

ALLEA (2020) ‘A
Snapshot of Climate
Change Education
Initiatives in Europe
Initial findings and
implications for future
Climate Change
Education’ – its
Relevance for Ireland

At the Royal Irish Academy, we champion research and promote awareness of how science enriches our lives and benefits society. As we believe that good research needs to be promoted, sustained and communicated, we bring academia, government and industry together to address issues of mutual interest, and in doing so, we contribute to public debate and policy formation.

As a Member of ALLEA (All European Academies), the Royal Irish Academy welcomes this latest ALLEA report *A Snapshot of Climate Change Education Initiatives in Europe: Initial findings and implications for future Climate Change Education*. ALLEA is the European Federation of Academies of Sciences and Humanities, representing more than 50 academies from over 40 EU and non-EU countries. Since its foundation in 1994, ALLEA speaks out on behalf of its members on the European and international stages, promotes science as a global public good, and facilitates scientific collaboration across borders and disciplines.

According to the latest ALLEA report, Climate Change Education initiatives, in addition to looking at causes of climate change, need to expand to focus more on mitigation and adaptation, and help students understand that mitigation is not only crucial for future generations but is also essential for current disadvantaged populations on whom climate change is having the biggest impact.

The report has been prepared by ALLEA's Science Education Working Group and contains recommendations based on an on-line survey of existing initiatives complemented by educational research literature and the expertise of the scholars who conducted this work.

This Briefing Paper by Dr Cliona Murphy, Chair of ALLEA's Science Education Working Group and the Royal Irish Academy's representative, discusses the latest ALLEA report and its implications for Ireland.



The Author

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Dr Cliona Murphy is an associate professor in Dublin City University and has been lecturing in the area of science education for 19 years. She has developed and implemented a range of pre-service, post-graduate and continuing professional development programmes in science education. She has conducted and published research and developed educational resources in the areas of Nature of Science, Inquiry-Based Science Education, Education for Sustainability and Climate Change Education. Dr Murphy has collaborated in a number of National and International projects in STEM Education, Education for Sustainable Development and Climate Change Education. She was the Irish co-ordinator and principal professional development facilitator for Ireland in the FP7 Fibonacci Project and was the Irish co-ordinator for the EU Comenius SUSTAIN project. Most recently she was one of the principal investigators on the Education for a Sustainable World Project, that was funded by the Global Consortium for Sustainability Outcomes (GCSO). Dr Murphy has been a member of ALLEA's Science Education Working Group since 2015. In January 2019 she was nominated to chair a sub-group of this working group to carry out a European survey on Climate Change Education Initiatives in Europe. In June 2019 Dr Murphy became Chair of ALLEA's Science Education Working Group.



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Setting the context

For the remainder of the 21st century and beyond, climate change poses an existential threat to humanity (IPCC 2014) as it has caused, and it will continue to cause, damage to human and natural systems around the world (IPCC 2019; UN 2019). UNESCO acknowledges “Climate change as a real and rapidly-evolving threat for humanity” and strives to ensure that all generations understand the impact of climate change and are better equipped to take action to protect resources, the environment and the planet that sustains life, as enshrined in SDG 13”. It advocates “the importance of education as a key element of the response to climate change” (UNESCO 2019).

The complexities of the issues surrounding climate change pose important challenges for education (Mallon 2015; Lena, Lescamontier, Wilgenbus 2019). However, learning about climate change can also provide opportunities for students to develop their knowledge and a range of inquiry, problem solving and critical thinking skills (Burke et al. 2018; IAP 2017; Tolppanen & Aksela 2018). Recent research also reveals that teachers are among the many ‘messengers of knowledge’ present in the society of information, the most trusted by the youth (Corner et al. 2015).

ALLEA’s Science Education Working Group, as part of the Inter Academy Partnership (IAP) Science Education Network, recognises the importance of Climate Change Education (CCE) in preparing our young people to face future challenges in our rapidly changing world, and acknowledges that there are numerous international educational initiatives that address climate change currently being rolled out throughout Europe. Such initiatives include the development of educational resources to support teaching about climate change, professional development for teachers, and regional conferences bringing together scientists, climatologists and educators. While anecdotally it would appear that there are a plethora of initiatives supporting CCE throughout Europe, there is a dearth of research that provides an overview of these initiatives.

The survey

To gain an insight into CCE initiatives in Europe an online survey was developed and administered to all ALLEA’s 58 Science Academies requesting that the survey be shared with relevant universities, education providers and outreach organisations that address climate change education in their work. The resulting scoping review mapped a sample of current CCE initiatives in a non-exhaustive way, and identified commonalities, gaps and best practices in CCE. While the sample in the study was small, it yielded informative and relevant findings that are particularly timely, taking cognisance that climate change is one of the key challenges identified by the European Commission in their 2020 Work Plan (EU, 2020).

Key findings

- Nearly three quarters of the initiatives referred to in the survey include primary school children in their target audience, over half of them include secondary-school students, while almost half of the initiatives include high-school students.

- Of the initiatives that involve participants in Higher Education, there was an equitable distribution between undergraduate and graduate programmes.
- While very high percentages of the initiatives offer resources for students, low percentages of the initiatives offer professional development for current teachers or for those in initial teacher education.
- The length of the professional development programmes varies significantly between the different initiatives. Some are less than 2 hours in length (11), nearly half are more than 2 hours but less than 10 hours, while only a quarter of the programmes are longer than 20 hours.
- Almost all of the initiatives focus on developing knowledge and understanding about climate change. However, only a third of the initiatives also provide support for design and implementation of climate action projects.
- The majority of the initiatives address the causes of climate change but fewer of the initiatives tend to focus on issues regarding climate change mitigation, climate change adaptation and impact reduction

Key recommendations

- Existing high-quality examples of CCE resources for different age groups should be collated so that educators throughout Europe could avail of them and use them in different educational settings. An important first step would be to assess the quality of existing CCE resources and then to develop a set of criteria or a framework that would inform the development of future resources.
- The aims of the CCE initiatives in addition to looking at causes of climate change need to expand to focus more on mitigation and adaptation. CCE initiatives should consult the successive Intergovernmental Panel on Climate Change (IPCC) summary reports that provide regular updates on the most recent developments in climate science. These reports also outline potential solutions for adaptation and mitigation.
- Further information is required to examine the extent to which 'climate justice' is addressed in the different educational resources. Students have to understand that mitigation is not only crucial for future generations but is also essential for current disadvantaged populations

on whom climate change is having the biggest impact, resulting in these populations having to deal with significantly bigger challenges.

- It is important that CCE resources and programmes adopt more solution-oriented and collective action approaches to climate change that would be a means of decreasing eco-anxiety but also of fostering a sense of agency.
- There are gaps in the age ranges which the initiatives target. High percentages of the initiatives appear to target upper primary and post-primary school students for example, however, very few target lower primary school students. It would be important to develop educational resources and programmes related to climate change for early years' education.
- There appears to be a dearth of initiatives that offer professional development for teachers to support them in teaching about climate change. A greater focus needs to be placed on the development, implementation and assessment of high-quality professional development programmes for teachers and on the impact of these professional development programmes on teaching and learning about climate change.
- Primary and post primary curricula throughout Europe are being reviewed and revised, and Education for Sustainable Development and Climate Change are being included as content in many of these revised curricula. Further research needs to be conducted to establish whether or to what extent existing CCE resources and initiatives (including Initial Teacher Education and Continuing Professional Development for teachers) are linked with National curricula.

Conclusions

The survey provides a snapshot, some initial insights, into CCE initiatives in Europe. However, a more in-depth examination of a wider range of CCE initiatives is warranted to ascertain a more thorough account of the status of climate CCE resources. The recommendations outline actions that are needed to achieve the necessary changes, actions that will require significant financial support. It is recommended that a funding framework should be established to support research in and the development of effective approaches for teaching and learning about Climate Change Education.

Implications for Ireland

In Ireland numerous organisations have developed initiatives to support teaching and learning about climate change. These organisations include, Government and Non-Government organisations, Higher Education Institutions and Private Organisations all of which offer support in terms of educational resources for students and teachers and to a lesser extent professional development for practising teachers and pre-service teachers in initial teacher education. However, these initiatives vary in terms of their overall aims, content, focus and pedagogical approaches. In order

for Irish youth to develop the conceptual knowledge, scientific, critical thinking and problem-solving skills towards mitigating climate change, as well as the attitudes to promote climate justice, the CCE resources with which they engage need to be assessed to ensure quality. Furthermore, a framework that would inform the development of future CCE resources that would fit in with the Irish primary and post primary curricula should be developed.

While there are a range of climate change education resources available for Irish teachers, CCE resources alone are not sufficient to ensure effective teaching and learning about climate change. Teachers have an instrumental role in CCE and it is essential that they are supported, via quality professional development, to develop their knowledge about climate science and to implement methodologies to teach about climate change effectively. Current professional development modules and programmes in CCE in Ireland need to be collated and assessed to ensure they provide teachers with the necessary support to competently teach about climate change as part of the Irish National primary and post-primary curricula and indeed as a component on under-graduate and post-graduate programmes.

A National Steering Committee that would oversee the review and assessment of existing Irish CCE resources, the review of current professional development in CCE and the development of a framework that would inform future CCE resources and professional development needs to be established. This committee should include experts in climate change, climate change education and education. Funding needs to be allocated to support this work.

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Further information

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