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Peace Education, Transformation, and Responding to Climate Chaos

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Abstract

Peace education rooted in an analysis of structural, cultural, and direct violence provides a vehicle for an anti-capitalist, pro-indigenous, and spiritually-grounded methodology to examine climate chaos. Through autoethnographic reflection, the author reviews the root causes that led us to planetary disaster, analyzes peace education responses, and shares peace-education-based climate education models to transform our teaching and our relationship to Earth.

Keywords

Climate chaos, transformation, root causes, Earth-centered, peace education

Introduction

The ever-intensifying effects of climate change have already begun to exacerbate the undue suffering and harm inflicted upon and felt by people all around the world. Thus, I feel the term 'climate chaos' more accurately captures the environmental conditions of humanity's impact on planetary climate as well as the attendant atrocities that all life on Earth, and the planet herself, currently face due to our reliance on fossil fuels and our inability to effectively address human production of greenhouse gases. Chaos implies disorder and confusion, moving the

climate conversation beyond scientific discourse as it conveys urgency; an urgency we must all attend to in small and large ways, in classrooms and beyond, in local, national, and international policy. Climate Chaos is calling us to fully reimagine the world and how we function in it, to recognize that we cannot keep doing the same things and teaching the same way if we are to protect the flourishing of all life on the planet.

As an educator with thirty-plus years of experience working in classrooms, non-profits, and universities, as well as in informal settings, I am a firm believer in peace education, thanks to its conceptual framework of the interconnected manifestations of violence and its use of critical multi-lensed pedagogy to examine and address root causes. When coupled with a spiritually grounded conception of transformation that reorients our way of being in relation to Earth and all forms of life, the methodology of peace education can facilitate the wholesale shift in our global mindset/habitus needed to work against the forces of climate chaos. I contend that peace education is the best teaching methodology to address climate chaos if we deliberately facilitate learning experiences rooted in anti-capitalism, pro-indigeneity, and transformative, Earth-centered spirituality, promoting values of Community, Cooperation, and Interdependence.

What follows is an autoethnographic exploration about the role peace education can play in disrupting the patterns and outcomes created by traditional schooling and societal practices of cultural violence that have limited both discussion and action around climate change and provides examples of methodologies used to shift the conversation towards a more holistic, embodied, environmentally grounded, imaginative practice of teaching and learning. Through vignettes of teaching experiences and the voices of learners, this article utilizes reflective practice and wisdom of practice as a mode of examining, analyzing, and sharing teaching and learning experiences that offer experiential models of embodied peace education manifested through environmental explorations, place-based learning, and science education informed by spiritual grounding with children, undergraduate students, pre-service teachers, and teachers.

Literature Review

As I wrote in 2002, “originally a study of the causes of war and its prevention, peace education has evolved into the study of violence in all its

manifestations and educating to counteract the war system for the creation of a peace system; a peace system on both the structural and individual level. The content and the methodology of peace education are progressive; promoting egalitarian learning environments, open inquiry, and significant learner participation" (Ardizzone, 16).

Connected to seminal ideas put forth by Johann Galtung (1969), peace education acknowledges Structural Violence as the violence that is embedded in issues and institutions to create the systems of oppression we see (and have historically supported and/or taken for granted as "the way things are") every day. Institutionalized racism, sexism, misogyny, transphobia, inherited and insurmountable poverty, environmental racism and injustice are all manifestations of structural violence and are inextricably linked to climate chaos. Current education systems and religious institutions allow for the perpetuation of Structural Violence via Cultural Violence, which authorizes and inculcates the dominating and exploitative mindsets of the ruling class, often using and legitimizing Direct Violence, which in peace education typically includes physical harm perpetrated on a personal level. All three forms of violence also damage the land and living environment. Direct violence manifests as oil drilling and natural gas fracking, clear-cut logging, habitat destruction for profit and property development, massive loss of biodiversity leading towards a sixth extinction, and the historical and ongoing decimation of indigenous populations. Cultural and Structural Violence manifest in our conception and treatment of nature and Earth herself, in that we only deem nature valuable when we can commodify and capitalize upon it. Education and religion have relegated Earth-centered traditions and practices to the margins, deeming them "barbaric," "pagan," "hippie," or "unrealistic," but the truly barbarous thing is the way humans have abused the earth.

During the same decade that Galtung put forth his definitions of violence, The Rev. Dr. Martin Luther King Jr. shared his Giant Triplets – racism, materialism, and militarism – which similarly represent the carefully constructed conditions in the world that keep many oppressed and allow power to fall freely into the hands of a relative few, who then use that power and the structures of society to continue to oppress and marginalize others and exploit nature and natural resources (Rousseau and Rousseau, 1999). Racism, according to King, measures a person's worth by physical characteristics rather than character. Materialism places

obtaining objects as the core focus of life and manifests as rampant consumerism with harmful environmental repercussions, such as fast fashion and single-use plastic. And militarism is the commonplace and acceptable use of force and might – via war, policing, and a mindset of siding with oppressors - which in turn demonstrates an outward manifestation of valuing objects above people, of making greed and fear the dominant mindset. Militarism is especially jarring in the US context, where annually, anywhere from 43% to 51% of the US budget goes to funding the military, and in 2023, Congress passed the most bloated military budget in history even while there is evidence that the US military is a major contributor to greenhouse gas emissions.

From a peace education perspective, the extremes of exploitative capitalism and individualism, all emblematic of the United States ethos and emboldened by patriarchal Christian teachings—which, as explained later in this literature review, promote gender division and dominion over female bodies, the divine feminine, and Mother Nature herself as norms—have led us to where we are today, environmentally. To undo this damage, peace education must examine the Root Causes of climate chaos and empower a shift in public consciousness away from apathy and/or faux fixes to systemic long-term change.

As a peace educator, I am acutely aware that the United States education system is complicit in perpetuating this state of near-constant violence. Top-down educational policies, an overemphasis on testing, disproportionate funding (as compared to, say, the military budget), oppressive teaching practices at all levels of education, and the dehumanization of both teachers and students not only represent Structural and Cultural Violence but also serve to maintain the status quo of violence in society at large. The US education system, with its focus on standardized tests and other outcome-based measures, fully lives into the culturally violent practice of competition perpetuating both the myth of meritocracy and the myth of scarcity. Since societal values are generated from the dynamics of capitalism, education – even when it purports to be a public good in the service of democracy – perpetuates these values in the classroom, serving as a mechanism of cultural violence. As Bowles and Gintis point out in their 1976 landmark work, *Schooling in Capitalist America*, public schools perpetuate the values of a capitalist society in order to generate a population that fulfills its needs. Capitalist values, when inculcated into learners, renders structural violence as the acceptable norm.

Hence, competition, exploitation, conformity, and obedience become the de facto values/ethos of schooling, all to maintain and perpetuate the "American" form of capitalism, itself deeply rooted in extraction, exploitation, and dehumanization. This includes how we view the planet and natural resources. When structural violence goes unquestioned, so do the practices that exploit, harm, and degrade the natural world making it total normal to limit inquiry-based science and environmental education in classrooms. The US education system still primarily utilizes a banking methodology of teaching, and when any form of critical pedagogy is included, it is often done only for the elites with an aim to inculcate children into the role they will eventually play in the hierarchical system. There is almost no room for the creation or discussion of alternative systems of functioning. The true damage of this is that students will travel through the education system without ever having an opportunity to imagine a different way of living and being, other than that of exploitative capitalism. Gratefully, critical pedagogues, peace educators, and proponents of true democratic education have not only questioned this ideology in classrooms but also put forth models that are counter hegemonic.

However, since those models are not incorporated in the majority of school settings, the United States education system has actively underprepared students to take planetary health seriously. Over the past thirty years, I have witnessed a steady decline in the quality of how science is taught. In *Miseducation: How Climate Change is Taught in America*, Katie Worth (2021) writes that science education was undermined by political machinations that made it acceptable for teachers to exclude real scientific information about climate change and to allow students to "interpret" climate change rather than see it as fact. After her comprehensive review of curricula across the US, she found many points of friction: "Teachers who disagree over whether to teach it. Students who want to learn about it but are not taught. Others who are taught it but reject what they learn. District officials who struggle with teachers who refuse to teach it, or those who insist on teaching it. Parents who rage that their children are taught it, or that they are not" (12). She concludes, "that the classroom is not an ideologically neutral space when it comes to climate science is, in a way, strange, because climate science itself *is* ideologically neutral. The evidence for human-caused climate change is now as strong as the evidence linking cigarettes and cancer" (12). Worth's research demonstrates that although there is overwhelming evidence of human-caused climate chaos, educational spaces remain mired in ambiguity, at best, and

resistance, at worst, on the value of teaching children about climate change, human responsibility, and the role that educators and learners can play as agents of truth-telling and change. An educational system that cannot commit to a unified ethos to address the urgency of the planetary situation is harmful.

I began teaching science, including global warming, in 1991. Instead of expanding education in this area to match the growth of the problem, climate change education has been increasingly limited over the past 30 years. When Jimmy Carter became president in 1976, his first act was to install solar panels on the White House. The United States had the opportunity right then to become a leader in renewable energy. However, four years later, when Ronald Reagan took office, his first act was to have those solar panels removed. Clearly, our nation had an awareness of global warming and the need for a significant course shift, but power and money stifled it. This awareness dates even further back to 1896 when Swedish chemist Svante Arrhenius shared his research-based findings that there was a clear connection between atmospheric carbon dioxide and planetary temperature indicating that Earth's temperature would increase as we continued to burn coal. By the mid-1900s, other scientists were proving that Earth had already begun to warm at a harmful rate. President Johnson, upon receiving a report from the scientific community in 1965, informed Congress that humans were altering the atmosphere through our use of fossil fuels. In the 1950s and 1960s, the petroleum industry funded research into the role of fossil fuels and they too overwhelmingly found that the burning of fossil fuels could be severely damaging to the planet. This led to the American Petroleum Institute's creation of a climate task force. By the 1980s, their findings were grim, but rather than using those findings to invest in alternative energy (renewables, e.g., solar and wind) their reports were buried, and this information was ignored – shameful but not surprising. It parallels the political machinations at work. Funding shifted from scientists researching the effects of carbon emissions to lobbyists fighting for the rights of the fossil fuel industry.

By 1990, thanks to the United Nations, the Intergovernmental Panel on Climate Change (IPCC) had been formed and issued its first report which stated, "the natural greenhouse effect keeps Earth warmer than it would otherwise be, and human activities are magnifying the effect." (23)
However, the trajectory of the United States' efforts to limit enacting any carbon emission restrictions – up to and including the Kyoto Protocols in 1997 – was

unobstructed. The debate about climate change (or global warming, as it was originally called) was born. Today, as we witness small island nations disappearing, rampant drought, flooding, and wildfires, people still question if it is real. In 2022 and 2023, the IPCC reports once again clearly stated that humans are the cause of climate change and that we have less than six years to limit our emissions to regulate planetary temperature. Imagine what things would look like had we listened in 1965.

This manipulation of information on climate change is echoed in public schools' science curricula. As a former high school biology teacher, I know that the ecology chapter is often relegated to the end of the textbook meaning that, oftentimes, teachers don't get to this important and overarching topic at all. Capitalism and competition have coopted science education, as students are strongly encouraged to pursue STEM (science, technology, engineering, math) fields. While not in and of itself a bad thing, this push often comes at the sad expense of arts and humanities programs. Further, many STEM programs are so focused on outcome that the learning process is warped, and many qualities children naturally possess, imagination, inherent curiosity, and wonder, are often left behind. Science education is not the only problem, of course, since social studies is also often taught from the perspective of the victors. History lessons regularly perpetuate the erasure of indigenous peoples and traditions relegating them to "the past" rather than acknowledging their continued presence and ongoing contributions to society.

Coupled with abysmal practices in science and history education is the growth of what Michael Maniates calls the "individualization of responsibility" (2001, 33). He points out that this individualization of effort to address our environmental crises stems from the "historical baggage of mainstream environmentalism, the core tenets of liberalism, the dynamic ability of capitalism to commodify dissent, and the relatively recent rise of *global* environmental threats to human prosperity" (33). He further claims that accelerating this *individualization of responsibility* narrowed our imagination on how to address environmental threats truly and effectively. We become entangled in greenwashing and buying eco-friendly products rather than engaging more deeply with the terrible problem of

consumption (or what Dr King called "materialism").[1] Individual responsibility is extremely important, especially if it allows us to live more simply, in undermining the efforts of the capitalist over-consumption machine. But a systemic problem requires systemic solutions and education plays a key role in helping students see this Big Picture.

To analyze the Big Picture, peace education relies on deracination to name and examine Root Causes, which, in the context of climate chaos, include Capitalism and Colonialism. Colonialism's focus on the subjugation of peoples and place, to exploit resources, is grounded in a Christian ethos of domination. Thus, as problematic as it is to name, religion also needs to be part of the root cause conversation. As a Unitarian Universalist minister, I spent much of my time during seminary examining religious teachings and history from a peace education perspective. The writings of Mary Daly and Vine Deloria Jr. Daly, a feminist former Catholic, and Deloria, a Standing Rock Sioux theologian, lawyer, and activist, define the root causes of oppression and environmental injustice as patriarchy and exclusivity (meaning lacking wholeness and unity), respectively.

Daly's (1973) methodology analyzes the religious roots of patriarchy through history, symbolism, and language. Male theologians through the ages—Tertullian, Augustin, Barth and Bonhoeffer—are part of creating and perpetuating the "exclusively masculine symbolism for God, for the notion of divine 'incarnation' in human nature and for the human relationship to God reinforces sexual hierarchy" (4). This male-oriented sense of God not only creates this hierarchy in the human realm but also manifests in how Earth—a divine feminine manifestation—and matrilineal, female-centered, and earth-centered spiritualities and cultural belief systems have historically been mistreated; they were devalued,

[1] I am reminded of the push across the US in the 2000s for people to replace all their bulbs with LEDs which, while important, is almost inconsequential compared to the more pressing needs of addressing refrigeration (shipping food across the country and/or around the world), food waste, deforestation, and fossil fuel overuse in personal transportation. (See Project Drawdown for a comprehensive list.) Buying an LED made people feel like they were doing something for the planet and allowed companies who engage in greenwashing to market a false sense of comfort in making consumers feel good about themselves or at the very least to make us feel like we are part of the solution, and not the problem. The LED craze felt like an extension of teaching children the 3 R's – reduce, reuse, recycle – but in most cases, classrooms (and even environmental education programs) focused on recycling, in and of itself a sham, rather than the far more impactful R, Reduce. One makes us feel good; the other requires us to change for good.

demonized, and obliterated. Society's allowance of raping and pillaging Earth as life-giver is consistent with the patriarchal mindset.

The Christian (or more accurately, Abrahamic) conception of male deity stands in stark contrast to notions of 'god' in Native (indigenous North American) spirituality; the Creator or Great Spirit or Wakan Tanka is genderless. The conception of God among Native Peoples is not patriarchal – although there are folks who refer to the Creator as father, it is not in a human sense. According to Deloria (1992), "the overwhelming majority of American Indian tribal religions refused to represent deity anthropomorphically" (79). Rather, the Great Spirit is an "undefinable presence" (79). The Native American Creator is more accurately interpreted as a representation of humanity's relationship with nature, and an inclusive rather than exclusive notion of a deity encompassing all the life (and things typically deemed non-sentient) it contains. To Native Americans, all of creation is good and therefore there exists a universality and interconnectedness to the planet. Deloria states, "All parts of [Earth] functioned together to sustain it" (81). Juxtaposed with Christian creation, Deloria points to the root cause of exclusion, or the lack of an ethic of interconnectivity with all life and the Earth. For him, the "aspect of the Christian doctrine of creation that concerns us today is the idea that man receives domination over the rest of creation" (82). He continues, "this attitude has been adopted wholeheartedly by Western peoples in their economic exploitation of the earth" (83). Deloria, whose father and grandfather were Episcopal ministers, contends that the most damaging aspect of Christianity is this lack of an Earth-centered ethos. Christianity doesn't simply ignore humans' relationship to the Earth but rather makes a point that the earth is for human subjugation. This idea that humanity is entitled to domination over the earth (and its peoples) by any means necessary necessitates a separation from that which gives us life.

An interaction with land and life forms is an integral part of Native spirituality and something that is utterly lacking in Christianity. While scripture certainly exists to support the idea of "loving one's neighbor" it appears tainted with unwritten conditions – unless they have the land you want, can serve as slave labor, impede your efforts to dominate, or try to fight back. In this light, Christian values are not as "communal" as they appear, (Deloria, 1992, 27) lacking clear guidelines for "responsibility to family and community" (40). For Native

Americans, all life is valued equally. Non-human living things are not belittled – they are "peoples" in their own right. The hierarchy Christianity places on life, from land to animals to women to men at the top of the pyramid, is both patriarchal and divisive. "To exist in a creation means that living is more than tolerance for other life forms – it is recognition that in differences there is the strength of creation, and that this strength is a deliberate desire of the creator" (89). Deloria's root cause of Christian oppression is the rejection of the interconnected nature of all living and abiotic things which perpetuates the binary Christian mindset grounded in an ethic of domination over Earth and its peoples. This lack of holism will continue to disallow a society that upholds Christianity from addressing the true needs of the people and the Earth. Thus, a peace education-lensed climate curriculum must include an understanding of how male-oriented "god" teachings have set us on this course. Furthermore, it must include a spiritual component that counters the traditional dominion and duality mindset regarding nature that can thus serve as a source of embodied knowing fostering a culture of reverence.

Healing this schism—the duality and disconnect—is clearly necessary and in addition to engaging learners in root causes dialogues, we can also increase the natural world experiences of young children. Research has demonstrated that young children who participate in Environmental Education or increased nature experiences have a greater connection to Earth and in adulthood demonstrate a greater sense of pro-environmentalism. (Rosa & Collado, 2019). More research is needed however to better understand why this connection exists which can help guide the development and design of childhood/youth nature-based learning experience (Rosa, Profice & Collado, 2018) but suffice to say that something – outdoor nature excursions - is better than nothing and will go a long way in shifting from a culture of disconnection and exploitation to a culture of respect, reciprocity, and reverence. This culture of reverence requires a wholesale shift in mindset and a core problematic in peace education is how to facilitate this shift towards greater consciousness. As Freire put forth more than five decades ago, the way to dismantle the interlocking systems of oppression is to raise consciousness via education. Freire's major goal was the development of an emancipatory pedagogical process that is designed to teach students, through critical literacies, how to negotiate the world in a thoughtful way that exposes and engages the relations between the oppressor and the oppressed (Macrine, 2009). This happens through an education that is facilitated by a certain type of teacher; "the teacher is of course an artist but

being an artist does not mean that he or she can make the profile, can shape the students. What the educator does in teaching is to make it possible for the students to become themselves" (Freire & Horton, 1990). Through a critical peace education pedagogy, we can: 1) raise awareness via 2) analysis of complex problems, thus empowering 3) a sense of agency among young people.

Working within the current educational paradigm is a challenge. A giant overhaul of the education system to address climate chaos and all forms of violence that currently plague us is most necessary. However, the fact that a full restructuring is not feasible does not make me hopeless. Rather it inspires me to find more ways to resist and create truly revolutionary education spaces that live into the promise of what peace education can bring. A key aspect of this resistance is educating to dismantle systems of power, clearly stated by Ian Harris and Mary Lee Morrison (2002): "If education is to play a vital role in bringing peace to the world, it must cease as a vehicle that enables the privileged to strengthen their power and must help those without power learn how to become powerful" (91).

Methodology

In order to provide experiences and models of peace education as a means to address climate chaos, this paper utilizes an autoethnographic method. Autoethnography is an "autobiographical genre of writing that displays multiple layers of consciousness, connecting the personal to the cultural" (Ellis and Bochner, 2000, 739) and can include research about personal experiences. Further, McIlveen (2008) states that "the core feature [of autoethnography] entails the scientist or practitioner performing narrative analysis pertaining to himself or herself as intimately related to a particular phenomenon" (3). In this case, I use autoethnography as an insider exploring the phenomenon of peace education methodology to address climate change, environmental connection, and transformative practice. My reflections in this paper align with what Mendez (2013) calls analytic autoethnography which directs writing and analysis towards a particular audience. She states too that an advantage of this type of autoethnography is that it allows other practitioners to "reflect on and empathize with the narratives presented" (282). Furthermore, since this autoethnography includes reflections over the course of my thirty-year teaching career, it represents practice wisdom or practical wisdom which Higgs (2009) states is "more than the possession of general

knowledge because it is the ability to actuate this knowledge with relevance, appropriateness, or sensitivity to context." Hager and Halliday (2009) contend that the wisdom of practice is "not to have attained a state of superabundance or skills that in no way can be improved upon. Paradoxically, to think that you have attained wisdom, means that you are not wise. Rather, wisdom is a disposition to go on developing and learning in a world of contingency and happenstance" (232). Higgs (2009) adds that practice wisdom is "an embodied state of being, comprising self-knowledge, action capacity, deep understanding of practice and an appreciation of others, that imbues and guides insightful and quality practice" (9). Through reflecting on one's practices, especially via a lens of continued self-discovery and experiential learning capitalizes on Beres' notion that, "Being undogmatic suggests holding knowledge tentatively and being willing to be surprised by new ways of thinking and being" (2019, 285). This is the spirit in which I share my research and experience. These models of self-research and self-reflection feel like ideal companions to the practice of peace education since peace education eschews notions of expertise while embracing lifelong learning, reflective practice, and dialogical learning experiences. It is my hope that by utilizing this methodology this paper opens dialogue and collaboration and an ongoing sharing of ideas so that a community of practice – of educators, and others committed to addressing climate chaos before it is too late – emerges. Thus, the findings to follow are reflections from my 30-year career in education and include examples from preK-12 and higher education in both formal and non-formal settings. While I have used peace education pedagogy in various ways, my primary focus, for this article, will be peace education via environmental education.

Findings

My first teaching job was at the American Indian Heritage School (AIHS) in Seattle, Washington in 1992. I was hired to run a grant-funded environmental education program based on the ecology and natural history of the Duwamish River. I am forever grateful to my indigenous colleagues and friends at AIHS who expanded my conception of ecology, profoundly adding to what my college professors taught me by inviting me to explore the spiritual side of the interconnected web of life. Those lessons from thirty years ago continue to inform both the *how* and *why* of my ongoing work in peace and climate education. Through the grant, the high school students and I conducted a school-year-long study based

on the Duwamish River, exploring the geography, chemistry, biology and natural history of the river and the role of Washington's original peoples (the Duwamish) in the care of the river. An interdisciplinary project, the grant included a partnership with the AIHS English/Drama teacher, who helped students create a play entitled "Sister River and the Two-Leggeds" which artistically represented the declining health of the Duwamish River and how that decline impacted all forms of life that relied upon the river. Further, the play made clear the role humans (the 'two-leggeds') played in the river's demise. A core group of students and I traveled to various schools in Seattle, sharing teachings about the Salmon life cycle and water quality which were followed by a performance of the play. A few impactful outcomes of this experience were 1) that it provided a holistic understanding of nature, ecology, and humans role as both harmful and potentially helpful, 2) it offered a connection-making place-based educational experience, 3) it utilized a peer-teaching model that allowed students to share their own learnings via their choice of pedagogy, 4) it brought science and art together allowing for learning to occur via multiple intelligences, and 5) it had lasting impact as it was codified into memory when the students and I had a brief guest spot on Bill Nye the Science Guy's television episode entitled "Garbage!"

Reminded of Nel Noddings' writings on place-based education and Dewey's call to make education local, practical, interdisciplinary, and real-world meaningful, coupled with my experiences at AIHS, I chose to spend a large part of my teaching career with either teachers who were on the path to certification or children in New York City exploring the outdoors—human-made "nature" as it were—inviting them into a relationship with life forms with which they initially had limited connection. While working with teachers in courses designed to prepare them to teach interdisciplinary science to young children, I found that many of these future elementary educators carried serious math and science phobia due in no small part to inadequate educational experiences during their own K-12 time. Thus, my coursework had to combine content learning and pedagogical practices with some form of emotional rehabilitation as well. These classes were therefore deeply grounded in play and exploration, whether we were examining physics principles, human biology or geology, and the courses naturally included time outdoors. Each time I taught this course one of our first lessons was a "Nature Scavenger Hunt" (a lesson I originally developed for children because of my time working at the American Museum of Naturally History and learning that a "field guide" helps

guide students through observations in the museum setting). We went outside to the local park or greenspace and future teachers were invited to find "evidence" for various forms of life using all their senses. They'd work alone or with classmates interacting with trees, plants, urban wildlife, as well as rocks, the sky and the Mahicantuck (Hudson River) drawing or writing their observations on a Field Guide I created. They were invited to collect samples (by doing no harm) and when we'd return to the classroom, we'd share observations *and* feelings about the experience. Our discussions were always rich, and I learned that if we want children to have deeper connections to various phenomena in the natural world, their teachers have to make those connections as well, or at least be willing to step into a space of "not knowing" to open the possibility for these connections to occur.

In the mid-2000s, I transitioned out of university teaching, into the non-profit world and then back to teaching young children when I founded my own science center (Storefront Science), doing a large amount of work as a "guest" or "push-in" science and environmental educator in schools, informal settings, and with the Parks Department. For many of the kids I worked with, their understanding of insects stopped with cockroaches, birds meant pigeons, and mammals included rats and aggressive squirrels. They were also disconnected from their food, having almost no idea that French fries came from potatoes or how apples or carrots grew, and when they encountered trees, they were neatly planted in a four-foot square box surrounded by concrete sidewalks.

Whenever possible, we would go outside and study that four-foot square, draw the tree, touch its bark, and look for human and non-human evidence of life. We'd discuss terms like biotic and abiotic and who got to decide what was deemed living and non-living. The kids began to question, "Why are there more buildings than trees? Why do rats and raccoons need to scavenge for their food? What role do insects play in our lives and is it okay to kill them? What can we learn about a tree based on its leaves and bark?" and to search for answers in the world around them. I'd also bring boxes of specimens into classrooms, and we'd sort shells, rocks, pinecones, seed pods, resin-encased insects, and even interact with my pets: a tarantula, gerbil, and rescued lab rats. They learned to be gentle. They learned to ask where things came from and why they look the way they do. They wondered why I had all these strange things. They learned to see patterns and create collections based on similarities and differences. The teachers I coached began

creating classroom collections of their own in conjunction with the students for more hands-on exploration and took their students to the grocery store to have conversations about where the fruits and vegetables came from.

With some student groups, we'd spend more time outside in one of New York City's carefully designed parks—a curated natural environment, to be sure—and we'd go deeper. We'd ask, "Why do we need a park?" "What happened to the original trees that grew here?" and even "What happened to the original people that lived here?" We'd go on scavenger hunts looking, listening, and smelling for evidence of non-human life and then we'd share what we noticed and ask more questions. They learned that we owe gratitude to the trees for cleaning our air. They learned that everything in the park was connected. I always actively referred to Earth as She, as Mother, as life-giver and healer, as living. We'd talk about where humans fit into this great big web of life and wonder why we didn't take better care of Earth.

Perhaps one of my most profound experiences that brought home the power of nature was when I was teaching science at a special needs pre-school in Harlem (NYC). We were sitting around the table sorting leaves—it was autumn and I had brought a great collection to class—while also looking at picture-heavy field guides of trees and a mostly non-verbal student was leafing through the pages of one of the books and carefully looking at the leaves sitting in front of him. A few moments later he started moaning and gesturing wildly. He had found a match! He was holding a maple leaf in one hand and pointing to the book with the other. His excitement was palpable. His teachers and I were stunned. They later told me that just the day before, he was tearing pages out of books, and here he was now, tapping with pride and joy at finding the leaf he held. He then, with such gentleness and affection began to rub the maple leaf on his cheek smiling broadly. In that moment, I witnessed that young boys' almost-spiritual connection and learned that if we cannot bring children to nature, we can bring nature to them and it's still a transformative experience.

When I relocated out of New York City and began working as an instructional coach with teachers and children in the Mid-Hudson Valley of New York I still found children with limited connection to Earth, despite the increased nature that surrounded them. They had the same questions as their urban peers, so

we did the same explorations. And when I coached their teachers, they'd say, "I don't know why I don't take them outside more." Perhaps they would have benefited from the words of naturalist John Burroughs (republished in 2015): "To absorb a thing is better than to learn it, and we absorb what we enjoy. We learn things at school, we *absorb* them in the fields and woods and on the farm. When we look upon Nature with fondness and appreciation, she meets us halfway and takes a deeper hold upon us than when studiously conned" (10).

Today, I continue to live into Burroughs' spirit of *absorption* with a return to higher education. I also spend a large part of my time as a community eco-minister focused on Earth-based experiences. I regularly preach on the topic of climate chaos and environmental injustice, and I teach a course for other religious leaders entitled "Ecology as Scripture" wherein I utilize a peace education framework to examine the science of climate change—because there is clearly a need to increase public understanding of how we got here—and spiritual motivations and responses to how we can address climate chaos and eco-injustice. Through textual analysis (ecologically minded exegesis) we examine root texts from various traditions to explore imagery, language, and meaning designed to pull us into a Freire-esque problem-posing discussion about division, dominion, and hierarchy. Through this practice, participants regularly find terms and images that are counter to the popular interpretation of scripture and text. They share observations around covenantal relationships with all life on Earth, and how this type of textual analysis invites us into a closer relationship with creation. Every time I offer the workshop, new ideas emerge from the participants, and I find myself co-learning with them and then, digging - seemingly continuously - for additional texts to dive into. As we do the textual analysis, we also find particular examples of climate chaos that each passage relates to thus inviting connection between science, spirituality, and action steps.

I utilize a similar practice in a course I teach each spring at an elite liberal arts college entitled "Science, Spirituality, and Peace Education: Addressing Climate Change," which provides the scientific data of climate chaos and invites students into an exploration of root causes, solutions, and finding their voice as agents of change. We call upon a variety of spiritual (and religious) traditions to find dissenting voices or core tenets that we can use to subvert the dominant dominion paradigm. Students find the course to be transformative. It is an

experience where their fears and grief are honored, where scientific data is only part of the equation, where they find a spiritual calling, and where they are invited to imagine the future they want to see and create an action project that starts them on their path. Through a series of short essays spread out over the semester, they share their learnings with me. On the overall concept of peace education, they write:

> Another core value of peace education is listening to local voices. In order to fight violence and achieve peace, those who are most greatly affected and have the most cultural and land knowledge need to be listened to. Additionally, peace education values connecting with nature on multiple levels. Not solely performing actions that help the earth but understanding the broad benefits of such actions.
>
> Strategies that speak to me in particular include explicitly introducing topics of peace and violence, challenging capitalistic values in schools, and empowering students to imagine creative solutions to conflict.
>
> Peace education also provides a framework to imagine alternative solutions to social and environmental violence. The recognition that science and traditional academic knowledge can only go so far in aiding our world's woes is a critical aspect of peace education. In considering peace education's pillar of planetary stewardship, conversations can be had in classrooms about what systems we are trying to sustain when we envision "sustainable futures." Turning towards a spiritual and cultural transformation as an avenue to envision how to apply science and technology-based solutions opens up new answers to this question.

About peace education practice, they share:

> I think that it is very important for young people, and older people, to envision an ideal future to make lifestyle changes that will lead to said future.
>
> Youth-centered, project-based learning is one way that we can disrupt unjust environmental policies and decisions that place marginalized communities at risk and incorporate futures studies into the classroom.

> It is a means of identifying alternative futures that represent what we want the future to look like, even if it is not what we think is actually going to happen.
>
> It emphasizes moving from a "power over" model to a "power with" model – power dynamics do not require one person/group/etc. having power over another, but capitalism limits our ability to imagine something different.
>
> Peace education accomplishes this by uplifting all voices, permitting every individual to feel personally responsible for taking a stance on climate change, while also placing them in a community of others who partake in the conversation.
>
> It would also be nice to change how we teach about current global crises and root causes; in my experience I often found my pre-college classes to be very detached from current events, and I believe teaching how current events trace back to historical root causes would be very beneficial.

They see the potential for transformation when peace education enters into a dialogue with climate chaos:

> But it is also incorrect to believe that we as individuals can do nothing; while facing global crises like climate change requires sweeping changes and collective movement, it must all start at an individual level. Yet this isn't the contradiction it may appear to be—really, what matters most is the purpose behind the action. It's different when an individual acts only in regard to personal consumption, and when individuals act knowing their efforts are part of a global whole.
>
> If there's a central tenet of Peace Education that most stands out to me, it is cultural transformation. From education classes prior, and my own journey of disillusionment, learning about the intertwined and intimidating systems of power and oppression—capitalism, racism, those seemingly too-entrenched-to-take-on "root causes"—have long felt disheartening. One issue leads to ten others, and addressing one seems impossible without addressing all. This hopelessness of impossible scale led me to our class and

in the face of perhaps the most dread-inducing intertwined issue, climate change, peace education expands my insight. It reignites my drive.

I believe that the emphasis on the interconnectedness of environmental justice with all other justice forms, including racial, gender, and housing, is key. To understand these connections, individuals must identify the root causes of problems, including white supremacy, capitalism, and patriarchy.

While it is important to teach students about systems of violence, it is just as important to give them the tools to replace them with new systems of peace. Children carry ample imaginative power, much of which is either suppressed by the prescriptive problem-solving approaches taught in schools or is otherwise channeled mostly towards creations to be profited off of… Transformation can begin with simple changes that one makes in their educational settings to encourage peacemaking and change definitions of success. By giving students the tools to imagine creative and peaceful solutions to conflict, we set them up to transform their own present and future communities, and potentially the wider world.

There is no easy fix to our current situation. But, I believe that the power of imagination and emotion is an untapped resource that can create a cultural revolution capable of combating our current structures. The first step to a new world is imagining the world we want to live in. Imagination itself is a resistance to capitalism.

Discussion

From my educational encounters, witnessing the experiences and voices of learners of all ages, I have come to realize a few things with regards to how education can better invite teachers and students into addressing climate chaos. Creating localized and place-based explorations can foster connection and deeper understanding of not only the natural (or natural-built) world but also one's role in the system. Since so much of formal education can be top-down, to teach from the bottom up is an act of resistance. Exploration and inquiry grounded in children's local setting allows them to bring forth local knowledge thus seeing themselves as part of rather than separate from nature, community, or one another. I see this

situational learning as part of an 'undoing'—undoing what we think we know, what we've been told to accept, and what we've come to believe as the only way to exist. Teachers also need this undoing of their own educational experiences so that they don't fall into the trap of perpetuating dominant mindsets around planetary care and humans' roles as agents of change. Through the practice of undoing and living into not-knowing, teachers can facilitate experiences that promote questioning thereby creating a learning community filled with co-learners, where children see their teachers as learners too. Through a co-learning model of critical pedagogy, educational spaces can become sites for learners to imagine futures that are actively different than what we've been invited to accept. So many of the people I've worked with—young and not-so-young—often feel crushed by the weight of the world, by planetary destruction and the prevalence of violence in so many forms. When given the chance to envision the world they want to live in, their countenance, and energy, shifts. Education that promotes imagination and creativity empowers learners—and their teachers—to not simply see another route forward, but to also live that world into creation. I believe all these shifts are part of a peace education practice and while certainly important for education in general, they can be particularly impactful to address the myriad issues we face in the wake of climate chaos.

To ground peace education in the various sites I teach, I have long relied on the Three Core Values of peace education as put forth by Betty Reardon (1986): Planetary Stewardship, Humane Relationship, and Global Citizenship as a foundation. I believe that they provide a clear and impactful framework for those needing a starting point for peace education,[2] although I did recently reformulate them to reflect a more expansive and inclusive value set.[3] The aforementioned 'un-doing' practice manifests when peace educators engage learners in questioning the dominant paradigm that sees wealth, competition, and environmental domination as the standard. Perhaps the first thing we all need to be comfortable with is unpacking the world order that exists, as Brantmeier states, "dominant and subordinate power relationships need to be critically explored" (2013, 247). In particular, we must engage learners in understanding how power structures based on capitalism and colonialism have not only shaped our economy and *modus*

[2] See, Ardizzone, L. (2022) Science, spirituality, and climate change. Peace Review.
[3] See, Ardizzone, L (2024). Three-Legged Stool: A Peace Education Framework for Weaving Together Spirituality, Science, and Technology. Zygon: Journal of Religion and Science.

operandi but also limited whose voices are given credibility and how, whether we have realized it or not, we all have come to accept the destruction of Earth as a *fait accompli.*

Peace education is ideally suited as the methodology for climate education if we are committed to using a critical, analytical, intersectional, interdisciplinary approach that questions assumptions, poses problems, engages in counter-hegemonic thinking, and collaboratively encourages learners to examine root causes and generate solutions that are holistic, responsive, and long-lasting. This last part is of paramount importance. We are bombarded with messages that technology will fix the climate crisis. And while this is certainly true in terms of developing alternative energy uses, inventing electric cars and other non-fossil-fuel conveniences, technology does not address the underlying consumption-based mindset that got us into this situation in the first place. Furthermore, technology does not invite us into an Earth-centered ethos for addressing root causes. Thus, a peace education perspective enables a critical examination of perceived solutions so that when we study the technology of electric car batteries, for example, we will also be looking at the environmental challenges of mining for necessary minerals used in their production and the political, economic, and post-colonial/oppressive power dynamics of these "advancements." Natural resources are needed for technological developments, (i.e. mining for copper in Latin America) thus we must examine how they are extracted, who is doing the extracting, and who is profiting from the extraction. Most crucially, we must examine the "why" of the technology. Why is this necessary, beyond convenience, and could we instead invest in a solution that doesn't continue harm to Earth? Could we address the problem by shifting how we live instead of exploiting the Earth to continue our current lifestyles? And the biggest question for peace educators: how do we engage learners of all ages in the discussion of living more simply and holistically? How do we engage them in, in Gandhi's words, learning to "live simply so others may simply live"? Technology may need to be part of a solution, but it does not invite us into a deeper relationship with nature or call us into community with societies that have lived and continue to live in respectful, restorative, and reciprocal relationships with Earth and nature.

Climate and Peace Educators need not start from scratch. While I've shared some models from my teaching experiences, other peace educators over the last

twenty-plus years have created various models that, while historically used to address other manifestations of the violence triangle, can easily be used to facilitate learning around the root causes of climate suffering. For example, Brantmeier (2013) put forth Critical Peace Education through an iterative process that includes "raising consciousness through dialogue," which for climate chaos means sharing compelling scientific data about global warming and its current manifestations and engaging learners in a discussion of root causes and prevailing impacts. He emphasizes "imagining non-violent alternatives" and, in this sense, helps learners dissect the violence done to planet and species through an exploration of pre-colonial epistemologies to reveal ways of interacting with Earth that are harmonious and reciprocal rather than violent and exploitative. This practice leads into his third point, "providing specific models of empowerment" wherein learners can conduct case studies of local and/or global environmental actions – especially those led by young people, indigenous people, and/or other marginalized voices, which will inspire them to more deeply examine or develop their own methods of 'transformative action". As the process continues, learners are invited into moments of "reflection and re-engagement" where they can share their learnings, their shifts in consciousness, and their personal challenges as they try to live in harmony with the natural world amid a culture of violence and destruction (249-250).

I am particularly drawn to another model, that of Turay & English (2008). Their "Transformative Model of Peace Education" is made up of five components, including a nod to spirituality. These five aspects "globalized perspectives, indigenous knowing, diversity, participatory learning, and spiritual underpinning" (293) bring together the best of what peace education has to offer, explicitly adding indigenous voices and acknowledging spiritual connection as a necessary component of peace work. In a classroom setting, examining climate chaos, or even studying just one aspect of the problem through this model allows students to recognize the global implications (not just the local) of climate change, and incorporate indigenous wisdom and examine spiritual motivations to address it. Through this model, I can see a classroom digging deeply into the Red Deal (https://therednation.org/), doing a case study of GreenFaith, or developing a protocol of Mutual Aid for their community.

These models, as well as the methods I have developed and utilized in my own learning spaces, speak to the power of peace education as empowerment education.

> "In the empowerment process, personal change begins to occur when people acknowledge their deep feelings about violence and the perilous nature of the world. Accepting feelings of fear and vulnerability as normal human reactions frees people to share those feelings with others and explore common links that provide the basis for joining together to address these problems." (Harris & Morrison, 2002, 93)

This is especially true and necessary as climate chaos involves profound feelings of grief and despair. In order to address the state of the world, we also need to be open to sharing and processing these heavy emotions. Through peace education, we can create brave and caring spaces where our concerns for the future and our despair in the present can be shared, processed, and transformed into action.

My learnings over the years have been profound and my peace education orientation has enabled me to continually incorporate, refine, reimagine, and re-implement lessons and experiences that foster connection, cooperation, and reverence. As seen by the responses from students (and students who are becoming teachers), experience with an alternative education paradigm is deeply impactful. Many people assume our responsibility as teachers who care about life on planet Earth extends only to taking kids outdoors more, and while that is definitely necessary, we need to know *why* we are taking them outdoors and we need to have a pedagogy of place that is not just about being in nature for the sake of being in nature, but also about listening to nature and to the cultural voices that lived in community with all of creation. This is where critical peace education meets spirituality; creating learning opportunities that invite us into a relationship with the natural world that isn't focused on outcome or content but rather on presence and connection.

What I hope to see peace educators facilitate is a love of nature, a reconnection and spiritual shift toward unity. Through peace education, we can push back against the historic duality or division between humans and the natural world that led to the destruction we are witnessing, which means we must relearn and re-engage with the thoughts and practices of First Nations people. Through this

we kindle curiosity and the creativity necessary to imagine an anti-capitalist future that puts relationships, healing, land back, reparations, and even the divine feminine at the center, leading us towards a communal and non-disposable way of living. This aspect of a peace-based climate education is not simply a "going into the woods" series of experiences, it's deeply understanding layers of ecology, fostering reverence for nature and all life forms. Through this, we cultivate reciprocity: you cannot take what you can't replenish. Such praxis will hopefully help learners not just gain a newfound or alternative perspective on nature and life on Earth, but also deeply question a society built upon extraction and unmitigated progress. Ideally, we'll guide them to develop personal, interpersonal, and communal ways of being that can avert the disasters that climate chaos brings and bring forth a more just and sustainable world.

By coupling peace education pedagogy with Earth-based practices and a spiritual-minded lens, we can foster critical analysis, support imagination and a futures-oriented way of thinking, nurture a call to justice, and perhaps, most important of all, cultivate hope – a radical, transformative hope that the world so desperately needs.

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