

Scientists' Warnings and the Need to Reimagine, Recreate, and Restore Environmental Education

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Abstract

Three decades have passed since approximately 1,700 scientists signed the *World Scientists' Warning to Humanity* highlighting severe environmental problems and trends affecting local and global communities. To reverse the situation, their 1992 Warning argued we need to change our behaviour. In 2017, a larger group issued a second consensus statement warning that the direction and rates of environmental change had worsened and remained unsustainable. Neither document, however, identified *education* as a key strategy in supporting the necessary behavioural changes that could address such trends. With this in mind in this essay we argue that to avoid imperilling our future and the planet's—and to achieve a just transition to sustainability—environmental education is a cornerstone for the social and environmental changes expected in such *Warnings*. We also argue that consensus on our environmental predicaments is not simply a matter for scientists; it must be supported in multiple spheres. This includes the humanities, arts, and social sciences, and wider society. Only then will contemporary calls by organisations such as UNEP and UNESCO that 'environmental education be a core component of all education systems at all levels by 2025', have a chance of gaining the multilateral and multileveled support the situation so urgently requires.

Keywords

UNESCO

UNEP

Environmental education

Education for sustainable development

Scientists' warning

Reimagine, Recreate, Restore: 3Rs for Environment and Education

Since 1974, World Environment Day has been marked on 5 June. Initiated and promoted by the UN Environment Programme (UNEP), the goal for each Day is that associated events and initiatives engage governments, businesses and citizens in efforts that address pressing environmental issues, by encouraging worldwide awareness and action for the protection of the environment.

The 2021 focus is ecosystem restoration, with the theme, “Reimagine. Recreate. Restore.” Publicity for the Day is replete with warnings of loss, destruction and catastrophic change, drawing heavily on evidence from research scientists while also emphasising consensus and the need to act.

In this essay, released to coincide with 2021’s World Environment Day, senior editors of *Environmental Education Research* reflect on: why such days and messages continue to appear in the global calendar, what and who are often missing from these events, and where education fits into all this. NB this essay builds on an ongoing collaborative writing project related to scientists’ warnings, details of which are noted in the Acknowledgements.

The environmental crisis: as if education matters

1992 saw the publication of *Ecological Literacy* by the renowned environmental educator, David Orr. The book offered readers a way to bridge an apparent gulf between “environmental” and “literacy” concepts by summarising the scientific consensus about the degradation of the planet’s ecological systems, as well as exploring what that meant for the priorities and institutions of formal education systems. In addition to revisiting a key question throughout his work—namely, ‘what is education for’ in times of extensive ecological destruction and societal disruption—Orr pronounced:

The crisis of sustainability, the fit between humanity and its habitat, is manifest in varying ways and degrees everywhere on earth. It is not only a feature on the public agenda; for all practical purposes it is the agenda. ... Sustainability is about the terms and conditions of human survival, and yet we still educate at all levels as if no such crisis existed. (*Ecological Literacy*, p.83)

Also appearing in 1992 and demonstrating a broader-based consensus of concerns in the scientific community, more than 1,700 leading scientists (including over 100 Nobel laureates) signed a document entitled “*World Scientists’ Warning to Humanity*”. Led by the particle physicist and Nobel Prize winner, Henry Kendall, the *Warning* was published in November, not long after the UN Conference on Environment and Development (UNCED, also known as the Rio Earth Summit), that had been held in June.

The *Warning* echoed the main conclusions of the Rio report, the lengthy “Agenda 21” on sustainable development. In contrast to Agenda 21 and the Local Agenda 21 initiatives it spawned, however, the *Warning* was designed to sidestep many of the machinations and communication channels of government and non-governmental organisations. Instead, it appealed directly to those interested in what scientists might have to say (to “people everywhere”) through the means of a deliberately brief statement (Yearley 2020). In essence, authors and co-signatories from the international scientific community bluntly stated that humanity had to work together within and across nations to halt the environmental degradation despoiling the planet (Union of Concerned Scientists 1992).

Recognising the planet's limited ecosystem capacities—and hence boundaries—and arguing that we must accept responsibility for the health of society and the world's life-support systems beyond political organisational units, this particular scientists' warning charted various challenges that demanded urgent action:

First, the *Warning* emphasised that both planetary and societal health both depend on addressing diverse but interacting threats, such as ozone layer depletion, limited availability of fresh water, depletion of marine life, forest losses, destruction of biodiversity, anthropogenic climate change, and continued human population growth.

Second, developed countries exhibit excessive consumption and in both hosting and nurturing the biggest polluters of the planet, resource chains would (they forecasted) grow increasingly fragile.

Third, failure to address interlinked challenges appearing at political and civil levels of society, would generate conflicts and aggravate economic and environmental instability within and across regional scales, triggering an increase in human migration affecting the Global South and North.

Finally, societal transformation was required globally, with leaders, governments and reluctant peoples needing to heed this *Warning* in order to make the necessary changes and change direction. Such changes included, for example, advocating for the reduction and eventually elimination of poverty, ensuring gender equality, and guaranteeing women control over their own reproductive decisions.

The *Warning's* conclusion (unpaginated) crystallised the task at hand in the starkest of terms:

A great change in our stewardship of the earth and the life on it, is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.

Education is key

The coverage and matters of concern populating the 1992 *Warning* still read like a well-worn curriculum map for generations of environmental educators. As to its conclusion, many environmental educators have held to the view that stewardship of the Earth is taught and learnt in society. In other words, it is neither innate nor universal as a value, nor can it be legislated. Nevertheless, education is widely regarded as a key driver of social change, capacity building, and re-orientation of cultural values, including via environmental and sustainability education (ESE) (Ardoin et al. 2018). Moreover, since the time of the United Nations Conference on the Human Environment in 1972 (the “Stockholm Conference”), environmental education has been identified as the primary vehicle for teaching and learning about the stewardship of the environment as our ‘common home’, including an ‘ethics of care’ that it implies towards each other and those with which we share life on this planet (see UNESCO 1977).

In the subsequent decades, alongside many local and independent initiatives, UNESCO and UNEP have spearheaded various international efforts to embed environmental education throughout education sectors, systems and activities (e.g., through outdoor environmental education, and teacher education capacity building or ‘reorientation’ initiatives) (see Reid and Dillon 2017). Equally, and since the 1990s, readers of *Environmental Education Research* will be familiar with the fact that UNESCO has added Education for Sustainable Development (ESD) to the mix, but often in ways that occlude its roots in both environmental and development education (among

other sources and currents), alongside, for example, being critiqued for failing to lead to significantly different outcomes to our current predicament, including after UNESCO's Decade of promoting ESD as a 'solution' (e.g., Huckle and Wals 2015). Nevertheless, combining environmental with sustainability education has received broad support, as it presents the possibility of deepening attention in education systems and processes to poverty reduction, ecojustice, and social and cultural sustainability, alongside what some might regard as environmental education's more apparent ecocentric concerns (Monroe 2012).

International surveys purporting to monitor 'progress' however, continue to show that key stakeholders, including governments, continue to fail to support and invest in environmental and sustainability education sufficiently to achieve the desired ends (UNESCO GEM Report 2016, UNESCO 2021a). Equally, although some sectors of today's global society appear primed to advocate for a green recovery when working to emerge from the worldwide devastation of the COVID-19 pandemic, this stance is not (yet?) widespread. In short, 'Education for All' and 'Education for the world we want' are still not a significant part of key intergovernmental action plans, summits, or global conversations. Yet the environmental crisis is deepening, and as we argue below, it will continue to worsen if we do not significantly support and invest¹ in ESE as a key means to addressing this complex, interlinked and dynamic issues of our contemporary situation.

A continuing crisis

A quarter century after the first warning, more than 15,000 scientists from 184 countries signed the "*World Scientists' Warning to Humanity: A Second Notice*" in 2017 (Ripple et al. 2017). Taking stock of trends and developments in the intervening years, the information underpinning the second warning was once again, largely devastating and discouraging. Most of the threats identified in 1992 had increased in severity, except for ozone-layer depletion. In fact, the second *Warning* demonstrated that escalation in threats was reflected in systemic spill-over effects among others: exploding population growth, declining availability of fresh water, growing ocean dead zones, continued forest losses, dwindling biodiversity, and accelerating climate change.

Against the backdrop of these threats, a third Scientists' Warning about the outcomes of anthropogenic climate change was issued (Ripple et al. 2020), in part to amplify the first alarm bells sounded about this at the First World Climate Conference (Geneva, 1979). While the 1980s ushered in an increasing focus on sustainable development (e.g., after the World Conservation Strategy and Brundtland reports on sustainable development), various neoliberal economic trends have continued largely unchecked. Coupled with a lack of political and corporate will to mitigate

¹ The *State of Finance for Nature* report (UNEP 2021), also released to coincide with World Environment Day events, includes recommendations to invest 0.1% of global GDP each year to protect and restore ecosystems and avoid the breakdown of ecosystem services. With estimates of half of global GDP relying on high-functioning diversity, and a fifth of countries being at risk of their ecosystems collapsing due to lack of care, education, and pollution control, the report argues that a total investment of US\$8.1tn is required to maintain the biodiversity and natural habitats vital to human civilisation. Key to this, but not stated explicitly, is education, when it is argued (p.6) that: "In order to ensure that humanity does not breach the safety limits of the planetary boundaries, we need a fundamental shift in mindset, transforming our relationship with nature." It is also fundamental to organisational learning, such as knowledge on diverse forms of 'capital' and a reorientation of financial sectors, public planning, project development, including in 'scaling up'. However, the report's optimization model for costs and investments screens out environmental education and training as a significant 'asset' or 'scaling factor' (p.49) from the final methodology and its assumptions, while the significance of this is *not* noted in the limitations section of the report (p.60).

the deleterious aspects of economic factors and systems, it is clear too that capitalism in a variety of forms has continued to fuel climate disruption, leading to the current climatic emergency. This is despite the fact that a UN Climate Change Conference (Conference of the Parties, COP) has been held almost every year since 1992's Rio Earth Summit while the Intergovernmental Panel on Climate Change (IPCC) has reported regularly on the scientific consensus among climate scientists and pressed the need for all in society, including those in economic, political, cultural, environmental and 'pedagogic' spheres, to work together to address the issue (Reid 2021).

In this, it is not surprising that the UN has identified education as one of the six priority areas in Article 6 of United Nations Framework Convention on Climate Change (UNFCCC, 1992), renamed *Action for Climate Empowerment* at the Conference of the Parties (Paris, 2015). We also note that, as agreed at Rio, Chapter 36 of Agenda 21 states environmental education is crucial for sustainable development, recognising its essential role during schooling, higher education, training, and lifelong learning for promoting systems thinking, capacity building, resilience and individual and collective pro-environmental behaviours (see Reid and Dillon 2017).

An environmental education based on critical thinking and close to science (Wals et al. 2014), for example, enables us to identify fake information and ideologies that wilfully separate economic policies from ecological realities and boundary conditions. Similarly, a focus on wicked environmental problems and a convergence of science education and environmental education (Dillon 2017) can bring together citizen science, science engagement and communication to foster an emancipatory and transformative civic science. But the second warning, similar to the most recent one on climate (Ripple et al. 2020), simply does not identify these as valuable forms of education that are well placed to support change initiatives, including of behaviour, nor indeed, of a broader-based, multidisciplinary and multimodal forms of teaching and learning, which is also crucial for the tasks at hand. In calibrating a response to a crisis, as Orr among others have argued, it is crucial to recognise that being able to understand, issue and respond appropriately to such warnings effectively relies on what is taught and learnt about understanding and enacting stewardship and sustainability holistically and across a range of domains. The integrity and integration of all this cannot be ignored either: both rely on an informed and collective sifting of what is powerful to know, as well as powerful ways of knowing (Carlgren 2020), and is particularly well served by engaging in ESE in diverse educational institutions and settings (Clark et al. 2020).²

The need to support a broad vision of environmental education for sustainability

According to one of the field's foundational statements, UNESCO-UNEP's *Tbilisi Declaration* (UNESCO 1977), the ultimate goal of environmental education is to ensure people's active participation in moving society towards the resolution of environmental problems, within and beyond the phases of schooling. Correspondingly, over the last five decades, the environmental

² As McCray (2019) remarks, Snow's (1959) comments on the prevailing and productive cultures of knowledge production deliberately sought to contrast "humanities versus sciences", to then lament "the inability of literary scholars and scientists to understand and communicate with one another." This "was not just an intellectual loss, ... but something that threatened the ability of modern states to address the world's problems" (unpaginated). McCray also observes shifts in recent decades from STEM ('science, technology, engineering, and math') to STEAM (where the A inserts the arts) education simply doesn't appear ambitious enough or sufficient to our current times and challenges. We agree, particularly if being educated relies on the capacity to identify and harness 'powerful knowledge' and 'powerful ways of knowing' (Carlgren 2020).

education field has championed students and their educators acquiring: *knowledge*, to understand the environment and its problems from a range of disciplines and fields, including problem-resolution strategies; *awareness and sensitivity* towards the problems involved in ways that rely on critical cultural literacy and expression as much as scientific modes of knowing; *attitudes* that relay a set of appropriate values and feelings of concern for the environment; and *skills* to identify and solve environmental issues that range across collaborative, participatory, decision-making, and action-taking domains (Fig. 1). Crucial to this, of course, is a commitment to lifelong learning, i.e., both beyond the immediate phases of, and after, compulsory forms of education (points also noted at UNCED).

More recently, in 2015, we note the *World Forum on Education*, backed by delegates from more than 160 countries, adopted the *Incheon Declaration for Education 2030* (World Education Forum 2015). This Declaration reaffirmed the value of environmental education for sustainability. Delegates agreed that it must encompass all educational stages, be supported in *all* subjects and disciplines, but also remain a top priority in non-formal as well as formal education. Correspondingly, universities were singled out as having a particularly significant role (e.g., Leal Filho, Manolas and Pace 2015), acting as they might as agents for change through research and scholarly activities. We note this might also be by influencing society given their social license to hold the powerful in society and social systems to account, as well as through graduates and their livelihoods, lifestyles, and future decisions. Nevertheless, initial teacher education (ITE) departments were rather optimistically seen as crucibles for change, given their particular responsibility to equip *all* future teachers in addressing environmental and sustainability issues in and beyond their classrooms (see Evans et al. 2017).

To achieve the objectives of environmental education then, it is safe to assume that curriculum for students and pre-service teachers must have an environmental education for sustainability at its core (UNESCO 2014). Yet, it must also be acknowledged that, for example, few ITE programmes currently have enough space to properly address and provide a transformative environmental education. In addition, the urgency of responses to the planet's environmental degradation (as signalled by the Warnings) requires both professional development for educators and environmental education for adults. In these ways, changes in 'head, heart and hands' towards sustainability will also provide educators and adults with the credibility and authenticity necessary to render environmental education for children and adolescents more effective, and it is hoped, less tokenistic or hypocritical as a result. Moreover, to make—as well as demonstrate—progress, it is now routine to recognise that we need to understand what is effective, evidence-based, and worth 'scaling' as ESE (see Reid 2018), if the agreed priority is to address, for example, the content and urgency of scientists' warnings.



Fig. 1. Environmental education as a cornerstone of social change in addressing environmental problems and ensuring the health of the environment. (Source: Clark et al. 2020, 381)

Yet as the preceding arguments and research continue to show, focusing attention on the mention or deficits in keywords in national curriculum documents, frameworks and education sector plans can amount to an overly reductive debate and account of the field. On the one hand, whole-institution approaches and extra-curricular activities are typically not mentioned in such texts, even if they are better suited to the aims of ESE; while on the other, non-school-based activities might also support the goals of the field and often without the limitations of current mantras and regimes of education policy or survey tools. Focusing on other areas of lifelong and everyday-life learning, such as community engagement activities and sites, nature-based tourism settings, and beyond-school networks, among others, may offer rich opportunities in this space (Ferreira and Davis 2012, Gould et al. 2019, Kuehl et al. 2021, Wojcik et al. 2021, cf. UNESCO 2021b).

Instead, as we have previously argued, governments and other entities must be charged with investing more monetary funds in promoting and assessing environmental education *innovation* both within K-12 and higher education internationally as well as beyond those spheres (see Reid 2018, which builds on Stevenson 2007 and Posch 1996). In brief, these require capacity building and outcomes development through productive partnerships and networks of those at the forefront of developing and finetuning ESE to particular needs and situations. Such priorities and qualities are reiterated in the analysis that underpins the *Call to Action* of the *Global Environmental Education Partnership* (GEEP) (www.thegeep.org). To illustrate, GEEP’s research, policy and development work demonstrates that innovative environmental education approaches for children and adolescents, in terms of educational activities and impact, are superior to those that primarily focus on curricula, textbooks or syllabuses as their ‘targets’ (see also Clarke et al. 2020). Equally, bottom-up efforts that afford de-institutionalised forms of environmental and sustainability education have borne fruit, as seen in a number of youth-led, global social movements that have

recently arisen, such as *Fridays for Future* and *Youth Climate Strike* which also receive support from the scientific community in terms of their significance (Fisher 2019). In sum, ensuring any form of environmental education is relevant, coherent, fit for purpose, funded appropriately, and available to current and future generations within and beyond ‘the curriculum’ will be crucial to addressing sound and pertinent warnings from scientists (Slovic 2020).

Conclusions and warnings

Through rhetorical devices like the issuing of *Warnings*³, leading scientists and science communicators alert us once more to the fact that we are endangering our future and that of the planet, while also advocating that to change current trajectories, it is essential to transition to a more sustainable path (Yearley 2020). To return to Orr (1991), it is especially important that we critically assess and respond to the call that all education is reoriented towards sustainability worldwide in ways that make sense to the contexts and challenges citizens—young and old—face. It is important to do so keeping in mind, that on average, the nations and social classes with the highest educational levels still tend to have the highest rates of per-capita consumption and, relatedly, the largest ecological footprints.

Indeed, warning after warning, how we have responded to decades of many of the same patterns in people-planet relationships, strongly suggests that we are not learning or being taught well: in short, humanity continues down a self-destructive path that is destroying the planet. To this end, while each *Warning* proposes that scientists, the media and citizens work together to pressure political leaders to prioritise and address these challenges, we must also consider the role of education both critically and creatively in influencing and shaping any of our individual and collective behaviours.

As shown in this essay, to motivate and realise the recommended changes in values, attitudes and behaviours across society and in our political decisions, education can—arguably should—have a crucial role to play. Heeding the scientists’ warnings, there is a clear case that governments and other bodies must invest more in supporting a broad-based and innovative environmental education for sustainability, in such a way that ESE can be a recognisable feature of every field of, and setting for, education.

But to both check and nuance the argument further, we note that Mickelsson (2020) observes that the challenge for environmental and sustainability education is often framed by UNESCO and its equivalents (e.g. the World Bank Group, Millennium Development Goals, Sustainable Development Goals) as that of ‘scaling up’ and ‘scaling out’ activities. For us, a note of caution is required, as we encourage asking: are these activities sufficiently sensitive to local ecological contexts, traditions and ways of living, as well as to the conditions for transformative or

³ Other warnings are available. ‘Understanding the Challenges of Avoiding a Ghastly Future’ (Bradshaw et al. 2021) includes Ripple as one of the co-authors. After reviewing aspects including the Sixth Mass Extinction, political impotence and failure to meet international goals (i.e. the SDGs), it argues (p.6) that to ‘change the rules of the game’: “The gravity of the situation requires fundamental changes to global capitalism, education, and equality, which include *inter alia* the abolition of perpetual economic growth, properly pricing externalities, a rapid exit from fossil-fuel use, strict regulation of markets and property acquisition, reigning in corporate lobbying, and the empowerment of women. These choices will necessarily entail difficult conversations about population growth and the necessity of dwindling but more equitable standards of living.” But again, while education now gets a mention, there is still no direct recognition or linking to environmental and sustainability education.

transgressive potential in a globalised and complicated world? As Morel et al. (2019) argue, policy reports and curriculum initiatives that focus on adoption, replication, spread, and working ‘at scale’, may actually prove to be counter-productive. This is because such versions of ‘scale’ tend to militate against supporting dynamic conceptualisations and expectations of a field of practice, particularly when they emphasise creating and measuring against benchmarks and foster a ‘data mining’ mentality rather than clear pathways or possibilities for changes in practice at local and democratically determined levels.

Accordingly, the end goal of practice development and monitoring and evaluation efforts must not simply be adaptations of ESE, including of UNESCO’s Education for Sustainable Development Goals (Rieckmann 2017). Nor should the end goal rely on uncritical or decontextualised audits of cognitive, social and emotional or behavioural dimensions for learning, as if content analyses and archiving or benchmarking of curriculum documentation will suffice as the principles means for measuring progress⁴. We and many others acknowledge that the world has moved on since the times of the Delors report on the four pillars of education (UNESCO 1996), and while accounts of similar adjectival educations such as global citizenship education still seem to rely on cognitive, social-emotional and behaviour dimensions as their terms of reference (UNESCO 2019), these are not the DNA of environmental education, nor do they have to be for education for sustainability (Reid 2019). As Clark et al. (2020) noted in their recent study of professionals and leaders in the contemporary field of practice and policy development, while the Tbilisi and Belgrade documents from the 1970s are often core reference points, thinking and priorities have changed over subsequent decades. That said, they note the five core outcomes that focus the environmental education field are now typically agreed to include (Clark et al. 2020, p. 381):

(1) environmentally related action and behavior change, (2) connecting people to nature, (3) improving environmental outcomes, (4) improving social/cultural outcomes, and (5) learning environmentally relevant skills and competencies. Reflecting those commonalities, we propose the following encapsulating statement to describe the field’s core outcomes: *Environmental education works to move people to action for the tangible benefit of the environment and humanity. To realize these benefits, people must connect experientially with the environment, learn needed skills, and understand the complicated social and cultural connections between humanity and the natural environment.*

Noticeable here is leading members of the field do not need to invoke sustainability in addressing the challenges of securing tangible benefits for the environment and humanity. Consequently, as a reframing of much that was expressed in the earlier and ongoing work of scaling at UNESCO and UNEP, we would argue that sustaining an ethos of *reinvention* of ESE is actually crucial to both seeding and catalysing local-to-global place-based educational innovations, which might then also spark and cascade other innovations (see, for example, Renshaw and Tooth 2018). In other words, a key task for environmental and sustainability educators and their supporters, is the ‘remixing’ the landscape and core elements and outcomes of ESE for continuous improvement and networked

⁴ Table 1 of the UNESCO (2021a) report that was used as the basis for advocating ‘environmental education in all curriculum by 2025’ does not list ‘nature’ or ‘natural’ as an environment-related keyword, nor typical related concepts such as *interdependence* – a key term used in the first goal of the Tbilisi Declaration, i.e. part of the field’s DNA. If content analysis is to be used, these and other terms well-suited to construct searches, interpretation and analysis include *futures, risk, uncertainty, challenges, systems, boundaries, place, habitat, and transformation*. See Wals (2015) and Sterling (2014).

learning (Clark et al. 2020). Thus our collective call at the end of this essay is, to borrow a phrase, that of 3Rs: *reimagining, recreating, and restoring* environmental education in and for these times.

Coda

If this analysis holds, it goes without saying that representatives of countries that meet at international summits—be that at Glasgow for COP26 about climate action and empowerment, or Berlin for a UNESCO World Conference that announces another Declaration on Education for Sustainable Development—must not only press to reduce the consequences of the environmental crisis, but also agree that all countries embed ESE throughout society in ways that make sense locally. More is required though, including further innovation and reinvention. The recently published Berlin Declaration (UNESCO, 2021b, paragraph 3) supports this position in stating:

We are confident that education is a powerful enabler of positive change of mindsets and worldviews and that it can support the integration of all dimensions of sustainable development, of economy, society and the environment, ensuring that development trajectories are not exclusively orientated towards economic growth to the detriment of the planet, but towards the well-being of all within planetary boundaries.

To our minds and collective experience in ESE, democratic renewal of education, including diverse curriculum and policy to support and evaluate environmental education for sustainability (Stevenson 2013), is a necessary first step—although it must be both broader and deeper than this. Key here, be that in light of the aforementioned warnings or recent youth-led social movements, is support for forms of environmental and sustainability education across multiple subject areas and contexts, i.e. within and outwith schools, as the Berlin Declaration supports.

To extend this point, while the first *Warning* called for support from “the world community of scientists—natural, social, economic, and political”, we call for a broader coalition. That requires learning with and from the humanities, arts and social sciences as well as sciences, technology, engineering and so forth, because only then will be possible to ensure an education that fulfils the ambitious brief of the Berlin Declaration’s paragraph 4, providing an education for all that is:

based on and promote respect for nature, as well as human rights, democracy, the rule of law, non-discrimination, equity and gender equality. In addition, it should promote intercultural understanding, cultural diversity, a culture of peace and non-violence, inclusion and the notion of responsible and active global citizenship.

A broader coalition though will also recast the very terms of such paragraphs, as it cannot simply be global citizenship education and Education for Sustainable Development that are implicated in the work. While such a far-reaching collaboration of expertise might seem a distant dream, we draw inspiration from those educational institutions, including universities, that have declared climate and environmental emergencies, particularly when looking for signs of innovation, reinvention and renewal. Many are committed to becoming carbon neutral and to reimagining their curricula, purchasing policies, investment policies, and more as ‘whole institutions’. Key to realising these commitments is fostering diversity and shared imaginations regarding what education is *now* for (Hoolohan et al. 2021), by learners, teachers and education administrators/managers/leaders alike. It is in such institutions that we trust we can reasonably expect academics and students from every department to collaborate, inspire and (re)invent, if not restore attention to what a ‘higher education’ is really for.

Finally, echoing but also extending the tenor of the *Warnings* and Orr, we note the Berlin Declaration concludes (para 9):

Transformative learning for people and the planet is a necessity for our survival and that of future generations. The time to learn and act for our planet is now.

In conclusion, we hold that only by investing in education—and especially environmental and sustainability education—will it be possible to radically alter the course we are currently on, and thus demonstrate to ourselves and future generations that sufficient heed was given to our warnings.

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