

Climate Change Education for the Caribbean: *A Call to Action*

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Should educators be frontline workers in response to the climate crisis (CC)? Climate change is a wicked problem adversely affecting the globe; regrettably, small island developing states (SIDS) including those of the Caribbean are disproportionately impacted.¹ Currently, the Caribbean is ill-equipped to respond adequately to the climate crisis due to a variety of factors including finance, information, human capacity, and governance.² In the context of the Caribbean SIDS, adaptation (preparation for climate change) is more important than mitigation (which reduces the impact of climate change), given that SIDS have relatively low carbon emissions and that there is a current existential threat that requires immediate education to inform action among the population. With this in mind, I will argue that Caribbean educational institutions and governments should support climate change education (CCE) that enhances both individual resilience (personal coping skills for the climate crisis) and community resilience (social cooperation). CCE should emphasize pro-environmental behaviours and psychological resilience, equip learners to catalyse collective climate activism, and prepare policymakers to make good climate policy.

This paper will discuss why CCE is justified, how the Caribbean and other SIDS can benefit immensely from global and local CCE, and who is responsible for the reimagination and implementation of CCE. Discussions of climate justice in settings such as international meetings, media, and scholarly publications have had seemingly minor impact given that commitment to global goals to reduce carbon dioxide emissions are inadequate. It is likely that well-designed education will motivate more effective responses to the climate crisis. It is plausible that CCE may promote individual and community resilience, helping to prepare people for the challenges CC will create.

Vulnerabilities of Caribbean Nations in the Climate Crisis

The climate change crisis adversely affects the Caribbean in a myriad of ways: heat extremes; water security, extreme

precipitation, floods, and droughts; tropical cyclones and sea-level rise; human health; agricultural yields, livestock, and fisheries; coral reefs and coastal infrastructure, and energy systems.³ CC poses a genuine existential threat to the Caribbean because most Caribbean nations are composed of low-lying islands, and due to the uncertainties related to the commitment of nation states to the Paris agreement.⁴

Given the vulnerability of the Caribbean, education about adaptation and psychological resilience are critical, given the rising heat, rising sea levels, and subsequent mental distress of Caribbean peoples. Moreover, about 80% of the respondents in a recent survey conducted in ten Caribbean countries felt that organizations such as the Ministry of Health and other government ministries, community-based organizations, local government officials, regional CARICOM organizations, and international organizations should each be taking more action to protect people from the health impacts of CC.⁵ Notably 78% of Caribbean people believed that universities should do more to address the health effects of CC.⁶ Given that the solutions to mental health issues during climate emergencies in the Caribbean are limited, counsellors, health professionals and students need to be taught related coping skills.

Another recent study in the Caribbean indicated that ‘information, awareness, and technology’ was the second most important factor limiting adaptation efforts at the national level, second only to financial resources.⁷ There is a lack of baseline information on temperature and rainfall among Caribbean SIDS and limited regional technology affects the quality and quantity of information although there is growing attention to the importance of data collection.⁸ Notably, human capacity and ‘governance, institutions and policy’ were ranked almost equally by the participants in the survey of barriers to action. Understanding, planning, and managing CC interventions including adaptation are essential and these require investment in human capital.⁹

The Need for Climate Change Education in the Caribbean Region

Educated stakeholders who know how to acquire information and govern well are key to successful adaptation, particularly because there are barriers to the use of climate information in the Caribbean.¹⁰ Not surprisingly, there is an urgent need for the co-production and uptake of climate information for Caribbean hoteliers and tourism policymakers.¹¹

Given the adverse impact of CC on the mental health of Caribbean youth, there is also a need to conduct future research to inform CCE,¹² including investigation to identify effective pedagogy and andragogy in CCE. Clearly, there is a need to implement CCE for all major sectors in the Caribbean, including agriculture, health, and tourism.

All adults, independent of their role in society, have a moral responsibility to address CC. While governments have the bulk of the burden in climate emergencies, citizens have a role to play. Educators should take up the mantle to improve the quality of CCE in ways that can empower students and graduates from childhood and youth. More importantly, university-level CCE can empower policymakers because many government leaders attend university.

The State of Climate Change Education

Although CCE has been highlighted as a key response to CC, its development and uptake remain limited. Recommendations for climate change education were issued decades ago. The United Nations Framework Convention on Climate Change (UNFCCC 1992) prioritized CCE, training, public awareness, public access to information, public participation, and international cooperation.¹³ However there has been limited progress on each of these fronts. There is no standard or widespread curriculum to prepare educators for providing CCE, little CCE funding, and perplexing choices to be made by educational policymakers.¹⁴ While most CCE is delivered in formal educational settings, many schools do not include CC content in their curricula.¹⁵ At the same time, many Australian teachers believe they have a professional responsibility to provide CCE.¹⁶

Low levels of CCE quality may account for low levels of collective climate action, and educators need related training to implement CCE. The environment in which CCE is delivered matters and philosophy of a school system may link with CCE outcomes.¹⁷ The CC beliefs of teachers influence the beliefs of their students, so special programs should be designed for teachers whose CC beliefs discount scientific evidence. Everyone has blind spots and biases. As Justin Cook writes, “in order to change, schools must become learning institutions, not just institutions of learning.”¹⁸ Notably, factors that lead to change in complex systems such as formal education are the restoration, renewal, redefinition of their purpose (using abductive thinking), and experimentation of new methods (using deductive thinking).¹⁹ CCE

must have purpose and suitable methods.

Educators in schools and universities have a critical role to play in the climate crisis. They are uniquely positioned to be catalysts for learning and change. Educators at all levels, and the educational institutions that employ them, have a moral responsibility to develop and deliver CCE because (I) CC is possibly the greatest challenge for the Caribbean, (II) formal education should be organized to prepare students with knowledge about important matters, (III) they are uniquely positioned to educate students and catalyze change. The next sections of the paper will discuss the aims and effectiveness of CCE, tools for CCE, and the integration of CCE into existing courses and curricula.

Aims

The aims of CCE are three-fold and involve cognition (knowledge and awareness), attitude (intent and emotions), and behaviour (actions and habits).²⁰ Some hold that CCE should be designed primarily for K-16 students²¹ although other groups inside and outside formal classroom settings would also benefit. The objectives of CCE are typically linked to mitigation and adaptation although topics such as warning systems also warrant inclusion and attention.²² The formal provision of CCE by universities and high schools (grades 9 – 16) could equip future policymakers for the work ahead. Although there is debate whether CCE should focus on climate action some hold that climate action should be the only aim.²³ But the unique psychological needs of children confronted by CC and climate emergencies warrants the development of CCE resources to help them “acknowledge feelings, emphasize solutions, and encourage action.”²⁴ Given increasing evidence that collective action may protect against depression and anxiety, there are compelling reasons to advance collective action through CCE in addition to enhancing individual resilience more directly.²⁵

Effectiveness

CCE should be carefully evaluated to determine whether it is fit for purpose. Students and teachers generally believe that there is global climate change and CCE research is growing; however there are some concerning trends. Undergraduates in science classes are offered more instruction in climate change than students in non-science classes, so there are differential levels of engagement across majors.²⁶

CCE is valuable because it can affect knowledge, attitudes and pro-environmental behaviours (PEBs). CC denial exists around the world, and, in the USA, this was reduced in one CCE intervention using ten ‘hunks’ of experimentally-vetted information.²⁷ Another study involving 47 schools suggests that knowledge is a key driver of willingness to adopt PEBs among young people,²⁸ and there is compelling evidence that environmental attitudes have a small to moderate effect on PEBs in 11 countries.²⁹ CCE should be designed to influence environmental attitudes because this

may in turn impact PEBs of students and graduates. Notably, CCE may affect lifetime carbon emissions.³⁰

Tools for Positive CCE Experiences

Inspired by the book “Feel Good Productivity”³¹ the design of CCE for different age and educational levels might center around play, empowerment and people. The most effective approach to CCE may be to empower students by delivering information that has personal meaning and to do so through active and engaging teaching activities.³² Playful CCE may include the use of games, virtual reality, and art.³³ Interaction with others is essential and may take the form of discussions with other students or climate scientists, and school or community projects.³⁴ Notably, some activities with others can literally ‘kill joy’³⁵ since individual climate actions are sacrificial. As such, collective climate actions are strongly recommended. Research is needed to determine which educational activities provide the most effective learning, engagement, and long-term behaviour change of different target groups.

Integration of CCE by Schools and Universities

Those integrating CCE must determine what courses or course content is feasible and reasonable for their students and other stakeholders. The alternative approaches used by schools and universities in CCE are piggybacking (integration of CCE within existing structures by adding individual CCE within existing modules), mainstreaming, specializing, and connecting (transdisciplinary offerings); many educational institutions piggyback CCE and other approaches are needed to advance effective CCE.³⁶ Mainstreaming some aspect of CCE seems feasible for K-16 education and should be adopted by faculty of medicine, nursing, and allied health; however, there can be no one-size-fits-all CCE, particularly in Caribbean universities. I believe that there should be education and training about exemplars who have integrated CCE into existing and new curricula. Encouraging and equipping educators to collectively design interdisciplinary CCE courses would be beneficial and require leadership, insight and ethics. To integrate and provide CCE, Caribbean universities might use the mainstream, specialize, or connect approaches in the form of CC-focused modules added to existing courses, master’s degree programs in climate action, or the design of new cross-disciplinary courses that would be made available across a university or program. A course that could have regional relevance might be called ‘An Introduction to Climate Change for Caribbean Peoples’.

Context Matters

There will never be able a universal CCE for any level of education due to social, cultural, political, and contextual differences. For example, the primary goal of CCE in developed countries may be mitigation because they disproportionately cause CC, and the primary goal in developing

countries may be adaptation because these countries need to be better prepared for current and future climate events that are out of their control. In both settings, the main objectives should be to increase pro-environmental behaviours, policy-making skills, and resilience among their students and graduates.

The specific responsibilities of educators vary with their autonomy and job role. Those at the tertiary level have more autonomy than others in what they teach. They should endeavour to integrate CCE in their classrooms and formally update their syllabi with CC topics. Innovation and imagination are needed, particularly among most K-12 educators as they lack the autonomy to change their syllabi. Those more senior are positioned to do so and include principals, senior teachers, and curricula developers within Ministries of Education. They have a responsibility to ensure that CCE is mainstreamed across primary and secondary education. Likewise, educational institutions and governments have a responsibility to train and support teachers to deliver CCE.

Caribbean CCE Going Forward

To maximize impact, Caribbean CCE should include basic climate science for all students, and give all university students opportunities to learn about climate policy at the university level. Preparation for disasters, as individuals and communities, is different than preparing to become a policymaker so preparation should be prioritized in introductory CCE, but CCE should also introduce university students to national and regional disaster planning. Adaptation and resilience should be the focus of CCE in the Caribbean where individual and community level resilience is particularly important. As emissions from developing countries are not the major drivers of global climate change, Caribbean people should learn about adaptation. Intercultural and international exchange and cooperation between students with different experiences and perspectives from inside and outside the Caribbean should be encouraged. One strategy to promote global climate action may be to nurture exchange between students hard hit by CC in the Caribbean with those in developed countries who otherwise learn about CC from textbooks. This could be a win-win scenario for both groups.

What are the roles and responsibilities of Caribbean educators to prepare their regions for worst-case scenarios? Caribbean educators should be equipped to facilitate CCE that prepares students for resilience during and after climate emergencies, and helps students understand and call for mitigation in countries that produce the largest amounts of global greenhouse gas emissions. Becoming knowledgeable about CCE is very challenging for educators, especially those without any scientific or health background so it is important to teach the teachers. Given that CC is a wicked problem and CCE is needed in the Caribbean, this section discusses the responsibilities of educators in reimagining, resuscitating, and revamping CCE for the common good.

Caribbean educators should design and deliver CCE for Caribbean students, yet few are adequately equipped to do so and some disagree that CCE is their duty. Caribbean educators thus need ongoing CCE themselves. Climate ethics training should be included along with access to relevant Caribbean climate data and a platform on which to learn and collaborate with those already designing and delivering CCE. Caribbean institutions and governments have a duty to provide CCE and ethics training for their educators, and ethics training may lead some educators to reconsider their duties for CCE.

Caribbean educators can be role models for their students and can influence the knowledge and teaching of other Caribbean educators. In Jamaica, nearly 300 teachers agree that sustainable development is important, environmental protection is integral to national development, economic and social development and environmental protection are necessary for sustainable development, buying locally grown produce contributes to social well-being, and acting to avoid serious or irreversible environmental harm is important.³⁷ That Caribbean teachers understand sustainable development at this level is significant because they are educated to provide students with knowledge, skills and attitudes that will help them address Caribbean vulnerabilities like CC, and must themselves have a foundational knowledge about this in order to teach about it.³⁸

Caribbean schools and universities should make important decisions about what CCE to offer and how to integrate CCE into existing curricula. As noted above, Caribbean CCE should focus on resilience and adaptation and include some practical steps that can be taken. School counsellors and social workers might assist with developing individual and community resilience. There are deep philosophical questions and discussions to be had within and outside universities. For example, what role does colonialism play in CC, and can CCE be effective if it ignores this?³⁹ One might ask why teachers should be deemed responsible for CCE when they are already overburdened and unpaid and whether parents or health professionals bear this responsibility? Few parents are equipped to provide CCE and health professionals seldom have sufficient time or knowledge for doing so. Ultimately, is it fair to expect educators who already are charged with so many tasks to add CCE to their portfolio?

If Caribbean students are not exposed to CCE by and for Caribbean people during their education, how can they learn about or contribute to resilience or adaptation? Of course, there are alternative routes to CCE but with our planet and people in peril, do we wish to wait or hope for these options when schools and universities can act now? It is not surprising that scientifically accurate knowledge about CC increases with age while misconceptions persist regardless of age.⁴⁰ Caribbean schools and universities should seek to tailor and provide CCE for the Caribbean context and to dispel misconceptions. Some research suggests that CC resilience

(which includes both adaptation and mitigation) leads to better outcomes in Latin America and the Caribbean,⁴¹ the development and delivery of Caribbean CCE should explore and draw from such examples.

Conclusion

Given the existential threat due to CC, educators have a responsibility to deliver CCE to their students, some of whom will be the policymakers and leaders of the future. Educators make a difference in their students' knowledge and behavior beyond the classroom, and they have a responsibility to creatively integrate CCE into their teaching. It may be most effective to do so with the people, empowerment, and play approach mentioned above. Particularly in the Caribbean, CCE is a moral responsibility of teachers, educational institutions, and governments. They should empower people to prepare for and adapt after climate emergencies (and secondarily to mitigate greenhouse gas emissions of the largest producers). CCE is essential in Caribbean SIDs (and elsewhere); Caribbean educators are *frontline workers* in the fight against climate change.

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