

nce Bender  
roductions,  
phic.  
rso.  
ew York:  
ange. New  
ur climate  
e). United  
log post].  
3 concepts,  
ite change  
ed planet  
of climate  
ved from  
ge [Video  
olumbia,

# Chapter 3

## Creating a Climate Change Curriculum

Treat the Earth well: it was not given to you by your parents, it was loaned to you by your children. We do not inherit the Earth from our ancestors, we borrow it from our children.

Native American Proverb

[Humans] make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past.

Karl Marx (Elster, 1986, p. 277)

In the last chapter, we explored ways secondary language arts teachers begin to start teaching about climate change. As you advance your teaching about climate change, you will want to more fully and carefully develop curriculum and instruction, creating richer and extended opportunities to bring a climate change perspective to your teaching and foster your students' inquiry and activism.

Human-caused global warming has a specific history with causes and solutions deeply imbedded in our social, economic, political, and cultural systems. This chapter is divided into four sections that set forward thematic ways to frame and organize climate change teaching: (1) Indigenous and Postcolonial Perspectives; (2) Capitalism and Consumerism; (3) Environmental Literature and Ecocritical Approaches; and (4) Systems Impacting Climate Change.

Too often our curriculum in English language arts is disconnected and, frankly, irrelevant to the issues in students' lives and the world today. Organized by genres, time periods, or narrowly construed national traditions, literary works or "informational texts" are presented as "pearls on a string," without meaningful connections between them. Writing instruction covers different modes or genres, but may lack real purpose and audience. Specific standards or skills get "checked off", but we sometimes wonder, are students authentically learning?

Understanding the history and social context of climate change opens many possibilities for the development of meaningful, coherent, and relevant English language arts curriculum that not only deeply explores climate change but also fosters sincere inquiry and purposeful interceding to address it.

### 1 INDIGENOUS AND POSTCOLONIAL PERSPECTIVES

While our ancestors have been around for about six million years, the modern form of humans only evolved about 200,000 years ago. Civilization as we know it is only about 6,000 years old, and industrialization started in earnest only in the 1800s.

Howell (2015)

For the vast majority of time humans have lived on Earth we have lived in ways that were ecologically sustainable. Our ancestors showed remarkable ability to adapt to different environments and learned to use plant and animal resources effectively and respectfully.

As evident in their religions, myths, literature, history, and daily practices, native/indigenous peoples have considered their environments as revered, sacred spaces essential to their livelihood. This approach opposes the typical Western European/American ideological perspective on nature as something to be dominated, conquered, or controlled. In his book, *Teaching Truly: A Curriculum to Indigenize Mainstream Education*, Four Arrows (2013) explains, “Indigenous perspectives see humans as part of Nature, without placing us in a hierarchy . . . It . . . honor[s] the Earth and its life systems as ‘Mother’ and the larger cosmos as ‘Father’ in ways that demand respect for them and encourage learning” (pp. 254–255). In contrast, European and American narratives have too often portrayed conquistadors, explorers, “great white fathers,” military officers, corporate executives, political leaders, as bringers of Christian salvation, civilization, development, and democracy, when instead they were conquering native peoples, plundering their land and resources, and using religious justification, ideas of racial superiority, “manifest destiny,” or “nation building” to justify their destructive actions.

While Europeans considered places they went to as spaces to be conquered and controlled for commercial gain, First Nation people perceived sacred spaces as located in time. As a result, many indigenous peoples construct their identities according to their narratives, portraying their connection to spaces and time:

In Maori [New Zealand’s indigenous] culture each person has a turangawaewae (literally, a place to stand) which has nothing to do with where I currently live. This turangawaewae is about my ancestry—biological and social (we call it whakapapa)—and is a place where I belong. It is a place of identity—usually represented through marae (ancestral meeting place), an urupa (burial site), and through features of the land that surrounds these places, such as mountains, rivers, lakes, and so on.

Kincheloe et al. (2006, p. 145)

In applying a climate change perspective to different literary and media representations of nature, students can examine whether humans’ relationship with the Earth is depicted as one of exploitation, control, and destruction or one of harmony, interdependence, and sustainability. Arrows (2013) suggests that bringing an indigenous perspective into mainstream education “is about remembering our relationship to and our love for place. It is about letting go of our sense of superiority over and our fear of the natural world so that we can return to a life that deeply respects Mother Earth” (p. 12).

Indigenous/native peoples have shown leadership in protesting the fossil fuel companies’ exploitation of lands and waters. Examples include the Standing Rock Sioux Reservation pipeline protest in North Dakota, the Nez Perce stopping rigs in Idaho, the Northern Cheyenne preventing coal development in Montana, the Lummi stopping coal export in the Pacific Northwest, native tribes winning a court victory against Shell’s Arctic drilling in Alaska, and indigenous groups holding back oil interests in the Amazon (Klein, 2015).

Students can inquire into, research, and discuss questions such as:

- How have European/American colonialism, slave trade, and ongoing imperialism created “developed” and “underdeveloped” areas of the world, and how do these areas differ in terms of responsibility for and suffering from climate change?
- How does the history of colonialism impact contemporary ideas of climate justice, “climate debt,” and the concept of climate change “loss and damage” payments from wealthy countries to poor countries?

– H  
co  
– H  
ch  
– W  
– W  
an  
co.  
– H  
on

## TEAC AND F

Students  
imperial  
portrays  
before, ir  
with the  
States en  
tinyw.in/  
Columbu  
into disc

Other

- Wa  
mo
- Tw  
and
- Me  
for
- Bro  
fam
- Thi
- The

On the  
of nature  
Flies. Col  
as The W  
destroying  
grossing fi  
In mar  
Students c  
countries  
wealth, na  
forests, far  
violence” t  
(Nixon, 20

- How does racism and its history continue to impact thinking about climate change consequences and solutions?
- How do cultural ideas about the role of humans in nature influence thinking about climate change?
- What can be learned from indigenous cultures about sustainable living?
- What can be learned from previous social movements and how they can impact society and policy, that is, the abolitionist movement, the movement against the rubber trade, anti-colonial struggles, civil-rights movements, indigenous-resource exploitation protests?
- How might we establish a cooperative world order to address climate change rather than one based in competition, domination, inequality, violence, and exploitation?

## TEACHING ACTIVITIES FOR ADOPTING INDIGENOUS AND POSTCOLONIAL PERSPECTIVES

Students could compare and contrast native/indigenous perspectives with those of colonialists/imperialists. For example, the eighty-page young adult novella, *Morning Girl* (Dorris, 2008), portrays the life of the Taino people living close to nature on an island in the Caribbean Sea, just before, in the final scene, Christopher Columbus arrives. Students could combine *Morning Girl* with the powerful first chapter from Howard Zinn's (2015) book *A People's History of the United States* entitled "Columbus, the Indians, and Human Progress" (chapter available online: <http://tinyw.in/6dIk>). It could also be paired with the picture book *Encounter* (Yolen, 1996) portraying Columbus' arrival from the perspective of an indigenous Taino boy. This pairing could open into discussions of values, nature, progress, and climate change.

Other native and indigenous works for secondary teachers with environmental themes:

- *Way to Rainy Mountain* (N. Scott Momaday, 1976, Kiowa tribal history in relation to movement from the Rockies to the Great Plains);
- *Two Old Women* (Velma Wallis, 1993, Athabaskan story about survival in nature; easy read and good pair with Jack London's "To Build a Fire");
- *Mean Spirit* (Linda Hogan, 1991, Osage; about preserving natural values on land exploited for oil drilling);
- *Brother Eagle, Sister Sky* (Susan Jeffers, 1991, picture book provides an adaptation of the famous speech by Chief Seattle from the 1850s);
- *Things Fall Apart* (Achebe, 1958, Ibo, Nigeria);
- *The Bleeding of the Stone* (Ibrahim Al-Koni, 2002, Taurag, Libya).

On the European side, works that could help students think about issues of colonial domination of nature and people include *The Tempest*, *Robinson Crusoe*, *Heart of Darkness*, even *Lord of the Flies*. Colonialism and destruction of the natural world is a focus of science fiction works such as *The Word for World is Forest* (LeGuin, 2010) about a planet where a logging company is destroying a nature-connected native people, or the 2009 film *Avatar* (Cameron, 2009) (the highest grossing film of all time) where a mining company threatens the existence of native peoples.

In many parts of the world colonial relationships have continued in "neo-colonial" forms. Students could examine the exploitation of land, resources, and people in formerly colonized countries for short-term profit by corporations in the wealthy countries. Rather than bringing wealth, natural resources become a "curse" on local communities where the exploitation of oil, forests, farmland, minerals, diamonds, coltan, and so on, have only led to an environmental "slow violence" that separates the enclaved rich (in both First and Third Worlds) from the outcast poor (Nixon, 2011).

To have her students at North Davidson High School in Lexington, North Carolina understand how an anthropocentric worldview serves to separate us superficially from nature, Rebecca Young had her students read Carly Lettero's (2010) "Spray Glue Goes. Maggots Stay" from *Moral Ground: Ethical Action for a Planet in Peril* (Moore & Nelson, 2010).

This personal essay juxtaposes the ways humans treat a body after death with how nature does upon witnessing the hospital's procedural sanitizing of her grandfather's dead body, which includes "so much disposable crap" in the form of "hermetically sealed cotton swabs," "rubber gloves," "individually wrapped wipes and plastic padded sheets" (p. 104). Lettero recalls a very different memory of finding the body of a sea lion that had washed ashore on a coast of Oregon that was destroyed by vultures, bugs, maggots, and flies: "So much life spiraled out from this one dead animal. In stark contrast to my grandfather's death, nothing was wasted."

Moore & Nelson (2010, p. 104)

The sensory details of these burials offer a context for exploring the times when humans place themselves above all else in nature, when we see ourselves as distinct from rather than as inclusive of other species or our environment. If literature can help us recognize the false sense of superiority we have imagined for ourselves, it can also instruct us toward a more empathic social narrative that helps us value ourselves, each other, and our environment more fully.

## 2 CAPITALISM AND CONSUMERISM

Capitalism is an economic system based on the private ownership of nature and natural resources and the means of transportation and production such as trucks, railroads, machinery, factories, offices, computers, and the Internet. The goal of capitalism is to generate profit for owners and shareholders. Different forms of capitalism have different degrees of private or public ownership, free markets, and regulation (Moore, 2016).

Capitalism has been an enormous stimulus to invention and production. Karl Marx and Frederick Engels writing more than 150 years ago in the *Communist Manifesto* (1848), state that capitalism "has created enormous cities, has greatly increased the urban population as compared with the rural." They argue that the power of capitalism is its "cheap prices" which "are the heavy artillery" that "batters down all Chinese walls" and "compels all nations" to accept capitalist production and exchange, and thus "creates a world after its own image."

In the twenty-first century we can now see that Marx and Engels were writing about the early stages of the Industrial Revolution. At first, when manufacturing went from hand work to machines, it was supported primarily by water power. During Marx's day and after, came the "Second Industrial Revolution," which involved the use of oil and rubber, the production of steel, the development of electricity, mechanization of agriculture, and, of course, automobiles and airplanes. Next was the "Great Acceleration" which, especially after 1950, resulted in marked increased population, energy use, fertilizers, transportation, and consumption causing enormous fossil fuel emission, deforestation, industrialization of agriculture, and increasingly adverse effects on the climate (see Anthropocene Dashboard at [www.anthropocene.info/great-acceleration.php](http://www.anthropocene.info/great-acceleration.php)).

How  
which a  
terms of  
fuels by  
omists p  
reflect th  
and som  
should c

Capit  
others, p  
in econo  
concentr  
wealth e  
people"

We ir  
world  
contr  
is a c  
figure  
(p. 5)

The c  
environ  
compani  
regulatio  
Mayer, 2

Own  
sponsore  
1970s, w  
ExxonM  
to cast d

This e  
within c  
suffer g  
populatio  
gases. In  
of CO<sub>2</sub>, v  
2015). D

people i  
adversely  
In a poo  
poorer m  
weather

Adop  
by consu  
through  
driving s

However, capitalism's "free market" doesn't account for the costs of environmental impacts, which are considered "externalities." For example, carbon-based fuels have enormous costs in terms of their greenhouse effects but those costs are not accounted for in the prices paid for the fuels by consumers. Those costs are "external" to the market price. For that reason some economists propose a "carbon tax" or "fee" that would allow the price of fossil fuels to more accurately reflect their true cost and discourage use. One 2015 study that accounted for various health effects and some environmental effects of the burning of gasoline indicates that a gallon of gasoline should cost at least \$3.80 more than the current price at the pump (Ayre, 2015).

**Capitalism and economic inequality.** The capitalist system benefits specific groups more than others, particularly the owners of resources and production rather than the workers, resulting in economic inequality across nations and people (Stiglitz, 2013; Piketty, 2014). Today this concentration is dramatic, as "the eighty-five wealthiest individuals in the world have a combined wealth equal to that of the bottom 50 percent of the world's population, or about 3.5 billion people" (Oxfam, 2014). As Bill McKibben (2001) notes:

We in this country burn 25 percent of the world's fossil fuel, create 25 percent of the world's carbon dioxide. It is us—it is the affluent lifestyles that we lead that overwhelmingly contribute to this problem. And to call it a problem is to understate what it really is. Which is a crime against the poorest and most marginalized people on this planet. We've never figured out, though God knows we've tried, a more effective way to destroy their lives (p. 5).

The owners of fossil fuel-based corporations have greatly benefited financially while the environment of everyone has been compromised. The billionaire Koch Brothers' fossil fuel companies have exerted extensive influence on the political system to oppose environmental regulations, clean energy subsidies, and development of mass transit (Matulis & Moyer, 2016; Mayer, 2016), for example, opposing President Obama's Clean Energy Program in the courts.

Owners of fossil fuel industries, who are opposed to regulations and subsidy cuts, have sponsored efforts to deny or suppress information about the adverse effects of emissions. In the 1970s, when scientists at ExxonMobil found that fossil fuel had adverse effects on the environment, ExxonMobil executives suppressed that information and, since then, have sponsored attempts to cast doubt on or deny the validity of more recent data on fossil fuel effects (Hall, 2015).

This economic inequality also results in inequality in the effects of climate change across and within countries. Low-income people and countries, with fewer resources to protect themselves, suffer greater harm from degradation of the environment. Viewed globally by national populations, the wealthiest 20 percent of the world is responsible for over 60 percent of greenhouse gases. In the United States, for example, the richest 1 percent have average emissions of 318 tons of CO<sub>2</sub>, while the poorest 10 percent emit on average 100 times less, 31 tons (Chancel & Piketty, 2015). Despite not being responsible for climate change, it is and will continue to be, the poorest people in the developing world contributing minimal emissions who are and will be most adversely affected by extreme weather events, heat, sea rise, and illnesses (Roberts & Parks, 2006). In a poor country such as Honduras, since multinational corporations own the fertile land, the poorer majority of the population is forced to live on riverbanks and hillsides where extreme weather events have the worst impacts (Roberts & Parks, 2006).

**Adopting an ethical perspective on climate change.** In part, the use of fossil fuels is driven by consumerism—purchasing goods associated with achieving an assumed happiness as celebrated through advertisements and media promotions. Advertisements for gas-guzzling SUVs associate driving SUVs with achieving social status and "freedom of the road," rather than using more

efficient mass transit. As we discuss in Chapter 6, an important goal for English instruction is to foster critical media analysis of the role of advertisements and media in fostering consumption of goods and products adversely impacting the environment.

The way we understand the history of global warming matters to the ethical questions it raises. All humans are not equally responsible for climate change. Some benefited and some lost out from colonialism, slavery, the Industrial Revolution, militarism, imperialism, increasing inequality, and the concentration of wealth that have been part of capitalist development.

Students can inquire into, research, and discuss questions such as:

- How has capitalist economic development impacted climate change?
- What is the role of government intervention, policy, and law to address climate change?
- How extreme is economic inequality in our world? How does this inequality affect the causes, impacts, and solutions of/for climate change?
- How does advertising function to sell not only products but unsustainable lifestyles?
- How might we evolve our thinking about consumption and consumerism to address sustainability and climate change?
- In what ways is capitalism compatible, or can it become compatible, with democracy, human rights, and sustainability?
- How do corporations and wealthy individuals admit or deny their role in climate change? How do they influence government policy regarding climate change?
- What are corporations doing to address climate change? What else might they do?
- What can we do as students to challenge consumerist values, instant gratification, and social competitiveness and adopt values associated with sustainability?
- How does the way we understand history, the words we use, and the way we describe climate change influence our thinking?

Students in Shelli Rottschafer's composition course wrote autobiographical essays in response to nonfiction texts to describe their ethical stances toward sustainability and the environment. In response to "My Land Ethic," from Aldo Leopold's (1949) *A Sand County Almanac*, Hailey Kingele, who grew up in rural Michigan, draws on Leopold's ethical stance that "'we abuse land because we see it as a commodity belonging to us' (viii)," noting that:

we have a certain power over nature, we do not control nor possess it. It is this generation's misconception that the Earth is just an appliance for humans to use at free will with no respect . . . The relationship one has with their biota affects the level of responsibility they feel toward it. The stronger the relationship, the more responsible they feel.

In response to Leopold's essay, "The A and B Cleavage" contrasting a group of A people who "'regards the land as soil, and its function as commodity production [versus] another group (B) regards the land as a biota, and its function as something broader' (pp. 258–259)," Sarah Ress notes how "Pope Francis has discussed our role in conserving the Earth, and urges all people to take responsibility in cleaning and restoring our planet." She supports "Sustainability Initiative and Zero-Waste Initiatives on campus, and we offer recycling and composting bins in almost every building."

Lilia Thomas posits the need to develop a "'Conservation esthetic' (Leopold, 1949, p. 280)" by:

TEAC  
AND C

Since the  
been writ  
urbaniza  
consume

The s  
inequalit  
To direc  
footprint  
Gatsby le  
and wrot

To he  
environm  
(free at v  
Harding  
capitalism

While  
class diffe  
extend the  
in the 184  
org). Step  
poverty a  
difference

A book  
can inspir  
*This Char*  
book, http  
the United  
Kelly & M

One pa  
to Australi  
are curren  
teacher bu  
by having  
located in  
there? Wh

Given t  
as a "debat

building around certain landmarks in order for people to observe and appreciate what nature has created . . . conservation involves the understanding of how we perceive nature and what it offers. Only by understanding the deep meaning will we be able to make changes to help the environment.

## TEACHING ACTIVITIES FOR ANALYZING CAPITALISM AND CONSUMERISM

Since the early stages of the Industrial Revolution and into the present day there have always been writers, artists, and intellectuals describing, representing, and objecting to industrialization, urbanization, poverty, wretched working conditions, massive inequality, and mindless consumerism.

The secondary English curriculum typically includes works that address capitalism and inequality. Of course, *The Great Gatsby* or, on the other side, *The Pearl*, could be starting points. To directly tie in climate change, imagine having students attempt to compare the carbon footprint of a modern day Gatsby, Tom, or Daisy with Kino or Juana. What if students reading *Gatsby* learned about John Muir, Aldo Leopold, Maude Murie, or other early environmentalists and wrote letters back and forth or held discussions in role with characters from the novel.

To help students gain a historical perspective on the rise of capitalism and impacts on the environment beginning in the nineteenth century, students can read *Life in the Iron Mills* (1861) (free at [www.gutenberg.org](http://www.gutenberg.org)). This is a pioneering short story or novella written by Rebecca Harding Davis portraying the gritty, difficult life of early factory workers and an exposé of capitalism and industrialization; students can detect environmental dimensions in the critique.

While English teachers may be familiar with applying an economic analysis to portrayals of class differences in texts such as Austen's or Dickens' novels (Appleman, 2014), teachers could extend the analysis by having students look at interviews with poor and working people in London in the 1840s found in Henry Mayhew's *London Labour and the London Poor* (at [www.gutenberg.org](http://www.gutenberg.org)). Stephen Crane's *New York City Sketches* from the 1890s are powerful short pieces addressing poverty and wealth (also at [www.gutenberg.org](http://www.gutenberg.org)). Students might inquire into similar class differences in the world today, and examine implications for climate change.

A book that directly foregrounds the relationship between capitalism and climate change and can inspire English teachers with teaching ideas is the previously mentioned Naomi Klein's (2015) *This Changes Everything: Capitalism vs. The Climate*, as well as the documentary based on the book, <http://tinyw.in/uQ0T>. At a retreat in Portland, Oregon, twenty-two educators from across the United States shared their experiences in building curriculum based on this book (Bigelow, Kelly & McKenna, 2015).

One participant shared a collection of stories by Pacific Island activists describing resistance to Australia's promotion of the economic benefits of their exporting coal when the Pacific Islands are currently being inundated by sea rise caused by climate change. Another New York City teacher built on Klein's description of "sacrifice zones" and the Black Lives Matter movement by having students critically examine how often energy plants producing greenhouse gases are located in low-income neighborhoods, leading students to pose questions such as, "Who lives there? Who doesn't? What is being sacrificed? Who benefits from the sacrifice?"

Given the success of efforts by corporate or political groups to deny or frame climate change as a "debatable" issue, students could read selections from *Don't Even Think About It* by George

struction is  
consumption  
ons it raises,  
me lost out  
g inequality,  
  
te change?  
/ affect the  
  
styles?  
to address  
  
icy, human  
te change?  
  
do?  
and social  
  
be climate  
  
says in  
ty and  
1 Sand  
pold's  
to us'  
  
his  
to  
cts  
the  
  
of A  
ersus]  
ader'  
rving  
met."  
id we  
  
1949,

Marshall (2015) regarding the impacts of denialism and why climate change is not adequately addressed in the media or public discussion. On his book's website, <http://climateconviction.org>, Marshall poses questions that could be used with students to discuss society's failure to attend to climate change:

- Why do the victims of flooding, drought, and severe storms become less willing to talk about climate change or even accept that it is real?
- Why are people who say that climate change is too uncertain more easily convinced of the imminent dangers of terrorist attacks, meteorite strikes, or an alien invasion?
- Why have scientists, normally the most-trusted professionals in our society, become distrusted, hated, and the targets for violent abuse?
- Why are science fiction fans, of all people, so unwilling to imagine what the future might really be like?

Teenagers are the target of a great deal of advertising and we need to help them think critically about consumerism shaping attitudes toward products and lifestyles that adversely impact the environment. Students can view the outstanding 20-minute *Story of Stuff* video (Fox & Priggen, 2007) <http://storyofstuff.org/movies> which describes extraction, production, distribution, consumption, and disposal of goods. They discuss how consumerism is related to climate change. The success and appeal of *The Story of Stuff* has led to a series of engaging short videos on cap and trade, cosmetics, shopping, and bottled water, available on the same website.

Students can also read science fiction texts on the adverse effects of consumerism, for example:

- *Brave New World* (Huxley, 2014) opens onto topics of social manipulation, consumerism, and developing sustainable lifestyles.
- M. T. Anderson's (2010) young adult novel, *Feed*, in which adolescent characters are continually receiving advertisements in their brains, offers a great source for discussions about teens and consumerism and the impact of consumerism on the environment.
- Scott Westerfeld's award winning young adult novel, *So Yesterday* (2004), portrays young people learning to question consumerism. His popular *Pretties* (2006) and *Uglies* (2008) are set in a post-apocalyptic world ravaged by climate change where superficial ideas of beauty are valued over authenticity.

### 3 ENVIRONMENTAL LITERATURE/ECOCRITICAL TEACHING

Nature and the natural world are an important topic in literary and cultural texts from ancient times up to the present. There is a long history in English studies of addressing nature literature and a diverse school of "ecocriticism" that has evolved to think about ecological perspectives and concerns.

Ecocriticism is the study of the way texts represent nature and treat environmental topics. Related terms include "ecopoetics," "environmental criticism," "geocriticism," "deep ecology," "ecofeminism," "green cultural studies," "animal studies," and "material ecocriticism." There are college courses on nature literature, scholars whose work focuses on ecocriticism, journals and books on the topic, and a professional organization, the Association for the Study of Literature and the Environment (ASLE), [www.asle.org](http://www.asle.org). You can draw on these ecocritical perspectives to help your students inquire into the deep cultural attitudes that shape our understanding and actions regarding climate change.

Ecocr  
cultural  
and othe  
to addre  
male/fem  
patriarch  
global un  
with the  
2014).

Ecocr  
and thos  
in texts. I  
(2015) d  
"domina  
multiple,  
nonhuma  
(p. 135).

One k  
2014; Phi  
and the e

men a  
and fe  
lead to  
those

Wome  
likely to  
family's c  
be advers  
not surpr  
and Iran  
in their b

To app

- Ho
- por
- Wh
- sep
- Is n
- Is n
- Wh
- (an
- Is c
- In
- nor
- life



Ecocriticism asserts the value of addressing environmental themes and issues in literary and cultural texts. Early on, ecocriticism focused on the way that writers in the Romantic movement and other literary traditions valued communion with nature. As ecocriticism evolved, it began to address the social construction of nature, questioning binaries such as nature/culture, male/female, and how hierarchical and unequal systems such as colonialism, capitalism, and patriarchy conceive and impact nature. More recently, ecocriticism has come to focus on a global understanding of ecojustice and the impact on humans, animals, and nature associated with the “slow violence” of environmental abuse (Buell, 2005; Nixon, 2011; Iovino & Oppermann, 2014).

Ecocriticism recognizes that the meaning of any given place depends on how it is described, and those descriptions can be studied to consider social, cultural, and psychological perspectives in texts. In their place-based writing about an Australian valley, Lesley Instone and Affrica Taylor (2015) describe going beyond “pastoral-conservationist” perceptions of the valley from that of “dominant white settler narratives of ‘improvement’ and ‘protection’” to appreciate the “ancient, multiple, complex and ongoing” history as “made and remade by many actors, human and nonhuman, not just those featured in the heroic white male settler histories of the last 200 years” (p. 135).

One key branch of ecocriticism, ecofeminism (Adams & Gruen, 2014; Shiva, 2014; Vakoc, 2014; Phillips & Rumens, 2016), highlights how perceptions of the relationship between humans and the environment are gendered in that:

men and masculinity are associated with culture and culture is valued, whereas women and femaleness are associated with nature and both are devalued. These linked valuations lead to hierarchy, which is then used to justify the domination of women, nature, and all those so associated.

Garrard (2010, p. 48)

Women are most likely to be adversely affected by climate change given that they are more likely to be poor, involved in food production and acquisition, responsible for protecting their family’s children and accessing and providing water for their families, as well as more likely to be adversely impacted by floods, cyclones, or droughts than males (Garrard, 2015). Perhaps it is not surprising that women in Australia (Agho et al., 2010), Canada (Scannell & Gifford, 2013), and Iran (Salehi et al., 2015) were more concerned about climate change and making changes in their behavior than men.

To apply ecocriticism perspectives, students can address questions such as:

- How are nature, the natural environment, “wild,” rural, suburban, and/or urban areas portrayed in literature or other texts?
- What is the relationship between humans and nature? Are humans part of nature or separated from it? How? Why?
- Is nature portrayed as static or a dynamic interaction of interdependent ecosystems?
- Is nature “romanticized” in literature? How? Why?
- What in nature is shown to be valuable? Is nature valued for the sake of human use (anthropocentric) or for its own sake (deep ecology)?
- Is civilization/industrialization portrayed as destructive of nature? How? What can be done?
- In the era of climate change and species extinction, what rights do or should other, nonhuman, forms of life have? What rights do humans have to impact or devastate other life forms?

- What are the issues of power, class inequality, gender, or race in the representation of nature?
- How are local natural environments related to larger and global ecosystems and how are they impacted by climate change?
- How can human beings live more sustainably in relationship to the environment and other species?
- How can depictions of nature help us better understand the causes, impacts, and/or dangers of climate change or motivate action to address climate change?

## TEACHING ACTIVITIES FOR FOCUSING ON ENVIRONMENTAL LITERATURE/ECOCRITICAL TEACHING

In *Last Child in the Woods* (2008) Richard Louv describes the joy and wonder, the creative sense of pattern, and the hands-on interaction young people can find in nature. Many of our students may have had their relationship with the natural world undermined by everyday consumption practices (Weintrobe, 2013). Units focused directly on nature and the environment offer an important way to help students understand and address global warming, start “reading green,” and appreciate and value the natural world.

For applying ecocritical perspectives, students can respond to canonical pastoral writing by Marlowe, Spenser, Sidney, Milton, Gray, and Pope that emphasizes the appeal of the rural life, care of sheep and other animals, and close connection with the natural world. Some of Shakespeare’s frequently taught plays including *As You Like It* and *Midsummer Night’s Dream* are influenced by pastoral traditions and portray nature and the “green world” as a place where the artificial urban society is restored by magic or pastoral values.

When Allen’s students read the classic pastoral, “The Passionate Shepherd to His Love” (Marlowe, 1599/2011) <http://tinyw.in/oRCw>, they discussed how the poem constructed class and gender roles, the differences between the real life of shepherds and rural workers in the sixteenth century, and the “beds of roses/and a thousand fragrant posies” in the poem. They then considered the impact on the pastoral and bucolic setting, the poem’s “valleys, groves, hills, and fields,” of industrialization, urban expansion, and modernization.

In the nineteenth century as factories, machines, and industrialization were becoming more prevalent, Romanticism and Transcendentalism turned to nature and rural life as reflected in poems by Wordsworth, Coleridge, Keats, and Shelley. Their poetry portrayed modern life breaking intimate, sacred bonds with nature. It is not even a stretch to connect Wordsworth’s “The World is Too Much With Us” <http://tinyw.in/XXDE>, the killing of the albatross, the mellow fruitfulness of autumn, or the joy of the skylark to current environmental devastation and the need for a different perspective. Henry David Thoreau’s (1854/2016) *Walden*, and his essays “Walking,” “Life Without Principle,” and “Civil Disobedience,” can all be connected to climate change and taking stands to address it (for activities developed by Allen’s students on teaching contemporary environmental writers such as Aldo Leopold, Edward Abbey, Annie Dillard, Barry Lopez, Gary Snyder, Jon Krakauer, and Bill McKibben visit the website: <http://bit.ly/2btMlxN>).

Students could apply ecological and feminist (“ecofeminist”) perspectives to different works, for instance the oft taught short stories such as “To Build a Fire,” “All Summer in a Day,” “The Most Dangerous Game,” “The Interlopers,” “The Open Boat,” or “Eve’s Diary,” or to classic novels with a significant role for nature and strongly gendered characters such as *Lord of the Flies*, *Huckleberry Finn*, *The Scarlet Letter*, *Wuthering Heights*, even *The Hobbit* and *The Lord of the Rings*.

Advan  
novel, A  
inheritar  
Ginny di  
water dra  
and conr  
on use o  
(2013) w  
is associ  
(Wrebe,

In an  
students  
A Sand C  
it die:

We re  
then,  
some  
itch; I  
hunte  
the m

He re  
more pl  
compon  
determin  
From  
participa  
an Austr  
of spect  
are valu  
(Matthe

## 4 HUI CHAN

Climate  
systems  
governm  
Why no  
understa

Each  
operate  
(2016a)  
volves c  
expands  
Other ex

Advanced students may apply an ecofeminist perspective to Jane Smiley's (2003) Pulitzer Prize novel, *A Thousand Acres: A Novel*. Based on *King Lear*, the owner of an Iowa farm rescinds his inheritance of the farm to one of his three daughters, Ginny, in favor of her two other sisters. Ginny discovers that the farm's soil is contaminated with pollutants from fertilizers and nearby water drainage, related to her family and neighbors' cancer. Ginny's environmental concern about and connection to the land puts her in opposition to farming practices in Iowa in the 1970s based on use of fertilizers and pesticides. Or they could look at *Animal Dreams* by Barbara Kingsolver (2013) which portrays how the mythic narrative of conquering and subduing the American West is associated with a masculine need for control and power while ignoring environmental impacts (Wrebe, 2014).

In an activity in the *Teacher's Guide to American Earth* <http://americanearth.loa.org/guide>, students are asked to respond to Aldo Leopold's (1949), "Thinking Like a Mountain" from his *A Sand County Almanac*, describing his experience as a young man shooting a wolf and watching it die:

We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger itch; I think that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

Leopold (1949) in McKibben (2008, p. 275)

He realizes that when wolves die, they no longer kill deer, who, as their population grows, eat more plants to upset the ecosystem. He is learning to generalize about how the different components of the ecosystem interact with and influence each other, generalizations essential to determining how perceptions of place are shaped by social, historical, and cultural frames.

From an ecological perspective, students could explore and adopt perspectives of nonhuman participants, as did Instone and Taylor (2015) in adopting the point of view of species living in an Australian valley. Students could critically reflect on how species are housed in zoos as objects of spectacle or represented by studying portrayals of species in children's literature where they are valued for certain human traits rather than as actual beings co-existing with humans (Matthewman, 2011).

## 4 HUMAN-BASED SYSTEMS IMPACTING CLIMATE CHANGE

Climate change is caused by human activity taking place within specific and interacting social systems including energy production, transportation, agriculture, housing, media, military, and government. To transition away from a carbon-based lifestyle, these systems must all be changed. Why not invite English language arts students into critical and imaginative reflection on how to understand, transition, and redesign our social systems to support a more sustainable world?

Each of these human-based systems impact fragile ecosystems described in Chapter 2 that operate according to a delicate balance in which species interact with each other. E. O. Wilson (2016a) cites the example of the wolf population in Yellowstone National Park. If there are fewer wolves due to hunting or disease, then they are less likely to eat the elk who, if their population expands, then eat the aspen trees, which reduces the number of trees for absorbing carbon dioxide. Other examples have to do with invasive species such as the fire ant, Asian termite, gypsy moth,

ation of  
how are  
and other  
dangers  
  
ve sense  
students  
mption  
ffer an  
green,"  
  
iting by  
ral life,  
ome of  
Dream  
e where  
  
s Love"  
lass and  
teenth  
sidered  
lds," of  
  
g more  
ected in  
ern life  
worth's  
mellow  
and the  
s essays  
climate  
eaching  
d, Barry  
:MlxN).  
: works,  
," "The  
c novels  
ie Flies,  
ie Rings.

emerald elm beetle, zebra mussel, Asian carp, snakehead, and mosquitos related to West Nile virus and the rise of the Zika disease. One effect of climate change, as well as globalization, is that these invasive species move from their natural habitats to new habitats, causing damage in those new habitats, for example in the emerald elm beetle moving to different regions and destroying elm trees in those regions.

The extinction of species due to human actions then upsets the balance of ecosystems. In an op-editorial in *The New York Times*, Wilson (2016b) notes that “we can put the fraction of species disappearing each year at upward of a 1,000 times the rate that existed before the coming of humans” (p. 5). From “1895 to 2006, 57 species and distinct geographic races of freshwater fishes were driven to extinction” (p. 5). Saving these species requires increasing areas for preservation from the “current 15 percent of the land and 3 percent of the sea to half of the land and half of the sea” (p. 5). Biologists also focus on the role of species such as invertebrates—sponges, moss animals, and worms—in polar regions who play an important role in filtering water and recycling nutrients, as well as being food for animals and fish (Freiberger, 2013).

There is evidence that people who are able to think in terms of human-based systems are more likely to recognize the risks posed by climate change and support policies to address it (Lezak & Thibodeau, 2016). Engaging students in such analysis fosters career-readiness and prepares young people for leadership as twenty-first-century change-agents.

Noah Zeichner (2015), a tenth grade teacher at Sealth High School in Seattle, teaches about social systems in a way that empowers his students to take action to address climate change:

While lowering our personal carbon footprints is important, without major systemic change, climate change will only speed up. My students this year understand how fossil fuel companies have put profit over progress. They understand why it is important to have indigenous peoples' voices at the table when climate agreements are drafted. And they understand the role that collective action can play in pressuring world leaders to lower carbon emissions.

While there are many social systems language arts students could examine and address either as a whole class or in groups, we focus here on energy production, military/conflict, housing/transportation, and agriculture. We include language arts teaching ideas with each section.

**Energy production.** Society needs to find alternative sources to fossil fuels to provide power for buildings, homes, businesses, and transportation. Understanding these alternatives includes research into the risks, benefits, and complications of different approaches (Ingwersen et al., 2014). For example, hydropower generates electricity without fossil fuels, but requires building dams that adversely impact rivers. Converting to alternative energy requires large investments with distant returns (Nemet, Grubler & Kammen, 2015). Without a clear sense that long-term investments will actually result in positive returns, investors and companies may be reluctant to take risks. But how else to meet the 2015 Paris Conference goals of targeted emissions reductions?

The challenge of a large-scale transition to use of clean alternative energy sources has to do with scale and time, given the disruption to current economic dependency on fossil fuels based on our consumption of goods (Smil, 2010; Maly, 2015). From a historical perspective, it takes time for a major transition to move from one energy source to another—liquefied natural gas took 150 years between its discovery in 1852 and its large-scale use. Moving off fossil fuels by

2050 to r  
funding.  
climate c  
much m  
than foss  
may hav  
Maly, 20  
Trans  
“green ec  
is design  
the marl  
through  
establish  
Trans  
the local  
40 count  
can use I  
Milita  
and cons  
the US M  
fuels” (S  
Accor  
increasir  
war in S  
shortage  
civil war  
have pro  
Pakistan  
insecurit  
all invol  
Stude  
future w  
on exper  
warming  
Engineer  
due to f  
participa  
and adap  
of imagi  
Hous  
from ele  
due to re  
and Dev  
areas are  
40 perce  
mass tra  
emission

2050 to renewable energy may involve similar delays due to policies, lack of infrastructure, and funding. Continued use of coal and oil during the transition period will have negative effects on climate change (Smil, 2010; Maly, 2015). The other challenge is that wind and solar energy are much more diffuse. More of the Earth's surface is required to produce wind and solar energy than fossil fuel energy, so that without massive energy transmission grids, people in remote areas may have more difficulty obtaining this energy than people in denser urban areas (Smil, 2010; Maly, 2015).

Transitioning involves rethinking systems. Students can explore issues involved in creating a "green economy" using wind, solar, and battery/fuel cell options when the existing power grid is designed for centralized production at large fossil fuel plants. The uncertainty of relying on the marketplace to transform the energy system raises the question of government support through tax credits and subsidies, yet current US government energy subsidies go to large, established companies in the fossil fuel industry (Nemet, Grubler, & Kammen, 2015).

Transition requires not only technological innovation but imagination and commitment at the local level. Students could learn about residents of some 1,000 Transition Towns located in 40 countries that have promoted the use of wind and solar power (Hinrichs, 2014). And they can use language arts skills to advocate for conversion in their communities.

**Military/conflict.** The US Military budget is greater than the next fourteen countries combined and constitutes about half of the entire world's expenditure. Therefore, it is not surprising that the US Military has been described as, "the planet's single greatest institutional consumer of fossil fuels" (Smith, 2016).

According to military planners, one of the most important challenges in the future will be increasing conflicts emerging from climate change (Department of Defense, 2016). The current war in Syria, for example, arose in part because of high temperatures, droughts, and food shortages. Syrians migrated from farms into cities and in desperation joined the uprising. The civil wars in the Sudan and in Somalia have been tied to climate change. All of these conflicts have produced many climate refugees. Potential conflicts between nuclear powers India and Pakistan over dwindling water supplies, drought in Central America, complex crisis and human insecurity created by storms in Southeast Asia, food shortages and other climate change events all involve conflict.

Students can inquire into the involvement of the military in climate change and ongoing and future world conflicts. As informed citizens they can advocate that rather than spending money on expensive weapon systems, more of the military's budget could be devoted to addressing global warming challenges both at home and abroad, for example: by having the Army Corps of Engineers devise ways to cope with flooding and water access; the Coast Guard address challenges due to flooding, water access, and sea-level rise; or different branches of the armed services participate in humanitarian efforts to supply water and food, support refugees, rebuild, mitigate, and adapt to global warming in other countries. Language arts students can and should be part of imagining and enacting a more cooperative world system.

**Housing/community development.** Two-thirds of all emissions in the United States come from electricity and road transport in urban regions, with suburban sprawl increasing emissions due to reliance on cars and dispersed electricity needs (Organisation for Economic Co-operation and Development, 2010). Denser urban regions employ less electricity; because Japan's urban areas are around five times denser than Canada's, consumption of electricity per person is about 40 percent less in Japan (OECD, 2010). Use of individual cars in North America, as opposed to mass transit in Europe, means that North American residents produce 50 percent more CO<sub>2</sub> emissions than Europeans (OECD, 2010).

Many communities are moving toward mass transit and are promoting more pedestrian-friendly walking options as well as bike-trails and commuting paths. One study of 170 urban neighborhoods in 20 cities found that walkable neighborhoods tended to have higher priced homes and better schools (Boak, 2016). Students can develop persuasive arguments about the use of private cars drawing on analysis of community organization that fosters dependency on them—roads, buildings, schools, shopping malls, and so on (Shove, Watson, & Spurling, 2015).

Buildings and houses consume as much if not more energy than transportation, thus the transition away from carbon involves energy-efficient buildings and solar energy. Students could study the energy use in their school and homes to identify methods to reduce it. Drawing on Foxfire approaches to community-based inquiry and learning, students can conduct observational research on the social and cultural norms in places supporting sustainability practices (Anderson et al., 2016).

Underlying green, sustainable urban development requires that its residents share a common sense of purpose based on “the betterment of the whole in which they live” (Rose, 2016, p. 23). Jonathan Rose (2016) identifies five characteristics contributing to a more livable, sustainable lifestyle in what he calls “well-tempered cities”:

- *Coherence* associated with a shared vision and plan for creating a sense of sustainable development for supporting its residents.
- *Circularity* of information, materials, and energy through use of recycling of limited water, food, or resources.
- *Resilience* to cope with challenges through construction of buildings that employ less energy and creation of green spaces for CO<sub>2</sub> absorption.
- *Community* to create a collective support system for residents based on shared resources.
- *Compassion* associated with caring for others that supports the need for creating a sense of community.

Rose (2016, p. 20–22)

Students could reflect on the degree to which their cities or town share these characteristics related to supporting sustainability. For example, they may note that their city or town lacks any clearly defined plan for supporting use of recycling of resources or building codes giving a lack of sense of community.

**Agriculture.** Agriculture is a major cause of climate change. For the average American, greenhouse gas emissions from simply eating are about the same as the emissions from energy use! Animal-based foods in particular account for 85 percent of food-related greenhouse gas emissions and 90 percent of all agricultural land use. Shifting diets away from meat could slash in half per capita greenhouse gas emissions and ward off additional deforestation, a major contributor to climate change (Magill, 2016). Industrial agriculture contributes between 20 and 25 percent of all greenhouse gas emissions, particularly through crops grown for animal feed, cattle releasing methane, nitrogen fertilizers releasing nitrogen (also a powerful greenhouse gas), transportation, and uses of biofuel. Students can learn about how their food choices impact climate change at [www.eatlowcarbon.org](http://www.eatlowcarbon.org). A powerful classroom resource is the film *Cowspiracy* (Anderson & Kuhn, 2014) which challenges environmental organizations to address animal agriculture. Available on Netflix, or for \$5 at <http://cowspiracy.com>; there is a 15-minute short version available here: <http://tinyurl.com/jqsjad8>.

Agr: change increas most tr soil pro both fe the Hol Agri inquiry. Webb.n corpora change. super ri I, Rigob Did No Hunger Student: undertor moveme

Lin Vi:

Agriculture will also be one of the areas most immediately and directly damaged by climate change. Droughts, increased temperatures, flooding, and ocean acidification, all caused by climate change, are expected to dramatically reduce food production, at the same time that demand is increasing due to expanding world population and changing diets. Food shortages are one of the most troubling aspects of global warming. The use of nitrogen fertilizers to increase short-term soil productivity to grow food for an increasing population, results in increased emissions from both fertilizers and transportation, and an agriculture system that differs markedly from that of the Holocene period (Williams et al., 2016).

Agriculture and human diets are critical areas of transition and invite language arts student inquiry. Allen recently taught an introductory literature course on food (syllabus: [www.AllenWebb.net/engl1100spring2014food.html](http://www.AllenWebb.net/engl1100spring2014food.html)). Students examined fast food and healthy eating, the corporatization of the food system, working in the food industry, food justice, and climate change. They read *Dinner With Trimalchio* (from a Roman novel about the excesses of the ancient super rich), *A Modest Proposal*, *The Jungle* (and visited a meat-packing plant), selections from *I, Rigoberta Menchu* (Menchu, 2010) (about migrant farm workers in Guatemala), *And the Earth Did Not Devour Him* (Rivera, 1987) (about Mexican-American migrant farm workers), *The Hunger Games*, and, in literature circles, various classic and young adult novels with food themes. Students wrote personal essays about their relationship with food, literary analysis papers, undertook food action projects, and created TED talks. In teaching this class, Allen joined a movement in English studies to address food and culture.

Lina Yamashita teaches about food in her undergraduate class at UC Davis, “Making Visible the People Who Feed Us: Labor in the Food System.”

The farm-to-fork system has a variety of environmental impacts and depends on the labor of people who produce, process, distribute, sell, and serve food. In the United States, food workers constitute one-sixth of the workforce and contribute over \$2.2 trillion in goods and services annually (Yamashita & Robinson, 2016). Most existing food education programs, such as school gardens or farm-to-school programs, do not focus on the people behind food or on the social inequities that shape their experiences (Yamashita & Robinson, 2016). I taught my course to make noticeable and humanize food workers, particularly those who tend to be less seen, through multicultural texts about or by workers that highlight their diverse experiences.

I used an activity called “4 corners.” Each corner stands for a stance—strongly agree, agree, disagree, and strongly disagree—and students move to one of these corners for a given statement, such as “tipping should be abolished” or “we should all become vegetarians or vegans.” Before having students walk to the corners that represented their stances, they write a sentence or two to support each stance, drawing on evidence from reading or their prior knowledge. I encouraged students to respond directly to one another. Ultimately, students recognized the existence of diverse perspectives and learned to engage in evidence-based debates.

## SIZE AND STEPS TOWARD ADDRESSING CLIMATE CHANGE

Climate change is a major, daunting issue. It emerges out of historical, cultural, and social contexts that call out for inquiry, careful thought, and response. This chapter provides many ways language arts teachers can develop meaningful curriculum to address the contexts of climate change.

Our students inherit and will live their lives in a climate changed world. They deserve to understand their world deeply and meaningfully, to consider large social and cultural values, ethical questions, and ways we can transform how we now live in order to save life on Earth. The subject of climate change, and our students themselves, are worthy of the time you spend transitioning your teaching.

The best way to respond to big challenges is by taking small steps, steadily, in the same direction. The last chapter set out first steps. This chapter gave ideas about how and where to keep walking. The next chapter takes another step in climate change teaching, drawing on literature and the power of the imagination.

For additional resources, activities, and readings related to this chapter, go to <http://tinyw.in/4hQO> on the book's website.

## REFERENCES

- Achebe, C. (1958). *Things fall apart*. Portsmouth, NH: Heinemann.
- Adams, C. J., & Gruen, L. (Eds.) (2014). *Ecofeminism: Feminist intersections with other animals and the Earth*. New York: Bloomsbury Academic.
- Agho, K., Stevens, G., Taylor, M., Barr, M., & Raphael B. (2010). Population risk perceptions of global warming in Australia. *Environmental Research*, 110(8), 756–763.
- Al-Koni, I. (2002). *The bleeding of the stone*. Northampton, MA: Interlink Publishing.
- Anderson, K., & Kuhn, K. (Directors) (2014). *Cowspiracy* [Motion picture]. USA: A.U.M. Films.
- Anderson, M. T. (2010). *Feed*. Somerville, MA: Candlewick Press.
- Anderson, V., Datta, R., Dyck, S., & Kayira, J. (2016). Meanings and implications of culture in sustainability education research. *The Journal of Environment Education*, 47(1), 1–16.
- Appleman, D. (2014). *Critical encounters in secondary English: Teaching literary theory to adolescents*. New York: Teachers College Press.
- Ayre, J. (2015, March 8). With “true cost” of emissions factored in, gasoline would cost \$3.80/gallon MORE than the pump price [Web log post]. Retrieved from <http://tinyw.in/k6c0>.
- Bigelow, B., Kelly, A., & McKenna, K. (2015). Bringing climate into the classroom: Inside a teaching retreat around Naomi Klein's *This Changes Everything*. *Radical Teachers*, 102, 34–42. Retrieved from <http://radicalteacher.library.pitt.edu>.
- Boak, J. (2016, January 27). Few US neighbourhoods affordable, walkable with good schools [Web log post]. Retrieved from <http://tinyw.in/aDrj>.
- Buell, L. (2005). *The future of environmental criticism: Environmental crisis and literary imagination*. Cambridge, MA: Blackwell.
- Cameron, J. (Director) (2009). *Avatar* [Motion picture]. United States: Twentieth Century Fox.
- Chancel, I., & Piketty, T. (2015). *Carbon and inequality: From Kyoto to Paris*. Paris School of Economics.
- Crane, S. (1894/1966). *New York City sketches*. New York: New York University Press.
- Davis, R. H. (1861). Life in the Iron Mills. *The Atlantic*, 7(4), pp. 430–461.
- Department of Defense (2016). *DoD Directive 4715.21 Climate change adaptation and resilience*. Retrieved from [www.dtic.mil/whs/directives/corres/pdf/471521p.pdf](http://www.dtic.mil/whs/directives/corres/pdf/471521p.pdf).
- Dorris, M. (2008). *Morning girl*. New York: Paw Prints.
- Elster, J., (Ed.) (1986). *Karl Marx: A reader*. Cambridge: Cambridge University Press.
- Fox, L., & Priggen, E. (Directors) (2007). *The story of stuff* [Video file]. Retrieved from <http://storyofstuff.org/movies/story-of-stuff/>.
- Freiberger, M. (2013). Biodiversity on the brink. + *Plus Magazine*. Retrieved from <http://tinyw.in/UmoA>.

Garrard,  
16  
Garrard,  
Hall, S. (2  
fro  
Hinrichs  
Ag  
Hogan,  
Howell,  
p  
Huxley,  
Ingworse  
re  
Instone,  
th  
Iovino, S  
Jeffers, S  
Kinchel  
in  
Kingsolv  
Klein, N  
LeGuin,  
Leopold,  
Lettero,  
E  
Lezak, S  
m  
Louv, R.  
Magill, I  
w  
Maly, T.  
Marlowe  
Marx, K  
Matthew  
Matulis,  
an  
Mayer, J  
Y  
McKibb  
McKibb  
Menchu  
Momad  
Moore,  
C  
Moore,  
T  
Nemet,  
W  
Nixon, I  
Organis  
P  
Oxfam  
el  
Phillips,  
Piketty,  
Rivera,



- Garrard, G. (2010). Problems and prospects in ecocritical pedagogy. *Environmental Education Research*, 16(2), 233–245.
- Garrard, G. (2015). Ecofeminism and climate change. *Women's Studies International Forum*, 49, 20–33.
- Hall, S. (2015, October 15). Exxon knew about climate change almost 40 years ago [Web log post]. Retrieved from <http://tinyw.in/OgLE0>
- Hinrichs, C. C. (2014). Transitions to sustainability: a change in thinking about food systems change? *Agriculture Human Values*, 31, 143–155.
- Hogan, L. (1991). *Mean spirit*. New York: Ballantine Books.
- Howell, E. (2015). How long have humans been on Earth? *Universe Today*. Retrieved from <http://wp.me/p1CHY-9UV>.
- Huxley, A. (2014). *Brave new world*. New York: Harper Perennial.
- Ingwersen, W. W., Garmestani, A. S., Gonzalez, M. A., & Templeton, J. J. (2014). A systems perspective on responses to climate change. *Clean Technology Environmental Policy*, 16, 719–730.
- Instone, L., & Taylor, A. (2015). Thinking about inheritance through the figure of the Anthropocene, from the Antipodes and in the presence of others. *Environmental Humanities*, 7, 133–150.
- Iovino, S., & Oppermann, S. (Eds.) (2014). *Material ecocriticism*. Bloomington: Indiana University Press.
- Jeffers, S. (1991). *Brother eagle, sister sky*. New York: Penguin Books.
- Kincheloe, J. L., McKinley, E., Lim, M., & Barton, A. C. (2006). Forum: A conversation on “sense of place” in science learning. *Cultural Studies of Science Education*, 1, 143–160.
- Kingsolver, B. (2013). *Animal dreams*. New York: Harper Perennial.
- Klein, N. (2015). *This changes everything: Capitalism vs. the climate*. New York: Simon & Schuster.
- LeGuin, U. (2010). *The word for world is forest*. New York: Tor Books.
- Leopold, A. (1949). *A Sand County almanac*. New York: Oxford University Press.
- Lettero, C. (2010). Spray glue goes, maggots stay. In K. D. Moore & M. P. Nelson (Eds.), *Moral ground: Ethical action for a planet in peril* (pp. 103–107). San Antonio, TX: Trinity University Press.
- Lezak, S. P., & Thibodeau, P. H. (2016). Systems thinking and environmental concern. *Journal of Environmental Psychology*, 46, 143–153.
- Louv, R. (2008). *Last child in the woods*. Chapel Hill, NC: Algonquin Books.
- Magill, B. (2016). Studies show link between red meat and climate change. *Climate Central*. Retrieved from: [www.climatecentral.org/news/studies-link-red-meat-and-climate-change-20264](http://www.climatecentral.org/news/studies-link-red-meat-and-climate-change-20264).
- Maly, T. (2015). A brief history of human energy use. *The Atlantic*. Retrieved from <http://tinyw.in/QPWJ>.
- Marlowe, C. (1599/2011). *The passionate shepherd to his love*. Charleston, SC: Nabu Press.
- Marx, K., & Engels, F. (1848). *The Communist manifesto*. London: Workers' Educational Association.
- Matthewman, S. (2011). *Teaching secondary English as if the planet matters*. New York: Routledge.
- Matulis, B., & Moyer, J. (2016). Beyond inclusive conservation: The value of pluralism, the need for agonism, and the case for social instrumentalism. *Conservation Letters*.
- Mayer, J. (2016). *Dark money: The hidden history of the billionaires behind the rise of the radical right*. New York: Doubleday.
- McKibben, B. (2001). The comforting whirlwind: God and the environmental crisis. Sermon.
- McKibben, B. (2008). *Teacher's guide to American Earth*. New York: Library of America.
- Menchu, R. (2010). *I, Rigoberta Menchu*. New York: Verso.
- Momaday, N. S. (1976). *Way to Rainy Mountain*. Albuquerque, NM: University of New Mexico Press.
- Moore, J. M. (Ed.) (2016). *Anthropocene or capitalocene? Nature, history, and the crisis of capitalism*. Oakland, CA: PM Press.
- Moore, K. D., & Nelson, M. P. (Eds.) (2010). *Moral ground: Ethical action for a planet in peril*. San Antonio, TX: Trinity University Press.
- Nemet, G. F., Grubler, A., & Kammen, D. M. (2015). Countercyclical energy and climate policy for the U.S. *Wiley Interdisciplinary Reviews: Climate Change*, 7(1), 5–12.
- Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Boston: Harvard University Press.
- Organisation for Economic Co-operation and Development (2010). *Cities and climate change*. Paris: OECD Publishing. <http://dx.doi.org/10.1787/9789264091375-en>.
- Oxfam (2014, January 20). Rigged rules mean economic growth increasingly “winner takes all” for rich elites all over world [Web log post]. Retrieved from [www.oxfam.org/en/node/4451](http://www.oxfam.org/en/node/4451).
- Phillips, M., & Rumens, N. (Eds.) (2016). *Contemporary perspectives on ecofeminism*. New York: Routledge.
- Piketty, T. (2014). *Capitalism in the 21st century*. New York: Belnap Press.
- Rivera, T. (1987). *And the Earth did not devour him*. Houston, TX: Arte Publico.

- Roberts, J. T., & Parks, B. (2006). *A climate of injustice global inequality, north-south politics, and climate policy*. Cambridge, MA: MIT Press.
- Rose, J. F. P. (2016). *The well-tempered city: What modern science, ancient civilizations, and human nature teach us about the future of urban life*. New York: Harper Wave.
- Salehi, S., Nejad, Z. P., Mahmoudi, H., & Knierim, A. (2015). Gender, responsible citizenship and global climate change. *Women's Studies International Forum*, 50, 30-36.
- Scannell, L., & Gifford, R. (2013). Personally relevant climate change: The role of place attachment and local versus global message framing in engagement. *Environment and Behavior*, 45(1), 60-85.
- Shiva, V. (2014). *Ecofeminism*. New York: Zed Books.
- Shove, E., Watson, M., & Spurling, N. (2015). Conceptualizing connections: Energy demand, infrastructures and social practices. *European Journal of Social Theory*, 18(3), 274-287.
- Smil, V. (2010). *Energy transitions: History, requirements, prospects*. Santa Barbara, CA: Praeger.
- Smiley, J. (2003). *A thousand acres: A novel*. New York: Anchor.
- Smith, G. (2016, January 18). The Pentagon's hidden contribution to climate change [Web log post]. Retrieved from <http://tinyw.in/VZ11>.
- Stiglitz, J. E. (2013). *The price of inequality: How today's divided society endangers our future*. New York: W. W. Norton.
- Thoreau, H. D. (1854/2016). *Walden*. New York: Macmillan.
- Vakoc, D. A. (Ed.) (2014). *Feminist ecocriticism: Environment, women, and literature*. Lanham, MD: Lexington Books.
- Wallis, V. (1993). *Two old women*. Kenmore, WA: Epicenter Press.
- Weintrobe, S. (Ed.) (2013). *Engaging with climate change: Psychoanalytic and interdisciplinary perspectives*. New York: Routledge.
- Westerfeld, S. (2004). *So yesterday*. New York: Penguin.
- Westerfeld, S. (2006). *Pretties*. New York: Simon Pulse.
- Westerfeld, S. (2008). *Uglies*. New York: Simon Pulse.
- Williams, M., Zalasiewicz, J., Waters, C. N., Edgeworth, M., Bennett, C., Barnosky, A. D., Ellis, E. C., Ellis, M. A., Cearreta, A. H., Peter, K., Ivar do Sul, J. A., Leinfelder, R., McNeill, J. R., Odada, E., Oreskes, N., Revkin, A., Richter, D., deB; Steffen, W., Summerhayes, C., Syvitski, J. P., Vidas, D., Wagreich, M., Wing, S. L., Wolfe, A. P., & Zhisheng, An. (2016). The Anthropocene: A conspicuous stratigraphical signal of anthropogenic changes in production and consumption across the biosphere. *Earth's Future*, 4(3), 34-53.
- Wilson, E. O. (2016a). *Half-Earth: Our planet's fight for life*. New York: W. W. Norton.
- Wilson, E. O. (2016b). The global solution to extinction. *The New York Times, Review*, p. 5. Retrieved from <http://tinyw.in/qWEe>.
- Wrebe, T. (2014). Barbara Kingsolver's *Animal Dreams*: Ecofeminist subversion of Western myths. In D. A. Vakoc (Ed.), *Feminist ecocriticism: Environment, women, and literature* (p. 39-64). Lanham, MD: Lexington Books.
- Yamashita, L., & Robinson, D. (2016). Making visible the people who feed us: Educating for critical food literacy through multicultural texts. *Journal of Agriculture, Food Systems, and Community Development*, 6(2), 269-282.
- Yolen, J. (1996). *Encounter*. New York: Voyager.
- Zeichner, N. (2015, December 13). Paris: How I have changed the way I teach about climate [Web log post]. Retrieved from <http://tinyw.in/etbL>.
- Zinn, H. (2015). *A people's history of the United States*. New York: Harper Perennial.

What wi  
Scientist  
both by a  
will impa  
make an  
Englis  
you how

CLIM/  
A new ki  
the hum  
literary g  
our stud  
action. A  
might te  
Litera  
and acti  
challeng  
level to s  
Cli-fi  
actually