

Journal Pre-proof

A Plan For Developing a Guide to Climate & Health Justice Education: Process and Content

Mita Huq , Sonora English , Heizal Patricia Nagginda ,
Jon Bonifacio , Thilagawathi Abi Deivanayagam , Rita Issa ,
Sorcha Ni Chobhthaigh , Priscila de Morais Sato , Hans Mulindwa ,
Delan Devakumar

PII: S2667-2782(22)00077-3
DOI: <https://doi.org/10.1016/j.joclim.2022.100188>
Reference: JOCLIM 100188



To appear in: *The Journal of Climate Change and Health*

Received date: 30 July 2022
Accepted date: 14 November 2022

Please cite this article as: Mita Huq , Sonora English , Heizal Patricia Nagginda , Jon Bonifacio , Thilagawathi Abi Deivanayagam , Rita Issa , Sorcha Ni Chobhthaigh , Priscila de Morais Sato , Hans Mulindwa , Delan Devakumar , A Plan For Developing a Guide to Climate & Health Justice Education: Process and Content, *The Journal of Climate Change and Health* (2022), doi: <https://doi.org/10.1016/j.joclim.2022.100188>

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2022 Published by Elsevier Masson SAS.
This is an open access article under the CC BY-NC-ND license
(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

A Plan For Developing a Guide to Climate & Health Justice Education: Process and Content

Technical Note for Special Issue on Pathways to Climate Health: Active learning and effective communication to optimize climate change action

- Mita Huq, MSc^a
mita.huq.19@ucl.ac.uk (corresponding author)
- Sonora English, MSc^a
sonora.english@ucl.ac.uk
- Heizal Patricia Nagginda^b
patriciaheizal@gmail.com
- Jon Bonifacio^c
jonbonifacio1@gmail.com
- Thilagawathi Abi Deivanayagam, MBBS MPH^{a,d}
abi.deivanayagam@ucl.ac.uk
- Rita Issa, MBBS MSc^a
rita.issa@ucl.ac.uk
- SORCHA NI CHOBHTHAIGH, MSc^a
sorcha.nichobhthaigh.21@ucl.ac.uk
- Priscila de Moraes Sato, PhD^e
pri.sato@gmail.com
- Hans Mulindwa^b
hansmulindwa12@gmail.com
- Delan Devakumar, PhD^a
d.devakumar@ucl.ac.uk

^a Institute for Global Health, University College London, London WC1N 1EH, UK

^b Climate Operation Ltd, *Kisaasi-Kyanja Road, P.O Box 37705*, Kampala, Uganda

^c Youth Advocates for Climate Action Philippines, College of Science Library, P. Velasquez Street, UP Campus, Diliman Quezon City, Philippines

^d Lancaster Medical School, Faculty of Health and Medicine, Lancaster University, LA1 4YG, Lancaster, UK

^e School of Public Health, University of São Paulo, Avenida Doutor Arnaldo, 715 São Paulo, Brazil

Word Count: 1982

Abstract: 250 words, 6 key words

Climate justice and health education can address the disproportionate health impacts of climate change on minoritized communities by providing frameworks to build awareness and instigate action on climate-related health inequities. The *Envisioning Environmental Equity Educator's Guide to Climate and Health Justice* provides a framework for educators, activists and health professionals to lead lessons on health and climate justice that center the experiences of those Most Affected People and Areas (MAPA) by climate change. Collaborators in Brazil, the Philippines, and Uganda engaged in stakeholder meetings to assess priorities and needs about climate and health with policymakers, doctors, activists, and students. These meetings informed the product: An educator's guide to climate and health justice that explores their dynamics from an anti-racist, anti-colonial approach. The guide serves as a recommended lesson framework fit with concepts, examples, and activities for educators teaching in primary and secondary learning settings. It is an innovative climate and health justice educational resource that draws on principles of anti-colonialism, critical thinking and consciousness, and engaged pedagogy. It offers a strategy for climate justice communication that targets diverse audiences across climate, health and social contexts by promoting educational approaches that center MAPA experiences, fit for diverse audiences.

Key words: climate justice, health justice, climate education, anti-colonialism, educational resources, environmental equity, lesson design, curriculum development

1. Introduction

Climate justice and health education can address the disproportionate health impacts of climate change on minoritized communities by providing frameworks to build awareness and instigate action on climate-related health inequities (1) (2) (3). Such educational initiatives are essential as the impacts of climate change materialize along racial, ethnic, and identity lines (4,5). These inequities are founded by colonial habits (6), making equity central to sustainable climate action decision-making (7). Nevertheless, this lens appears to be missing in educational spaces that tackle the intersection between climate change and health (8).

While educational materials exist for climate and health, and climate justice modules are abundant, there is a gap in educational resources that convenes health and climate through the lens of decoloniality, social justice, and MAPA perspectives while taking a more explicit social justice approach (9). In January 2022, a scoping exercise conducted by the authors found no pre-university educational resources that comprehensively discussed the intersection of climate change, health, and the origins of related injustices in colonialism and oppression. As such, we designed a resource for educators that structures lessons on climate and health justice for late-primary through secondary school settings. This resource distills complex concepts, contextualizes the crisis within colonial and oppressive systems of power, and provides tools and examples that center the perspectives of MAPA (most affected peoples and areas), and takes pedagogical approaches relevant to discussing justice and power in diverse learning settings.

2. Methods

The *Envisioning Environmental Equity (EEE) Educator's Guide to Climate and Health Justice* is a structured collection of concepts, examples, and activities for educators, activists and health professionals to use when designing lessons on climate and health justice. It equips educators to teach on this nexus while centring Most Affected People and Areas (MAPA) communities using MAPA-relevant and diverse examples, and encouraging reflective, dialogic discussions about the social justice dimension of climate change.

This process was a collective effort by the Envisioning Environmental Equity (EEE) initiative, a research and public engagement project delivered by University of São Paulo in Brazil (USP), Youth Advocates for Climate Action Philippines (YACAP), Climate Operation (CO) Uganda, and Race & Health, UK. In late 2021, project partners convened under the EEE initiative to secure a funding opportunity to platform MAPA narratives in climate and health justice movements, of which fuels the guide's creation.

2.1 Foundational Theories & Pedagogical Approaches

The guide aims to inform climate education with anti-colonial, socially-oriented, justice driven approaches to climate and health education (1). It draws from pedagogical approaches derived from Paulo Freire (6) and bell hooks (10) to refine content delivery using practices relevant to social justice-oriented learning contexts. To do so, we first developed a humanities-focused climate and health lessons related to injustice, colonialism, and roots of inequality. We then supplemented these lessons with narrative-driven case studies, examples, and activities that interrogate climate-related health inequities in MAPA communities and minoritised communities in global North countries.

We provide pedagogical recommendations for educators using teaching notes provided throughout the guide on how to foster community in the classroom, facilitate dialogic learning environments, and conduct critical reflective activities. These recommendations are informed by Freire's *Pedagogy of the Oppressed*, which emphasizes praxis and dialogue to promote student-led knowledge building that confronts systems of oppression (11). Concurrently, we draw from bell hooks' engaged pedagogy that emphasizes the role of community in learning and the teacher's role in establishing learning communities (12). From this lens, student contributions to the course material, including reactions, connections, and critiques are invaluable. In the context of anti-racism and decoloniality, creating a learning experience that is not only critical and creative, but is also generative and empowering was a guiding principle to the guide's design (13).



Figure 1: Guide Development Timeline

2.2 Priority Setting and Content Creation

This guide targets educators, activists, and other community educators from Brazil, the Philippines, and Uganda. Target audiences would have experience leading lessons in institutions and/or with NGO-led community education settings with learners in late-primary through secondary educational settings.

This target population is diverse in geography, language, educational experience, culture, and institution, meaning their needs will vary across socio- and geopolitical contexts. To identify priority health issues, educational access, relevant content/examples, and perception of climate and health justice, we engaged policymakers, health professionals, activists, and students to discuss their needs, priorities, and perceived gaps in awareness about climate change. Priorities and strategies were further informed by collaborators with prior experience in climate education with communities in their respective countries. These collaborators include climate and health community-based educators, researchers, health professionals with experience educating and working with local MAPA communities. Subsequent content development priorities can be categorized into three themes: relatability, delivery, and adaptability.

2.2.1 Relatability

Relatability is essential to effective climate change education (14). Based on input from the stakeholder meetings, and from the teams' prior experiences, mainstream representations of climate change derive from global North countries and are less relatable to MAPA communities as they lack MAPA-relevant perspectives (15).

To address this, we conceptualized injustice by framing climate change and its related health impacts within colonialism, justice, and its relationship with hierarchical social categorisations (e.g., race, caste, ethnicity) (16). We also provide instructions, examples, and case studies that encourage educators to identify locally relevant and relatable examples of discrimination, history, and politics that shape local

climate-related health outcomes. This consideration yielded tangible tools and examples that explore the root causes of climate and health inequities while encouraging each classroom to incorporate local experiences and ideas in the teaching process.

2.2.2 Delivery

Informational gaps exist amongst educators themselves who, though keen to discuss climate justice and health, need more resources about climate and health justice to feel prepared to teach on the subject (17). Given the target audience diversity, content needed to be tailored to varied levels of education, and easily incorporated into diverse educational cultures.

To address informational gaps, the guide details important concepts relevant to climate and health justice while providing examples from around the world for educators to use and/or adapt to their learners. The format follows a question-and-answer format to inform a logical progression from one concept to the next, and prompts educators to explore discussion questions with students pervasively throughout each section. Educators are encouraged to make use of these questions (or adaptations thereof) to open classroom dialogue per Freire's pedagogical approaches (18) to create space for educators and their students to engage key concepts and invite additional dialogue (19,20).

The guide is a free printer-friendly resource that will be hosted across collaborator websites. All activities in the guide do not rely on writing materials, presentations, or the internet. The intended mode of delivery thus accounts for varied access to and reliability of internet connection, especially in remote and rural areas most impacted by climate change.

2.2.3 Adaptability

To ensure the guide's usability across diverse contexts, content must be easily translatable and adaptable by educators across diverse learning settings, and include content relevant to key stakeholders. To promote contents' transferability across learning contexts, we provided guidance on developing contextually relevant case studies while providing a wide breadth of examples across varied MAPA communities to select from. The guide's adaptability is intended to ensure it can be transferred across contexts while equipping educators with a resource that they can use and reshape according to their needs.

The initial version of the guide is in English as it is the shared language of the collaborators. It was developed to be inclusive of diverse English reading and writing levels, and for ease of translation. However, the guide will be translated into Portuguese, Tagalog, and Luganda for community and institutional education settings in Brazil, the Philippines, and Uganda.

2.3 Evaluation and Piloting Process

Using a semi-structured qualitative survey that explored predetermined themes around content, accuracy, reliability, and decoloniality, the guide was reviewed by an international panel of community educators, institutional educators, climate and health experts, and activists across project sites. Feedback praised the guide for its focus on MAPA perspectives of climate change, and the succinct focus

on colonial roots of the crisis. Suggested improvements highlighted a need for further instructions for end-chapter activities, increasing the ratio of examples compared to concepts, and including supporting visuals for educators to use when exploring key concepts. The guide will be piloted at schools in the Philippines and Uganda through existing community relationships affiliated with the respective organization to assess its usability and accessibility (see Figure 1). Lessons learned from piloting will be integrated into the guide before the first version's publication, with iterations of feedback/adaptations to come.

3. Results

This guide is a detailed course outline that can take between 1-4 months to deliver depending on the educator's expertise and the educational setting (e.g., activist vs. institutional). Its chapters are designed to be presented in succession, however chapters can be extracted and delivered between 2-4 weeks. Each chapter (see Table 2) starts with a content summary and practical recommendations informed by the selected pedagogical approaches. Lesson aims and objectives are presented before the main content presentation, which is delivered in a Q&A format, supplemented with periodic critical thinking questions and summary boxes for reinforcement. Each lesson concludes with an extended case study and proposed discussion activities.

Table 2: Guide overview

<u>Introduction to the EEE Guide</u>	<ul style="list-style-type: none"> • Introductory remarks to users • Who it is for • How to use it
<u>Chapter 1 - Introduction to climate change, global warming, and humans</u>	<ul style="list-style-type: none"> • Brief introduction to climate science • The relationship between climate change and the humanities
<u>Chapter 2 - Climate Change and Human Health</u>	<ul style="list-style-type: none"> • The relationship between climate and health • Health inequities across minoritized communities
<u>Chapter 3 - Climate Change and (In)justice</u>	<ul style="list-style-type: none"> • Power, oppression, and colonialism in climate-related health injustice • Justice principles and their relationship to climate-related health inequity • Colonialism as a key contributor to climate change and imbalanced climate decision-making

Chapter 4 - Moving Towards Justice

- Importance of systems-level changes
- How to enact system-level changes
- Critical assessment of proposed climate action for structural change
- Participating in structural change

4. Discussion and conclusion

Reviewers expressed that the EEE Educator's Guide to Climate and Health Justice is an innovative climate and health justice educational resource that draws on well-established theoretical and methodological approaches. It synthesizes and builds upon existing climate education practices from MAPA settings, sharing the best approaches that have been tried and tested in countries facing some of the worst manifestations of the climate crisis. It also offers a strategy for climate justice communication that targets diverse audiences across climate, health and social contexts by prioritizing modes of delivery, adaptability and relatability.

The guide faces limitations: It lacks audio-visual that would support virtual learning strategies. These were not included in the interest of linguistic diversity due to collaborators' inability to translate external resources such as videos and podcasts. Coupled with the burden these resources have on areas with limited internet accessibility, such as rural areas heavily impacted by climate change, access and adaptability were prioritized.

Further, the guide attempts to capture a wide target audience. While our iterative feedback process attempts to accommodate this audience, we will also incorporate long-term feedback infrastructure to iteratively collate feedback. Iterations of the guide will be released as feedback is received. Although the original iteration is in English, it will be translated as needed and translations will be made publicly available. This includes an online learning community designed to promote international sharing of translations, examples, methods, and feedback about experiences with both the guide and teaching on climate, health, and justice. This will be hosted on a free project-delivery app and supported by the EEE team.

Our approach tackles both climate and health injustice and the epistemic injustice pervasive in climate communication resources. It encourages educators to create communities in their classrooms that think critically about climate and health injustice and the power structures that fuel them, raising critical consciousness and engagement with rapid and equitable climate action.

Acknowledgements

To the local communities, activists, and educators who have facilitated the very necessary, empowering, and difficult work that is climate justice education: thank you for convening on this initiative and contributing your expertise, passions, and stories to this guide.

Collaborator websites and platforms where the guide will be hosted

Climate Operation: <https://linktr.ee/climateoperation>

Race & Health: www.raceandhealth.org

YACAP: <https://yacap.org/>

Funding

This work was funded by the Wellcome Trust. Grant number: 224687/Z/21/Z. The Wellcome Trust had no influence over the methods followed in this piece, nor the guide.

Author Agreements | *Communicating Climate: Developing a Guide to Climate and Health Justice Education*

Special Issue: Pathways to Climate Health: Active learning and effective communication to optimize climate change action


30 July, 2022









My signature below indicates that I certify that I have seen and approved the final version of the manuscript titled *Communicating Climate: Developing a Guide to Climate and Health Justice Education* being submitted to the Journal of Climate and Health: *Special Issue: Pathways to Climate Health: Active learning and effective communication to optimize climate change action*.


I affirm that this article is original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

I affirm that my contributes as stated next to my name and accorded with the CRediT (Contributor Roles Taxonomy)* is accurate to my contribution to this manuscript and the area of work in reference.

*Terms and definitions below for reference.

Author Name	Contribution	Signature
Mita Huq	Conceptualization, methodology, writing – original draft, writing – review & editing, project administration	

Sonora English	Conceptualization, methodology, writing – original draft, writing – review & editing, project administration	
Heizal Patricia Nagginda	Conceptualization, methodology, writing – original draft, writing – review & editing, investigation, resources, funding acquisition	
Jon Bonifacio	Conceptualization, methodology, writing – original draft, writing – review & editing, investigation, resources, funding acquisition	
Thilagawathi Abi Deivanayagam	Writing – original draft, writing – reviewing & editing, funding acquisition	
Rita Issa	Writing – original draft, writing – reviewing & editing, funding acquisition	
Sorcha Ni Chobhthaigh	Methodology, writing – review & editing	
Priscila de Morais Sato	Conceptualization, Investigation, writing – review & editing, funding acquisition	
Hans Mulindwa	Investigation	

Delan Devakumar	Supervision, funding acquisition	
--------------------	----------------------------------	-------------------------------------------------------------------------------------

CRediT (Contributor Roles Taxonomy) Terms and Definitions

Term	Definition
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims
Methodology	Development or design of methodology; creation of models
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse
Writing - Original Draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)
Writing - Review & Editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre-or postpublication stages
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation

Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team
Project administration	Management and coordination responsibility for the research activity planning and execution
Funding acquisition	Acquisition of the financial support

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Communicating Climate: Developing a Guide to Climate and Health Justice Education

Technical Note for Special Issue on Pathways to Climate Health: Active learning and effective communication to optimize climate change action

- Mita Huq, MSc ^a
mita.huq.19@ucl.ac.uk (corresponding author)
Conceptualization, methodology, writing – original draft, writing – review & editing, project administration
- Sonora English, MSc ^a
sonora.english@ucl.ac.uk
Conceptualization, methodology, writing – original draft, writing – review & editing, project administration
- Heizal Patricia Nagginda ^b
patriciaheizal@gmail.com
Conceptualization, methodology, writing – original draft, writing – review & editing, investigation, resources, funding acquisition
- Jon Bonifacio ^c
jonbonifacio1@gmail.com
Conceptualization, methodology, writing – original draft, writing – review & editing, investigation, resources, funding acquisition
- Thilagawathi Abi Deivanayagam, MBBS MPH ^{a e}
abi.deivanayagam@ucl.ac.uk
Writing – original draft, writing – reviewing & editing, funding acquisition
- Rita Issa, MBBS MSc ^a

rita.issa@ucl.ac.uk

Writing – original draft, writing – reviewing & editing, funding acquisition

- Sorcha Ni Chobhthaigh, MSc ^a
sorcha.nichobhthaigh.21@ucl.ac.uk
Conceptualization, writing – review & editing
- Priscila de Moraes Sato, PhD
pri.sato@gmail.com
Conceptualization, Investigation, writing – review & editing, funding acquisition
- Hans Mulindwa ^b
hansmulindwa12@gmail.com
Investigation
- Delan Devakumar, PhD ^a
d.devakumar@ucl.ac.uk
Supervision, funding acquisition

^a Institute for Global Health, University College London, London WC1N 1EH, UK

^b Climate Operation Ltd, *Kisaasi-Kyanja Road, P.O Box 37705*, Kampala, Uganda

^c Youth Advocates for Climate Action Philippines, College of Science Library, P. Velasquez Street, UP Campus, Diliman Quezon City, Philippines

^d Lancaster Medical School, Faculty of Health and Medicine, Lancaster University, LA1 4YG, Lancaster, UK

^e School of Public Health, University of São Paulo, Avenida Doutor Arnaldo, 715 São Paulo, Brazil

References

1. McGregor C, Scandrett E, Christie E, Crowther J. Climate justice education: From social movement learning to schooling. In: Routledge Handbook of Climate Justice. Routledge; 2018.
2. McLaren P, Houston D. Revolutionary ecologies: Ecosocialism and critical pedagogy. *Educ Stud* [Internet]. 2004 Aug;36(1). Available from: http://www.tandfonline.com/doi/abs/10.1207/s15326993es3601_4
3. Olsson D. Empowering political engagement with unsustainable actions: the possibilities and limitations of teaching guides for climate change education. *Environ Educ Res*. 2021 Nov 25;1–17.
4. Abimbola O, Aikins JK, Makhesi-Wilkinson T, Roberts EM. Racism and Climate (in)justice: How

- Racism and Colonialism Shape the Climate Crisis and Climate Action. 2021. 38 p.
5. Hickel J, Slamersak A. Existing climate mitigation scenarios perpetuate colonial inequalities. *Lancet Planet Health*. 2022 Jul;6(7):e628–31.
 6. Costa D, Matos B. Moving towards Climate Justice with Pedagogy of the Oppressed. 2020 [cited 2022 Oct 9]; Available from: <http://dx.doi.org/10.15730/forum.2020.62.2.189>
 7. Skea J, Shukla P, Kilkış Ş. Climate change 2022: Mitigation of climate change. 2022 Apr 1 [cited 2022 Sep 29]; Available from: <https://open.metu.edu.tr/handle/11511/97072>
 8. Limaye VS, Grabow ML, Stull VJ, Patz JA. Developing A Definition Of Climate And Health Literacy. *Health Aff* . 2020 Dec;39(12):2182–8.
 9. Rousell D, Cutter-Mackenzie-Knowles A. A systematic review of climate change education: giving children and young people a “voice” and a “hand” in redressing climate change. *Child Geogr*. 2020 Mar 3;18(2):191–208.
 10. Sultana, F. (2019). Decolonizing Development Education and the Pursuit of Social Justice. *Human Geography*, 12(3), 31–46. <https://doi.org/10.1177/194277861901200305>
 11. Shih YH. Rethinking Paulo Freire’s Dialogic Pedagogy and Its Implications for Teachers’ Teaching. *J Stat Educ*. 2018 May 15;7(4):230.
 12. Bell H. *Teaching to Transgress: Education as the Practice of Freedom*. 1st ed. Routledge; 1994. 224 p.
 13. Diemer MA, Rapa LJ, Voight AM, McWhirter EH. Critical consciousness: A developmental approach to addressing marginalization and oppression. *Child Dev Perspect*. 2016 Dec;10(4):216–21.
 14. Monroe MC, Plate RR, Oxarart A, Bowers A, Chaves WA. Identifying effective climate change education strategies: a systematic review of the research. *Environ Educ Res*. 2019 Jun 3;25(6):791–812.
 15. Asaduzzaman M, Ara R, Afrin S, Meiring JE, Saif-Ur-Rahman KM. Planetary Health Education and Capacity Building for Healthcare Professionals in a Global Context: Current Opportunities, Gaps and Future Directions. *Int J Environ Res Public Health*. 2022 Sep 18;19(18):11786.
 16. Selvarajah S, Deivanayagam TA, Lasco G, Scafe S, White A, Zembe-Mkabile W, et al. Categorisation and Minoritisation. *BMJ Glob Health* [Internet]. 2020 Dec;5(12). Available from: <http://dx.doi.org/10.1136/bmjgh-2020-004508>
 17. Apollo A, Mbah MF. Challenges and Opportunities for Climate Change Education (CCE) in East Africa: A Critical Review. *Climate*. 2021 Jun 9;9(6):93.
 18. [No title] [Internet]. [cited 2022 Oct 6]. Available from: <https://files.eric.ed.gov/fulltext/EJ1179672.pdf>

19. Egan-Simon D. Active agents of change: A conceptual framework for social justice-orientated citizenship education. *Equity in Education & Society*. 2022 May 3;275264612210893.
20. Yang H. A research on the effective questioning strategies in class. *Sci J Educ*. 2017;5(4):158.

Journal Pre-proof