, "... primary materials challenged and made history real for the children and to their growing perception of how their own lives and landscape were related to the larger city, region, and nation" (122). This ties back to the idea of ecophobia; the West Philly students were able to connect to their environment and build a relationship with it. Disappointingly, Spirn's partnership with the local school and the Mill Creek neighborhood dissolved because of forces outside their control. Striking a hopeful note with this example is a challenge.

Although Philadelphia has several challenges, including its nickname "Filtadelphia," there are also several environmental highlights that have happened in the ten years since Spirn's work with Mill Creek. The city has cleaned up its residential water, heavily invested in bike share programs, offers residential rainwater collection and beautification, and also offers residential tree planting. The city is hiring its first forester in an effort to plant more trees and alleviate some of the heat island effects.

Teaching Strategies

This unit uses a “reading schedule” structure for the teaching strategies. The book is broken up into several sections and key activities and strategies are detailed in each section.

Pre-Reading

The pre-reading offers an opportunity to introduce the book’s topics and themes, as well as introduce the cumulative assessment. The main content in pre-reading is the pilot episode of *Westworld*, a longform journalism piece on climate change or animal cloning, and, ideally, a field trip to a nature preserve, botanical garden, or other green space.

The purpose of the episode of *Westworld* is to think about the theme of human greed and control, which students will realize is a common theme in Crichton’s work. If *Westworld* is too mature, a similar option is the episode “Itchy & Scratchy Land” from the sixth season of *The Simpsons*, although, with that episode, the theme is more person versus technology and is more similar to *Westworld* than *Jurassic Park*. Teachers can have students respond to the episode’s themes in a variety of ways. Two common ways are through writing and through the “save the last word for me” discussion. For writing, instructors can use whatever form of writing they are working on (paragraphs, longer essays, standardized test written responses). For “save the last word for me,” students sit in groups of four or five, or even as a whole class. Each student writes down a moment from the film that relates to the theme or another teacher-given prompt. One student share only what they wrote down, not the explanation, and the other students in the group or student volunteers respond just to the original quote. Then, at the end, the original student can share their justification or add on to what their classmates shared.

Margaret Atwood’s short story, *Death of a Landscape*, offers an interesting opportunity for pre-reading or could be used at another point in the unit. The story is about an adult woman who fills her home with landscape paintings to force herself to remember her teenage friend who disappeared on a summer camping trip in the woods. The story offers opportunities to analyze the force of nature and the narrator’s fixation on landscape. Interestingly, the narrator theorizes that her friend has actually turned into a tree, and she turns to the landscapes to try to make sense of it.

Reading informational texts is an important part of this unit. A shorter informational text to use is the *New Yorker* article “Bringing Back the Woolly Mammoth.” With this article, students can read it for the content on genetic engineering and cloning, and also perform a meta-analysis for the components of narrative nonfiction. The focus components of narrative nonfiction for this unit are levity, anecdote, parallel structure, and juxtaposition (Ziegler). Students will annotate the article for the different parts and use it as a model text as it is short and manageable.

There are two longer information texts that are relevant to this unit as well. The first is “Inside the Frozen Zoo that Brings Animals Back to Life.” The first section of this article is titled, “Nobody say Jurassic Park.” The article is about gene cloning technology and how we can bring back species that we have made extinct through human intervention. The text can also be annotated for levity, anecdote, parallelism, and juxtaposition. The second article that can be used is “How Climate Migration Will Reshape America.” It is not as topically related as the previous two articles, but the themes of human control, hubris, and natural devastation provide a connection.

It is important to get students out into nature, so a field trip to a nature preserve, arboretum, or other local organization with a focus on environmentalism and environmental justice is a key part of this unit; this does require advanced planning. The field trip is also important to scaffold the narrative nonfiction writing at the end of the unit. Students should take notes during the trip, using a story planner to make notes on character, setting, events, and sensory details. They can use these notes and photos to help recall specific moments and details to include. Then, they plan the narrative structure of their piece and write a full anecdote to open their story.

Introduction and Prologue

The Introduction starts with a narrator, possibly Crichton himself, speaking on the recent boom in genetic engineering. The narrator laments the influence of money in scientific advancement, and then references the silence around the aforementioned “events” that occurred in Costa Rica. In the Prologue, a doctor stationed in Costa Rica is awakened late at night by a helicopter landing with a seriously injured young man. The “foreman” claims that the man was injured in a construction accident, but the doctor thinks that the injuries look like a maul. The man dies, the helicopter leaves, and the doctor is troubled by what she saw. The chapter closes with the definition of “raptor,” the prehistoric creature.

Guided Reading Prompts and Questions:

- Who do you think wrote the Introduction? Is it Crichton as himself? Someone else?
- How do you think this introduction sets up the conflict of the book?
- How do the sensory details Crichton include in the Prologue heighten the mood of the scene?
- Why include the confusion about what the young man says (“raptor”) and hupia?

Instructional Activities

The strategy I use to assess if students are reading at home is called “quizzers.” I give a one question comprehension question quiz as a reading check. Students get 5 points for

the right answer or 0 points for the wrong answer. I do give 1 point for honesty (“I don’t know” or “I didn’t read”). I usually have 2-3 quizzer questions and students are assigned one. I do give half credit if students correctly answer a question they didn’t have. The rationale is that they should get some points for showing they read at least part of the assigned section.

After writing about their field trip, students should brainstorm research topics for their narrative nonfiction stories. One simple way to do this is to have students come up with three questions they have or things they notice about their city’s natural environment. Students can respond on paper, on a Jamboard, or on a Padlet. The Padlet is useful because students can also attach links; students should also begin to find preliminary sources on their topic at this point to see what is out there. Once the Padlet is created and students have finished their brainstorming, they can narrow down their topic and, on Padlet, these notes can be sorted into different columns so that students and the instructor can see who has the same topic.

A more structured way to brainstorm topics and to activate prior knowledge is to use a SWOT analysis: strengths, weaknesses, opportunities, and threats. Students can come up with examples from their city that fit into these categories, and use things from any category to inform their topic selection. This also helps students highlight the positives instead of just focusing on the negatives.

A more academic way for students to choose their topics is to write a prospectus. Students should write no more than a double-spaced page explaining their topic, why they chose it, and why it’s relevant. They should also include an initial list of resources they will use. The benefit of this assignment is that it models what students will be expected to do in college writing and research. It also helps them set a purpose for their research into their topic.

First Iteration

The main narrative of the novel opens with the Bowman family on vacation in Costa Rica when their young daughter is bitten by a “lizard.” The investigation into what bit her stumps scientists and researchers, who infer that the creature is a basilisk lizard. The foreshadowing continues when a lab assistant, upon seeing the daughter’s drawing of the “lizard” that bit her, asks whose child drew the picture of the dinosaur (Crichton 29).

Guided Reading Prompts and Questions:

- Find an example of foreshadowing.
- How does Crichton poke fun at scientists and the scientific community in this section?

Second Iteration

This section opens with the reader's introduction to the main characters. Readers meet Grant, Sattler, Gennaro, Hammond, Malcolm; Regis makes a reappearance from the Prologue and they make their way to Jurassic Park. At this point, modern readers know that the park is filled with cloned dinosaurs, but readers are along for the ride and putting the pieces together along with Grant and Sattler. Gennaro and Malcolm already know what is happening on the island. This section also provides a lot of initial characterization of Hammond as an eccentric billionaire who does not quite understand the effects of his actions, as well as the conflict of someone within the park trying to steal its secrets.

Guided Reading Prompts and Questions:

- What brings each character to Jurassic Park? What are their major character traits?
- What are Hammonds's motivations for building Jurassic Park? Why do you think he responds so negatively to Malcolm?

Instructional Activities

After students have narrowed down their research topics, they should begin background research. Students should have a thorough understanding of their topic in order to write about it for a general audience. Depending on library resources, students should keep a document of all of their sources and the notes that come from each source. Note-taking can be modeled depending on the class's proficiency with paraphrasing. I use a made-up acronym to help with paraphrasing: ReTFAC. It stands for: read with a purpose, translate the words, flip the sentence order, add a signal phrase, and cite it. It is important that students keep their topic in mind when reading their source and picking out relevant information. They should not be repeating information from source to source. Translating the words and phrases means that students should figure out ways to rephrase things and swap out synonyms. Many students stop paraphrasing there, but the next step, flip the sentence order, is important to completely paraphrase. The sentence structure must be changed. Students can break apart clauses, swap sentences, or join clauses. Adding a signal phrase forces students to read over what they have written and add any transition words or phrases to clarify the relationship between ideas and facts. Citing it is, of course, giving in-text citations.

Depending on library resource access and student abilities, the teacher can support finding sources. Linking Google Drive folders on the original Padlet is a useful way to keep all of the different sources together. Because the project is hyper-local, an effort should be made to find extremely recent sources about the topic in the area in addition to academic studies and essays and scientific background information.

Third Iteration

This section provides a lot of exposition about the park and the animals. It also introduces Arnold, Wu, and Muldoon, who are key characters in the rest of the text. Things begin to go wrong as Nedry steals the embryos and attempts to escape to the loading dock, shutting down the power for the island and putting everyone in danger.

Guided Reading Prompts and Questions:

- Find and copy the most delusional line from this section. (Note: this prompt comes from the prompt “find the most _____ line from this section”)
- Draw and caption one moment from this section.

Instructional Activities

At this point, anchor charts are useful. Establishing all of the characters and their roles, divided by visitors and employees, as well as where on the island everyone is, helps students keep track of the main events as the chaos unfolds. There is no map of Isla Nublar in the book, but I used some fan-made maps found online as the basis for annotating the setting and action locations in the book.

One of the challenging parts of the narrative nonfiction assignment is supporting students in the in-person investigation component. This investigation can serve as the opening anecdote for their story or be incorporated into the body. One relatively simple activity student can do is a walk audit. The walk audit is a tool used by the organization Feet First Philly to survey pedestrian areas and think about access (Walk). The teacher should model the walk audit around the school grounds. After students have been introduced to the five themes (mixed use, transportation connections, designed for people, safety and accessibility for all, and comfort and appeal), they should conduct the audit with the teacher, taking notes on relevant elements of the themes. Then, students can evaluate the school location and surrounding pedestrian area. More information about the walk audit and the in-person investigation component can be found in the Appendix.

Fourth Iteration

The fourth iteration opens with the most iconic scene from the movies: the T-Rex attacking the Land Cruisers. This section is also where characters start to die and Grant and the children are in a fight for their lives. After Malcolm is attacked, he returns to the lodge with Satler and Harding. Regis is ripped apart by a T-Rex, Nedry is killed by the dilos, and there is confirmation that the dinosaurs are breeding.

Guided Reading Prompts and Questions:

- How is Hammond’s characterization evolving?
- How does Crichton create suspense in this section?

Instructional Activities

As students are completing their in-person investigation components, they can work on researching solutions for their topic's problems. Students can research what other cities or countries are doing to solve their issues as inspiration. They can also turn to very current events. For example, in Philadelphia, there was a hotly contested mayoral primary. Students can research what those candidates and the eventual winner pledge to do about their issue and evaluate if they think the solution will work.

An activity students can complete to frame their solutions is "Headlines from the Future." Some iterations of this activity have participants imagine a headline from a future in which their project is a success, but for this unit's purpose, students should think about what a newspaper headline twenty years in the future would say if their problem had been solved. Students should be encouraged to think creatively and be specific about their headlines. They can use this to inspire their solutions research or as a way to synthesize it and provide a wrap up for their narrative nonfiction story.

Fifth Iteration

In this section, Tim, Lex, and Grant continue to run from the dinosaurs. At the lodge, Malcolm continues to lecture Hammond on the flaws with his park, which Hammond incredulously denies. Arnold is killed while Wu attempts to bring the park back under control, and begin to succeed before they discover that the raptors have escaped their pens.

Guided Reading Prompts and Questions

- Who do you think speaks as Crichton's mouthpiece in this section?
- How does Crichton use rising and falling action to evoke emotion in the reader?

Instructional Activities

There is a lot of vivid imagery throughout the novel, and especially in this section. Students should be able to do a close reading of this imagery and explain its connection to the novel's themes. An imagery analysis exercise can help students break down the elements of a passage. First, students identify a vivid quote from this section or from the entire book. Teachers can also pre-print quotes to ensure students pick analyzable excerpts. Then, students copy the quote onto the top third of a blank piece of paper. In the middle of the paper, they should draw the image as it appears in their head. On the bottom third, they analyze the quote. They should identify examples of color, figurative language, sensory details, characterization, and any other relevant element of literature. They should also think and respond to the purpose of the quote in the passage and how it supports one of the novel's themes.

Sixth and Seventh Iteration, Epilogue

In the concluding sections, Tim and Lex defeat the raptors, Wu is killed, and Tim brings the park's computer systems back up and running. Gennaro and the kids stop the cargo ship with raptors aboard from leaving the island, averting disaster. Satler, Gennaro, and Grant also discover the dinosaur nests and theorize that they want to migrate, as birds. Hammond is killed by compys and the survivors are airlifted off the island. While waiting to be released by the Costa Rican government, Grant meets Guitierrez from the first iteration, who implies that more dinosaurs have escaped the island. The novel concludes on an open note, with Guitierrez telling Grant that none of them will be leaving Costa Rica any time soon (PDF 211).

Guided Reading Prompts and Questions

- How do the concluding action scenes link to the foreshadowing elements from the beginning of the book?

Instructional Activities

Once the book is finished, students should discuss the novel as a whole. There are a number of different strategies instructors can use to encourage students to cite direct text evidence when backing up their opinions and inferences. The goal of discussion is to help students make meaning from the text and can also be used as a summative assessment, as there is no formal summative assessment for the book in this unit.

In addition to wrapping up the novel, students should begin to put the pieces of the background research, investigation, and solutions research together into their narrative nonfiction story. Students can revisit *Bringing Back the Woolly Mammoth* or another article to analyze it for its components. Students can use the same organizer that they will fill out with their own information. They should be able to identify the opening anecdote, the types of information contained in the body of the story, and the conclusion that links back to the anecdote. Then, students should put all of their own work into the story planner. This gives students a clear outline for their story's structure.

Cumulative Assessment

There are three components to the cumulative assessment: watching the film, a radio drama mini-project, and drafting the narrative nonfiction story.

When watching the film, instructors can go as simple as a novel and film Venn diagram. There's also the opportunity to have students examine sound in the film, which could prime students for the radio drama mini project.

The radio drama mini-project challenges students to take the written words in the text and turn them into an audio story. Students use voice acting and sounds to help their audience “see” the scene without any written words. The teacher can choose some examples of old radio dramas from the Internet Archive, or students can find their own examples. This helps students understand what they are supposed to be creating. For this project, I let students make a group of any size, including working by themselves. The only caveat is that every group member must speak in the radio drama. Then, once students have chosen their groups, they choose their scene and write a simple two-column script with one column for their dialogue and one column for the sound. Students should heavily refer back to the scene and take dialogue and sounds explicitly in the text. They should only add sounds and dialogue for clarity. Once students have created their script, they should record their dialogue on their phone’s voice recorder or their computer, and should find their sound effects from royalty-free sites like freesounds.com. If students do not have access to editing software at school, they can use the podcast feature on a free site like WeVideo. More information, examples, and rubrics can be found in the Classroom Activities and Appendix.

Finally, students will finish their narrative nonfiction story. Students should take their outline and turn it into a draft. Drafts should be one to two pages single spaced with a modified format for clarity up to the teacher’s discretion. Students should have the opportunity to conference with the teacher and with each other before submitting the final draft.

Classroom Activities

Lesson 1: Radio Drama Mini-Project

Standards:

CC.1.3.11–12.C Analyze the impact of the author’s choices regarding how to develop and relate elements of a story or drama.

CC.1.3.11–12.G Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text.

CC.1.4.11–12.U Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

CC.1.5.11–12.F Make strategic use of digital media in presentations to add interest and enhance understanding of findings, reasoning, and evidence.

Objectives: SWBAT interpret a written text in audio form; SWBAT use digital tools for a creative project

Duration: 5 class periods or 1 week

Materials:

- Novel
- Radio drama examples from the Internet Archive
- Model script and recording (Appendix)
- Blank script (Appendix)
- Voice recorder app
- Podcasting software like WeVideo
- Rubric (Appendix)

Steps:

1. Introduce the project. Before students pick their own scenes, explain that you will look at some examples. Select a few old radio drama examples or allow students to find their own examples. Discuss what students “see” in their minds. What do they notice about the relationship between dialogue and sound?
2. Allow students to make groups of any size, including working individually. Explain that all students must speak on the final product.
3. Allow students to choose their scene from the text.

4. Review the teacher model and do a sample grading using the rubric.
 - a. Listen to the finished product, examine the script, and examine the original scene in the novel.
 - b. Grade teacher sample using project rubric, discussing student rationale for the grades.
5. Students write their scripts and submit for teacher feedback.
6. Once their script is finished, students should record their dialogue and find their sound effects.
7. Once they have recorded and downloaded their sounds, students should edit their radio dramas into a continuous recording.
8. Students should submit the share link to their finished radio dramas and teacher should organize a “listening party” in which the class listens to each others’ work in chronological order.

Lesson 2: Walk Audit

Standards: CC.1.4.9-10.V: Writing: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Objectives: SWBAT model an in-person investigation and apply themes to our local environment.

Duration: 1 class period (approximately 45 minutes)

Materials:

- Walk audit theme slideshow
- Student handout

Steps:

1. Preparation: prepare the sample walk audit for your school's location. Pick a short route and 3 specific locations that students will stop to take notes at.
 - a. For more detailed information about the themes, Feet First Philly has a walk audit webinar available on their website
 - b. To simplify for students, choose themes that will be relevant for each stop
2. Introduce the five themes to students and explain the task. Explain that the purpose of the audit is to give students an example of an in-person investigation they can complete.
 - a. Mixed Use/Varied Environment - there are a variety of structures that fulfill a variety of purposes (government, business, groceries, housing, etc)
 - b. Designed for People - designed for residents/pedestrians to use the features like benches, trash cans, etc.
 - c. Transportation Connections - close to public transportation
 - d. Safety and Accessibility for all - people of all abilities can access features of the area
 - e. Comfort and Appeal - the area is visually appealing and nice to be in
3. Take students outside for the audit. At each stop, point out what you notice. Encourage students to take their own notes or record.
4. At the end, ask students to complete the last box of giving the walk an overall rating using language from the five themes and informally discuss students' conclusions.

Lesson 3: Narrative Nonfiction Story Model and Planner

Standards:

CC.1.2.9-10.C: Reading Informational Text: Apply appropriate strategies to analyze, interpret, and evaluate how an author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

CC.1.4: Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

CC.1.4.9-10.V: Writing: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Objectives: SWBAT plan their narrative nonfiction story by synthesizing all of their research and experiences.

Duration: 3 class periods (approximately 2 hours)

Materials:

- “Bringing Back the Woolly Mammoth”
- Story Planner (Appendix F)

Steps:

1. Explain that students will reverse-engineer a published article as a model for their own stories.
2. Review the components of the organizer. If students have not already read the article, read the article together.
3. Guide students through the organizer. They should be able to identify the opening anecdote and the type of information in each paragraph. Once they have finished reading, discuss the big idea or take away from the article.
4. Answer any remaining questions about the article or planner.
5. Then, students should work on planning their story on the planner. Explain that students should first think about what they want readers to take away from their

story. Then, they should synthesize all of their notes and decide where it goes in the organizer.

6. Once students are finished with their organizer, they should receive feedback before moving on to the first draft.

Resources

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Lepore, Jill. "Bringing Back the Woolly Mammoth." *The New Yorker*, 7 Aug. 2022, www.newyorker.com/magazine/2022/08/15/bringing-back-the-woolly-mammoth. Accessed 27 Apr. 2023. This is the article used as a model for the narrative nonfiction story.

Lustgarten, Abram. "How Climate Migration Will Reshape America." *The New York Times Magazine*, 15 Sept. 2020, www.nytimes.com/interactive/2020/09/15/magazine/climate-crisis-migration-america.html. This is one of the informational texts that is thematically connected to the novel's themes.

"Old Time Radio." *Internet Archive*, 2019, archive.org/details/oldtimeradio. This is a huge repository of old radio dramas to use as models for the mini-project.

Appendix

Appendix A: ELA Common Core Standards for Grades 9-10, 11-12

Note - ELA standards are meant to be taught concurrently throughout the year. This is a selection of the most relevant ones for this unit.

CC.1.2: Reading Informational Text: Students read, understand, and respond to informational text – with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.

CC.1.2.9-10.C: Reading Informational Text: Apply appropriate strategies to analyze, interpret, and evaluate how an author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

CC.1.3: Reading Literature: Students read and respond to works of literature - with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.

CC.1.3.9-10.G: Reading Literature: Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment.

CC.1.4: Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

CC.1.4.9-10.V: Writing: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CC.1.5: Speaking and Listening: Students present appropriately in formal speaking situations, listen critically, and respond intelligently as individuals or in group discussions.

Appendix B

Note - these resources are very particular to the time and place of the assignment. The instructor will have to modify this list.

ENVIRONMENTAL JUSTICE NARRATIVE NONFICTION ASSIGNMENT Interviews/In Person Investigation

You will conduct at least one in person interview or investigation. This could include talking to an expert in the field, a neighbor or someone you know involved in the issue, or attending an event and taking notes yourself. This component will serve as the structural frame for your story as well as give you more information about your topic.

Who could you talk to?

- Do you know your block captain?
- Do you know any city employees?
- Do you know any researchers in your field?

What could you do?

- Attend a neighborhood clean up
- Attend a mayoral debate or event
- Complete a walk audit
 - [Template is here](#)
- Observe your surroundings (in an organized/sustained manner)
 - Air pollution
 - How do you get to school? [What is the “impact” of you getting to school?](#) (emissions, etc) Conduct an informal survey of your classmates; what is your combined impact?
 - Water pollution
 - Walk audit - focus on where rain water puddles/gathers
 - Explore permeability and impermeability - pour water on different surfaces in your neighborhood or neighborhood and around school and recreation areas and see how fast it absorbs
 - [Use this map](#) to identify green rainwater infrastructure around you. Go check it out and write about it!

- Litter
 - Observe the school's courtyard...where does all the trash in the yard come from?
 - Observe your block's trash day. At what time do people put out their bags? Are things loose? Is the trash and recycling picked up on time? Is there trash left on the street?
- Light Pollution
 - [Click](#) for a few at-home science experiments to measure light pollution
- Transportation
 - Observe bike lanes and walking paths
 - Observe the public transit experience...how do you get to school? [What is the "impact" of you getting to school?](#) (emissions, etc)
- Go for a nature walk or to a nature preserve
 - Wissahickon Park
 - John Heinz
- Go to JJ Tiziou's Walk Around Philadelphia art exhibit at Studio 34 in Cedar Park (West Philly)
 - [Click here for detailed info](#)

Appendix C

JURASSIC PARK WHOLE BOOK DISCUSSION QUESTIONS

The majority of *Jurassic Park* is written from Grant's perspective, but perspective changes so often throughout the novel that Grant is not necessarily the sole protagonist. Make a case for Tim as the protagonist of this novel.

Do you agree with Malcolm's general assessment of scientists? Why or why not?

Michael Crichton was a noted climate change denier. He believed that the science of environmentalism and politics were too entwined, and also that we were too trusting of scientists. What in the book indicates this? What in the book refutes (disagrees with) this? (refer to page 413)

Many of the characters die grisly deaths. Discuss each of these characters' motivations (what brought them to JP) and if their death was "deserved".

- Nedry (pages 195, 218)
- Regis (pages 2, 107, 237)
- Arnold (pages 155, 346)
- Wu (pages 138, 220, 374)
- Hammond (page 64, 220, 439)
- Malcolm*

Why do you think the characters that survived, survived?

- Tim
- Lex
- Grant
- Satler
- Gennaro (page 64)
- Muldoon (page 163)

What do you think is the significance of the hupia reference from the Prologue?

Was the main flaw or error in the idea of Jurassic Park rooted in technology, science, or humanity?

What do you think about the ending of the book?

Who was your favorite character? Why?

Appendix D

RADIO DRAMA SCRIPT

CHARACTERS: Tina

SETTING: Costa Rican beach

DIALOGUE	SOUND
<p>"Look! <i>Look!</i>"</p> <p>"It just went into the jungle! I don't think it was a squirrel monkey...I think it was just another howler."</p> <p>"Hey...According to this book, the beaches of Cabo Blanco are frequented by a variety of wildlife, including howler and whitefaced monkeys, three-toed sloths, and coatimundis.' You think we'll see a three-toed sloth, Dad?"</p> <p>"Later! I'm going to see if there's a sloth"</p> <p>"Do sloths make a chirping sound?"</p> <p><i>Sharp inhale</i></p> <p>"A new animal for my list! What are you? I've never seen you before."</p>	<p><i>Car driving</i></p> <p><i>Flipping pages</i></p> <p><i>Parking; Car door slamming</i></p> <p><i>Beach sounds - waves crashing, seagulls, etc</i></p> <p><i>Running on sand; heavy breathing</i></p> <p><i>Heavy rustling/kicking leaves</i></p> <p><i>Chirping and rustling</i></p>

<p><i>Muttering to self</i> "Dark green with brown stripes, three-toed footprint...you're cute!"</p> <p>"Sorry, I just don't have anything"</p> <p><i>Gasp of surprise</i> "Ow, that pinches!"</p> <p>"What are you doing?"</p> <p><i>Screaming</i></p>	<p><i>Rustling through a backpack for something to write with and a notebook</i></p> <p><i>Chirping and squeaking</i></p>
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RADIO DRAMA SCRIPT

CHARACTERS:

SETTING:

DIALOGUE	SOUND

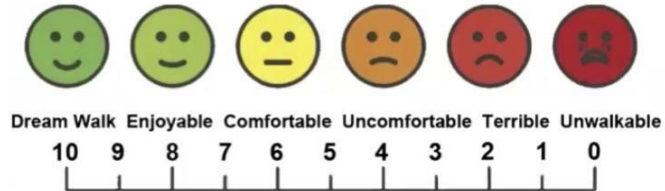
JURASSIC PARK DRAMATIC SCENE READING

	3	2	1
Script	Script was complete; script was easy to follow; script had a balance of dialogue and sound effects	Script was not easy to follow (not written in order) or script was missing dialogue or sound effects	Script was incomplete; no sound effects
Acting	All performances were dramatic; emotions were clear	Some performances or parts were emotionless/monotone	No inflection or attempt at acting
Finished Product (x2)	Final recording is understandable and engaging; as good as hard work could make it; listeners can "see" the scene	Final recording is understandable; with more work, recording would be great	Final recording is too long or too short; minimal effort put into recording
Workflow	All group members worked hard and finished targets mostly on time	All group members contributed; some targets were met on time	No drafting or targets were met on time

Appendix E

What are we going to do?

We are going to walk around the school block and evaluate it. For each “stop” or area, you are going to take notes on the aspects of “walkability” (these can be audio notes or a video or handwritten) and evaluate the “stop” on the following rating scale:



Rating Scale

- Mixed Uses
- Transportation Connections
- Designed for People
- Safety & Accessibility for All
- Comfort and Appeal



Think of all users. Who are the people who walk in or through this space everyday? Imagine young children, elderly, those on bikes, transit users, people pushing a stroller or grocery cart, or people with disabilities (e.g. blind, deaf, in a wheelchair).

Be Safe! Safety first, remember we are walking in the real world. Look out for yourself and others crossing streets, in low lit areas, and on uneven walking surfaces.

Varied Environment

Different types of destinations within walking distance

Residential, parks, restaurants, other public and commercial spaces



Image: PMI 2016

Designed for People

Designed to reward not punish:

Bike racks, benches, trash cans, pedestrian signals at intersections

Storefronts close to the sidewalk



Image: latrail.org

Transportation Connections

Pedestrian, bicycle, and transit networks are comprehensive and connected to each other



Image: Adam Coppola

Safety and Accessibility for All

Safe for all ages and physical abilities

Curb ramps, cross walks, bumpouts, leading pedestrian intervals



Images: Longbeach.gov, Richard Drdul

Comfort and Appeal

Walking/rolling should be fun,
easy, and rewarding

Murals, green spaces, wide
and well-lit sidewalks, plantings



Images: Michael Boren, WRTI.org

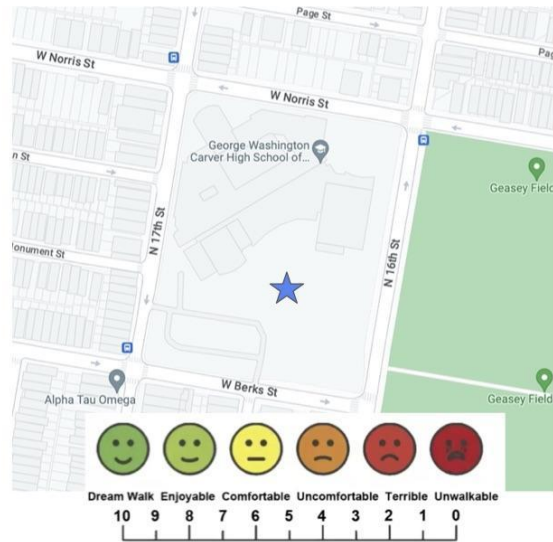
Step 1: School Location

Varied Environment/Mixed Use - what different types of locations and amenities are within walking distance?

Designed for people - are there bike racks, benches, or trash cans? Are there other ways for people to participate in the physical environment?

Comfort and appeal - are there green spaces, murals or other art, lights? Is there shade?

Safety and accessibility for all - are there curb cuts; are the sidewalks in good shape; are there crosswalks? Is driving signage clear?

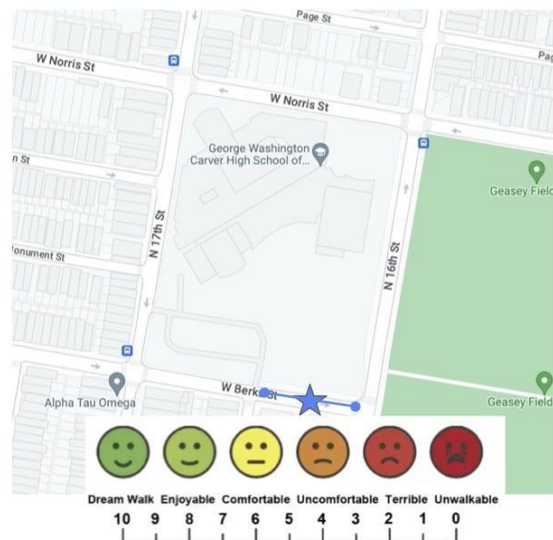


Step 2: Corner of 16 and Berks

Transportation connections - are transportation options comprehensive (complete) and connected (can you easily take multiple forms of transportation)?

Safety and accessibility for all - are there crosswalks? Pedestrian symbols? Are the sidewalks in good repair? Are there a lot of cars?

Designed for people -



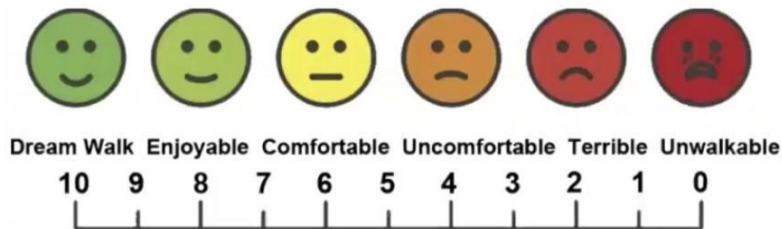
Stop 3: Northwest Corner

Comfort and appeal - are there murals, plantings, wide and well-lit sidewalks? Is it visually appealing? Is there shade?

Safety and accessibility for all - are the sidewalks and curb cuts in good shape? Are cars blocking pedestrian views? Are there crosswalks and pedestrian signals?



Overall walk rating:



Using the 5 themes, justify your rating:

Appendix F

NARRATIVE NONFICTION ORGANIZER

BIG IDEA - What do you want readers to take away from your story?

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ZOOM IN - ANECDOTE - How will you set the scene? How will you get to the purpose or theme?

Use your notes from your in-person investigation or interview for the anecdote.

SETTING	
Where?	When?
Sensory details - sight, smell, taste, hear, touch:	

CHARACTERS - PEOPLE INVOLVED	
Who are they? (names, relationships)	What are they like? (age, appearance, personality)
1.	
2.	
3.	

PLOT

What happened? What did you do?

ZOOM OUT - Use your background research for this part

What's the history of the topic? In general? In Philadelphia?

What is the science behind this topic?

**What's the current research or activism or happenings with this topic?
What are some current solutions?**

ZOOM IN - Pull all the pieces together; end with your anecdote and some "food for thought"

This can be a loose idea for now - what do you want to end on?