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Lessons from Freire: Towards a Pedagogy for Socio-Ecological Transformation

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Abstract

Climate breakdown is one of the greatest challenges our world faces. Driven by social, economic, political, environmental and ideological forces, the climate crisis necessitates critical, creative, inclusive and impactful action across multiple levels of society. Adult learning is a core element of societal transitions to a more sustainable future and this article explores Paulo Freire's Pedagogy of the Oppressed as a valuable resource for understanding processes of, and barriers to, multi-level changes. Drawing on our innovative 'Creating our Vision for a Greener Future' project, we situate Freirean pedagogy as a cornerstone of teaching, learning and action for socio-ecological transformation.

Keywords: Climate breakdown, Freirean Pedagogy, Climate Action, Adult Learning, Pedagogy for Socio-Ecological Transformation

Introduction

We live in an era of unprecedented socio-ecological turmoil. Entwined with societal patterns of production and consumption, environmental catastrophes such as climate breakdown, deforestation and plastic waste in oceans are heightening awareness of human impacts on our planet. Focusing on the climate crisis as one of the greatest challenges facing our socio-ecological world, in this article we articulate the forces driving climate breakdown as being simultaneously social, economic, political, environmental and ideological. We argue that critical, creative, inclusive and impactful actions are required across multiple levels of society to tackle the climate and ecological crises; Paulo Freire's *Pedagogy of the Oppressed* is a valuable resource for understanding processes of, and barriers to, societal changes.

Outlining some of Freire's key concepts, we examine problem-posing education, conscientisation and praxis as essential components of adult learning for transformative climate action. We elucidate the influence of Freire's ideas on 'Creating our Vision for a Greener Future', a non-formal educational initiative developed by staff and students in Queen's University Belfast. Situating Freirean pedagogy as a cornerstone of teaching and learning for socio-ecological transformation, we emphasise how adult learning is a core element of societal transitions to a healthier, fairer and sustainable future.

Climate Change

A crucial issue of growing public discourse, climate change relates to large-scale, long-term shifts in our planet's average temperatures and weather patterns (Met Office, 2019). Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and fluorinated gases are greenhouse gases (GHGs) which trap radiation from the sun within the earth's atmosphere, acting like a greenhouse which retains the sun's heat and prevents it from escaping into space (National Institutes of Health, 2019). This 'greenhouse effect' means the majority of solar radiation is absorbed within the Earth system, causing our oceans, atmosphere and land to heat up, warming the planet beyond normal temperatures and causing climate change (Lallanila, 2018). We, humans, increase the greenhouse effect and global warming by adding vast amounts of greenhouse gases to those which occur naturally in the atmosphere, through activities like: using oil, gas and coal (fossil fuels) to power our homes, workplaces and transport; cutting down trees to clear land for house construction or for livestock to graze (as trees absorb CO₂, they act as carbon sinks; deforestation releases stored carbon into the atmosphere); unsustainable farming practices, livestock production and meat consumption (European Commission, 2019).

Despite growing public awareness of climate change, demand for fossil fuel resources keeps rising: primary energy consumption increased by 2.9% in 2018 (the fastest growth since 2010, nearly double the 10-year average of 1.5% per year); carbon emissions grew by 2.0% (the fastest growth in seven years) (BP, 2019). The fossil fuel industry has doubled its contribution to global warming by emitting as much greenhouse gas (GHG) emissions in 28 years as in the 237 years between 1988 and the birth of the Industrial Revolution; 71% of global GHG emissions were traced to just 100 fossil fuel producers (CDP, 2017).

Accelerating GHG emissions are evident in dramatic increases in atmospheric CO₂ (NOAA, 2013) and since the Industrial Revolution, atmospheric CO₂ has

increased by over 40% to levels that are unmatched in at least 800,000 years (Met Office, 2019). In May 2019, global CO₂ emissions were the highest ever recorded (414.7 parts per million) (NOAA, 2019a). Human activities have 'caused approximately 1.0°C of global warming above pre-industrial levels ... global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate' (IPCC, 2018). Global temperature records reveal escalating temperatures: for example, June 2019 was the hottest June in 140 years and it was the 414th consecutive month with above-average global temperatures (NOAA, 2019b). CO₂ remains in the atmosphere and oceans for thousands of years (NOAA, 2013) and global CO₂ emissions must peak by 2020 and be reduced by 45% before 2030 in order to limit temperature increases to 1.5°C (IPCC, 2018). However, we are on track for a 3°C increase by 2100 with serious ramifications (McGrath, 2019).

Climate Breakdown and Socio-Ecological Injustices

One might find the idea of a hotter Ireland appealing but climate change isn't simply about warmer weather – as our atmosphere and oceans heat up, snow and ice levels are reduced and sea levels increase, producing wide-ranging consequences (DCCAE, 2019). Predicted impacts in Ireland include: rising sea-levels; extreme weather (more intense storms and rainfall); increased chance and scale of river and coastal flooding; poorer water quality; increased pressure on water resources and food production systems; greater political and security instability; population displacement and climate refugees; heightened risks from new pests and diseases; extensive impacts on plant and animal species (ibid.). Major socio-ecological, economic and political risks are inherent to climate breakdown:

Poverty and disadvantages are expected to increase in some populations as global warming increases; **limiting global warming to 1.5°C**, compared with 2°C, **could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050** ... Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C (IPCC, 2018, p.11).

Climate breakdown is driven by, and further deepens, socio-economic inequalities globally. The top 10 emitting countries emit 45% of global GHG emissions yet the bottom 50% of countries emit only 13% of GHG emissions (UN, 2019, pp.iv–v). So-called 'developed' countries in the Global North

(particularly the US and Europe) have produced the most cumulative GHG emissions since 1850 (National Geographic, 2017) but poorer countries which bear least responsibility for emissions experience the worst consequences of climate change (Islam and Winkel, 2017; Goldenberg, 2014). Climate change worsens socio-economic and ecological inequalities within countries and climate risks affect people differently, depending on their social, economic and cultural environment (HM Government, 2017, p.10). Low-income households are particularly susceptible to climate change impacts which disproportionately affect their resources; low-income groups also have lower capacity and resources to adapt to climate change (ibid.).

Societal patterns responsible for climate breakdown are destructive in other ways, notably how 'human actions threaten more species with global extinction now than ever before ... around 1 million species already face extinction, many within decades, unless action is taken to reduce the intensity of drivers of biodiversity loss' (IPBES, 2019, pp.3-4). Since 1500, human activities have caused the extinction of approx. 680 vertebrate species (e.g. mammals, fish, birds, amphibians, reptiles) (O'Sullivan, 2019). When one considers these socio-ecological consequences on a global scale, Monbiot's articulation of climate breakdown is apt. Calling climate breakdown 'climate change' is like calling an invading army 'unwanted visitors' and Monbiot argues that 'climate change' and 'global warming' are inadequate terms for 'the collapse of the benign climate in which humans have prospered, and the loss of the conditions upon which many other life-forms depend' (2013, 2019). We face unimaginable socio-ecological crises and 'everything is getting much worse, faster, everywhere ... this is as much to do with social justice as it is climate and environmental breakdown' (Porritt, 2019).

Mitigation, Adaptation and Adult Learning

A social issue, an ecological phenomenon, a matter of social justice, climate breakdown is an amalgam of socio-economic and political and ecological inequalities, risks and impacts on a scale humankind has never previously experienced. There is no single solution to climate breakdown and action is required across scientific, environmental, human, economic, political and spiritual domains (O'Brien, 2017); indeed, policies for climate change mitigation and adaptation highlight the necessity of cross-cutting responses at international and national levels (e.g. United Nations Framework Convention on Climate Change). Mitigation involves decreasing the amount of heat-

trapping GHGs which enter the atmosphere by reducing GHG emissions and strengthening 'carbon sinks' (like forests) which can accrue and store greenhouse gases (NASA, 2019). Climate mitigation is a critical priority if we are to avoid a 'catastrophic rise' in global temperatures of 4°C (Gray, 2016) and there is an onus upon 'developed' countries to 'sharply reduce their overall carbon emissions... to maintain the habitability of the planet for current and future generations' (Geiger et al., 2017). Adaptation means adapting to climate breakdown to 'reduce our vulnerability' to wide-ranging socio-ecological impacts while utilising 'potential beneficial opportunities' like longer periods of warmer weather that could benefit food production (NASA, 2019).

The internationally-binding Paris Agreement commits states to ambitious efforts to combat climate change and adapt to its impacts by keeping global temperature rise this century well below 2°C above pre-industrial levels; preferably limiting temperature increase to 1.5°C (UNFCCC, 2018). Ireland has ratified the Paris Agreement and embedded strategies for climate change mitigation and adaptation within a policy framework that includes the *Climate Action Plan* (DCCAE, 2019), *National Mitigation Plan* (DCCAE, 2017), *Climate Action and Low Carbon Development Act* (Government of Ireland, 2015). The Irish state committed to a 20% reduction in GHG emissions by 2020, however, the country will be lucky to achieve a 1% reduction by 2020 (EPA, 2018). To tackle climate breakdown, action must be taken across all levels of society, from a micro level of altered food choices to systemic decarbonisation of energy, transport, agriculture, industry, etc. (Slevin, 2018), including investments in energy efficiency and preparation for 'inevitable consequences of climate change such as flooding' (Wall et al., 2016, p.11). Policy initiatives alone will not address climate breakdown – people have to undertake climate action as the success, or lack thereof, of multi-level changes will depend on 'the public's willingness to accept, support, and actively engage' with required socio-economic, cultural, political and structural shifts (Geiger and Swim, 2016, p.79).

A fundamental challenge, however, is that humans have never before encountered such complex, far-reaching socio-ecological crises. The emergence of Extinction Rebellion and Youth Strikes for Climate illustrate how many children, young people and adults have embarked on a pathway of learning, reflection and action on climate breakdown; unfortunately, these social movements do not yet encompass the majority of people. Referring to crises like socio-economic risks, inequality, ecological disturbances and pollution, Mezirow (2007, p.10) identified a significant problem – 'learners cannot know

what they need to know to deal with such a high-risk society'. Citing Socrates, Mezirow outlines a relevant learning paradox:

A person can learn only that which he doesn't know,

But if he doesn't know it,

How does he know what he is seeking to learn?

Applying this paradox to the context of climate breakdown, if a person does not know about socio-ecological crises or comprehend human causes, will they realise the need for transformative climate action? As critical insights into climate breakdown may not be widely held, climate action includes people learning about causes, interrogating possible remedies and collaborating for change. Adult and community education can play a central role in strengthening societal responses to climate breakdown, after all, 'there is more to learning than being a worker, or a consumer or a client ... we do need to learn how to live together in peace, justice and with care for each other' (Fleming, 2007, p.5). We also need to learn how to live together in a radically changing world, co-creating new possibilities to transition away from socio-ecologically harmful consumption and production patterns towards a healthier, more sustainable and just future. In this context, an interrogation of Paulo Freire's *Pedagogy of the Oppressed* offers valuable insights to help us develop a pedagogy for socio-ecological transformation.

Lessons from *Pedagogy of the Oppressed*

Paulo Freire's work on transformative education reflects the unjust socio-economic, political and cultural realities of Latin America in the 1960s (Garavan, 2010). A product of its circumstances and time, Freire's *Pedagogy of the Oppressed* (first published in English in 1970) reveals the writer's critical focus yet does not explicitly articulate gender or environmental inequalities within a movement for liberation (ibid.). Nevertheless, over fifty years after its publication, *Pedagogy of the Oppressed* is a core text to aid socio-ecological transformation.

In *Pedagogy of the Oppressed*, Freire emphasises the necessity of overcoming oppressive relationships and systems to liberate the oppressed and their oppressors, enabling both to become fully human (1996, pp.26-7). Focused on counteracting socio-economic and cultural oppression, Freire recognises humanity's dependencies upon, and interrelationships with, our natural

environment, suggesting that conquering oppression empowers 'human hands which work, and working, transform the world' (ibid.). This could imply 'a simple faith in the old modernist project of fashioning the natural world to enhance human progress' (Garavan, 2010), based upon unrelenting resource exploitation, environmental degradation and humanity's alienation from our environment (Urry, 2011). Yet, Freire displays an intrinsic awareness of socio-ecological interdependencies, stressing that the 'world and human beings do not exist apart from each other, they exist in constant interaction' (1996, p.32). Freire acknowledges the commodification and exploitation of natural resources for wealth accumulation, stating that the violence of oppression involves the creation of 'a strongly possessive consciousness – possessive of the world and of men and women' – without which 'the oppressor consciousness ... could not even exist' (Freire, 1996, p.40):

The oppressor consciousness tends to transform everything surrounding it into an object of its domination. The earth, property, production, the creations of people, people themselves, time – everything is reduced to the status of objects at its disposal. In their unrestrained eagerness to possess, the oppressors develop their conviction that it is possible for them to transform everything into objects of their purchasing power. Money is the measure of all things, and profit the primary goal. For the oppressors, what is worthwhile is to have more – always more – even at the cost of the oppressed having less or having nothing. For them, *to be is to have* and to be the class of the 'haves'.

Freire powerfully illuminates ideologies and practices creating material divisions in society and connects exploitation of people and planet within capitalism. Human societies are completely dependent upon nature for basic needs like air, water, food, shelter and energy yet our interrelationships with nature are often ignored. A dominant exploitative consciousness regards environment and natural resources as free objects or 'gifts of nature to man' (Foster and Clark, 2009; Slevin, 2016), instead of important shared resources upon which we all depend. Commodification of natural resources is inseparable from the 'extractive imperative' (Arsel et al., 2016) which necessitates ever-growing resource extraction to facilitate escalating consumption patterns, thereby generating wealth for those who control capital. Viewing the environment as a 'social problem' (Macdonis and Plummer, 2012) enables analyses of socio-economic, political and ideological processes inherent to capitalism which have enabled new forms of accumulation and forged a disconnect between

humans and nature (Urry, 2011; Foster et al., 2010). Freire's conceptualisation of oppression enables the interrogation of ecological injustices along a spectrum which includes socio-economic, cultural and coercive forms of oppression, further uncovering the tyranny of damaging societal processes. Thus, Freirean-influenced socio-ecological education should make clear the inseparability of human and nonhuman natures, illuminate the role power and social inequalities play in shaping human/nonhuman interactions and examine ecological limits breached by human patterns of production and consumption (Pellow and Nyseth Brehm, 2013).

Towards a Pedagogy for Socio-Ecological Transformation

Assessing *Pedagogy of the Oppressed* in this era of climate breakdown requires consideration of content and teaching and learning methods essential for socio-ecological transformation. Freire was sceptical of educational approaches which regard educators as experts whose role is to impart their wisdom upon students. Within 'banking' methods of education, students are regarded as empty receptacles waiting to be filled with the educator's knowledge; 'the scope of action allowed to the students extends only as far as receiving, filing and storing the [educator's] deposits' (Freire, 1996, p.53). A banking method of education is not conducive to transformative pedagogy, particularly with adults who have grown to know and understand the world in different ways and who bring to the classroom diverse experiences and insights. Rather, Freirean pedagogy involves 'problem-posing education' and obliges resolution of the 'teacher-student contradiction' through the creation of a non-hierarchical learning space in which educators and students become co-investigators in learning (ibid.).

Developing a Freirean-inspired pedagogy for socio-ecological transformation requires 'co-intentional education' through which educators and students ('leadership and people') become co-intent on unveiling reality, knowing reality critically in order to recreate knowledge: 'as they [educators and students] attain this knowledge of reality through common reflection and action, they discover themselves as its permanent re-creators' (Freire, 1996, p.51). The co-creation of knowledge inherent to co-intentional education emerges through 'invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other' (Freire, 1996, p.53). Furthermore,

Education as the practice of freedom – as opposed to education as the practice of domination – denies that man is abstract, isolated, independent,

and unattached to the world; it also denies that the world exists as a reality apart from people. Authentic reflection considers neither abstract man nor the world without people, but people in their relations with the world. In these relations consciousness and world are simultaneous (Freire, 1996, p.62).

Conscientisation

Problem-posing education prompts students to 'feel increasingly challenged and obliged to respond' to problems they face 'in the world and with the world' (ibid.) and begins with *conscientização* (conscientisation) as 'learning to perceive social, political and economic contradictions, and to take action against the oppressive elements of reality' (Freire, 1996, p.18). Freire later elaborated on conscientisation as critical awareness of the material, social, political, cultural and ideological conditions in which we find ourselves, conditions which almost always generate divisions that make it difficult to construct ideals of change and transformation (2001, p.55).

Freire outlined different stages of conscientisation, beginning with semi-intransitivity or magical consciousness, which is a fatalistic, disempowered and passive consciousness (Ledwith, 2005). At this stage, people exist in a 'culture of silence', whereby 'life is perceived in terms of fate or destiny and seen as beyond human control... the oppressed internalise the values of their oppressors, resulting in emotional dependency upon them and self-deprecation' (Mezirow, 1991, pp.136-7). Interpreting socio-ecological crises through the lens of magical consciousness might involve: acceptance of the status quo; assumptions that climate breakdown is naturally occurring rather than human-caused. 'Climate silence' and acquiescence as complex interactions between society and environment appear too challenging to comprehend.

Naïve or semitransitive consciousness is the next stage of consciousness which might imply awareness of climate breakdown and inform individual actions like 'meat-free Mondays' or 'bio-fuelling the Hummer' (Barry, 2017) but limited 'greening of business as usual' is 'insufficient to the scale and urgency of the deeper structural political economy transformation needed' (Healy and Barry, 2019). Denial or scepticism of climate breakdown might be regarded as a symptom of naïve consciousness, although powerful vested interests can take deliberate actions to minimise critical thinking and action around climate breakdown. For example, ExxonMobil is alleged to have given approximately \$30m to various groups to promote disinformation about global warming (Goldenberg, 2015).

Necessitating ‘rigorous critique’ of ‘dehumanising social, political and economic structures supported by ideologies’ (Mezirow, 1991, p.136), critical consciousness is the pinnacle of conscientisation. Only by recognising power, political economic drivers and the deep interconnections of socio-ecological relations, can we fully understand and respond to the socio-ecological challenges we collectively face (Osborne, 2017, p.844). A critical socio-ecological consciousness critiques the web of socio-economic, political, cultural and ideological forces which drive consumption and production of GHG emitting resources, broader environmental degradation and socio-ecological injustices, seeking to overcome this state of affairs to tackle climate breakdown and aid just transitions to healthier, fairer and sustainable societies.

Praxis

Conscientisation involves people becoming critically aware of interlocking ‘structural forces of power’ which impact upon our lives, ‘as a precondition for critical action for change’ (Ledwith, 2005, pp.97-8). Action for change is explicit within Freirean pedagogy and to no longer be prey to the domestication of oppression, people must emerge from exploitative circumstances and turn upon them, which can only be done through praxis as ‘reflection and action upon the world in order to transform it’ (Freire, 1996, p.33). Praxis is ‘transformation of the world’ through human activity, requiring theory and practice, reflection and action (Freire, 1996, p.106). Praxis ‘cannot be reduced to either verbalism [‘sacrifice of action’] or activism [‘sacrifice of reflection’]’ (ibid.); nor can praxis for socio-ecological transformation be devoid of theory and practice, reflection and action. ‘Critical consciousness is not liberating until it becomes a collective process for change’ (Ledwith, 2005, p.6) and it is only through praxis that learners engage in action to bring about social change (Mezirow, 1991, p.136).

Freire describes his approach as ‘the pedagogy of people engaged in the fight for their own liberation’ and he identified two distinct stages (1996, pp.35-7). In the first stage, learners unveil ‘the world of oppression’ and commit to transformation through praxis; the second stage is a ‘pedagogy of all people in the process of permanent liberation’, rejecting myths and structures which enabled oppression in the first instance (ibid.). A Freirean-influenced pedagogy for socio-ecological transformation begins with critical consciousness-raising, reflection and action, progressing to a stage of ‘permanent liberation’ underpinned by ideals of justice, respect equality, and sustainable living with each other and within planetary boundaries.

Codifications

An integral aspect of teaching and learning for climate action is the use of codifications which are representations (e.g. photographs, sketches or even a word) of significant situations in people's lives (Kirkwood and Kirkwood, 1990, pp.42-3). Elements of a codification are arranged to embody important themes and contradictions in the lives of people and codifications open dialogue about the reality presented; educators support this process by 'asking questions, listening and sometimes challenging' (ibid.).

Within socio-ecological education, we might use representations of local floods, forced migration, poverty, fossil fuels or even a plastic bottle to aid decodification as analysis that 'takes place through dialogue, revealing the previously unperceived meanings of the reality represented by that codification' (Heaney, 1995). Decodification reduces a codification into its constituent elements and is the process by which learners begin to perceive relationships between elements of the codification and other experiences in their day-to-day life, and among the elements themselves (ibid.). An image of a plastic bottle, might for example, prompt discussion about issues like: over-use of single-use plastics; micro-plastics in wildlife, water and food; oil extraction, processing and socio-ecological impacts; ingestion of processed drinks as 'energy-fixes' which can exacerbate health conditions like heart disease, diabetes and obesity; class, poverty and differential health outcomes. A simple everyday item can enable exploration of matters that have social, cultural, environmental, health, economic, political and ideological implications, spanning micro, meso and macro levels of society.

Generative Themes

Freire advocates the use of generative themes during consciousness-raising education; themes are grounded in people's experiences and established by studying students' lives and communities. Generative themes are codifications of complex experiences, resulting from the history and experiences of learners, which are likely to generate considerable discussion and analysis (Heaney, 1995). Generative themes arise from people's relationship with each other and the world; themes exist simultaneously across a 'range of spatial-temporal levels of scale at epochal, world, intercontinental, continental, national, regional, district, local, family, interpersonal and personal levels (Kirkwood and Kirkwood, 1990, p.39). Themes offer immeasurable possibilities for fostering critical consciousness through critically debating and analysing interconnected issues which may otherwise be dealt with in isolation; Freire uses the themes of development and underdevelopment as examples.

Generative themes can aid dialogue across numerous spatial-temporal levels of scale and within a pedagogy for socio-ecological transformation; there is no shortage of themes. For example, a theme of global inequality could link overconsumption patterns in the global North which produce extensive greenhouse gas emissions, with socio-ecological issues in the global South that have been greatly exacerbated by climate breakdown (including droughts, food shortages and poverty) (Islam and Winkel, 2017). A generative theme connected to climate adaptation might illuminate how poorer communities are more susceptible to climate risks (HM Government, 2017) and/or examine socio-economic inequalities which constrain the capacity of individuals, families and communities to respond to climate breakdown through measures like energy efficiency, retro-fitting homes, and alternatives to GHG emitting forms of transportation.

Limit-Situations

During the process of conscientisation, people become more aware of themselves and their way of being in the world and can overcome situations which limit them ('limit-situations') (Freire, 1996, p.80). Through examining contradictions contained within their themes, participants can encounter limit-situations in their personal circumstances which can be described 'as blocks to their further humanisation' (Kirkwood and Kirkwood, 1990, pp. 44-5). Freire emphasises that limit-situations are not impassable boundaries where possibilities end, but rather are the real boundaries where all possibilities begin (1996, pp. 80-1). Depending on how limit-situations are perceived, people can either passively accept limit-situations as insurmountable barriers or people can regard them as fetters, as challenges that can be tackled: 'as critical perception is embodied in action, a climate of hope develops which leads men [and women] to overcome the limit-situation'. Overcoming limit-situations can 'be achieved only through action upon the concrete, historical reality in which limit-situations historically are found' (ibid.).

As the most pressing limit-situation humanity has ever faced, climate breakdown offers us opportunities for critical reflection upon exploitative socio-ecological interactions and functions as a boundary where new possibilities begin – possibilities for a healthier, more equal and sustainable world – based upon hope, collaboration, co-creation of new knowledge and urgent climate action across all levels of society.

‘Creating our Vision for a Greener Future’: Developing a Pedagogy for Socio-Ecological Transformation

Analysing *Pedagogy of the Oppressed* in the context of climate breakdown establishes the value of critical socio-ecological teaching and learning as a form of climate action. Freirean pedagogy influenced ‘Creating our Vision for a Greener Future’, an innovative extracurricular initiative involving staff and students in the School of Social Sciences, Education and Social Work, Queen’s University Belfast (QUB). While working as a Lecturer in Social Policy, author one (Slevin), introduced socio-ecological issues to the social policy curriculum. Following an energetic two-hour session about climate breakdown and sustainability with first year undergraduate students (28 February 2019), Slevin (an environmental sociologist with a background in adult education and community activism) invited students to collaborate with her to develop an accessible arts-based educational programme around climate breakdown. Four mature students volunteered – two social work students (Graves, Petticrew), a Criminology and Social Policy student (Elliott) and a Social Policy and Sociology student (Popoff). We were awarded funding from QUB’s Green Fund for ‘Creating our Vision for a Greener Future’ and our group of five women embarked on a special learning journey, united by a commitment to create awareness and influence action around climate breakdown. This account draws on data from a team reflexive session (1 August 2019) and an evaluation of one public workshop (7 November 2019).

Our concern was not about lecturing to people about climate breakdown or providing artistic experiences simply for the sake of art – from an early stage we shared a concern with developing an engaging, non-formal educational project on pressing socio-ecological issues. One team member explained her motivation was to ‘help educate people on the dangers of climate change and what we can do as individuals and as a society to reduce it’ (student one, Green Arts Team, 2019c). Similar motivations were held by other members, for example, ‘I was excited by the prospect of joining a group to educate people about climate change and devise creative ways how they can be proactive in making small changes to benefit the planet and effectively all his/her inhabitants’ (student three, Green Arts Team, 2019c). The foundations for our endeavours were based on critical teaching and learning initiated in the formal space of a higher education module, yet from the onset, we collaborated as a non-hierarchical team beyond the constraints of typical student-teacher relationships, becoming ‘co-investigators in learning’ (Freire, 1996). At the start ‘we had no idea that we’d do [what we did] ... within a few weeks everything did come together ... it

wasn't one person's idea, we all came together ... [gaining] confidence, learning, creating' (group reflective discussion, Green Arts Team, 2019c).

'Anna's Journey'

Within his Freirean-inspired *Theatre of the Oppressed*, Augusto Boal asks if art should 'educate, inform, organise, influence, incite to action or should it simply be an object of pleasure?' (2007, pp. ix-x). In keeping with Boal's belief that 'theatre can... be a weapon for liberation' and present 'a vision of the world in transformation and ... the means of carrying out that transformation' (ibid.), we co-created a short drama, 'Anna's Journey'. We designed our play to communicate socio-ecological issues, prompt critical thinking and, hopefully, action among those who engaged with our wider project. Citing Marcuse (1978), Brookfield recognises that 'art cannot change the world' but 'it can contribute to changing the consciousness and drives of the men and women who could change the world' (2005, pp.201-2).

Our process of devising characters and narratives within the play entailed collective analysis of cross-cutting inequalities of class, gender, race and socio-environmental injustices across local and global scales. 'Anna's Journey' advanced from decodification to development of generative themes like global inequalities, unsustainability and climate breakdown encompassed within short scenes designed to prompt deep reflection. Each scene involved actors' performance and aural inputs which were enhanced by related images and brief research findings read by the Narrator and also displayed on an accompanying projector. For example, the play opens with Anna happily sharing her personal (over) consumption patterns of regular international travel, against a backdrop of images related to consumerism; the Narrator and an associated PowerPoint slide outlines how tourism accounts for about 8% of global GHG emissions, the majority of which are caused by high-income countries (Lenzen et al., 2018).

With a narrative that immediately connects individual choices in the Global North with global ramifications, scene one is in stark contrast to the experiences of Amelia (scene two) whose family were dispossessed due to Amazonian deforestation. Although this scene was created before catastrophic fires in the Amazon rainforest (August 2019), the play's use of imagery of land-clearing for meat-production illuminates some socio-ecological consequences of societies' hunger for cheap meat; associated research problematises rising GHG emissions, deforestation and global demand for livestock (Caro et al., 2018). Images as codifications are central to the play: 'the images worked well. For the

audience to see heart-wrenching images of the impact of climate hazards really enhanced the dialogue (student four, Green Arts Team, 2019c). People engaging with the play encountered auditory, visual and written codes associated with generative themes and were encouraged to decode codifications during discussions which followed each performance.

'Anna's Journey' is based on fictional characters yet presents real socio-ecological issues interwoven with societal processes of production and consumption. By presenting narratives of four characters (from Northern Ireland, Brazil, India and Mozambique), our play illustrates vast differences in life-experiences of indigenous peoples in the Global South and wealthy tourists from the Global North, pointing to intersectional inequalities on a global scale. It also elucidates socio-ecological consequences on countries which bear least responsibility for cumulative GHGs driving climate breakdown, using creative methods to make the global local and problematise societal interactions with our life-sustaining environment. An outcome of co-intentional, problem-posing education within our group, the play also functions as a non-formal educational tool for adults learning about climate breakdown and was incorporated within a series of public events on socio-ecological issues.

'Creating our Vision for a Greener Future' Events

'Creating our Vision for a Greener Future' was influenced by praxis as 'reflection and action upon the world in order to transform it' (Freire, 1996, p.33) and the development of 'Anna's Journey' demonstrates reflection and some action within the Green Arts team. Crucially, our endeavours were not limited to team members and we also engaged with our wider community, developing engaging educational activities to influence climate action within and beyond Queen's University Belfast.

In parallel with the evolution of 'Anna's Journey', author one worked with the Duncairn Centre for Culture and Arts in North Belfast to organise a participative evening of arts, music and talks around climate breakdown and sustainability. Seeking to inspire communities, develop audiences and the arts, the Duncairn aims to 'create a new arts-based model of engagement with disenfranchised, marginalised and disadvantaged communities in North Belfast' (Duncairn, 2019a). Our collaborative event was held on 12 April 2019 and involved a creative smorgasbord of activities such as: a quiz on socio-ecological topics by author one (designed to foster group work and set context for shared learning and discussions); talks about sustainability and climate breakdown by Prof. John

Barry (QUB) and Siofra Caherty (a fashion designer who makes products from recycled materials); a performance of 'Anna's Journey'; and music by Ger Wolfe and local musicians. Over 80 people participated in a stimulating evening of deep discussion and reflection upon climate breakdown and unsustainability: 'I feel this was a success. There was immense positive feedback from the audience' (Student three, Green Arts Team, 2019c).

Building on learning from the Duncairn event, we designed and facilitated a 'Creating our Vision for a Greener Future' workshop as part of QUB's Development Weeks (20 May 2019). This workshop created a space for participants to examine generative themes of climate breakdown, plastic waste pollution and species extinction in a hands-on stimulating way. Incorporating ice-breaker activities which utilised images as codes to spark dialogue around socio-ecological issues, the workshop included a participative quiz, a performance of 'Anna's Journey', group discussions and arts-based group work. Facilitated by our Green Arts team and colleagues Dr. Lucy McCarthy (Queen's Management School) and Dr. Nuala Flood (School of Natural and Built Environment), small group activities enabled participants to interrogate pressing environmental and social issues as a basis for their creation of a piece of art (visual, poetry, story-telling, etc.) to communicate their vision for a greener, sustainable future. Each small group chose to make visual art to communicate their visions for a greener future, utilising recycled waste and an array of arts materials to co-create pieces which they presented to other participants in order to share learning, deepen dialogue and prompt action.

Reflecting the influence of Freirean pedagogy upon our work, praxis is central to 'Creating our Vision for a Greener Future' and during a Green Arts team's reflexive session (1 August 2019) we assessed all elements of our project and agreed to continue collaborating. Subsequent events included three creative public workshops on climate breakdown held in Wholegreen, Letterkenny, Co. Donegal (Culture Night, 2019) and the 'Creating our Sustainable Future' workshop (7 November 2019) facilitated as part of the ESRC Festival of Social Science. Building on learning from our previous public engagement events, 'Creating our Sustainable Future' was an exciting artistic adventure which prioritised collaboration and co-creation of knowledge about sustainability and climate breakdown using participative methods.

Held in QUB, activities included performance of 'Anna's Journey', an interactive quiz, a joint performance by the 'Change the World in Song' and 'Sing for Earth'

choirs and group activities during which intergenerational participants were asked to co-create their vision for a sustainable future through spoken word or recycled materials and arts supplies. As the workshop was funded by the Economic and Social Research Council, we asked participants to complete an evaluation survey, undertaken by 30 respondents. All agreed with the statement ‘I am inspired to learn more about this topic’ (25 people strongly agreed); 20 participants strongly agreed ‘I will use/share things learnt today’ (10 participants agreed). Participants were also invited to make additional comments, providing valuable feedback on our pedagogical approach for socio-ecological transformation:

The programme was interesting. This is an amazing way at encouraging people to do something for the environmental sustainability. (Respondent 3)

Thoroughly enjoyed the quiz and creative opportunities to engage as opposed to the usual being talked at event. Really inspiring event! Loved the choir/drama. (Respondent 5)

Fun event, interactive. Would love to attend more activities love the choir as well. (Respondent 7)

I really enjoyed the play and found it quite moving. (Respondent 13)

Excellent Event. So glad I came. I want to learn more. (Respondent 14)

Very informative and well-presented info presented in ‘easy to digest’ and engaging format. (Respondent 22)

Brilliant evening and very different kind of event. I wouldn’t change anything, enjoyed it! (Respondent 23)

Thanks very much. It was so informative. You made us feel very welcome. We all really enjoyed it. (Respondent 26)

Concluding Thoughts on Adult Learning for Climate Action

Climate breakdown is real and already happening, producing myriad impacts for human and non-human species. Mitigating against climate chaos and adapting to socio-economic and ecological consequences of climate breakdown necessitates wide-ranging actions, which we believe begins with adult learning. Learning to understand the socio-ecological drivers of climate breakdown;

comprehending the human causes of threats we collectively face; co-creating new knowledge about how we might tackle climate breakdown; developing new ways of teaching and learning to affect transformative climate action; and engaging in praxis for multi-level changes to enable a healthier, fairer and sustainable future.

A pedagogy for socio-ecological transformation is a pedagogy of people mobilising for learning, reflection and socio-ecological action to aid just transitions to low carbon societies. Freire's *Pedagogy of the Oppressed* is a vital resource for such endeavours and his attention to conscientisation is invaluable for considering how to tackle climate denial, silence, scepticism and other psychological defence mechanisms which can prevent us from responding to climate change (Adams, 2019). Freire's focus on overcoming oppression through collaboration, love and humility is important for collective action to tackle unprecedented challenges at micro, meso and macro levels. His writing on co-intentional, problem-posing education is a valuable example of how to develop teaching and learning strategies for socio-ecological transformation; similarly, his elucidation of praxis as 'reflection and action upon the world in order to transform it' (Freire, 1996, p.33) is a key component of radical climate action which can be fostered within non-formal educational initiatives like 'Creating our Vision for a Greener Future' (Green Arts Team).

'Creating our Vision for a Greener Future' is one example of a pedagogy for socio-ecological transformation and we are conscious of limitations in terms of scale, reach and accessibility. Yet even such a small project can have impactful results, not just for those who collaborate as co-investigators but for people of all ages who participate in creative, non-formal learning activities. Positive outcomes of our project were recognised through feedback and the team being awarded a special 'Innovation for Engagement' QUB Green Award (4 June 2019); Slevin was also given an award under QUB's Staff Recognition Scheme (10 June 2019). Yet we did not co-produce 'Creating our Vision for a Greener Future' to win awards – our collaborative initiative is concerned with enhancing praxis around climate breakdown, deepening learning and action within and beyond our Green Arts team.

We are hopeful for possibilities arising from critical reflection and climate action garnered through innovative pedagogies for socio-ecological transformation. Other examples include new courses emerging within the formal education sector (e.g. QUB's new module on sustainability and climate change co-convened

by author one) and programmes and initiatives provided by established groups like Cultivate, Cloughjordan Ecovillage and the Organic Centre – teaching and learning inherent to social movements such as Extinction Rebellion and Youth Strikes for Climate.

To respond to climate breakdown with the urgency and range of actions required, we need to make learning about climate action and just transition accessible to people in every village, town and city; Paulo Freire's work can help us develop a pedagogy/(ies) for such socio-ecological transformation.

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