Constructing Environmental Racism at the US/Mexico Border & Mapping Borders in Our Communities: A Unit Plan

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Holly Hardin is a queer, working-class educator from the rural foothills of North Carolina, but has spent most of her adult life teaching and organizing in Durham, NC. She has taught in a variety of public school settings, but particularly appreciates middle schools which incorporate local project-based learning, youth-led participatory action research, and abolitionist practices into the pedagogy. Holly looks forward to applying identity-based themes as well as the history of the borderlands region into the student projects: from investigating the impacts of climate change on their communities to studying their own connections to food. In addition to teaching, she is a community organizer, most recently focusing on issues of education and immigrant justice, as well as doing ongoing work with Southerners On New Ground, a home for LGBTQ liberation across all lines of race, class, abilities, age, culture, gender, and sexuality in the South. When she is not teaching or organizing, Holly spends her free time with babies, baking, or enjoying the fine slow details of queer country life in the city.

Subject Area: Environmental Science, Project Based Learning, Interdisciplinary Classroom Settings

Keywords: Science (Chemistry, Ecology, Air Pollution, Climate, Environmental Science), Environmental Racism, Border Wall, Migration, US/Mexico Border, REAL ID act, Geography/Mapping

Grade Level: 6th – 12th (Created for use in a 7th/8th grade classroom, but could be applied and utilized across grade levels)

Time Required to Complete:
- PART ONE: 1-2 weeks (each activity will take 1-2 days, with the seminar needing more time for preparation)
- PART TWO: 1 week for Introduction; Ongoing (1 month-1 year) for YPAR project

Instructional Objectives and Student Learning

Teaching Tolerance’s Social Justice Standards:
Diversity 10. Students will examine diversity in social, cultural, political and historical contexts rather than in ways that are superficial or oversimplified.
Justice 12. Students will recognize unfairness on the individual level (e.g., biased speech) and injustice at the institutional or systemic level (e.g., discrimination).

Justice 13. Students will analyze the harmful impact of bias and injustice on the world, historically and today.

Justice 14. Students will recognize that power and privilege influence relationships on interpersonal, intergroup and institutional levels and consider how they have been affected by those dynamics.

Action 16. Students will express empathy when people are excluded or mistreated because of their identities and concern when they themselves experience bias.

Action 17. Students will recognize their own responsibility to stand up to exclusion, prejudice and injustice.

Action 20. Students will plan and carry out collective action against bias and injustice in the world and will evaluate what strategies are most effective.

**NC Standard Course of Study (7th & 8th grade)**

**Science:**

7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.

8.E.1 Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.

8.L.2 Understand how biotechnology is used to affect living organisms

8.L.3 Understand how organisms interact with and respond to the biotic and abiotic components of their environment.

8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

**Social Studies:**

7.C.1 Understand how cultural values influence relationships between individuals, groups and political entities in modern societies and regions.

7.E.1 Understand the economic activities of modern societies and regions.

7.G.1 Understand how geography, demographic trends, and environmental conditions shape modern societies and regions.

7.G.2 Apply the tools of a geographer to understand modern societies and regions.

7.H.2 Understand the implications of global interactions.

8.C&G.2 Understand the role that citizen participation plays in societal change.

8.E.1 Understand the economic activities of North Carolina and the United States.

8.H.1 Apply historical thinking to understand the creation and development of North Carolina and the United States.

**Introduction**

The U.S.-México border region, like many imposed and enforced borders of control, is a politically contentious region, and the present moment is not an exception. As with any crisis connected to
capitalism, a legacy of colonialism, and imperialism we see issues of environmental extraction and
destruction arise. The border is no different. Similarly, the South, where I call home, has its own
internal borders, many of which have been affected by issues of environmental racism as well. One of
the first major examples of environmental justice organizing happened in 1982 in response to the
building of a PCB contaminated landfill in a predominantly Black community in Warren County, NC.

In my research, I stumbled across the work of Dr. Carolina Prado- a queer Latinx women doing
environmental justice work with communities on the border. To be able to bring my students the work
of someone who not only looks like them, but someone who is partaking in a methodology that
centers and puts the tools in the hands of those directly impacted is truly extraordinary. Using
community-mapping methodologies in Tijuana and community air monitoring in San Diego, Prado
explores how the material realities of the borderlands impact how community members in colonias or
neighborhoods experience environmental justice.

For those of us in the rural south and Appalachia, the concept of “colonias” in the border region can be
easily compared to the similar crisis here- where many communities have no access to clean drinking
water or working sewer/sanitation services. These issues in both areas are exacerbated by climate
change. For instance, rural communities already dealing with exposure to raw sewage in the US Black Belt now also face increasing temperatures and more frequent flooding, amplifying their public health
issue. Appalachia faces growing water issues, including the need for upgrades and contamination
caused by byproducts of the fossil fuel industry- mining and waste product disposal. It’s likely there are
parallels in other places too- I’d argue that almost any community can map their own spaces and
borders—of access, gender, class, ethnicity, race, economics- and see them align with issues around
resource extraction and environmental pollution.

Additionally, in 2005, as part of the “War on Terror”, the REAL ID Act was created to allow the
Department of Homeland Security total discretion in waiving any previous law/act in the name of
national security. Rarely used previously, it has made a resurgence here in the borderlands since 2018,
and has been brought back to life to expedite building more physical border wall. DHS can and has
waived any US law that might otherwise prevent the construction of a wall of the southern border. It
has already been used to construct walls in Hidalgo County, Texas, Cameron County, Texas, and
Southeastern New Mexico, bypassing at least 25 laws in the process, ultimately turning the
borderlands into an unprotected area, without civil and environmental rights.

These lessons or unit looks at several questions and has students explore them through history, science
experiments, case studies, interviews, and eventually their own participatory action research, thus
redefining who has the expertise to produce knowledge in our world:
  1. Does pollution recognize borders?
  2. What does environmental racism mean?
  3. Are there ever reasons for certain acts that provide protection to the environment, culture, and
     people be voided?
PART ONE: Constructing Environmental Racism at the US/Mexico Border

Guiding Questions
1. Does pollution recognize borders?
2. What does environmental racism mean?
3. Are there ever reasons for certain acts that provide protection to the environment, culture, and people be voided?
4. What is the connection between borders, walls, and environmental racism?

Materials and Resources

PART ONE: Constructing Environmental Racism at the US/Mexico Border

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Materials and Resources

Activity 1:
3 Photocopied Maps, each cut into puzzle pieces (the same number of pieces as group members)
- Colored Pencils/Markers
- Tape

Activity 2:
For each group:
- Recording Sheets (one for each student)
- 2 containers (cups or small bins)
- A flat surface (a tray or plate)
- A straw for each group member
- Sink or access to water
- A large bin/bag of soil
- A bucket for “contaminated” soil to be dumped
- 3 pipettes
- 3 spoons
- 6 medicine cup size containers, each one filled with one ingredient below:
  - Sprinkles
  - Instant Coffee
  - Cocoa Powder
  - Corn Syrup (pre-mixed with red food coloring)
  - Vegetable Oil
  - Water mixed with food coloring (choose a dark color)

Activity 3:
- Medium to display research depending on your classroom resources/needs (poster board/markers; computers/iPads)
- Computers for research or printed handouts
- REAL ID Act Planning Guide
- REAL ID Act Gallery Walk Sheet
- Article: “The Little-known Law That The Trump Administration Is Using To Build A Border Wall”

Activity 4:
- Seminar Questions and Reflection Sheet
- Completed REAL ID Act Gallery Walk Sheet (from Activity 3)
- Readings:
some background historical and current political context around migration to the United States from the South)

- Parker, Laura. “Six ways the border wall could disrupt the environment.” National Geographic. Jan 10, 2019.
- NPR’s Story 2: Drawing a Line & Story 3: Fence Facts

ENGAGE, EXPLORE, EXPLAIN: Instructional and Lesson Activities

Activity 1: Maps- Human Choices and Impacts

1) Photocopy area of the US/Mexico border region and cut into random sections, like puzzle pieces, so that each student has one piece. Pass out the pieces randomly, so that students don’t know where their land might fit.
   a) Ask students to look at their pieces of the map. What do they notice? (rivers, mountains, etc.) Can anyone tell where we are located?
2) Tell students the first step of the assignment is for everyone to design the piece of land as they choose. (Brainstorm on the board ways humans use land). Reassure them that there is no right or wrong way to design their plots of land.
3) Once completed, groups will put them together, and see how one might affect another:
   a) On your individual piece, what environmental impact did your choices have on people, animals, water, air, or the land?
   b) How do our development choices affect one another? How did that make you feel?
   c) Does pollution recognize borders? Why or why not?
   d) Were any areas “safe”? Why might some areas get protected and others don’t?
   e) What could we do to help protect the land, water, animals, and people? Why might this be hard at a border region?

Activity 2: Pollutant Investigation

In this hands-on simulation, students will be given three different environments: a bin of water, a bin of soil/sand, and a flat surface, to explore how pollutants might move through water, the ground, and through the air. The students will explore 6 pollutants, all simulated by safe materials found in the kitchen.

1) Place a small amount of your pollutant into the water. Observe what happens & record. Give the bin a shake or add some movement if needed.
2) Place a small amount of your pollutant into the soil. Observe what happens & record. Give the bin a shake or add some movement if needed.
3) Place a small amount of your pollutant on the flat surface (tray or plate). Using the straw blow air towards the pollutant without touching it. Observe what happens & record.
4) Repeat #1-3 with the other pollutants. If needed, change your bins of water & soil between tests.
1) Revisit the brainstorm answers from the first activity to the question “What can we do to help protect the land, water, animals, and people?/Are there things in place already to help do this?”
2) Introduce the text to the students. Share that they are going to read an article about the REAL ID Act. Explain to students that this act was created in 2005, in response to 9/11. “What was the mood and political climate during this time period?” Also, share with them that this act has rarely been used until recently (2018), which they will learn why in the text.
3) Pass out the article and have students read and annotate according to your class needs. (Individually, pairs, out loud, small teacher group)
4) Render the text: Each student should pick 1-2 lines for any reason (it could be a line they don’t understand or a line they like, a line they think is really important or something that just stood out to them for why they picked it). Go around the class and have everyone read that line out loud, offering no explanation. After they have shared their lines, ask students “What became more audible for them from hearing those lines out loud? What are the important points?” Make a list on the board of important notes or points.
5) With a partner, take 5 minutes to summarize the REAL ID Act (what it is, who it affects, when it can be used). Have pairs then join another pair to combine their summaries into one written one. Share these out loud.
6) In the article, it poses the question: "Why should Americans living in our border communities not be entitled to the same federal protections that other Americans enjoy?" Have students break this down in groups- what federal protections in the article are being denied to border communities? What federal protection historically have been denied to border communities? *(This is a good chance to share some history of the border region- the creation of the US/Mexico border; the history of Texas Rangers and border patrol; etc. or it would work well to studying this topic simultaneously in a humanities class)*
7) Provide each group a pre-existing act that can now be ignored according to this act, in order for more wall to be built:
   a) Endangered Species Act
   b) National Environmental Policy Act
   c) American Indian Religious Freedom Act
   d) Antiquities Act
   e) Clean Air Act
   f) Native American Graves Protection and Repatriation Act
   g) Safe Drinking Water Act
8) Have each group research the act using the links in the REAL ID Act article, as well as the website [https://www.usa.gov/laws-and-regulations](https://www.usa.gov/laws-and-regulations).
9) Using a medium of their choice and based on the resources in the classroom, each group should create a product (example: poster, short video/iMovie, Clips, slide presentation) to summarize the meaning of their act, why it is important, who or what it benefits, and any other specific
details they think are important. An optional planning guide as a scaffold for students is included.

10) Once all groups have completed their products, have a gallery walk of all the products, where each student should complete the REAL ID handout

**Activity 4: Socratic Seminar: What is the connection between borders, walls, and environmental racism?**

1) Pass out the Seminar Handout (Pre & Post Seminar Reflections) and the Readings/Artifacts. Provide students with time to complete the readings & prep work in class.
2) On the seminar day, have students move the chairs into a circle, and bring their prep materials to the circle.
3) Begin by asking students to write one word down that the seminar brought to mind. Then go around and have everyone share this word with no explanation.
4) Ask if any students have a question that they would like to begin the seminar with, or ask the first question, if needed.
5) Observe and make notes of the student discussion, providing support where needed.
6) End the seminar, by having students close with a one phrase takeaway or question they are leaving with.
7) Have students complete the post-seminar reflection.

**EXTEND/ELABORATE: Additional Learning**
Blackout poetry on a selected seminar reading after the seminar in order for students to more deeply connect, interpret and demonstrate their learning.

Further exploration of environmental racism- historically (with its roots being based in NC activism in Warren County) and locally (current examples in your region).

Students can explore deeper the legalities around the REAL ID Act, looking at the specific use of it in New Mexico to construct more border wall, as well as any more current uses of the act.

Explore deeper science related concepts on habitat fragmentation. Look at examples of organisms that have been affected by habitats being cut off by physical barriers, and then hypothesize/research what organisms might be most affected by a US/Mexico border wall.

Examine environmental racism occurring on other borders, such as the pipeline construction through the US/Canada border, or Palestine.

Study how climate change is greatly affecting migration rates and serving as a cause for migration.

Continue exploring the NPR website on the [Borderlands](http://borderlands).
EVALUATE: Assessment
Students will be assessed formally through their participation and seminar reflection, which includes answering the essential questions.

Students will be assessed for understanding throughout through brief journaling activities, think/pair/shares, and completion and engagement in activities.

**PART TWO: Mapping Borders in Our Communities**

**Guiding Questions**
1. What environmental borders exist in the world? Exist in our town? What causes them?
2. What are the intersections between race, diversity, equity and environmental outcomes?
3. Why is it important for communities to be involved in their own environmental solutions?

**Materials and Resources**

**Activity 1:**
- paper/pencils
- Google Maps or paper maps of the area you live in

**Activity 2:**
- Case Study Handout
- Website:
- Computers/Internet Access

**Activity 3:**
- Interview Handout
- Computers/Internet Access
- Projector & Speakers

**Activity 4:**
- Computer/Internet Access
- Projector & Speakers
- Big Paper
- Paints/colored pencils/construction paper/glue
- Local issues readings (*these are specific to Durham, NC or the South)*:
ENGAGE, EXPLORE, EXPLAIN: Instructional and Lesson Activities

Activity 1: Maps of Our Communities

1) What can we find on maps? Brainstorm a list on the board of things people can show on maps.
2) Ask students to draw a map of their own communities and what is important to us in them.
3) Have students share with a partner or small group. Give each person a minute to share.
4) Give students another 5 minutes to add more details to their maps.
5) Have students place their maps on their desks & then everyone silently walk around the room and look. No commenting, just seeing what they notice (themes, differences, etc.).
6) In a class discussion let students share: How are our maps different? What things are special to us? Why do we want to protect these areas and keep them safe? Are there borders in our communities- what are they, what defines them? (Consider roads, land uses, class and racial segregation, urban vs rural areas) How do our communities define us?

Activity 2: Environmental Indicators: Case Studies in Tijuana, San Diego, and beyond

1) With a colored pencil have students examine their maps from Activity 1 and circle any things on their maps that they think might impact their health or the environment in positive or negative ways. They may also add details.
2) Share and discuss. Make a list of land uses that have positive and negative health/environmental impacts within their communities.
3) Examine San Diego and Tijuana on google maps individually or in small groups. What do you notice? What stands out to you? How are they the same? Different? What land uses are similar or different to where we live? Make a similar list of land uses for this region- those having positive and negative health/environmental impacts.
4) Share with the students how a scientist and community organizer named Dr. Carolina Prado completed work in both these cities. Read and annotate the one page case study about her work together or in pairs.
5) As students finish, have students openly explore the variety of environmental indicators on map overlays provided by the EPA. Encourage them to look both at the border region, but also
to notice trends locally and other places in the United States. When everyone is done reading, go over takeaways from the reading as a class. Then, share some of the specific tools on the maps before allowing students to continue exploring.

6) Exit slip: Write down one interesting trend you noticed on the online environmental indicator maps.

**Activity 3: Interview (virtual or in person) with Dr. Carolina Prado or local environmental justice organizer/academic (if substituting in a different person, be sure to give students background info before the interview)**

1) Re-read Dr. Prado’s bio, highlighting her as a queer Latina scientist and community organizer. As a warm-up, go over Dr. Prado’s work, asking students to recall what they learned from yesterday. What is unique about her work compared to other scientists we know?

2) In small groups, have students discuss and complete the pre-interview handout or recording on big paper the questions they might ask.

3) Meet with small groups and help students formulate questions, highlighting at least one per group that you encourage them to ask.

4) Conduct the virtual or in-person interview.

5) Complete reflection questions on the pre-interview handout.

**Activity 4: Applying these case studies locally: Beginning the YPAR process**

1) For classes that have not done YPAR previously, begin with resources here: [http://yparhub.berkeley.edu/get-started-lessons/introduction-to-participatory-action-research](http://yparhub.berkeley.edu/get-started-lessons/introduction-to-participatory-action-research)

2) For classes that have done YPAR, begin by sharing with the class that they are going to be completing a local project in the spirit of the research we’ve been studying in our own area.

3) As a whole class, re-watch the student made video: [The Air We Breathe Matters](#)

4) Have students cycle through four stations around the room to discuss, answer, and record the following (alternatively, have students self-select and go to just one station, knowing that they will later present to the class their findings):
   a) Why is it important for communities to be involved in their own environmental solutions? (big paper/markers)
   b) What are your dreams for our community? Think about your map- what would you change? Draw/paint/design this community (paper/paints/colored pencils/paper/glue)
   c) Are there environmental justice issues in our area? Look at local issues readings & pull out main points. (Durham, NC & Southern specific readings)
   d) Can students do real work? What is inspiring? What seems hard? Explore the work that latino youth have done in the Salinas Valley investigating environmental chemical exposures. (Youth article)
EXTEND/ELABORATE: Additional Learning

In Activity 2, if NAFTA & maquiladoras have not been previously discussed, provide additional content/lessons to accompany the case studies in Tijuana and San Diego. Look at the human and environmental impacts of NAFTA and factories based in Mexico.

In Activity 2, connect the San Diego work on air pollution to previous science lessons on particulate matter and air pollution. If not previously studied, be sure to provide hands-on examples and science background on this topic.

For those in the rural south and Appalachia, the concept of “colonias” in the border region can be easily compared to the similar crisis there—where many communities have no access to clean drinking water or working sewer/sanitation services. These issues in both areas are exacerbated by climate change. It’s likely there are parallels in other places too, and I would encourage teachers in these two locations to highlight these similarities and align discussion on borders and environmental racism.

On the border (and beyond), we also see environmental racism issues that impact our schools as well, and are often tied into other issues of gentrification. One example that would be worth looking at is the work of Familias Unidas del Chamizal in the Duranguito neighborhood of El Paso.

EVALUATE: Assessment

This activity sets students up to be on track to continue into the YPAR process, tackling an environmental issue in their own community (potentially neighborhood mapping or air quality monitoring like Dr. Prado’s work), starting with defining an issue. Berkeley’s YPAR website provides a lot of information on how to facilitate this process with students. YPAR is a process that takes time. If you are a school that is already doing project based work, have freedom in curricular choice, or teaching environmental science as part of an elective, this could be a natural addition. If you are a school that is not doing those things, I still encourage you to explore YPAR and consider pushing yourself or your administrators for including this into your current curriculum.

More about Youth Participatory Action Research from the website: “YPAR is an innovative approach to positive youth and community development in which young people are trained to conduct systematic research to improve their lives, their communities, and the institutions intended to serve them. YPAR is a cyclical process of learning and action – research is done not just for the sake of it but to inform solutions to problems that young people themselves care about. YPAR can be useful for any young people wanting to make a difference, and is an especially powerful approach for young people who are experiencing marginalization due to racism, sexism, homophobia, transphobia, classism, ableism, or other forms of oppression. YPAR can: Redefine who has the expertise to produce knowledge to our world — not just professional adult researchers but young people who are living the issues they are
studying. **Provide** skills in inquiry, evidence, and presentation that are important to young people’s development as students and agents of positive change in schools and communities. **Generate** findings that provides insights into issues faced by young people that they themselves experience, as well as the resources that matter in helping solve those issues. **Promote** young people’s sociopolitical development and psychological empowerment such that they understand the roots of problems facing their communities and have the skills and motivation to take action. **Evaluate** programs, policies, and practices that affect young people.”

**Accommodations and Modifications**

Some accommodations and modifications to consider are as follows:

1. Provide seminar readings and articles at different levels or languages when needed through sources such as Newsela.com
2. Do classroom/outloud/small group readings when needed to ensure understanding.
3. Outline the material for the student before reading a selection.
4. Reduce the number of pages or items on a page to be completed by the student.
5. Break tasks into smaller subtasks.
6. Provide additional practice to ensure mastery.
7. Provide written and verbal instructions for each task, and ask students to repeat directions back to confirm understanding.
8. Allow students to respond verbally or with prompts if needed.
9. Create a word wall that is accompanied by an image or photograph created by students for each new vocabulary term.

**Additional Teaching Resources**

**Border Betrayed** has an excellent series of articles about environmental health on the border: ““The way water moves underground, the way sewage moves underground, there’s no differentiation between where the border is,” Reynolds says. “There is definitely the potential for cross-contamination on either side of the border.””

**Scalawag** and **Southerly** has a large selection of article about environmental justice in the South.

ToxTown is a [website](#) and [map](#) from the National Institutes of Health that explores the effects of toxins on communities.

**“The Globalization of Environmental Justice: Lessons from the U.S.-Mexico Border”** highlights one community’s struggle against industrial hazardous waste. It then considers larger regional efforts to develop cross-border environmental justice collaboration, and a national campaign to create more authentic right-to-know laws in Mexico. Northern Mexico also provides a point of departure for a broader analysis of the promise and limits of environmental justice in Latin America.
The **Border 2020 Program** is the latest environmental program implemented under the 1983 La Paz Agreement. It builds on the Border 2012 Environmental Program, emphasizing regional, bottom-up approaches for decision making, priority setting, and project implementation to address the environmental and public health problems in the border region.

**Water Matters: Water Insecurity and Inadequate Sanitation in the U.S./Mexico Border Region** highlights sanitation issues and water insecurity at the border. Over the past three decades, much progress has been made in providing water and sewer service to many colonias in the U.S./Mexico border region. However, 134,419 people living in 604 colonias in the border region do not have access to public water systems and/or sewer services.

Cuauhtin, Tolteka; Zavala, Muguel; Sleeter, Christine; Au, Wayne. “Rethinking Ethnic Studies.” Rethinking Schools, 2019.

Rethinking Ethnic Studies provides an excellent resource for teachers, students, and activists who wish to critically understand and engage the fundamental issues and questions that frame the field. The volume brings together theory and practice in ways that are both engaging, as well as extremely practical for classroom use.


The Line Between Us explores the history of U.S-Mexican relations and the roots of Mexican immigration, all in the context of the global economy. And it shows how teachers can help students understand the immigrant experience and the drama of border life.

**Works Cited**


Parker, Laura. “Six ways the border wall could disrupt the environment.” National Geographic. Jan 10, 2019.


Rodríguez, José Antonio. House Built on Ashes: A Memoir. Oklahoma University Press, 2017


USAgov. Commonly Requested US Laws and Regulations.