**Krasny, M., Chang, C., Hauk, M., Dubois, B. (2016) *‘Climate Change Education’ in* Russ, A. and Krasny, M.E., (ed.) *Urban Environmental Education Review*. Comstock Publishing Associates**

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**Reviewed by: Kate Greer**

Krasny et al. (2016) pose the question to environmental educators: “how can we hold true to our foundational values of enhancing the environment, including efforts to mitigate climate change, while addressing the reality that climate change has already irreversibly changed our environment and that we need to adapt and transform?” In response, they present two approaches accompanied by examples of practice in urban contexts – a multi-pronged approach from Singapore and an approach for thinking about “climate-responsive environmental and sustainability education”.

Between 2006-2014 Singapore has experienced multiple record rainfalls and droughts. Singapore is addressing climate change adaptation and mitigation via formal curriculum, public education and infrastructure. In the curriculum, climate change features in the grade 8 and 9 syllabus with a focus on “variable weather and changing climate” and seeking to develop “knowledge, skills, values and action to engage with and learn about the causes, impacts, and management of climate change.” While acknowledging that Singapore’s multi-pronged approach is impressive and an example for other coastal cities around the world, Krasny et al. also highlight criticism that there are opportunities for more integration between the three dimensions.

The second approach presented is Hauk’s [[1]](#footnote-1) Three Rs approach for thinking about climate-responsive environmental and sustainability education. This model is built around the dimensions of reclamation, resilience, regeneration.

*Reclamation* addresses ideas of mitigation and of reducing impact on and improving the environment. Krasny et al. describe how EE can support reclamation of “more complete sustainable living systems” such as those that include indigenous ecological knowledge. This dimension is driven by an ethic of caring and a cultural commitment to sustainability that honours past cultures and provides alternatives to modern living. They acknowledge this can be difficult in cities but cite a Cuban example of urban agricultural practices creating opportunities for environmental learning.

*Resilience* relates to adaptation and adaptive capacity. They describe how resilience can be thought of in terms of people, communities, ecosystems or social-ecological systems and that there are several contributions that EE programs and organisations can make: by “foster(ing) attributes of resilient social-ecological systems” by collaborating with government to help adaptation and recovery from disturbances; by using resilience as a bridging concept in the debate between education as instrumental (where fostering social-ecological systems is instrumental) and emancipatory (where critical thinking can build psychological resilience); and, where through major events, new learning can occur and new EE approaches can emerge.

*Regeneration* relates to transformation or envisioning new social-ecological processes and systems. This dimension recognises that climate change is altering social-ecological processes. While some systems may lose the ability to adapt, regenerative systems have multiple, multi-scale feedback mechanisms that operate among networks. Krasny et al. point out how urban EE can play a role in such regeneration by helping young people engage in practical regeneration activities but also by reflecting on the human, community and ecosystem processes that enable such systems to thrive. Krasny et al. consider this process to be more ‘transformative’ and feature learning characterised by cooperation, mutual reciprocity, and vibrancy.

In concluding the chapter, Krasny et al. argue that EE can respond to the challenges of climate change by integrating mitigation and adaptation. They suggest that while aligning with the values of EE (which they suggest are compatible with mitigation and conservation), climate-responsive EE can also address adaptation through approaches that feature the dimensions of reclamation, resilience and regeneration. These would be “community-based approaches” featuring youth and adults collaborating via hands-on stewardship and monitoring, sitting alongside and creating context for classroom structured learning. In so doing, Krasny et al. claim that EE can “foster psychological resilience and transform lives”.

**Questions**:

* In what ways does or could your work address reclamation, resilience or regeneration?
* How does this model relate to your ideas of climate change education and it is or could be?
* Is this a useful model for EE practitioners (in schools, EE orgs or elsewhere)?
* Have you seen examples of it, particularly of the ‘transformative’ regeneration part of the model?
* Is there anything missing from this model in terms of your ideas of climate change education?

 **Group discussion**

* Ideas of the ‘commons’ and the importance of them in England in urban centres
* How do EE programs/activities relate to the Three Rs model: discussion of how bird-watching and monitoring education programs can fit into this model
* Discussion of some of the climate change adaptation issues for London – issues of reduced rainfall, changes in weather patterns, changing requirements for urban infrastructure (e.g. water infrastructure and buildings)
* Opportunities in London for climate change education that draws on/enhances the ‘cultural commons’ of migrant groups or ethnically diverse communities, both in terms of current population and migrating future population.
* Discussion of the opportunities and the complexities of urban agriculture as adult education: can be an opportunity to continue and draw from cultural knowledge but there’s a tension as some people (whether migrating from other countries or from non-urban parts of England) might be living here as part of pursuing a different life. Discussion of the need to be careful about romanticising agricultural pasts through urban agriculture projects.
* Discussion of large-scale, social and economic challenges that are seemingly beyond our influence and given the scale and the complexity of those challenges, what can education do: we can’t know what the future will bring so the focus needs to be on education for critical thinking and questioning rather than content
* Discussion of fear/anxiety about a future with climate change. Maybe there are differences in levels of fear and optimism about this future between industrialised/developed countries and developing countries and, within those countries/societies who is anxious or fearful and who is optimistic.
1. Hauk, M. (2016). The new “three Rs” in an age of climate change: Reclamation, resilience, and regeneration as possible approaches for climate-responsive environmental and sustainability education. Journal of Sustainability Education, 7(2) [↑](#footnote-ref-1)