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Centering an Environmental Ethic in Climate Crisis

Charlie Kurth and Panu Pihkala

Abstract. This article advocates for an emotion-aware approach to climate change ethics education. We begin by reviewing traditional strategies, both noting their strengths and limitations, and highlighting how these traditional approaches often neglect the role of emotion in climate change ethics education. From here we discuss five philosophical frameworks that motivate and give substance to a more emotion-aware approach. We then detail four central pedagogical elements that are characteristic of this approach, explaining how these elements give shape to a distinctive and compelling pedagogical approach to climate change ethics education. We conclude by discussing both the benefits and challenges of adopting a more emotion-aware strategy.

Key words: Climate emotion, Sentimentalism, Feminism, Pedagogy of hope, Transgressive pedagogy, Philosophy of emotion

The ecological crisis raises profound ethical issues and education has a major role to play in addressing them. While there are numerous problems on this front (for an overview, see Steffen et al., 2015), climate change has become the overarching issue of the 21st Century.[1] Looking at the crisis from an ethical perspective reveals a number of difficult questions, such as:

[1] Will Steffen, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs et al, "Planetary Boundaries: Guiding Human Development on a Changing Planet," *Science* 347, no. 6223 (2015): 1259855. https://doi.org/10.1126/science.1259855

- What responsibilities do we have toward future generations? Do future generations have rights and, if so, how should these rights be accommodated in ethical decision-making?
- How should individual responsibility be balanced against institutional structures that often push people toward behaviors that have problematic impacts on the environment?
- Given the profound threats that the climate crisis presents, how can those who have more power support those who have less power?
- What is the human responsibility towards non-human creatures and ecosystems?

Developing effective pedagogical strategies for thinking about ethical questions like these is getting increased attention among educators. Students are also exploring environmental themes in a wide range of courses – from the arts and history to literature and the sciences. As Charlotte Jones and Aidan Davison observe, "participants' experiences of learning about climate change at school had significant ongoing impact in their lives, particularly when they were making decisions that influenced their life course and long-term futures.[2]" However, these impacts have not always been positive: climate issues can cause distress and even trauma, and educators are searching for ways to enable constructive engagement with "climate anxiety" and other negative "eco-emotions."[3]

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[2] Charlotte A. Jones and Aidan Davison, "Disempowering Emotions: The Role of Educational Experiences in Social Responses to Climate Change," *Geoforum* 118 (2021): 198, https://doi.org/10.1016/j.geoforum.2020.11.006

[3] Panu Pihkala, "Eco-Anxiety and Environmental Education," *Sustainability* 12, no. 23 (2020): 10149. https://doi.org/10.3390/su122310149

Overall, emotions are emerging as an important aspect of climate change ethics education – in large part because they are seen as affecting not just learning outcomes but also individual wellbeing and moral development. In this chapter, we argue for an emotion-aware approach to climate change ethics education. We begin by discussing the rationale behind this strategy by engaging with two traditional approaches to climate change ethics education. After discussing the strengths and limitations of these approaches, we then introduce the "affective turn" in environmental education, discussing some of the philosophical traditions that motivate and inspire this new integrative approach.

In the remainder of the article, we discuss four themes that center an emotion-aware approach to climate ethics education: (1) The need to recognize that discussions about climate change can evoke powerful affective responses and do so for a diverse range of reasons. (2) The appreciation that emotions associated with climate change can be – and often are – rational and appropriate responses. (3) The understanding that individuals may need support in order to productively process and channel the emotions they feel. (4) The recognition that moral education about climate change needs to focus on the development of a rich set of positive and negative emotions. We then conclude by noting that although emotions can be powerful sources of pro-environmental motivation and empowerment, developing educational systems that can foster this will be challenging.

Our argument for an emotion-aware approach to climate ethics education rests not just on pedagogical grounds, but also moral reasons centered in a humanism that emphasizes the important role that education plays in providing people of all backgrounds with the critical

understanding, emotional attunement, and agency needed for both individual and social growth.[4] We also discuss the relationship that this emotion-aware framework has with justice-oriented environmental pedagogies.

1. Traditional Approaches and Their Limits

In order to draw out what's distinctive in an emotion-aware approach to climate change ethics education, we start with a brief overview of two traditional alternatives, what we call the rationalist and experiential models. Seeing the strengths and weaknesses of these approaches will draw out how incorporating a more emotion-aware approach can bring important benefits.[5]

To begin, the rationalist model takes climate science and traditional ethical theory as its starting place.[6] Pedagogically, it has two aims. First, in looking at climate science, the rationalist approach seeks to underscore the nature and reality of the problem. Achieving this might come by way of, for instance, an overview of how greenhouse gasses contribute to rising global temperatures and sea water levels, a review of the evidence of anthropocentric drivers to these changes, and discussions of the latest report from the Intergovernmental Panel on Climate Change. With this scientific background in hand, the second aim emerges. Here there's a turn to discuss standard moral theories – typically, grounded in traditional Western views (e.g.,

[4] Paulo Freire, *Pedagogy of Hope* (New York: Bloomsbury, 1994); Devin K. Joshi, "Humanist But Not Radical: The Educational Philosophy of Thiruvalluvar Kural," *Studies in Philosophy and Education* 40 (2021): 183-200, https://doi.org/10.1007/s11217-020-09750-9; bell hooks, *Belonging* (New York: Routledge, 2009).

[5] As will become apparent in the next section, there are a variety of other approaches to climate change ethics education. We focus on the rationalist and experiential approaches because of their historical prominence and to help draw out what's distinctive in a more emotion-aware approach.

[6] Dale E. Miller and Ben Eggleston, *Moral Theory and Climate Change: Ethical Perspectives on a Warming Plant* (New York: Routledge, 2014); J. Baird Callicott, "Thinking Climate Change Like a Planet: Notes From an Environmental Philosopher," in *Teaching Climate Change in the Humanities* (New York: Routledge, 2016), 105-111.

consequentialism, deontology, and virtue ethics) – which are presented as the principal tools one might use to understand, and so resolve, the ethical issues that climate change raises.

The rationalist approach can be valuable in a variety of ways. For instance, its focus on climate science can promote scientific literacy as well as an understanding of how to think about the value (and limits) of empirical evidence. The strategy also introduces students to core moral and evaluative concepts, and can do so in ways that foster an understanding of the larger theoretical frameworks that they are a part of.

Turning to the experiential approach, we have a pedagogy that focuses on getting students to actively engage with climate-change-driven ethical issues.[7] The tools used to generate these experiences can take many forms: reading and discussing a novel like Paolo Bacigalupi's *The Water Knife* or accounts of the work of environmental activists (e.g., Greta Thunberg's *No One Is Too Small to Make a Difference* or Nick Meynen's *Frontlines: Stories of Global Environmental Justice*), participating in a local habitat restoration project, or examining case studies about how, for instance, companies like Exxon-Mobil not only provided financial support to groups that were skeptical of climate science, but did so with the aim of confusing the public.[8]

The value of these experiential strategies lies in helping students develop emotional and participatory connections with the environment.[9] This, in turn, can foster a motivation for, and

[7] For further discussion of the experiential model, see Sobel 2005 and Greenwood 2013. David Sobel, *Place-Based Education.* 2nd ed. (Great Barrington, Orion Society, 2005); David A. Greenwood, "A Critical Theory of Place-Conscious Education," in *International Handbook of Research on Environmental Education* (New York: Routledge, 2013), 93-100.

[8] Paolo Bacigalupi, *The Water Knife* (New York: Vintage Books, 2016); Nick Meynen, *Frontlines: Stories of Global Environmental Justice* (Washington, D.C.: Zero Books, 2019); Greta Thunberg, *No One is Too Small to Make a Difference* (New York: Penguin, 2019); Naomi Oreskes and Erik Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (New York: Bloomsbury Press, 2010).

[9] Cheryl Charles et al., *Home to Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth* (Minneapolis: Children and Nature Network, 2018); Christopher D. Ives, David J. Abson, Henrik Von

commitment to, environmental stewardship. For instance, in a recent review, the environmental education scholar Louise Chawla points to empirical work indicating that "[c]hildren who express greater connection with nature are also more likely to report taking action to care for nature. Children's connection with nature increases with time spent in nature, and extended time in nature in childhood, many studies show, predicts active care for nature in adulthood."[10] She suggests that we get these results, at least in part, because experiential approaches "encourage…[a] multisensory immersion in nature" that can promote things like empathy and respect for living things, a sense of outdoor competence, and positive feelings of enjoyment and oneness.[11]

While a variety of individual concerns have been raised about the effectiveness of the traditional models,[12] we want to focus on a pair of challenges confront both approaches. The first issue focuses on the problematic ways in which these models can alter student engagement and

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Wherden, Christian Dorninger, Kathleen Klaniecki, and Joern Fischer, "Reconnecting with Nature for Sustainability," *Sustainability Science* 13 (2018): 1389-13972, https://doi.org/10.1007/s11625-018-0542-9

[10] Louise Chawla, "Childhood Nature Connection and Constructive Hope: A Review of Research on Connecting with Nature and Coping with Environmental Loss," *People and Nature* 2, no. 3 (2020): 621. https://doiorg/10.1002/pan3.10128; Laura Fernanada Berrera-Hernández, Mirsha Alicia Sotelo-Castillo, Sonia Echeverría-Castro, and César Octavio Tapia-Fonllem, "Connectedness to Its Impact on Sustainable Behaviors and Happiness in Children," *Frontiers in Psychology* 11 (2020). https://doi.org/10.3389/fpsyg.2020.00276; Silvia Collado, Henk Staats, and José A. Corraliza, "Experiencing Nature in Children's Summer Camps: Affective, Cognitive, and Behavioural Consequences," *Journal of Environmental Psychology* 33 (2013): 37-44. https://doi.org/10.1016/j.jenvp.2012.08.002; Joelene Hughes, Miles Richardson, and Ryan Lumber, "Evaluating Connection to Nature and the Relationship with Conservation Behaviour in Children," *Journal for Nature Consservation* 45 (2018): 11-19. https://doi.org/10.1016.j.jnc.2018.07.004.

[11] Chawla, "Childhood Nature Connection and Constructive Hope," 629.

[12] See, for instance, Wals 2007, 2010 and Lotz-Sisitka et al. 2015. Arjen E.J. Wals, "Learning in a Changing World and Changing in a Learning World," *Southern African Journal of Environmental Education* 22 (2007): 35-45; Arjen E.J. Wals, "Mirroring Gestaltswitshing and Transformative Learning," *International Journal of Sustainability in Higher Education* 29, no. 4 (2010): 380-390. https://doi.org/10.1108/1467637101107759; Heila Lotz-Sisitka, Arjen Wals, David Kronlid, and Dylan McGarry, "Transformative, Transgressive Social Learning: Rethinking Higher Education Pedagogy in Times of Systemic Global Dysfunction," *Current Opinion in Environmental Sustainability* 16 (2015): 73-80. https://doi.org/10.1016/j.cosust.2015.07.018

motivation. The issues here are perhaps most pronounced for the rationalist model: both qualitative studies and reports from teachers suggest that some students feel disempowered as they struggle to, say, understand how they might bridge the gap between theory and practice in a meaningful way. Here's how one instructor explains the problem: "It's surprising how many students…will openly say they don't care."[13] Relatedly, students may find that the (emotion-free) presentation of facts and theories leaves them unaware of the urgency of the dangers that climate change presents. We see this in, for instance, student reports like this: "[climate change] wasn't explained in a way that was critical…I wasn't scared or anything. It was just like, oh, it's just a thing and we're fine."[14]

While the experiential model does better on this front, it's not immune to worries about motivation and engagement. In particular, longitudinal studies raise questions about whether the concern for the environment that experiential instruction can bring lasts beyond the individual's particular emersion activity. This work also suggests that the best results come when students have extended and repeated opportunities to engage experientially.[15] But this raises familiar

[13] Jeremy Jimenez and Laura Moorhead, "'Don't Say It's Going to be Okay': How International Educators Embrace Transformative Education to Support Their Students Navigating Our Global Climate Emergency," *Education Sciences* 11, no. 10 (2021): 9, https://doi.org/10.1016/j.jnc.2018.07.004; Renee Aron Lertzman, "The Myth of Apathy: Psychoanalytic Explorations of Environmental Subjectivity," in *Engaging with Climate Change* (New York: Routledge, 2012) 117-133.

[14] Jones and Davison, "Disempowering Emotions," 194-195.

[15] Stephan Barthel, Sophie Belton, Christopher M. Raymond, and Matteo Giusti, "Fostering Children's Connection to Nature Through Authentic Situations: The Case of Saving Salamanders at School," *Frontiers in Psychology* 9 (2018): 928, https://doi.org/10.3389/fpsyg.2018.00928; Marc J. Stern, Robert B. Powell, and Nicole M. Ardoin, "What Difference Does it Make? Assessing Outcomes form Participation in a Residential Environmental Education Program," *The Journal of Environmental Education* 39, no. 4 (2008): 31-43, https://doi.org/10.1126/science.1259855.

equity concerns: effective experiential education will be disproportionally available to students from privileged backgrounds where these multiple emersion activities are more readily had.[16]

Moving to the second issue, because the rationalist and experiential models don't focus on emotional engagement, they tend to be under-equipped to address the emotions that will inevitably be evoked through coursework and discussions about climate change. And even when climate emotions are acknowledged and supported within these approaches, those efforts tend to focus just on positive feelings: the awe and enjoyment of outdoor experiences, the pride that comes with completing a habitat restoration project. But this leaves negative emotions – anxiety, guilt, anger, etc. – undiscussed and unsupported.

Given the discussion to come, it's worth pausing to note why this is a problem. For one, empirical work suggests that the more environmentally connected a person is, the more likely they are to experience (strong) negative emotions toward human-driven environmental degradation[17] (Tseng & Wang 2019; Barros & Pinheiro 2020; Clayton 2020). Related work points to some of the issues that arise when the negative emotions are felt, but not supported. We see, for instance, that the most common strategies that young people employ to help deal with negative climate change emotions include things like problematic avoidance and repression that, in turn, tend to have negative impacts on wellbeing.[18] Moreover, there are the distinctive

[16] Dan W. Butin, "The Limits of Service-Learning in Higher Education," *The Review of Higher Education* 29, no. 4 (2006): 473-498, https://doi.org/10.1353/rhe.2006.0025

[17] Yu-Chi Tseng and Shun-Mei Wang, "Understanding Taiwanese Adolescents' Connection with Nature: Rethinking Conventional Definitions and Scales for Environmental Education," *Environmental Education Research* 26, no. 1 (2020): 115-129, https://doi.org/10.1080/13504622.2019.1668354; Helen Barros and José Pinheiro, "Climate Change Perception by Adolescents: Reflections on Sustainable Lifestyle, Local Impacts and Optimism Bias (Percepción del cambio climático en adolescentes. Reflexiones sobre los estilos de vida sostenibles, el impacto local y el sesgo optimista)." *PsyEcology* 11, no. 2 (2020): 260-283, https://doi.org/10.1080/21711976.2020.1728654

[18] Maria Ojala, "Young People and Global Climate Change: Emotions, Coping, and Engagement in Everyday Life," *Geographies of Global Issues: Change and Threat* 8, no. 1 (2016): 1-19; Angela T. Clarke,

challenges that come from intersectional teaching of climate change that are often neglected by the traditional approaches – for instance, helping students understand the views and feelings of those who come from very different backgrounds.[19]

Finally, though we've been focusing on the impact that neglecting emotions in climate change education can have *for students*, it's worth noting that there are also consequences on this front *for teachers* – consequences that can intensify the issues that we've been canvassing. For starters, educators can find themselves fatigued, stressed or even overwhelmed by the emotions that teaching about climate change can bring. (Verlie et al. 2020). The trouble here grows to the extent that teachers lack the training and support needed to understand their students' (and their own!) emotional responses and needs. This matters because teachers' responses can have a significant impact on their students' environmental attitudes and emotions. For instance, the work of the psychologist Maria Ojala reveals that adolescents are more likely to express constructive hope regarding climate change if they think that their teachers will respect their emotions and offer them support; but adolescents are less like to be hopeful when they believe their teachers will be dismissive or unsupportive of their feelings.[20] (Ojala 2021, 2015; also Chawla 2020; Ciucci et al. 2018; Zembylas et al. 2014).

"Coping with Interpersonal Stress and Psychosocial Health Among Children and Adolescents: A Meta-Analysis," *Journal of Youth and Adolescence* 35 (2006): 10-23, https://doi.org/10.1007/s10964-005-9001-x.

[19] Greta Gaard and Bengü Erguner-Tekinalp, eds. *Contemplative Practices and Anti-Opressive Pedagogies for Higher Education* (New York: Routledge, 2022).

[20] Maria Ojala, "Safe Spaces or a Pedagogy of Discomfort? Senior High-School Teachers' Meta-Emotion Philosophies and Climate Change Education." *The Journal of Environmental Education* 52, no. 1 (2021): 40-52, https://doi.org/10.1080/00958964.2020.1845589; Maria Ojala, "Hope in the Face of Climate Change: Associations with Environmental Engagement and Student Perceptions of Teacher's Emotion Communication Style and Future Orientation," *The Journal of Environmental Education* 46, no. 3 (2015): 133-148, https//doi.org/10.1080/00958964.2015.1021662; Chawla, "Childhood Nature Connection and Constructive Hope"; Enrica Ciucci, Andrea Baroncelli, Monica Toselli, and Susanne A. Denham, "Personal and Professional Emotional Characteristics of Early Childhood Teachers and Their Proneness to Comunicate with Parents and Colleagues About

2. The Affective Turn: Thinking about Environmental Ethics Education through Emotions

In light of the limitations of the traditional approaches, as well as a growing appreciation of the significance of eco-emotions, teachers are increasingly turning to alternatives that give central place to emotions in environmental ethics education. Here we discuss five theoretical frameworks that often underlie this more emotion-aware approach: what we're calling the "affective turn." Looking at these sources of inspiration will not only better position us to see how an emotion-aware climate change ethics pedagogy can help address some of the limitations that we've noted in traditional approaches, but also draw out why an emotion-aware methodology is one we ought to be developing.

We can start with educators who are motivated by the "sentimentalist" tradition of thinkers like David Hume, Charles Darwin, and Adam Smith.[21] Here we're understanding sentimentalism as a philosophical theory of value and the mind that gives central place to the sentiments – where this has typically focused on emotions such as empathy, sympathy, anger, fear, joy, and pride. The core idea underlying sentimentalism is that our capacity to experience these emotions is central to both what we care about and what makes us the moral beings that we are.

Sentimentalism contrasts most naturally with the philosophical "rationalism" of, say, Immanuel Kant or Rene Descartes. For these thinkers, reason and rationality – not feelings and emotions – are where we should turn for insight on core ethical questions like who counts as a moral agent and what things have intrinsic (as opposed to merely instrumental) value. Thus, a

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Children's Emotions," *Child & Youth Care Forum* 47, no., 2 (2018): 303-316, https://doi.org/10.1007/s10566-017-9431-0.

[21] Callicott, "Thinking Climate Change Like a Planet."

rationalist like Kant ties having both intrinsic value and moral status to having certain rational capacities: for him, anything that lacks the requisite rational capacities – streams, forests, non-human animals, and more – is merely instrumentally and non-morally valuable.

It's this contrast, then, that draws out why some see sentimentalism as an important alternative approach to environmental ethics education. More specifically, the rationalist account makes it difficult to extend the sphere of moral concern beyond things that are "rational." The sentimentalist account, by contrast, allows for a more encompassing moral perspective since it takes as morally relevant anything that "is a fitting object of…our moral sentiments."[22]

A second source of inspiration lies in the insights of feminism, especially feminists working in the tradition of care ethics.[23] This source of inspiration shares the sentimentalist's rejection of the idea that what has value and who counts as a moral agent are best understood in terms of reason and rationality. It also sees a better model as being grounded in our emotions. But unlike sentimentalism, the feminist approach focuses on a different set of emotions. For instance, within the care ethic paradigm, the focus is on the emotional bond — the care and concern — that is typified by a mother's nurturing connection to her child.[24] As Nel Noddings explains, "we have memories of caring, of tenderness, and *these lead us to a vision of what is*

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[22] Callicott, "Thinking Climate Change Like a Planet," 84.

[23] Leesa Fawcett, "Ethical Imagining: Ecofeminist Possibilities and Environmental Learning." *Canadian Journal of Environmental Education (CJEE)* 5, no. 1 (2000): 134-149; Teresa Lloro-Bidart, and Keri Semenko, "Toward a Feminist Ethic of Self-Care for Environmental Educators." *The Journal of Environmental Education* 48, no. 1 (2017): 18-25. https://doi.org/10.1080/00958964.2016.1249324; Laura Piersol, and Nora Timmerman. "Reimagining Environmental Education Within Academia: Storytelling and Dialogue as Lived Ecofeminist Politics." *The Journal of Environmental Education* 48, no. 1 (2017): 10-17. https://doi.org/10.1080/00958964.2016.1249329; Jones and Davison, "Disempowering Emotions."

[24] Nel Noddings, *Caring* (Berkeley: University of California Press, 1984); Virginia Held, *The Ethics of Care* (London: Oxford University Press on Demand, 2006).

good — a state that is good-in-itself and a *commitment to sustain and enhance that good*."[25] Thus, the reasons we have to help the needy, keep our promises, and protect the environment — as well as our motivations to act in accordance with these reasons — are grounded in feelings of care and concern.[26]

But the feminist approach also emphasizes the need for a perspectival change – away from "male" themes that reify "reason" and "objectivity," and toward a distinctive feminist view about what's valuable and how we relate to what we (should) care about. In this way, the feminist framework expands, in important and novel ways, the sentimentalist's insight that the divisions of value and agency in terms of who has (or lacks) rational capacities is mistaken. For the feminist, not only is *any* distinction between "us" and "other" suspicious, but looking at the world through the eyes of traditionally maringinalized individuals is more enlightening. As Leesa Fawcett explains, "the importance of the 'situated knowledges' of the less powerful, the subjugated, those on the peripheries whose perspectives can offer more adequate and promising accounts, often because they are not as blinded by disappearing tricks of denial and repression practiced by dominant people."[27]

But Fawcett also highlights how the feminist framework brings a distinctive perspective on environmental ethics education:

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[25] Noddings, *Caring*, 99 (my italics).

[26] These feminist themes have recently been echoed by several researchers and psychologists who explore climate emotions and politics. See, for example, Weintrobe 2021, which posits "a culture of care" against "a culture of uncare." Sally Weintrobe, *Psychological Roots of the Climate Crisis: Neoliberal Exceptionalism and the Culture of Uncare* (New York: Bloomsbury, 2021).

[27] Fawcett, "Ethical Imagining," 139.

> I am interested, then, in an ethics that prioritizes the perception, emotions, and moral judgements of particular people and places in particular relationships with nature, over abstract rules of pure anthropocentric morality. … The dualistic tendencies of Western [i.e., rationalistic] thought, separating the emotional and cognitive, function to limit and control human experience, particularly knowledge of the 'other.'"[28]

As Fawcett and other environmentally concerned feminist see it, incorporating the narratives of marginalized individuals into classroom instruction can foster important emotional engagement and perspectival change. For instance, Jenny Ritchie found that integrating indigenous ways of being, knowing, and doing into classroom discussions helped promote hope in the face of fear felt about the impacts of climate change. The indigenous worldviews emphasized emotions, feelings, and the "interdependence and interconnectedness of all within the universe" and did so in ways helped foster attitudes of care and concern for the environment and combat tendencies toward the "othering" of marginalized communities.[29]

A third source of inspiration – pedagogies of hope – has roots in the work of feminist thinkers like bell hooks and Vivienne Bozalek as well as philosophers of education like Paulo Freire. In some ways, pedagogies of hope offer a counter to the "doom and gloom" messaging that pervades much of the public media coverage of climate change. But it's an approach that's also sensitive to concerns about facile gestures to hope – for instance, that promoting hope in the

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[28] Fawcett, "Ethical Imagining," 141-142.

[29] Jenny Ritchie, Jenny, "Indigenous Onto-Epistemologies and Pedagogies of Care and Affect in Aotearoa." *Global Studies of Childhood* 3, no. 4 (2013): 397-398; Blanche Verlie, *Learning to Live With Climate Change* (London: Routledge, 2022); Weronika Kałwak, and Vanessa Weihgold, "The Relationality of Ecological Emotions: An Interdisciplinary Critique of Individual Resilience as Psychology's Response to the Climate Crisis." *Frontiers in Psychology* 13 (2022). https://doi.org/ 10.3389/fpsyg.2022.823620. In recent work Blanche Verlie (2022) pushes this further, linking work on eco-emotions to feminist and postcolonialist pedagogies. Indigenous thought is an inspiration for many climate emotion researchers: see, for example, Kalwak & Weihgold (2022).

face of the climate crisis might be a naive (if not out-rightly foolish) strategy or one that, at best, promotes minor changes in behavior, like interest in recycling, that make one feel good but are of little substance.[31] Rather, what pedagogies of hope emphasize, then, is the need for a knowledgeable and critical form of hope.[32]

In the context of climate change ethics education, the pedagogy of hope framework has three aims. The first is to help students conceptualize new possibilities through teaching that provides them with the resources and time they need to (re)envision what might be. Importantly, this envisioning of new possibilities is done, not as an exercise in thinking about oneself, but rather much more holistically – the goal is to think about how to "design a different, less-ugly 'world.'"[33] But, second, there's also the need to see this (re)envisioning of new possibilities, not as some sort of fantastical utopian imagining, but rather as a critical assessment of how a better world can be built from the existing social-political structures. As hooks explains, "our visions for tomorrow are most vital when they emerge from the concrete circumstances of change we are experiencing right now."[34] Finally, this critical assessment, in turn, needs to be linked to action –

[31] For critical discussion, see Lisa Kretz, "Hope in Environmental Philosophy," *Journal of Agricultural and Environmental Ethics* 26 (2013): 925-944. https://doi.org/10.1007/s10806-012-9425-8; Samantha MacBride, *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States* (Cambridge: MIT Press, 2013).

[32] Elaborating: scholars have made various distinctions between an inadequate hope, such as wishful thinking, and a "realistic", "constructive", or "authentic" hope. See, Panu Pihkala, "Environmental Education After Sustainability: Hope in the Midst of Tragedy," *Global Discourse* 7, no. 1 (2017): 109-127. https://doi.org/10.1007/978-3-319-51322-5_7; Stuart Tannock, "Pedagogies of Hope and Fear," in *Educating for Radical Social Transformation in the Climate Crisis* (London: Palgrave Macmillan, 2021), 87-117. https://doi.org/10.1007/978-3-030-83000-7_4.

[33] Freire, *Pedagogy of Hope*, 778.

[34] Bell hooks, bell, *Teaching Community* (New York: Routledge, 2003), xiv; David Hicks, *Educating for Hope in Troubled Times* (London: Institute of Education Press, 2014). Various methods of imagining better futures have become a major theme in environmental education, and sometimes the term "futures education" is used to describe this imagining. See e.g. Hicks 2014.

the development and mobilization of, for instance, what hooks calls "communities of resistance."[36]

Importantly, in the context of climate change ethics education, the theoretical account of a pedagogy of hope that we get from hooks, Freire, and others finds empirical backing in research of scholars like Maria Ojala and Robin Nabi. (Ojala, 2012a; Ojala, 2012b; Nabi et al., 2018). This work suggests that when feelings of fear and anxiety about the impact of climate change are encountered constructively and are combined with a critically-informed, socially-engaged hope, the result is an amalgamation of affect that can better promote pro-environmental engagement.

The fourth source of inspiration for an emotion-aware environmental ethics education builds from work in the transgressive and environmental justice pedagogical traditions.[37] The starting place here is the idea that expressions of emotions are political acts: when you are angry, proud, or sad, you are not just feeling a certain way; you are also making a political statement about, say, an injustice done (anger), an accomplishment secured (pride), or a loss suffered (sadness).

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[36] hooks, *Teachimg Community.*

[37] Audre Lorde, "The Uses of Anger," *Women's Studies Quarterly* 25, no. 1/2 (1997): 278-285; Peter Lyman, "The Domestication of Anger: The Use and Abuse of Anger in Politics," *European Journal of Social Theory* 7, no. 2 (2004): 133-147. https://doi.org/10.1177/1368431004041748; Rebecca A. Martusewicz,, Jeff Edmundson, and John Lupinacci, *Ecojustice Education: Toward Diverse, Democratic, and Sustainable Communities* (New York: Routledge, 2014); Blair Niblett, "Facilitating Activist Education. Social and Environmental Justice in Classroom Practice to Promote Achievement, Equity, and Well-Being," *What Works? Research into Practice* (2017) http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ww_Facilitating_Activist_Education.pdf; Sarah Riggs Stapleton, "A Case for Climate Justice Education: American Youth Connecting to Intragenerational Climate Injustice in Bangladesh," *Environmental Education Research* 25, no. 5 (2019): 732-750. https://doi.org/10.1080/13504622.2018.1472220; Michalino Zembylas, *Teaching with Emotion* (Greenwich, Connecticut: Information Age Publishing, 2005); Michalinos Zembylas, Constadina Charalambous, and Panayiota Charalambous, "The Schooling of Emotion and Memory: Analyzing Emotional Styles in the Context of a Teacher's Pedagogical Practices," *Teaching and Teacher Education* 44 (2014): 69-80. https://doi.org/10.1016/j.tate.2014.08.001.

Central to this framework – what underlies calling it *transgressive* – is the idea that emotional expressions are ways for individuals, especially marginalized individuals, to challenge the prevailing power relations of the classroom and beyond. Elizabeth Spelman, for instance, discusses how a marginalized individual's expressions of anger can function as "acts of insubordination" that challenge the prevailing views and assumptions about who has power and whose concerns should be taken seriously.[38] (1989: 267; also Lorde 1981, Kurth 2022a).

But expressions of anger, anxiety, pride, and the like are also ways for individuals to come to a better understanding of their emotions, themselves, and the world they live in. So, for instance, a student angry about injustice can come to see her anger as part of a larger social dynamic that shapes (for the better or the worse) whose feelings can be expressed and heard. In these ways, the transgressive approach aims to push back against the more traditional "emotional intelligence" paradigm that sees emotions as valuable only when they are properly managed and controlled – where "properly" is understood from the perspective of established authority figures (e.g., the teacher, one's parents, political figures).[39]

Brought into the context of climate change ethics education, the transgressive approach sees emotions as an essential mechanism for promoting environmental justice, especially for those who have traditionally been shut out of these conversations. On this front, Greta Thunberg – a teenage woman with Asperger's Syndrome – is perhaps the most well-known example. Consider what she said before the UK Parliament in 2019:

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[38] Charlie Kurth, "Inappropriate Emotions, Marginalization, and Feeling Better,"." *Synthese* 200, no. 2 (2022): 155. https://doi.org/10.1007/s11229-022-03619-9; Lorde, "The Uses of Anger";

[39] Zembylas, *Teaching with Emotion;* Zembylas, Charalambous, and Charalambous, "The Schooling of Emotion and Memory."

> You lied to us. You gave us false hope. You told us that the future was something to look forward to. And the saddest thing is that most children are not even aware of the fate that awaits us. We will not understand it until it's too late. And yet we are the lucky ones. Those who will be affected the hardest are already suffering the consequences. But their voices are not heard.[40]

But, of course, Thunberg's anger at politicians is not the only instance of this utilization of emotion. (see Grewall et al. 2022 for additional examples). We see them everywhere in the non-traditional educational mechanisms – protests, boycotts, marches, social media campaigns – that not only have the ability to empower participants, but also emphasize importance of collective responses.[41] This is the type of empowerment and informal, self-driven learning of which the transgressive movement aims to encourage.

The final source of inspiration looks to findings in psychology and the cognitive sciences. It shares the above recognition that environmental ethics education is – and should be – emotion-aware, but adds that educators are likely to be better able to secure their learning goals to the extent that they explicitly recognize this emotional element and equip students to understand it. It's also distinctive in thinking that environmental ethics education should be shaped by

[40] Greta Thunberg, "'You Did Not Act in Time': Greta Thunberg's Full Speech to MPs." *The Guardian*. (London), April 23, 2019. https://www.theguardian.com/environment/2019/apr/23/greta-thunberg-full-speech-to-mps-you-did-not-act-in-time

[41] Erik Andersson, and Johan Öhman, "Young People's Conversations About Environmental and Sustainability Issues in Social Media," *Environmental Education Research* 23, no. 4 (2016): 465–485. https://doi.org/10.1080/13504622.2016.1149551; Tanu Biswas, and Nikolas Mattheis, "Strikingly Educational: A Childist Perspective on Children's Civil Disobedience for Climate Justice," *Educational Philosophy and Theory* 54, no. 2 (2022): 145-157. https://doi.org/10.1080/00131857.2021.1880390.

empirical work on emotions. This approach also dovetails with the growing body of scholarship on the general role of emotions in education.[42]

Perhaps the best example of this model lies in the work of Maria Ojala, a Swedish psychology and environmental education researcher. Her approach champions the importance of "critical emotional awareness."[43] The idea is not to practice therapy in education, but instead to draw on empirical findings to help structure educational experiences in ways that take emotions into account and provide transformative possibilities.[44] In this way, Ojala's work has affinities with work in philosophy and education theory that builds on the Aristotelian virtue tradition.[45] (e.g., [ADD cite to Aristotle entry in this volume],. On this model, virtue is understood as the harmonious attunement of one's motivations, feelings, and thoughts (e.g., beneficence is acting to help another from a feeling of sympathy and the belief that they are in need of assistance). Thus, a central aim of moral education lies in helping individuals cultivate their emotions so that they are felt at the right time and in the right way. Thus, within the Aristotelian framework, research in cognitive sciences like Ojala's can provide guidance about how to structure lectures and classroom activities in order to facilitate emotional attunement.

Summing up, we can now see that an emotion-aware approach rests on a diverse set of theoretical traditions and insights. This richness provides educators with a range of moral and pedagogical foundations from which climate change ethics educational programming can be

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[42] Reinhard Pekrun, Krista R. Muis, Anne C. Frenzel, and Thomas Götz, eds. *Emotions at School* (New York: Routledge, 2018).

[43] Ojala, "Hope in the Face of Climate Change."

[44] Ojala, "Young People and Global Climate Change"; Verlie, *Learning to Live with Climate Change.*

[45] Kristján, Kristjánsson, *Virtuous Emotions* (Oxford: Oxford University Press, 2018); Charlie Kurth, "Cultivating Disgust: Prospects and Moral Implications," *Emotion Review* 13, no. 2 (2021): 101-112. https://doi.org/10.1177/1754073921990712.

built. In saying this, the suggestion is not that an emotion-aware approach should replace more traditional models. Rather, we see the insights that an emotion-aware approach can bring as an important way to augment these efforts.

3. Four Core Elements of an Emotion-Aware Approach to Climate Ethics Education

In this constructive part of our article, we present what we see as four core elements of an emotion-aware approach to environmental ethics education. In doing this, we bring together scholarship from various disciplines, especially the philosophy of emotions and environmental ethics education theory.

(i) A growing number of scholars are recognizing that discussions about climate change can evoke powerful emotional responses and that they do so for a diverse range of reasons. These include many kinds of negative and positive emotions, and complex combinations of the two.[46]

We can begin with a brief survey of the climate change emotions that scholars see as most prevalent in children and young people. Starting with negative emotions, many studies have focused on worry and concern about the ecological crisis, and they have typically found that self-reports of these emotions tend to be very high. Moreover, there's a close relationship between worry, fear, and anxiety, and so in the context of ecological crises like climate change, people to experience a range of variations in these threat-related emotions.[47] This is significant because

[46] Panu Pihkala, "Toward a Taxonomy of Climate Emotions," *Frontiers in Climate* 3 (2022): 738154. https://doi.org/10.3389/fclim.2021.738154.

[47] Maria Ojala, Ashlee Cunsolo, Charles A. Ogunbode, and Jacqueline Middleton, "Anxiety, Worry, and Grief in a time of Environmental and Climate Crisis: A Narrative Review," *Annual Review of Environment and Resources* 46 (2021): 35-58. https://doi.org/10.1146/annurev-environ-012220-022716; Pihkala, "Towards a Taxonomy of Climate Emotions."

threat-related emotions about the climate crisis have also been shown to shown to have significant connections with sadness, grief, and low mood.[48] For some, these emotional experiences become so intense that scholar identify them as anxiety states, or complicated grief/depressive states, and they are often accompanied by feelings of helplessness, powerlessness, and being overwhelmed.[49] Researchers and teachers also report seeing many kinds of anger, guilt and shame in their students in response to ecological issues. Recent studies show that eco-anger can manifest both as moral outrage and defensive raging.[50] There can also be strong feelings of eco-guilt and shame, especially among the more affluent.[51]

It's also worth emphasizing that all these negative emotions can be felt for a variety of reasons. For instance, they can arise in response to seeing or discussing the impact of a local ecological problem or from recognizing the size and significance of the environmental challenges we face.[52] In educational settings, the content of the teaching material can not only have an impact on emotions, but also shape the way that students engage with the subject

[48] Ashlee Cunsolo, and Karen Landman, eds. *Mourning Nature: Hope at the Heart of Ecological Loss and Grief* (Montreal: McGill-Queen's Press-MQUP, 2017).

[49] Caroline Hickman, Elizabeth Marks, Panu Pihkala, Susan Clayton, R. Eric Lewandowski, Elouise E. Mayall, Britt Wray, Catriona Mellor, and Lise van Susteren, "Climate Anxiety in Children and Young People and Their Beliefs About Government Responses to Climate Change: A Global Survey," *The Lancet Planetary Health* 5, no. 12 (2021): e863-e873. https://doi.org/10.1016/S2542-5196(21)00278-3; Pihkala, "Eco-Anxiety and Environmental Education."

[50] Nino Antadze, "Moral Outrage as the Emotional Response to Climate Injustice," *Environmental Justice* 13, no. 1 (2020): 21-26. https://doi.org/10.1089/env.2019.0038; Louise Knops, "Stuck Between the Modern and the Terrestrial: The Indignation of the Youth for Climate Movement," *Political Research Exchange* 3, no. 1 (2021): 1868946. https://doi.org/10.1080/2474736X.2020.1868946.

[51] Tim Jensen, *Ecologies of Guilt in Environmental Rhetorics*. London: Palgrave Macmillan, 2019; For students' eco-guilt, see e.g. the empirical examples in Jimenez and Moorehead, "Don't Say It's Going To Be Okay."

[52] Thomas J. Doherty, and Susan Clayton, "The Psychological Impacts of Global Climate Change," *American Psychologist* 66, no. 4 (2011): ,265–276. https://doi.org/10.1037/a0023141.

matter.[53] Add to this that what students feel, and how they feel it, will often be shaped by social factors like the values and viewpoints of peers, teachers, parents, and others.[54]

Shifting to positive emotions evoked by climate change, we see scholarship focusing on, for example, hope, pride, and excitement about the opportunities to engage in meaningful ways in valuable projects (Landmann 2020; Bowman 2019). Joining others can result in fellow-feeling, empowerment, and meaningfulness; they can also bring significant levels of empathy and caring.[55]

In short, an emotion-aware approach recognizes that the scope of possible emotional responses is very wide, and this affective dimension shapes people's reactions in profound ways.

(ii) Contrary to many prevalent views, the emotions associated with climate changes can be – and often are – rational and appropriate responses. In saying this, we're adopting a common philosophical understanding of emotions. On this picture, emotions are, in a real sense, evaluations of one's situation – to be anxious about the storm is to see it *as worrisome*; to be proud of one's work to restore the marsh is to see those efforts *as an accomplishment* (here italics highlight the evaluative dimension of these emotional experiences). But to say this is to

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[53] David Hicks, and Andy Bord, "Learning About Global Issues: Why Most Educators Only Make Things Worse," *Environmental Education Research* 7, no. 4 (2001): 413-425. https://doi.org/10.1080/13504620120081287; Sarah Jaquette Ray, "Coming of Age at the End of the World," in *Affective Ecocriticism: Emotion, Embodiment, Environment*, ed. Kyle Bladow and Jennifer Ladino (Lincoln, Nebraska: University of Nebraska Press, 2018), 299-319.

[54] Audrey Bryan, "Pedagogy of the Implicated: Advancing a Social Ecology of Responsibility Framework to Promote Deeper Understanding of the Climate Crisis," *Pedagogy, Culture & Society* 30, no. 3 (2022): 329-348. https://doi.org/10.1080/14681366.2021.1977979; Tara J. Crandon, James G. Scott, Fiona J. Charlson, and Hannah J. Thomas, "A Social–Ecological Perspective on Climate Anxiety in Children and Adolescents," *Nature Climate Change* 12, no. 2 (2022): 123-131. https://doi.org/10.1038/s41558-021-01251-y.

[55] Caroline Hickman, "We Need to (Find a Way to) Talk About… Eco-anxiety," *Journal of Social Work Practice* 34, no. 4 (2020): 411-424. . https://doi.org/10.1080/02650533.2020.1844166; Natascha Klocker, Charles Gillon, Leah Gibbs, Jennifer Atchison, and Gordon Waitt, "Hope and Grief in the Human Geography Classroom," *Journal of Geography in Higher Education* (2021): 1-18. https://doi.org/10.1080/03098265.2021.1977915.

say that your emotions will be rational when they correctly evaluate your situation (e.g., your anxiety is rational because the storm *really is* worrisome). But that emotions can be rational, doesn't entail they always are – and so much of the debate about the eco-emotions experienced by students and others can be understood as a debate about when (if at all) particular emotions end up being rational.

To better see both the rational nature of emotions – and some prevailing prejudices against them in educational settings – we draw from Ojala's recent research (2021) analyzing Swedish senior high school teachers' views of emotions in relation to climate change education. Her work found that teachers tend to take one of four different stances toward the climate change emotions felt by their students.

First, some teachers actively advocated for avoiding climate emotions. This "disapproving" view, as Ojala calls it, builds from the belief that emotions are inherently irrational responses. For instances, some of the teachers in Ojala's study believe negative emotions only work to make people passive; other teachers expressed suspicions about whether students really feel as strongly about climate change as they maintain. Second, some teachers admit that positive emotions can be fruitful, but still believe that negative emotions like guilt, worry, and hopelessness are dangerous and so feelings that must be resisted. These teachers often champion hope as the "good" emotion, one which should replace fear and worry.

The third category is a partially accepting view. Among teachers who hold this view, worry, guilt, and hopelessness are seen in roughly the same way as in the second theme. But unlike the second option, these teachers often mention emotions like anger, frustration, and irritation as potentially constructive negative emotions. The fourth and rarest category understands emotions as "complex" in the sense that teachers see that all kinds of emotions can

have significance and that the context in which the emotion is felt determines whether it is useful or not.

This review of Ojala's work is useful because it provides us with concrete examples of the complex, often skeptical, views of emotions found among many educators. So, while a growing number of scholars note the importance of emotion-aware methodologies there's still much work to be done to spread the word about the diversity and appropriateness of ecological emotions.[56]

(iii) If it's true that, as suggested above, emotions can be rational responses to ecological crises, then moral education about climate change ought to focus on the development of a rich set of positive and negative emotions. As we've already seen, the philosophical and theoretical work that motivates the affective turn recognizes that emotions are a significant part of how we respond to – and engage with – discussions of climate change. But increasingly, some are starting to press this further: it's not just that emotions *are* part of how we engage with climate change, but that they *should be*. More specifically, the idea is that because emotions are so central for both the development of agency and the promotion of wellbeing, an adequate environmental ethics education needs to help students develop a rich set of positive and negative emotions toward things like climate change.

Fleshing this out, first notice that within the dominant Aristotelian tradition, virtue is understood as the harmonious attunement of one's thoughts, motivations, and emotions. Thus, we praise the person who has learned to be angry at the right time, in the right way, and for the

[56] Marie Eaton, "Navigating Anger, Fear, Grief, and Despair," in *Contemplative Approaches to Sustainability in Higher Education* (New York: Routledge, 2016), 40-53; Elizabeth Hufnagel, "Attending to Emotional Expressions About Climate Change: A Framework for Teaching and Learning," in *Teaching and Learning about Climate Change* (New York: Routledge, 2017), 43-55; Klocker, Gillon, Gibbs, Atchison, and Waitt, "Hope and Grief in the Human Geography Classroom."

right reason; but we deem foolish those who aren't angry when they ought to be. This, in turn, means that Aristotelian moral development is, in part, a process whereby one learns to align one's emotions with what matters (NE IV.5). Similarly, feminists like Noddings take moral development to be centrally focused on expanding the range of individuals for whom one feels concern. Underlying these models is the idea that there is something amiss in individuals who are not, say, anxious about what's worrisome, not angry about injustice, not guilty or proud of the unfortunate or admirable things they've done: in these cases, the person's emotions aren't hooked up to what matters in the right kind of way.

Others working on wellbeing maintain that we should understand the good life as one where an individual experiences a wide range of (often intense) positive and negative emotions.[57] The idea here isn't merely a continuation of the Aristotelian thought about the importance of the attunement of emotion to value. It adds the idea that our lives go better to the extent that we experience – and so more deeply understand – the *full* range of human emotions. The thrill of an accomplishment misses something important if it's not understood in terms of the anxiety and frustration of one's struggles (and failures) to succeed.

Finally, and in line with research of some feminists and those working in the transgressive pedagogy tradition, we might see the development of one's emotions an essential aspect of one's ability to grow one's agency. And this is all the more so for members of marginalized communities: Expressing emotions like anger, anxiety, and concern can be empowering insofar as they allow an individual to, for instance, express disagreement or worries about prevailing norms or draw attention to values that aren't getting the attention they deserve.

[57] Lorraine L. Besser, and Shigehiro Oishi, "The Psychologically Rich Life," *Philosophical Psychology* 33, no. 8 (2020): 1053-1071. https://doi.org/10.1080/09515089.2020.1778662; Daniel M. Haybron, *The Pursuit of Unhappiness* (Oxford: Oxford University Press, 2008).

Given this as background, we can better appreciate why there are moral and pedagogical reasons for ethical education about climate change to focus on the development of a rich set of positive and negative emotions. We ought to focus on emotional development because these capacities are so central to the development of our wellbeing and moral agency. There are, of course, challenging questions about how to productively foster this kind of emotional development as part of climate change education; but an essential first step lies in recognizing that classroom discussions and coursework about the environment *ought* to provide students (and teachers) with the time, resources, and support needed to understand what they are feeling, why they are feeling it, and how they can productively direct the emotions they feel.[58]

(iv) Both students and teachers need support and resources in order to productively process and integrate the emotions they feel. Above, we discussed some of the challenges to doing this: for example, one's emotions may feel overwhelming because of the magnitude of the ecological crisis, and teachers aren't typically trained to help students with the ecological emotions that they feel. Pihkala (2020b) discusses these challenges in relation to environmental education and provides practical guidelines for developing capacities. Underlying his recommendations is a three-part vision for educators: (1) validating the existence of eco-emotions and the difficulty inherent in encountering many of them, (2) providing, when possible, safe spaces for discussing eco-emotions, and (3) looking to provide holistic opportunities for embodied engagement (via, e.g., art-based methods and outdoor pedagogies). Making room for

[58] Bryan, "Pedagogy of the Implicated"; Charlie Kurth, *Emotion* (New York: Routledge, 2022); Ojala, "Hope in the Face of Climate Change"; Verlie, *Learning to Live with Climate Change.*

education regarding civil engagement and political participation should also be a part of these approaches.[59]

Of course, securing these goals will require institutional and grassroots support. As Verlie et al. (2021) explain, educators find that helping students "face and respond to ecological crises [is]an extremely challenging task, one which [is] hindered by time limitations, their own emotional distress, professional expectations, society-wide climate denial and a lack of guidance on what works."[60] Thus, on an institutional level, it is important to develop an emotion-positive attitude and discuss the dynamics of eco-emotions between educators.[61] (Eaton, 2017; Pihkala, 2020b). Peer groups and various forms of social support can also help educators withstand stress and develop their emotional "tool kits."

In practice, educating emotional "tool kits" is crucial both for teachers and students. This includes skills of recognizing emotional energy in one's bodymind and learning to channel its flow, which includes learning to name emotions as a tool for both understanding and self-control. Many eco-emotions are complex combinations of various types of affect, emotion, and feeling, but even rudimentary skills of recognition and naming can help one more constructively experience them, as can the insights provided by emotion regulation research.[62] In addition to the ways in which "emotion-focused coping" is currently framed, it is important to take note of

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[59] Bryan, "Pedagogy of the Implicated"; Verlie, *Learning to Live with Climate Change*.

[60] Blanche Verlie, Emily Clark, Tamara Jarrett, and Emma Supriyono. "Educators' Experiences and Strategies for Responding to Ecological Distress," *Australian Journal of Environmental Education* 37, no. 2 (2021): 132-146. https://doi.org/10.1017/aee.2020.34.

[61] Eaton, "Navigating Anger, Fear, Grief, and Despair."

[62] James J. Gross, "Emotion Regulation: Current Status and Future Prospects," *Psychological inquiry* 26, no. 1 (2015): 1-26. https://doi.org/10.1080/1047840X.2014.940781; Jo Hamilton, "'Alchemizing Sorrow into Deep Determination': Emotional Reflexivity and Climate Change Engagement," *Frontiers in Climate* (2022): 3. https://doi.org/10.3389/fclim.2022.786631; Pihkala, "Towards a Taxonomy of Climate Emotions."

positive emotion-focused skills, which have been explored for both in the original theory of emotion-focused coping and in Emotional Approach Coping (EAC) literature.[63] Philosophy has much to offer for educational discussions with students – and between teachers – about the ethical evaluation of emotions.[64] (e.g., Kurth 2022a, 2022b: chapter 8; Liebow & Glazer 2019).

Educators should also look to develop a sensitivity toward educational content which may trigger strong and difficult emotions. Content warnings should be used if and when necessary: for example, teachers should not show videos of animals choking to plastic pollution without warning students first.[65] Students can also be given time for emotional and cognitive reflection and sharing before and after classes: discussing the thoughts and emotions engendered by the teaching material can validate, strengthen, and educate. Students can also be encouraged to seek support for their eco-emotions outside class: while people have widely different situations as regards the availability of such support, at least online support is available for most people.

To mention one more example, in Finland, an educational project called Toivoa ja toimintaa, "Hope and Action", has worked since 2019 to provide training for teachers of 13- to 19-year-olds in relation to both emotional methodologies and methods of participatory environmental action. Teachers have also been encouraged to build and maintain peer networks

[63] Richard S Lazarus, and Susan Folkman, *Stress, Appraisal, and Coping* (New York: Springer, 1984); Jennifer L. Austenfeld, and Annette L. Stanton. "Coping Through Emotional Approach: A New Look at Emotion, Coping, and Health-Related Outcomes." *Journal of Personality* 72, no. 6 (2004): 1335–1364. https://doi.org/10.1111/j.1467-6494.2004.00299.x

[64] Kurth, "Inappropriate Emotions, Marginalization, and Feeling Better"; Kurth, *Emotion,* chap. 8; Nabina Liebow and Trip Glazer, "White Tears: Emotion Regulation and White Fragility," *Inquiry* 66, no.1, (2023): 122-142 . https://doi.org/10.1080/0020174X.2019.1610048.

[65] See Bryan, 2022 for a critical discussion of various possibilities in such visual material, including positive outcomes; Bryan, "Pedagogy of the Implicated."

with the help of social media. Some workshops by related Finnish NGOs have invited school principals for sessions of their own, so that the principals can share how the issues seem from their perspective and methods can be aimed for increasing awareness among principals.

4. Conclusion

Above four ideas circumscribe an emotion-aware pedagogy for climate change ethics education. We see this less as a replacement for the traditional strategies (though it might be used that way), and more as a set of pedagogical principles that can supplement and enrich both rationalistic and experiential approaches, providing resources that can help educators address the limitations that we noted in these strategies. With our article, we join the recent and steadily growing vein of scholarship and educational practice development which foregrounds the role of emotion in environmental and climate education.[66] We have argued that affective connections matter; they are a sign of care and concern, and emotions can also be rational responses. They can also be effective tools for mobilizing morally admirable behavior, and they can bring distinctive (even unique) benefits. Additionally, we've seen that experiencing moral emotions about the ecological crisis can reflect well on the person and the group who feels them. Moreover, it's because emotions function in these ways that they can aid us as we confront questions like those we flagged at the outset. The perspective and motivation that emotions bring can work to deepen our understanding of, for instance, not just how climate change may affect marginalized populations and ecosystems, but also why these harms are ones we ought to be concerned about.

[66] Bryan, "Pedagogy of the Implicated"; Pihkala, "Eco-Anxiety and Environmental Education"; Verlie, *Learning to Live with Climate Change.*

Emotions are also crucially important in relation to behavioral engagement with the ecological crisis. A growing number of scholars argue that taking the affective dimensions into account can help us overcome the problems related to the knowledge-action-gap. (e.g. Dunlop & Rushton 2022; also Kollmuss & Agyeman 2002). However, great care is needed in order to avoid overly simplistic assumptions of emotions and their effects on behavior (especially given the influence of contextual factors and individual differences in people's emotional dispositions).[67] Not everyone has the same possibilities for action: intersectional justice issues greatly shape people's resources, and contextual factors need much attention. Scholars of critical theory have also warned about overly individualizing tendencies related to framing of eco-emotions and the methods of encountering them.[68]

We have argued for an emotion-aware climate ethics education, but we must be wary of the many challenges and even potential pitfalls in this area. Because of the history of skepticism about the value of emotion, too few resources are allocated to training teachers about emotions, and the difficulty of the subject matter furthers these challenges (Wallace et al. 2020, Ojala 2020). Some educators and educational leaders are also likely to resist a shift to emotion-aware methodologies. Fortunately, practical methods for implementing emotion-aware environmental education in the classroom are being developed in many countries. Philosophical ethics courses and content offer some excellent opportunities for group discussions with students about the complex dynamics of eco-emotions. In a similar vein, an international network called Existential Toolkit for Climate Justice Educators (www.existentialtoolkit.com) offers both texts and practical emotional methods on the topic. NGOs such as Force of Nature have published short

[67] For further discussion, see Kurth, and Pihkala, "Eco-Anxiety: What It Is and Why It Matters."

[68] Kalwak and Weihgold, "The Relationality of Ecological Emotions."

guides for teachers about how to engage eco-emotions in the classroom. Scholars and educators have also developed various methods for different age groups: see e.g. Brown (2016) for younger children, Hufnagel (2017) for primary school students, and Gaard & Erguner-Tekinalp (2022) for university students.[69]

Amidst the intensifying ecological crisis, emotion-aware climate education will not always be easy, but it will be increasingly needed. We believe that it can also contribute to increasing feelings of meaningfulness, and that it is related to the ancient philosophical goal of the good life.

[69] Molly Young Brown, "Supporting Children Emotionally in Times of Climate Disruption: Teaching Practices and Strategies," in *Education in Times of Environmental Crises* (New York: Routledge, 2016), 195-209; Gaard, and Erguner-Tekinalp, *Contemplative Practices and Anti-Oppressive Pedagogies for Higher Education*; Hufnagel, "Attending to Emotional Expressions About Climate Change."

Bibliography

Andersson, Erik and Johan Öhman. “Young People’s Conversations About Environmental and Sustainability Issues in Social Media.” *Environmental Education Research* 23, no. 4 (2016): 465–485. https://doi.org/10.1080/13504622.2016.1149551

Antadze, Nino. “Moral Outrage as the Emotional Response to Climate Injustice.” *Environmental Justice* 13, no. 1 (2020): 21-26. https://doi.org/10.1089/env.2019.0038

Austenfeld, Jennifer L. and Annette L. Stanton. “Coping Through Emotional Approach: A New Look at Emotion, Coping, and Health-Related Outcomes.” *Journal of Personality* 72, no. 6 (2004): 1335–1364. https://doi.org/10.1111/j.1467-6494.2004.00299.x

Bacigalupi, Paolo. *The Water Knife.* New York: Vintage Books, 2016.

Barros, Helen, and José Pinheiro. “Climate Change Perception by Adolescents: Reflections on Sustainable Lifestyle, Local Impacts and Optimism Bias (Percepción del cambio climático en adolescentes. Reflexiones sobre los estilos de vida sostenibles, el impacto local y el sesgo optimista)." *PsyEcology* 11, no. 2 (2020): 260-283. https://doi.org/10.1080/21711976.2020.1728654

Barthel, Stephan, Sophie Belton, Christopher M. Raymond, and Matteo Giusti. "Fostering Children’s Connection to Nature Through Authentic Situations: The case of Saving Salamanders at School." *Frontiers in psychology* 9 (2018): 928. https://doi.org/10.3389/fpsyg.2018.00928

Berrera-Hernández, Laura Fernanda, Mirsha Alicia Sotelo-Castillo, Sonia Beatriz Echeverría-Castro, and César Octavio Tapia-Fonllem. (2020). Connectedness to Its Impact on Sustainable Behaviors and Happiness in Children.” *Frontiers in Psychology* 11 (2020). https://doi.org/10.3389/fpsyg.2020.00276

Besser, Lorraine L., and Shigehiro Oishi. "The Psychologically Rich Life." *Philosophical Psychology* 33, no. 8 (2020): 1053-1071. https://doi.org/10.1080/09515089.2020.1778662

Biesta, Gert. (2006). Interrupting hope. *Philosophy of Education Yearbook,* pp. 280–282.

Biswas, Tanu, and Nikolas Mattheis. "Strikingly Educational: A Childist Perspective on Children’s Civil Disobedience for Climate Justice.” *Educational Philosophy and Theory* 54, no. 2 (2022): 145-157. https://doi.org/10.1080/00131857.2021.1880390

Brown, Molly Young. "Supporting Children Emotionally in Times of Climate Disruption: Teaching Practices and Strategies.” In *Education in Times of Environmental Crises.* 195-209. New York: Routledge, 2016.

Bryan, Audrey. "Pedagogy of the Implicated: Advancing a Social Ecology of Responsibility Framework to Promote Deeper Understanding of the Climate Crisis." *Pedagogy, Culture & Society* 30, no. 3 (2022): 329-348. https://doi.org/10.1080/14681366.2021.1977979

Butin, Dan W. “The Limits of Service-Learning in Higher Education.” *The Review of Higher Education* 29, no. 4 (2006): 473-498. https://doi.org/ 10.1353/rhe.2006.0025.

Callicott, J. Baird. "Thinking Climate Change Like a Planet: Notes from an Environmental Philosopher." In *Teaching Climate Change in the Humanities*, 105-111. New York: Routledge, 2016.

Charles, Cheryl, Karen Keenleyside, Rosalie Chapple, Bill Kilburn, Bill, Salah Pascale van der Leest, Diana Allen, Miles Richardson, Matteo Giusti, Lawrence Franklin, Michael Harbrow, Ruth Wilson, Andrew Moss, Lousie Metcalf, and Luis Camargo. (2018). *Home To Us All: How Connecting with Nature Helps Us Care for Ourselves and the Earth.* Minneapolis: Children and Nature Network, 2018.

Chawla, Louise. “Childhood Nature Connection and Constructive Hope: A Review of Research on Connecting with Nature and Coping with Environmental Loss.” *People and Nature* 2, no. 3 (2020): 619-642. https://doi.org/10.1002/pan3.10128 .

Clarke, Angela T. “Coping with Interpersonal Stress and Psychosocial Health Among Children and Adolescents: A Meta-Analysis." *Journal of Youth and Adolescence* 35 (2006): 10-23. https://doi.org/10.1007/s10964-005-9001-x .

Ciucci, Enrica, Andrea Baroncelli, Monica Toselli, and Susanne A. Denham. "Personal and Professional Emotional Characteristics of Early Childhood Teachers and Their Proneness to Communicate with Parents and Colleagues about Children’s Emotions." *Child & Youth Care Forum* 47, no. 2 (2018): 303-316. https://doi.org/10.1007/s10566-017-9431-0 .

Collado, Silvia, Henk Staats, and José A. Corraliza. "Experiencing Nature in Children’s Summer Camps: Affective, Cognitive and Behavioural Consequences." *Journal of Environmental Psychology* 33 (2013): 37-44. https://doi.org/10.1016/j.jenvp.2012.08.002 .

Crandon, Tara J., James G. Scott, Fiona J. Charlson, and Hannah J. Thomas. "A Social–Ecological Perspective on Climate Anxiety in Children and Adolescents." *Nature Climate Change* 12, no. 2 (2022): 123-131. https://doi.org/10.1038/s41558-021-01251-y

Cunsolo, Ashlee, and Karen Landman, eds. *Mourning Nature: Hope at the Heart of Ecological Loss and Grief*. Montreal: McGill-Queen's Press-MQUP, 2017.

Doherty, Thomas J., and Susan Clayton. “The Psychological Impacts of Global Climate Change.” *American Psychologist* 66, no. 4 (2011): ,265–276. https://doi.org/10.1037/a0023141

Eaton, Marie. "Navigating Anger, Fear, Grief, and Despair." In *Contemplative Approaches to Sustainability in Higher Education*, 40-53. New York: Routledge, 2016.

Fawcett, Leesa. "Ethical Imagining: Ecofeminist Possibilities and Environmental Learning." *Canadian Journal of Environmental Education (CJEE)* 5, no. 1 (2000): 134-149.

Freire, Paulo. *Pedagogy of the Oppressed.* New York: Continuum, 1970.

Freire, Paulo. *Pedagogy of Hope*. New York: Bloomsbury, 1994.

Gaard, Greta and Bengü Erguner-Tekinalp, eds. *Contemplative Practices and Anti-Oppressive Pedagogies for Higher Education*. New York: Routledge, 2022.

Greenwood, David A. “A Critical Theory of Place-Conscious Education.” In *International handbook of research on environmental education*, 93-100. New York: Routledge, 2013.

Gross, James J. "Emotion Regulation: Current Status and Future Prospects." *Psychological inquiry* 26, no. 1 (2015): 1-26. https://doi.org/10.1080/1047840X.2014.940781 .

Hamilton, Jo. "“Alchemizing Sorrow into Deep Determination”: Emotional Reflexivity and Climate Change Engagement." *Frontiers in Climate* (2022): 3. https://doi.org/10.3389/fclim.2022.786631

Haybron, Daniel M. *The Pursuit of Unhappiness*. Oxford: Oxford University Press, 2008.

Held, Virginia. *The Ethics of Care*. London: Oxford University Press on Demand, 2006.

Hickman, Caroline. "We Need to (Find a Way to) Talk About… Eco-anxiety." *Journal of Social Work Practice* 34, no. 4 (2020): 411-424. . https://doi.org/10.1080/02650533.2020.1844166

Hickman, Caroline, Elizabeth Marks, Panu Pihkala, Susan Clayton, R. Eric Lewandowski, Elouise E. Mayall, Britt Wray, Catriona Mellor, and Lise van Susteren. "Climate Anxiety in Children and Young People and Their Beliefs About Government Responses to Climate Change: A Global Survey.” *The Lancet Planetary Health* 5, no. 12 (2021): e863-e873. https://doi.org/10.1016/S2542-5196(21)00278-3

Hicks, David. *Educating for Hope in Troubled Times*. London: Institute of Education Press, 2014.

Hicks, David, and Andy Bord. "Learning About Global Issues: Why Most Educators Only Make Things Worse.” *Environmental Education Research* 7, no. 4 (2001): 413-425. https://doi.org/10.1080/13504620120081287

hooks,bell. *Belonging*. New York: Routledge, 2009

hooks, bell. *Teaching community*. New York: Routledge, 2003.

Hufnagel, Elizabeth. "Attending to Emotional Expressions About Climate Change: A Framework for Teaching and Learning.” In *Teaching and Learning about Climate Change*, 43-55. New York: Routledge, 2017.

Hughes, Joelene, Miles Richardson, and Ryan Lumber. "Evaluating Connection to Nature and the Relationship with Conservation Behaviour in Children.” *Journal for Nature Conservation* 45 (2018): 11-19. https://doi.org/10.1016/j.jnc.2018.07.004 .

Ives, Christopher D., David J. Abson, Henrik Von Wehrden, Christian Dorninger, Kathleen Klaniecki, and Joern Fischer. "Reconnecting with Nature for Sustainability." *Sustainability Science* 13 (2018): 1389-1397. https://doi.org/10.1007/s11625-018-0542-9

Jensen, Tim. *Ecologies of Guilt in Environmental Rhetorics*. London: Palgrave Macmillan, 2019.

Jimenez, Jeremy, and Laura Moorhead. "'Don't Say It's Going to be Okay': How International Educators Embrace Transformative Education to Support Their Students Navigating Our Global Climate Emergency." *Education Sciences* 11, no. 10 (2021): 593. https://doi.org/10.3390/educsci11100593

Jones, Charlotte A., and Aidan Davison. "Disempowering Emotions: The Role of Educational Experiences in Social Responses to Climate Change." *Geoforum* 118 (2021): 190-200. https://doi.org/10.1016/j.geoforum.2020.11.006

Joshi, Devin K. "Humanist But Not Radical: The Educational Philosophy of Thiruvalluvar Kural." *Studies in Philosophy and Education* 40 (2021): 183-200. https://doi.org/10.1007/s11217-020-09750-9

Kałwak, Weronika, and Vanessa Weihgold. "The Relationality of Ecological Emotions: An Interdisciplinary Critique of Individual Resilience as Psychology's Response to the Climate Crisis." *Frontiers in Psychology* 13 (2022). https://doi.org/ 10.3389/fpsyg.2022.823620

Klocker, Natascha, Charles Gillon, Leah Gibbs, Jennifer Atchison, and Gordon Waitt. "Hope and Grief in the Human Geography Classroom." *Journal of Geography in Higher Education* (2021): 1-18. https://doi.org/10.1080/03098265.2021.1977915

Knops, Louise. "Stuck Between the Modern and the Terrestrial: The Indignation of the Youth for Climate Movment." *Political Research Exchange* 3, no. 1 (2021): 1868946. https://doi.org/10.1080/2474736X.2020.1868946

Kretz, Lisa. "Hope in Environmental Philosophy" *Journal of Agricultural and Environmental Ethics* 26 (2013): 925-944. https://doi.org/10.1007/s10806-012-9425-8 .

Kristjánsson, Kristján . *Virtuous Emotions*. Oxford: Oxford University Press, 2018.

Kurth, Charlie. "Inappropriate Emotions, Marginalization, and Feeling Better."." *Synthese* 200, no. 2 (2022): 155. https://doi.org/10.1007/s11229-022-03619-9

Kurth, Charlie. *Emotion*. New York: Routledge, 2022.

Kurth, Charlie. "Cultivating Disgust: Prospects and Moral Implications." *Emotion Review* 13, no. 2 (2021): 101-112. https://doi.org/10.1177/1754073921990712.

Kurth, Charlie, and Panu Pihkala. "Eco-Anxiety: What It Is and Why It Matters." *Frontiers in Psychology* (2022). https://doi.org/10.3389/fpsyg.2022.981814 .

Lazarus, Richard S. and Susan Folkman. *Stress, Appraisal, and Coping*. New York: Springer, 1984.

Lertzman, Renee Aron. "The Myth of Apathy: Psychoanalytic Explorations of Environmental Subjectivity." In *Engaging With Climate Change*, 117-133. New York: Routledge, 2012.

Liebow, Nabina, and Trip Glazer. "White Tears: Emotion Regulation and White Fragility." *Inquiry* 66, no.1, (2023): 122-142 . https://doi.org/10.1080/0020174X.2019.1610048

Lloro-Bidart, Teresa, and Keri Semenko. "Toward a Feminist Ethic of Self-Care for Environmental Educators." *The Journal of Environmental Education* 48, no. 1 (2017): 18-25. https://doi.org/10.1080/00958964.2016.1249324.

Lorde, Audre. "The Uses of Anger." *Women's Studies Quarterly* 25, no. 1/2 (1997): 278-285. .

Lotz-Sisitka, Heila, Arjen EJ Wals, David Kronlid, and Dylan McGarry. "Transformative, Transgressive Social Learning: Rethinking Higher Education Pedagogy in Times of Systemic Global Dysfunction." *Current Opinion in Environmental Sustainability* 16 (2015): 73-80. https://doi.org/10.1016/j.cosust.2015.07.018

Lyman, Peter. "The Domestication of Anger: The Use and Abuse of Anger in Politics." *European Journal of Social Theory* 7, no. 2 (2004): 133-147. https://doi.org/10.1177/1368431004041748

MacBride, Samantha. *Recycling Reconsidered: The Present Failure and Future Promise of Environmental Action in the United States*. Cambridge: MIT Press, 2013.

Martusewicz, Rebecca A., Jeff Edmundson, and John Lupinacci. *Ecojustice Education: Toward Diverse, Democratic, and Sustainable Communities*. New York: Routledge, 2014. https://doi.org/10.4324/9781315779492

Meynen, Nick. *Frontlines: Stories of Global Environmental Justice.* Washington, D.C.: Zero Books, 2019.

Miller, Dale E., and Ben Eggleston. *Moral Theory and Climate Change: Ethical Perspectives on a Warming Planet*. New York: Routledge, 2020.

Niblett, Blair. "Facilitating Activist Education. Social and Environmental Justice in Classroom Practice to Promote Achievement, Equity, and Well-Being." *What Works? Research into Practice* (2017). http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ww_Facilitating_Activist_Education.pdf

Noddings, Nel. *Caring*. Berkeley: University of California Press, 1984.

Ojala, Maria. "Hope and Worry: Exploring Young People's Values, Emotions, and Behavior Regarding Global Environmental Problems." PhD diss., Örebro universitetsbibliotek, 2007.

Ojala, Maria. "Young People and Global Climate Change: Emotions, Coping and Engagement in Everyday Life." *Geographies of Global Issues: Change and Threat* 8, no. 1 (2016): 1-19.

Ojala, Maria. "Hope in the Face of Climate Change: Associations with Environmental Engagement and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation." *The Journal of Environmental Education* 46, no. 3 (2015): 133-148. https://doi.org/10.1080/00958964.2015.1021662.

Ojala, Maria. "Safe Spaces or a Pedagogy of Discomfort? Senior High-School Teachers' Meta-Emotion Philosophies and Climate Change Education." *The Journal of Environmental Education* 52, no. 1 (2021): 40-52. https://doi.org/10.1080/00958964.2020.1845589

Ojala, Maria, Ashlee Cunsolo, Charles A. Ogunbode, and Jacqueline Middleton. "Anxiety, Worry, and Grief in a time of Environmental and Climate Crisis: A Narrative Review." *Annual Review of Environment and Resources* 46 (2021): 35-58. https://doi.org/10.1146/annurev-environ-012220-022716.

Oreskes, Naomi, and Erik Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury Press, 2010.

Pekrun, Reinhard, Krista R. Muis, Anne C. Frenzel, and Thomas Götz, eds. *Emotions at School*. New York: Routledge, 2018.

Piersol, Laura, and Nora Timmerman. "Reimagining Environmental Education Within Academia: Storytelling and Dialogue as Lived Ecofeminist Politics." *The Journal of Environmental Education* 48, no. 1 (2017): 10-17. https://doi.org/10.1080/00958964.2016.1249329.

Pihkala, Panu. "Toward a Taxonomy of Climate Emotions." *Frontiers in Climate* 3 (2022): 738154. https://doi.org/10.3389/fclim.2021.738154

Pihkala, Panu. "Eco-Anxiety and Environmental Education." *Sustainability* 12, no. 23 (2020): 10149. https://doi.org/10.3390/su122310149

Pihkala, Panu. "Environmental Education After Sustainability: Hope in the Midst of Tragedy." *Global Discourse* 7, no. 1 (2017): 109-127. https://doi.org/10.1007/978-3-319-51322-5_7 .

Ray, Sarah Jaquette. "Coming of Age at the End of the World." In *Affective Ecocriticism: Emotion, Embodiment, Environment*, edited by Kyle Bladow and Jennifer Ladino, 299-319. Lincoln, Nebraska: University of Nebraska Press, 2018.

Ritchie, Jenny. "Indigenous Onto-Epistemologies and Pedagogies of Care and Affect in Aotearoa." *Global Studies of Childhood* 3, no. 4 (2013): 395-406.

Sobel, David. *Place-Based Education*. 2nd edition. Great Barrington: Orion Society, 2005.

Spelman, Elizabeth. “Managing Ignorance.” In *Race and Epistemologies of Ignorance*, edited by Shannon Sullivan and Nancy Tuana, 119–131. Albany, NY: SUNY Press, 2007.

Stapleton, Sarah Riggs. "A Case for Climate Justice Education: American Youth Connecting to Intragenerational Climate Injustice in Bangladesh." *Environmental Education Research* 25, no. 5 (2019): 732-750. https://doi.org/10.1080/13504622.2018.1472220

Steffen, Will, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs et al. "Planetary Boundaries: Guiding Human Development on a Changing Planet." *Science* 347, no. 6223 (2015): 1259855. https://doi.org/10.1126/science.1259855.

Stern, Marc J., Robert B. Powell, and Nicole M. Ardoin. "What Difference Does it Make? Assessing Outcomes from Participation in a Residential Environmental Education Program." *The Journal of Environmental Education* 39, no. 4 (2008): 31-43. https://doi.org/10.3200/JOEE.39.4.31-43 .

Tannock, Stuart. "Pedagogies of Hope and Fear." In *Educating for Radical Social Transformation in the Climate Crisis*, 87-117. London: Palgrave Macmillan, 2021. https://doi.org/10.1007/978-3-030-83000-7_4

Thunberg, Greta. *No One is Too Small to Make a Difference.* New York: Penguin, 2019.

Thunberg, Greta. “'You Did Not Act in Time': Greta Thunberg's Full Speech to MPs.” *The Guardian*. (London), April 23, 2019. https://www.theguardian.com/environment/2019/apr/23/greta-thunberg-full-speech-to-mps-you-did-not-act-in-time

Tseng, Yu-Chi, and Shun-Mei Wang. "Understanding Taiwanese Adolescents’ Connections with Nature: Rethinking Conventional Definitions and Scales for Environmental Education." *Environmental Education Research* 26, no. 1 (2020): 115-129. https://doi.org/10.1080/13504622.2019.1668354 .

Verlie, Blanche. *Learning to Live With Climate Change*. London: Routledge, 2022.

Verlie, Blanche, Emily Clark, Tamara Jarrett, and Emma Supriyono. "Educators’ Experiences and Strategies for Responding to Ecological Distress." *Australian Journal of Environmental Education* 37, no. 2 (2021): 132-146. https://doi.org/10.1017/aee.2020.34.

Wals, Arjen E.J. “Learning in a Changing World and Changing in a Learning World.” *Southern African Journal of Environmental Education* 22 (2007): 35-45.

Wals, Arjen E.J. “Mirroring, Gestaltswitshing and Transformative Learning.” *International Journal of Sustainability in Higher Education*, 29, no. 4 (2010): 380-390. https://doi.org/10.1108/14676371011077595

Weintrobe, Sally. *Psychological Roots of the Climate Crisis: Neoliberal Exceptionalism and the Culture of Uncare*. New York: Bloomsbury, 2021.

Zembylas, Michalinos. *Teaching with Emotion*. Greenwich, Connecticut: Information Age Publishing, 2005.

Zembylas, Michalinos. "Mobilizing Anger for Social Justice: The Politicization of the Emotions in Education." *Teaching Education* 18, no. 1 (2007): 15-28. https://doi.org/10.1080/10476210601151516

Zembylas, Michalinos, Constadina Charalambous, and Panayiota Charalambous. "The Schooling of Emotion and Memory: Analyzing Emotional Styles in the Context of a Teacher's Pedagogical Practices." *Teaching and Teacher Education* 44 (2014): 69-80. https://doi.org/10.1016/j.tate.2014.08.001.