

# ADDRESSING THE CHALLENGES OF CLIMATE CHANGE: THE POTENTIAL ROLE OF DEVELOPMENT EDUCATION IN THE TERTIARY SECTOR

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**Abstract:** This paper explores the potential of placing development education (DE) principles at the core of all curricula, as a model to build local and global sustainable societies, as advocated by the National Strategy on Education for Sustainability in Ireland 2014-2020 (NSESI) (DES, 2014). A vision for change in education culture is required as the world enters the ‘third industrial revolution’ (Rifkin, 2011) with a view to sustaining life into the future within identified planetary boundaries (Rockstrom, 2015). Development education (DE) focuses on learning about and leading change. It also makes multiple, diverse and sometimes contradictory (Waldron, 2014) connections across disciplines. It adopts active and participative learning methodologies to achieve fairness in the distribution of wealth and power. As such, DE enhances critical analysis and reflection. It facilitates the development of participative and transformative skills for action and dialogue at cultural, social, political, ethical, economic and technological levels. It thus makes a strong contribution to understanding local and global development issues which are central to addressing climate change and educating for resilience.

**Key words:** Development education; climate change; education culture; sustainable societies.

The urgency and magnitude of problems created by climate change, coupled with the deep embeddedness of its causes, raises major issues for society, not least for educators. Despite attempts to date at prevention and mitigation, greenhouse gas emissions have continued to rise between 1970 and 2010 with the largest absolute decadal increases being towards the end of this period (IPCC, 2014: 5). The warmest year on record was 2014 and this year’s temperature data would seem to indicate that these trends are

continuing (Blunden and Arndt, 2015). Hence, the European Environment Agency (EEA) has argued that:

“the most fundamental shift in modern society in the 21st century will be to **reinvent** what it means to have a high level of societal well-being, while accepting and embracing the limits of the planet. Otherwise there is an increasing risk that breaching tipping points and moving beyond limits might bring more disruptive and unwelcome pushes towards societal change” (2015:169, emphasis added).

The urgency of change needed and exactly how this change might unfold is as yet undetermined and raises a major challenge for higher education institutions (HEIs). This is both in conducting the research necessary to reimagine and facilitate such a ‘reinvention’ and in fostering the abilities in individuals and communities to implement these visions.

This paper argues that, given the level of change needed at all levels in society to address (both in terms of climate mitigation and adaptation) the problem of climate change, that education as a whole and HEIs in particular, have distinct roles to play in facilitating the learning needed to address this crisis. Furthermore, it argues a role for DE as an existing ‘inter-discipline’, in providing models that have the potential to help seed the changes in HEI curricula needed to increase knowledge and awareness of climate change and of other challenges of (un)sustainability. Thus in Dewey’s words, HEIs can act as resources to enable people to ‘better anticipate what is going to happen that [they] can therefore get ready or prepare in advance so as to secure beneficial consequences and avert undesirable ones’ (1961: 76).

The paper begins by drawing from the literature on DE and Education for Sustainable Development (ESD), examining the nature of broader learning capacities required to address complex problems of sustainability and unsustainability in HEIs (*in addition to* more traditional disciplinary skills). These ideas are further developed through a discussion of the potential role of HEIs in building resilience at personal and community

levels. Given the major thrust in current Irish higher educational policy towards rationalisation, the argument thus invites a *re-envisioning* of the role of HEIs as *regional* resources, contributing to the learning required to build resilient communities in addressing the challenges of climate change.

### **Development education as a model for trans- and inter-disciplinary learning**

This paper concentrates on DE and ESD where elements of both disciplines are explored and the concepts involved in both are viewed as complementary and overlapping. DE crosses disciplinary boundaries, as is evident from the CONCORD (2004) definition of DE as:

“an active learning process, founded on the values of solidarity, equality, inclusion and co-operation. It enables people to move from basic awareness of international development priorities and sustainable human development through understanding the causes and effects of global issues, to personal involvement and informed action. It fosters the full participation of all citizens in world-wide poverty eradication and the fight against exclusion. It seeks to influence more just and sustainable economic, social, environmental, and human rights based national and international policies”.

Knowledge of climate change requires transdisciplinary approaches, where insights from a range of disciplines are applied to complex or ‘wicked’ problems (Conklin, 2005). These problems are characterised by large degrees of uncertainty and multiple perspectives. This complexity is apparent in relation to planetary health in the Anthropocene era (a contested concept where humankind causes some environmental degradation). Whitmee et al. advocate interdisciplinarity:

“Planetary health, as a field straddling many uncoordinated disciplines demands investment and the development of a culture of interdisciplinary research. The health research community should forge links with the full range of relevant disciplines in the natural,

physical, and social sciences to understand complex systems and assess potential policy solutions” (2015: 45).

DE principles are central to the NSESDI (DES, 2014) which calls for education *for* sustainable living with total institution responses, interdisciplinarity and innovative pedagogies in formal and non-formal education scenarios. Building knowledge, developing skills and value systems for sustainability and equality are key aspects of change. These form a basis for building resiliency in society and constitute the basic tenets of DE and ESD.

NSESDI also calls for integrated education programmes resisting ‘silo-isation’ and with ‘build-in’ rather than ‘bolt-on’ approaches (DES, 2014: 21) with current examples in Dublin City University (DCU) and University College Cork (UCC). As educators of future leaders, professionals, and policy makers, HEIs have a key role to play in educating for sustainability. This gives rise to the need for the integration of political, socio-economic and environmental knowledge in all programmes.

### **Climate change and world development: What learning capacities are required for action?**

Climate change can be viewed as the major symptom of a multi-faceted ecological crisis with social, political and economic dimensions. One of the biggest difficulties is that it emerges through a highly complex set of causes and conditions which are deeply embedded in complex systems of human behaviour and activities. Dominant in these is a reliance on fossil fuels and habits and lifestyles dependent on them. These, in many cases, also contribute to global inequalities. Addressing both climate change and related problems of global inequality thus requires action at many levels (individual, community, regional, national and global).

As far back as 1975, the first significant Declaration on Environmental Education, the Belgrade Charter, signified a clear need for a *holistic* approach to address environmental problems. The context for this was growing global inequality, hunger, poverty, illiteracy, class, racial and

gender exploitation and domination, all of which are core concerns of DE also. These are echoed in the United Nations Intergovernmental Panel for Climate Change *Summary for Policymakers* (IPCC, 2014: 5), where it is suggested that sustainable development and equity should provide a *basis* for assessing climate policy. In addition, it states that climate mitigation attempts should also address equity, justice and fairness. Climate change issues must not be addressed in isolation. They must be considered in the context of other societal goals, such as health, food security, biodiversity, local environmental quality, energy access, livelihoods and equitable sustainable development. This integrated approach maximises mutual benefits and avoids unwanted side-effects.

Studies of resilience to climate change also acknowledge the role of factors such as conflict in increasing the vulnerability of regions to climate-related problems. The positive effects of strong governance, civil and political rights, and sustainability literacy in building adaptive capacity are also noted by Brooks et al. (2004). There is therefore a strong case for mainstreaming aspects of DE in transdisciplinary spaces. This facilitates learners from different disciplines in building personal resilience and reflecting on both the implications of decisions or practices and the positive contributions that their disciplines can make in addressing serious and complex issues. Wals describes the need for this:

“Our search for a more sustainable world requires cutting edge new thinking that can break the cycle of un-sustainable knowledge creation and transfer, un-sustainable technological development and unsustainable consumption patterns tied to un-sustainable economic principles ... taking advantage of the privileged position universities have in our society and utilising some of the brightest minds on the planet in finding ways to preserve, rather than to destroy, the very same planet” (2006: 55).

Addressing issues such as climate change requires a view of relationships and interdependencies between economy, society and the

ecosystems which support them. This includes how different systems work and how different perspectives can be reconciled. These relationships or interdependencies can be understood *as the context* for a wide range of disciplines. A consultative study involving an international panel of 70 ESD experts identified a set of core competencies for ESD, (competencies defined here as preconditions for self-ordered action). These included systemic, anticipatory and critical thinking skills. Other cited skills involved communication, such as the ability to cooperate in heterogenous groups; capacities for participation, empathy and change of perspective; abilities for interdisciplinary work and communication through a range of media. Organisational skills, such as planning and realising innovative projects and the ability to evaluate these, were also included. Finally the capacities to deal with ambiguities, tolerate frustration and act fairly and ecologically were also noted (Rieckmann, 2012: 133). Definitions such as these (also see University Educators for Sustainable Development (UE4SD, 2014) provide useful bases for designing curricula. Given that the issue of academic freedom has been raised in attempts to drive sustainability-oriented curricula in higher education (Jones et al., 2010; Knight, 2005), it is salient to bear in mind that what is important here, as Kirby acknowledges:

“is nurturing people’s curiosity and critical insight so that they become powerful and wise change makers in their own right, not the ‘correct’ communication of some previously defined body of knowledge” (2012: 25).

The next section discusses in more detail the challenges posed by climate change for learners and communities. These challenges are raised by the levels of behavioural change required and DE literature is assessed for insights into learning *for* and not just about sustainability (DES, 2014). The potential role that can be played by HEIs in their regional communities and the possibilities posed by building on existing experiences of engaged or situated learning for both student and community are then discussed. The engagement mission of HEIs is highlighted, as cited in the National Strategy in Higher Education (Hunt, 2011).

## **Resilient learners and resilient communities**

Douthwaite (2010: 1) has argued that, given the high level of societal and economic dependence on fossil fuels, moving beyond this dependence requires that systems of production and distribution and human relationships are changed out of all recognition. Such change is difficult for individuals to comprehend and even more difficult to apply in practice. In many instances the consequences of individual action (or inaction) may be located at a distance spatially – in other parts of the world, or temporally – affecting future generations. This raises questions of how best to incorporate these learning concepts for action into (higher) education settings.

In third level courses, oriented towards professional training, this raises the need for learners to critically reflect on the global and the inter-generational implications of decisions. The absence of such reflection is illustrated in a study by Reicher Newstadt (2015) on the attitude of secondary school learners in the US. The reasons for not worrying about climate change were found to be as follows: it is not local; it is happening somewhere else; it is happening in the future; it was not impacting on the learners but it was impacting on animals and the environment.

One possible explanation for this attitude is the concept of ‘cognitive dissonance’. Klein (2014) cites the discomfort caused by the awareness that mundane activities could be destroying the planet, for example, driving to the supermarket and buying the ingredients for a meal. Such dissonance could also be engendered through, for example, knowledge of the undesirable conditions of production of items being purchased, for example the use of child labour. It is more comfortable not to know. Environmental educator David Selby thus identifies a range of deep psychological issues raised by climate change including: ‘a presenting acceptance, often fulsome, of the severity of the looming crisis coupled with an ill-preparedness to follow through in terms of embracing and promoting the radical personal and societal change needed to stave off the worst effects of climate change’ (2011: 2). In tandem with this acceptance is:

“a form of self-deceptive or furtive denial characterized by fully conscious, or threshold of consciousness, **dissonance** between perception of problem and identified acted upon (or not acted upon) remedies, with profoundly unhealthy ramifications for both the individual concerned and society at large” (ibid: 2, emphasis added).

The serious discomfort raised by such dissonance, coupled with (related) broader societal and political inertia, results in an effective paralysis of the individual, even in the absence of ignorance or dissent. However, it is also important to note, and particularly within an educational setting, that the actions of individuals and communities in addressing issues such as climate change are also differentially circumscribed by contextual factors such as social and economic circumstances. For example, as Shove and Walker (2010) argue, individual social practices are shaped by elements such as practical know-how, meanings, infrastructures and socio-technical systems. Thus individual change might require social, political and infrastructural change and this is highly contingent on the circumstances of the individual and community.

Murphy et al. provide some possibilities for addressing these contradictions in a DE setting, through integrating cognitively-based compassion training (CBCT) with critical pedagogies employed in DE, noting that:

“by cultivating compassion, individuals will develop a more sophisticated emotional literacy in duality with critical literacy which might impel them to intervene more rigorously for social change as a compassionate global citizen” (2014: 53).

The cultivation of mindfulness and compassion, based on the Dalai Lama’s notion of a *secular* ethic (1999, 2011), views compassion as arising via an increased recognition of our common humanity and interdependence. This approach involves acknowledging vulnerability and building resilience at an individual level and relates to both the intrinsic and instrumental approaches to ESD. Intrinsic ESD is more concerned with broader educational aims such



as developing critical capacity in the individual. *Instrumental* ESD involves the promotion of informed, skilled behaviours and ways of thinking (Vare and Scott, 2007: 191). These, according to Sterling (2010), contribute to building ‘resilient learners’ who are also better placed to effectively engage in social learning processes (Glasser, 2007; Lundholm and Plummer, 2010). Thus, as acknowledged by Scott and Gough (see also Huckle, 2008):

“ESD can helpfully be seen as an education in citizenship: a responsive social learning process which is a preparation for informed, open-minded, social engagement with the main existential issues of the day that can be experienced in the family, the community and workplace, indeed, in all aspects of lifelong learning” (2010: 3743).

Development of resilience in the learner as an individual, can also contribute to social learning within communities. This provides a further argument for an increased role for HEIs through their community engagement mission, building on existing work (e.g. DES, 2014; Ryan and Stritch, 2009) in facilitating opportunities for engaged and participative learning and research in their local communities. It also assists the development of active citizenship skills in learners. Quilley (2009: 49) argues for a combination of academic learning with the acquisition of practical skills for resilience, such as those advocated by movements such as the Transition Movement (Hopkins, 2008) and organisations such as Cultivate in Ireland. Here, community resilience is built through encouraging local food and energy production, relationship building, and skills development (Carnegie Trust, 2015). There is also potential for linking local challenges to global ones and reflection on how to ‘re-build local prosperity without ruining some other place’ (Orr, 2004:164). The next section provides examples of how both individual and social learning skills have been developed in higher educational settings, through engaged learning experiences aimed at addressing multi-faceted and complex problems. It also provides an illustration of the characteristics of the learning spaces required and a series of examples to show what these spaces may look like in practice.

## **Learning spaces for building resilience**

Designing learning experiences to develop a wide range of sustainability competencies, as discussed above, can be difficult in traditional educational settings. Enabling learners, trained in different disciplines to collaborate on multi-faceted problems, requires time and space. This is particularly so where it involves multiple stakeholders with differing perspectives, many possible outcomes and a high degree of uncertainty. This may be difficult to implement in the current tertiary sector. How to address needs for deep comprehensive learning as distinct from surface-based learning is influenced by the learning environment, course content and individual factors which influence motivation to understand and engage with the topic of study (Warburton, 2003). Deep learning can be inhibited by a strong disciplinary focus. In the UK, the Quality Assurance Agency for Higher Education (2014) recommends the use of case studies, stimulus activities, simulation, experiential project work and problem-based learning (PBL) as the best way of addressing sustainability literacy at third level in its guidelines for lecturers. This has the potential to provide what Barth et al. (2007: 418) term a 'new learning culture' which moves from the principle of indoctrination to one that is 'enabling-oriented, based on self-organisation and centred on competence'.

A case study from the University of Manchester (UM) on transformative learning for sustainability (TLfS), provides a particularly useful example of how learner-centred approaches and transdisciplinary knowledge creation on social, economic and environmental justice can be achieved (Dobson and Tomlinson, 2008). This PBL action research project involved year three undergraduates from a variety of courses in UM in the academic year 2009-2010. The aim of the project was to embed interdisciplinary experiential sustainability literacy for complex global issues in the curriculum, to lead to transformation for learners as agents of change. PBL was used to enable learners to view a problem from many perspectives, as outlined in the Business Environment Social and Technology (BEST) pyramid analogy of ESD for engineers and scientists (ibid: 269). The assumption taken by UM was that learners had a potential role as leaders and

managers of change in their future professional careers and would have to face resolving ‘wicked’ problems in their work lives.

Strict criteria for PBL project design in ESD in this case included: creating ‘wicked problems’ requiring a non-reductionist approach being topical unsolved projects rather than historic ones; projects that would effectively lead to knowledge about change processes and sustainable development (SD) by working across disciplinary boundaries; being age appropriate for undertaking by professionals; and being cumulative to form a coherent learning experience. Here, the learner was totally responsible for deciding, evaluating, presenting and reflecting on the problem to be solved. The design of the triggers or problem scenarios had to be adjusted in their degree of ‘wickedness’, to match the characteristics of the learner cohort and the institution itself. Such classroom-based studies provide rehearsals for messy realities where the parameters of ‘wickedness’ might not be so easily adjustable. They can also support, for example, the type of scenario setting proposed by planetary health advocates (Whitmee et al., 2015).

A second example, from the University of British Columbia (UBC), introduces community based and affective learning to the educational experience. This is achieved by adopting Transformative Sustainability Learning (TSL) objectives. These aim to balance cognitive, psychomotor and affective domains through community based action research with innovation, implementation and reflective learning objectives. TSL merges the fields of sustainability education and transformative learning together, acting as organising principles for cognitive (head), psychomotor (hand) and affective (heart) domains to shift education systems to contribute to a sustainable world and set standards for curricular reform.

There are two premises guiding this work. Firstly, that sustainability education must be situated in both the university and community environs and secondly, sustainability education must deconstruct all aspects of teaching and learning. Rationalistic and humanistic approaches to knowledge are required to address the weariness ‘of curricula immunised

from the human condition and devoid of story, attachment and meaning' (Phelan, 2004, cited in Sipos, Battisti & Grimm, 2008: 70). The objective of integration of head, hand and heart methodologies is to impact on the behavioural domain also, as described by Hauenstein (1998, cited in Sipos, Battisti & Grimm, 2008: 74), which is one of the key challenges of transformative learning.

The approaches to learning that enabled inter/transdisciplinary, experiential and place-based sustainability and that the UBC found useful were: action learning; community service-learning, critical emancipatory pedagogy, environmental education, participatory action research, pedagogy for eco-justice and community, PBL and traditional ecological knowledge. Again, these are all dimensions of DE in different contexts. The value of the UBC case in this article, is that it shows the importance of community engagement and affective learning in bringing about real behavioural change. TSL and DE methodologies are closely aligned in terms of education for action.

The two cases above demonstrate how PBL and other TSL approaches can be used as learning strategies suitable for ESD and DE and also for integration into a wide range of curricula, leading to deeper learning and interconnectedness between disciplines. These provide a starting point to address the question posed by Warburton (2003), who asks how we might provide learners with the conceptual tools to move across disciplines and recognise patterns and causal relationships between economic, environmental and equity issues. However the question still remains concerning how these types of experiences can be best integrated into current tertiary sector in an environment which is still (in particular at undergraduate level) largely disciplinary-focused.

### **Seeds of change and the campus-community nexus**

Integrating community-based, multidisciplinary engaged learning in HEIs requires a rethink of how learning and institutions of learning are structured, to reflect a more outward-looking social focus and provide a public resource

for learning. Several international initiatives, beginning with Talloires (1990) and more recently the People's Sustainability Treaty on Higher Education have contributed to this agenda. Signatory HEIs have committed to a series of actions, oriented 'towards societies that are fair, participatory, future facing and peaceful and able to restore the integrity of Earth's ecological systems, as well as promoting human development in an equitable and inclusive manner' (Copernicus Alliance, 2012: 2). A range of national and international support networks also exist. The most recent one comes via an EU-funded project to drive ESD in higher education – University Educators for Sustainable Development (UE4SD). This aims to provide training in key competences for educators through the development of an ESD academy to provide professional training in these (2014: 46). Moreover, 2015 has been designated as the European Year of Development (EYD) and is also the year when the Sustainability Development Goals (SDGs) will be formulated to set the development policy agenda to 2030. Moreover, the Conference of the Party, Meeting 21 (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) is taking place in Paris in December 2015 adding to an important year for global development policy and practice.

The above initiatives and events emphasise the absolute urgency of addressing climate change. This urgency is reflected, for example, in an increased focus by political and religious communities (for example Pope Francis, 2015) and a recent breakthrough case in the Hague District Court (*Urgenda Foundation v The State of the Netherlands*, 2015), requesting state action on climate change as a human right to protect citizens. They underpin the need for a strong knowledge base for learners regarding the multi-layered dimensions of climate change. These range from basic mechanics to the broad range of skills needed for sustained action, including those needed in potential roles as change agents at different levels, and the basic tenets of professional, civic and community responsibility.

In Ireland, the NSESDI (DES, 2014), as mentioned above, was eventually published, after a long delay (Liddy, 2009), at the end of the

United Nations Decade for Education for Sustainable Development (UNDESD). It includes: recommendations for an extension of existing green campus and sustainable transport programmes; the creation of more undergraduate programmes relevant to sustainable development; the embedding of sustainability principles into existing disciplines; and increased research funding and collaborations in the area (DES, 2014: 21-23, 30, 43). Many recommendations regard the establishment of reporting mechanisms in this area as priority and to provide some research foundation to monitor future activity and generate specific baseline data. These are indicative of how little work has been done at a policy level in this area to date. Indeed, the strategy document acknowledges that ‘the obstacles to effective ESD are significant’ and that the ‘scale of the task should not be underestimated’ (ibid: 37).

However, despite this lack of data, the NSESDI acknowledges that much work in ESD already exists, and at third level, a number of development education initiatives have been instrumental in these. Integration of development into the education of social professionals, for example, social care workers, youth workers, child care workers, early childhood educators, and others is advocated (DES, 2014). This is at present reflected in: the Development and Inter-Cultural Education (DICE) programme supporting primary teacher education; the Ubuntu initiative embedding DE in initial teacher training in Ireland; and Teachers in Developing and Learning (TIDAL) in Northern Ireland. The Institute of Technology Sligo (IT Sligo) has mainstreamed a number of modules in undergraduate degrees in Social Care Practice and Early Childhood Care and Education, and has also established a student-led Happy Planet One World Society (HPOWS) which provides a focus for integrative work between learners, campus, and local and international community networks. HPOWS aids learner engagement outside the classroom, across campus and with communities in the north-west of Ireland. It currently benefits from the support of Campus Engage and IT Sligo Clubs’ and Societies’ funding.

These developments were initially funded by Irish Aid. This demonstrates how seed funding, in tandem with the ongoing support of national networks, can effectively spur and support longer term change within HEIs and by extension, the broader community. Sustainability and resiliency studies underpin models of practice in the social professions where community development and specific regional responses are considered as part of curricula. Working with Nature, is another module integrated into social science courses where learners focus on learning for sustainability in an open air classroom. This is located adjacent to IT Sligo campus' organic garden, which was set up as a resource for staff and students with the aid of the College and the Health Service Executive.

The 2011 National Strategy for Higher Education did not mention sustainability, although a starting point was made through a commitment to community engagement. This has since been underpinned by strengthening a national 'Campus Engage' network and the drafting of a National Charter on Community engagement, signed by 20 presidents of HEIs. Campus Engage aims to promote and support engaged, community-based learning and research within higher education, in addition to student volunteerism and to share best practice via a wide range of case studies on their website. These include community gardening in Galway (National University of Ireland Galway, (NUIG)) and Dublin (Dublin City University, (DCU)) to nursing in Africa (NUIG). Initiatives such as these provide the basis of an infrastructure for HEI partnerships with local and global communities (Campus Engage, 2015). Despite these positive examples, the broad thrust of higher education policy over the past few years however, has been on rationalisation of the sector and the need for HEIs to survive with reduced funding in an increasingly competitive environment. This does not leave much space for the broader processes of research and learning that are needed to address problems such as climate change education.

## **Conclusions**

Addressing climate change needs much more than a series of technological fixes, though these are also necessary requirements. Creating the capacity to

address and adapt to climate change involves building resilience in individuals and communities, locally and globally. This requires more innovative pedagogies; input from many disciplines; engaged and action-orientated learning; and changes needed in educational structures and cultures to enable these. Climate change provides a stark and urgent reminder of the need to address problems of ‘actually existing unsustainability’ (Barry, 2012) including the deep global inequities, which characterise ecological and development crises.

This paper has argued that education at all levels, and particularly at higher level should play a key role in addressing existing and emerging ecological and socio-economic challenges. In this context, it has been proposed that insights from DE can be adopted in designing and creating inter and transdisciplinary learning spaces, thereby providing the knowledge, skills and value systems required for dialogue and action. Enabling the development of spaces for engaged transdisciplinary learning will require research and consequent reform. Curricular reform, in particular will be required to create this space, in addition to further development of the engagement mission of HEIs to strengthen the HEI/community interface.

Despite the magnitude of change needed and the fact that change is slow, many examples exist where innovative actors have engendered positive change aided by supportive networks and in some cases policy change. Examples provided in this paper of existing networks and initiatives demonstrate some of these possibilities. Although the NSESDI was published relatively late, in the final year of the UNDESD (2014), it provides a starting point for the more integrated focus required to address climate change education in Ireland. As such, it will hopefully provide an impetus for the transformation in Irish education needed to contribute to future climate stability.

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