



Why is transformative education a vital response to the multiple challenges of the future?

Written by Tereza Čajková



Thanks go to Aurèle Destrée for editing the text, to Amy Skinner for proofreading, to Nora Forsbacka, Sandra Oliveira, and Ana Teresa Santos for their feedback and support. Thanks go to members of the Gesturing Towards Decolonial Futures collective, scholars, and educators, whose scholarly and pedagogical work essentially informed Part 3 of this text.

BRIDGE 47

The Bridge 47 Network brings people of various backgrounds together to learn from each other and collaborate for advancing transformative learning and SDG Target 4.7. Bridge 47 – Building Global Citizenship Education is a project co-created by 14 European and global partner organisations, co-funded by the European Union. The project mobilises civil society to take action for global justice through Global Citizenship Education.

Why is transformative education a vital response to the multiple challenges of the future?

© **Bridge 47 2021**

Writer: Tereza Čajková



This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of the 14 project partners and can in no way be taken to reflect the views of the European Union.”

Printed in EU

Contents

Summary	4
Introduction	6
PART 1	
Future challenges, risks and trends	7
1.1 Environment	8
1.1.2 Climate change - here and heating up	8
1.1.3 Crisis of ecosystems – unravelling of the web of life	9
1.2. Society – a polarised, fragmented and quickly changing world	10
1.2.1. Population growth and urbanisation	10
1.2.2. Polarisation, fragmentation, destabilisation	10
1.3. Technology - connectivity is the new geopolitics	11
1.4. Economic context: globalisation continues with a growing middle class and richer elites	13
1.5. Call for transformation	13
PART 2	
What is the role of education in these times of transition?	15
2.1. Call for an education that heals, repairs, repurposes, and renews	16
2.2. What is the role of transformative education?	17
PART 3	
What kind of learning do we need in a world of increasing complexity, uncertainty, and fragility?	20
3.1 Developing capacities to relate differently to each other and the planet	21
3.1.1. Learning from social and historical violence of the dominant world-view.....	21
3.1.3. Learning to live in and with the world, without occupying its centre	24
3.2. Developing capacities to face the magnitude of the problems	25
3.3. Developing capacities to navigate uncertainty amid rapid changes	26
3.3.1. Transformative education for volatile, uncertain, complex and ambiguous times	28
3.3.2. Learning from “epistemologies of crises”	29
Conclusion	30
Footnotes	32
References	34

Summary

This report explores the role of transformative education as described in SDG Target 4.7 in responding to the global challenges, risks and trends of the future.

Part 1 sets the context based on several foresight reports. The environmental challenges, climate and ecosystem crises show the alarming state of the planet. An analysis of the foresight reports suggests that the physical effects of climate change are likely to intensify during the next two decades as humanity looks unlikely to meet the goal of limiting global warming to under 2°C. They warn that the pressure put on ecosystems may leave the Earth's web of life unravelling, as land and oceans are degrading, and one million species of plants and animals are threatened with extinction. The burden of climate disruption and environmental decline is already felt by everyone, but disproportionately by the most vulnerable populations.

Social challenges described in foresight reports reflect increasing levels of uncertainty, precarity, fragility and complexity. The future world will likely be more connected, yet more fragmented, characterised by multiple changes taking place at an unprecedented pace. In response, populist, autocratic or technocratic politics may arise and people may increasingly tend to gravitate to "information silos", resulting in fragmented communities. Rapid advances in technology are likely to bring both new comforts and new disruptions or new existential threats. Economic trends anticipate rising national debts and increased inequalities.

This is accompanied by increased calls by international institutions for a recognition of the interconnection between all of these challenges, and the need for a response which encompasses widespread transformation of systems and relationships between people and the planet.

Part 2 reflects on the role of education in times of social and ecological transformation. There is currently increasing momentum for questioning established education approaches in terms of whether they are able to equip future generations to cope with the multiple crises the foresight reports warn us of. Transformative education can contribute to this process given that preparing learners to address future challenges is one of its core commitments.

Part 3 provides an insight into the types of learning which may be more suited to coping with these numerous challenges. If humanity is to fit within planetary boundaries and have human dignity and ethical solidarity as core organising principles, learning how to develop capacities to relate differently to each other and the planet will be essential. Transformative learning develops the cognitive abilities to learn from the social and historical shortcomings of the dominant world-view and to address the driving forces responsible for degradation of life on the planet. It can support development of dispositions enabling learners to relate to each other and the world in a radically different way, understanding that we cannot separate humanity from the planet and all other living beings and that humanity may need to learn how to live in, and with the world, without occupying its centre.

In order to cope with the potentially difficult consequences of the climate crisis and environmental decline, it will be essential for learners to develop capacities to face new complex, changing and challenging realities with a deep sense of social and ecological accountability. Developing capacities, dispositions and stamina to hold space for dissonance, complexity, uncertainty, tensions and failure in generative ways can support learners to engage with painful topics without feeling overwhelmed and



immobilised.¹ In order to respond to the increasing difficulty of predicting and planning for the future in ways that we previously did, a strategic response may be to move beyond the transmission of static competencies or content, and instead facilitate the deepening of learners' capacities for ongoing self-reflexivity, accountability, and discernment.²

The purpose of this report is to explore the role of transformative education - as described in SDG Target 4.7 - in responding to the global challenges, risks and trends of the future. It consists of three parts. Part 1 presents an overview of so-called mega-trends. These are trends that are linked to our present, they unfold over a long period of time, occur on a large scale and in many cases affect the entire world.³ Part 2 reflects on the role of education, and transformative education, in times of social and ecological transformation. Part 3 provides insight into what kind of learning might be needed to cope with the changing and challenging realities of the future world.

The content of Part 1 is based on a review of the following publications:

Making Peace with Nature. *A scientific blueprint to tackle the climate, biodiversity and pollution emergencies.* United Nations Environment Programme (UNEP) 2021;

Global trends to 2030. *Challenges and choices for Europe.* European Strategy and Policy Analysis System (ESPAS) 2019;

The long pandemic: after the COVID-19 crisis. School of International Futures (SOIF) 2021;

From system shock to system change – time to transform the future of sustainability. Forum for the Future (2020);

Global trends 2040. A more contested world. The National Intelligence Council (NIC) 2021;

among other resources. While this publication attempts to discern some general trends based on a review of a number of reports focusing on foresight and mega-trends, it does not attempt to claim that the future is predictable. In fact, the futures we face may become increasingly volatile and unpredictable.

Introduction

Today, our lives are changing in ways we could not have imagined a few years ago. As we find ourselves in the midst of the global health crisis of the COVID-19 pandemic, we are also facing the cascading effects of climate crises and biodiversity loss, economic austerity and instability, social fragmentation, political polarisation, large-scale human migration, and more.⁴

While some still see the pandemic as a temporary interruption of a recoverable normality, others, like Inuit artist Taqralik Partridge ask: “What if COVID-19 is just the ‘warning shots’ of the real crisis?”⁵ Several reports reflecting on the future share this sense. One of them suggests the pandemic is “**a harbinger of the sort of shocks to the systems we rely on**, which we can expect in the years to come as climate change, and other disruptions take hold.”⁶

At this moment in time, many reports come to the same clear conclusion that the current mode of development degrades the Earth’s finite capacity to sustain human well-being. It comes hand in hand with data showing that society has been failing to meet its promises and commitments to limit environmental damage so far. A UNEP report, *Making Peace with Nature: A Scientific blueprint to tackle the climate, biodiversity and pollution energies* (2021) states that “none of the agreed global goals for the protection of life on Earth and for halting the degradation of land and oceans have been fully met.”⁷ The same report concludes that “so far, **the economic, social and technological advances have come at the expense of the Earth’s capacity to sustain current and future life.**”⁸ It points to “the increasingly unequal and resource-intensive model of development” as the driver of “environmental decline through climate change, biodiversity loss and other forms of pollution and resource degradation.”⁹

UNEP (2021) suggests “only system-wide transformation will enable humanity to achieve well-being for all within the Earth’s finite capacity to provide resources and absorb human waste.”¹⁰ It details that a transformation towards sustainability “involves significant and mutually reinforcing changes in behaviour, culture, material flows and systems of management and knowledge transmission.”¹¹ Such transformation also involves a “**fundamental, system-wide shift in world views and values** and in the technological, economic and social organization of society. Transformation requires, amongst other things, innovation, learning, collaboration, multilateralism and adaptation of governance structures, policies, business models, technologies, education and knowledge systems.”¹²

The Berlin Declaration on Education for Sustainable Development, adopted at the World Conference on Education for Sustainable Development, organised by UNESCO in May 2021, calls for “a fundamental transformation that sets us on the path of sustainable development based on more just, inclusive, caring and peaceful relationships with each other and with nature.”

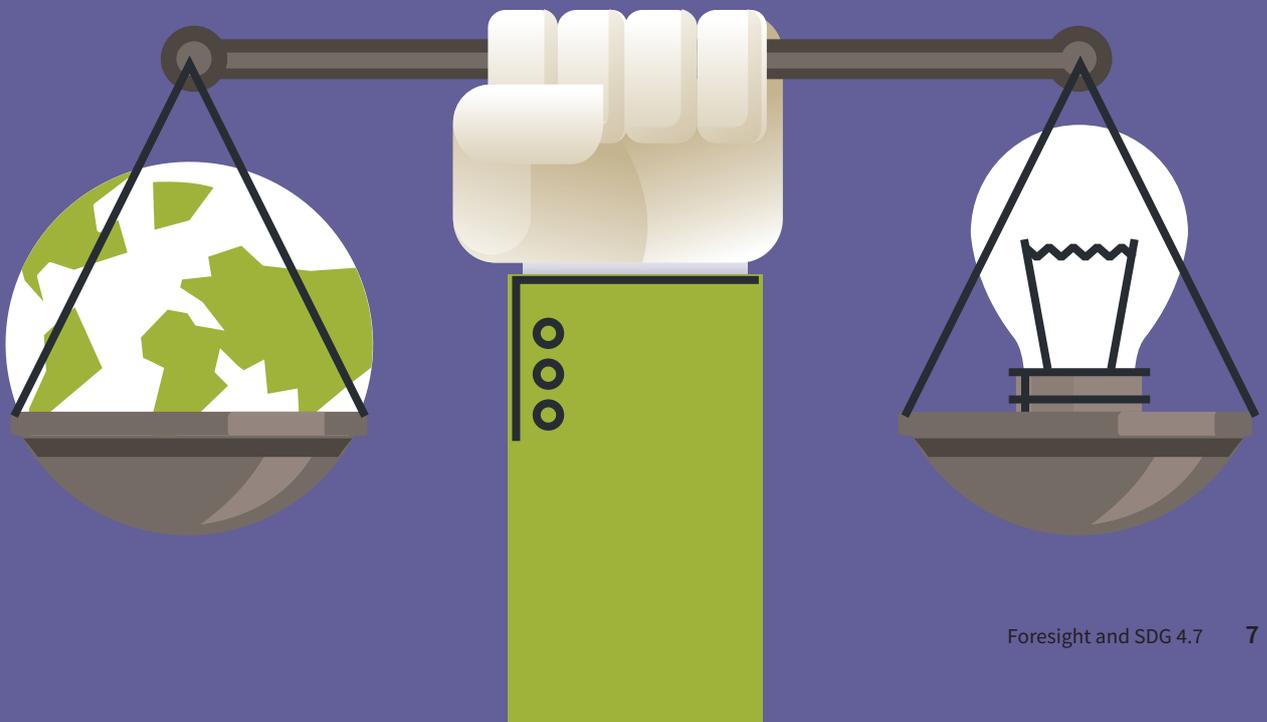
Whilst calls for a radical transformation are at an all-time high, scholars and educational practitioners feel that existing paradigms and approaches to education are increasingly inadequate when it comes to addressing the rapidly changing contexts of our world. Transformative educators from the diverse strands of education under the SDG target 4.7 are particularly aware of this, given that one of their core commitments is preparing learners to respond to global issues and challenges.

Part

1

Future challenges, risks and trends

An analysis of the forecast reports reviewed for the purpose of this publication, suggests that many institutions and agencies involved in analysing global trends agree that by 2040, shared global challenges such as climate change, health crises, economic crises, and technology disruptions, are likely to manifest themselves more frequently and intensely in almost every region of the world. The following pages will provide a **review of the mega-trends**, understood as “strategic forces that shape our future in a manner akin to a slow-moving glacier: they cannot easily be turned around by humans.”¹³



1.1.Environment

1.1.2. Climate change – here and heating up

We are living in a world already affected by climate change. According to the Intergovernmental Panel on Climate Change (IPCC), human-induced concentrations of greenhouse gases in the atmosphere have increased average temperatures by about 1°C since pre-industrial levels.¹⁴ The 2018 IPCC report anticipated that global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

The scientific community warns that humanity is not on course to fulfil the Paris Agreement to limit global warming to below 2°C above pre-industrial levels and to further limit the increase in temperature. Moreover, according to the 2020 UNEP *Emissions Gap Report*, current national policies to reduce greenhouse gas emissions put the world on a pathway to warming of at least 3°C by 2100.¹⁵

At the time of writing this paper, the effects of the climate crisis have started to trigger **deep societal concerns**. The UNEP (2021) report lists that current warming has already caused shifts in climate zones, changes in precipitation patterns, melting of ice sheets and glaciers, accelerating sea level rise and more frequent and more intense extreme events such as extreme heat, drought and fire. It states that “even small increases in temperature, along with associated changes, increase risks to health, food security, water supply and human security”¹⁶, and all these risks increase along with global warming. UNEP notices that “**the burden of environmental decline is already felt by everyone, but disproportionately by the poor and vulnerable** and looms even larger over today’s youth and future generations.”¹⁷ The National Intelligence Council (NIC) (2021) expects that during the next 20 years, the physical effects of climate change will have an impact on every country.¹⁸

Concretely, if warming exceeds 2°C, both marine and terrestrial animals and plants are projected to decline, including the decline of warm-water coral reefs by 99 percent, the decline of Arctic summer sea ice, large declines in marine fishery catches and the placing of 20–30 percent of terrestrial species at increased risk of extinction. Substantial increases in heatwaves, heavy precipitation in several regions and drought in some regions are associated with global warming, and in turn increase risks to food security.¹⁹ Global warming of more than 2°C, combined with continued loss of biodiversity and increasing pollution- in other words the 6th mass extinction- will likely have dire consequences for humanity.

The costs and challenges of climate change are burdening the world



disproportionately, and this is likely to be the case in the future too. It is obvious that those already feeling the impact and those who will be hit hardest by climate change, including Indigenous Peoples across the world, are among those least responsible for causing the crisis.

²⁰ As Potawatomi scholar Kyle Whyte (2017) points out, **“Thinking about climate injustice against Indigenous peoples is less about envisioning a new future and more like the experience of a *deja vu*.”**²¹ In the regions of the Global South, the impacts of climate disruption intersecting with environmental degradation may create new vulnerabilities and exacerbate existing risks to economic prosperity and food, water, health, and energy security.

The NIC (2021) assumes that the physical effects of climate change are likely to intensify during the next two decades, especially in the 2030s. As the world gets closer to exceeding 1.5°C, probably within the next 20 years, NIC (2021) anticipates an increasing debate over how and how fast the world should reach net zero as countries will face hard choices over how to implement drastic emissions cuts and adaptive measures. In this projection, neither the burdens nor the benefits will be evenly distributed within or between countries, heightening competition, contributing to instability, straining military readiness, and encouraging political discord.²²

“Irrespective of our next decisions, we will be hit by the fallout of past inaction and will have to manage the impact accordingly.”

(European Strategy and Policy Analysis System, 2019)

It is a known fact that even if emissions reached net zero immediately, cumulative emissions already in the atmosphere would drive temperature increases further. According to the US National Climate Assessment this would last for the next two decades.²³ The European Strategy and Policy Analysis System (ESPAS) admitted in 2019 that “even in the unthinkable scenario of all emissions from human activities ceasing today, carbon

dioxide already in the atmosphere will remain there for about 40 years. So irrespective of our next decisions, we will be hit by the fallout of past inaction and will have to manage the impact accordingly.”²⁴

1.1.3. Crisis of ecosystems – unravelling of the web of life

As the Earth’s climate is changing, UNEP (2021) warns that its web of life is unravelling as land and oceans degrade and chemicals and waste accumulate beyond agreed limits. It demonstrates that **“none of the global goals for the protection of life on Earth have been fully met**, including those in the strategic plan for biodiversity 2011–2020”; admitting that “society is not on course to achieve land degradation neutrality, where degradation is minimized and offset by restoration” and that “many of the targets for conservation, restoration and sustainable use of oceans, coasts and marine resources will likely not be fully met as marine and coastal ecosystems are declining.”²⁵

We are already **in the midst of a mass extinction of plant and animal species** caused by the transformation of nature due to human activities. UNEP (2021) estimates that as “three quarters of the land and two thirds of the oceans are now impacted by humans, one million of the world’s estimated 8 million species of plants and animals are threatened with extinction, and many essential ecosystems are eroding.”²⁶

Deterioration of the state of the environment further threatens the well-being of hundreds of millions of people. UNEP (2021) estimates that land degradation may “adversely affect more than 3 billion people.”²⁷ But the planet’s ecosystems are under pressure. The **destruction of biodiversity, the overexploitation and pollution of waters and the breakdown of the climate do reinforce each other** (UNEP, 2021). According to the Forum for the Future (2021), if the crisis of these three deeply intertwined systems pushes them to fall further apart, “we risk crossing irreversible tipping points to a point of no return. It isn’t simply that we can’t go back to how things were before: it’s that we are set to enter a radically unstable biosphere, a ‘Hothouse Earth’, unlike anything seen in the past 100,000 years.”²⁸

1.2. Society – a polarised, fragmented and quickly changing world

The reports analysed cohere around a picture of a world that is far more complex than it used to be in the past. A world that is much **more connected, yet more fragmented**. Challenging changes in the environment, technology and politics make it more contested, possibly more competitive. The key characteristic seems to be **a number of changes happening at an unprecedented pace**.

The European Strategy and Policy Analysis System (ESPAS) (2019) speaks of a world that is heading toward a “new geopolitical, geo-economic and geotechnological order”, anticipating that by 2030 the world will experience “seismic global power shifts; pressure on liberal democracies; challenges to global governance; the transformation of economic models and the very fabric of societies; new uses and misuses of technology; contrasting demographic patterns; and humanity’s growing ecological footprint.”²⁹

1.2.1. Population growth and urbanisation

ESPAS (2019) anticipates that by 2030 the global population will have risen from 7.6 billion to 8.6 billion. It acknowledges that even though demographic shifts are considered to be the most certain trends, as with projections generally “this number can change in a variety of ways, especially in the longer run due to uncertainties regarding the impact of climate change.”³⁰ Further forecasts indicate that as birth rates remain low and the

median age rises, global population growth overall is slowing down, but it will not have stopped by 2030. Most developed and many emerging economies will likely see their populations peak and then start to shrink by 2040.³¹

It is considered common knowledge that by 2030 two-thirds of the world will live in cities. ESPAS (2019) predicts that far more people will live in cities of under 1 million, followed by those between 1 and 5 million.³² This trend may conflict with what UNEP (2021) draws attention to, saying that “environmental degradation hampers efforts to make cities and human settlements inclusive, safe, resilient and sustainable.”³³

1.2.2. Polarisation, fragmentation, destabilisation

There is a growing sense that in times where rapid and radical changes are urgently needed, desires for uncomplicated solutions will likely make strong leaders popular. **A rise in populism** can be expected as a consequence of **narratives emphasising the division** between the elites and the masses. If democracies are too slow or ineffective in responding to these pressing issues, they are likely to be challenged by autocratic or technocratic approaches to governance.

The NIC (2021) foresees people gravitating to “information silos” with others who share similar perspectives, bolstering their beliefs and understanding of the truth. This may result in increasingly **fragmented communities** as “people will seek security with

like-minded groups based on established and newly prominent identities.”³⁴

ESPAS (2019) observed that “until 2005, democracies and freedoms were expanding around the world”. This trend has changed over the last decade and is now perceived as being on the decline.³⁵ The School of International Futures (SOIF) (2021) suggests the pandemic has “accelerated the transition to a multi-polar world, but in ways that may be profoundly destabilising.”³⁶

Coming to the context of the pandemic, SOIF (2021), drawing on Global Dashboard’s framework, anticipates the global health crisis is “likely to persist, possibly at a lower level, for another 1–2 years.” But it warns that **the psychological effects of the pandemic** could last a generation. These effects are likely to go beyond shared grief, as “the effects of social isolation, family conflict, economic anxiety and the realisation that life is less certain may also live with children and young people for decades.”³⁷

The crisis is expected to have long term political impacts too. SOIF (2021) foresees a strong political reaction from those most likely to be worse-off in the post-pandemic labour market, such as young people, among others from the groups which have become most politicised

in recent years.³⁸ Forum for the Future (2021) estimates that globally, millennials and members of their successor generation, the so-called Gen Z, will represent 75% of the working population by 2025. It suggests that many members of these generations may become radicalised by the **cumulated pressures of economic downturns, job insecurity, social injustice and the threat of climate change**, because they have been “poorly served by the present system, and feel they have little to lose from quite radical changes in direction. These are also the people who will still be alive towards the end of the century, living with the long-term consequences of our collective actions.”³⁹

1.3. Technology - connectivity is the new geopolitics

During the upcoming decades, **the pace and outreach of technological developments** are likely to increase dramatically. The future trends include Artificial General Intelligence, a system that in the future may match or exceed a human being’s understanding and learning capacity⁴⁰, the Internet of Things or the Internet of Everything.



This connectivity is assumed to generate new comforts and bring progress in some areas of human life. Technologies will create new jobs, but also make many existing lines of work redundant. “The next wave of automation is expected to transform so-called white collar roles such as accountancy and law, which substantially involve analysis of information. Few sectors will be left untouched, including IT professionals them-selves.”⁴¹

NIC (2021) assumes that **artificial Intelligence will become mainstream** and that “by 2040, AI applications, in combination with other technologies, will benefit almost every aspect of life, including improved healthcare, safer and more efficient transportation, personalized education, improved software for everyday tasks, and increased agricultural crop yields.”⁴²

In addition, technology is expected to **offer the potential to mitigate problems**, such as climate change and disease. According to a recent study by Vinuesa, Azizpour, Leite et al. (2020), artificial intelligence could play a leading role in enabling the accomplishment of most of the SDGs, if it was supported by the necessary regulatory oversight. But this study also named the challenges and hidden costs of this technology, such as high energy consumption, inequitable distribution and application, and transparency with the potential to undermine many of the SDGs.⁴³

Furthermore, this rapid technological progress is expected to redefine global power. ESPAS (2019) foresees China and the United States taking a lead on emerging technologies and innovations. Europe in this projection “lags behind”, which, among other factors such as

demographics, will, according to ESPAS, contribute to the world of the future being no more Eurocentric.⁴⁴

However, technological progress is also expected to generate **a number of existential threats**. Increased connectivity will likely create and trigger tensions and disruptions at all levels, within and between societies, industries, and states.⁴⁵ Shaping a state of the **world that is “both inextricably bound by connectivity and fragmentation in different directions,”**⁴⁶ from societies divided over core visions, values, truths to authoritarian and technocratic regimes that employ digital repression to control populations.

In summary, NIC (2021) sees novel technology as “enabling governance, threatening freedom and privacy”. It warns that “the technology-saturated and hyperconnected future will offer leaders and governments new tools to monitor their populations, enabling better service provision and security but also offering greater means of control”. Given that the same technologies that currently empower citizens to communicate, organise, and monitor their health are providing increasing amounts of data to governments and the private sector, this report expects that governments, especially those of an authoritarian nature, “will exercise unprecedented surveillance capabilities to enforce laws and provide security while tracking and de-anonymizing citizens and potentially targeting individuals.”⁴⁷



It is interesting to note that the same report warns us about the potential of novel technologies to “disrupt what it means to be human”.⁴⁸ Some of their applications may **challenge our capacity to envision and grasp their potential scope and size**, which could result in a damage to life on a global scale, and may require the development of resilient strategies to survive. However, technology is expected to play a role in both creating these existential risks and in alleviating them.⁴⁹

1.4. Economic context: globalisation continues with a growing middle class and richer elites

Rising national debts, a more complex and fragmented trading environment and the continued rise of powerful firms, are just some of the global economic trends predicted to take place over the next two decades.

SOIF (2021) expects the current **economic crisis** to last for 5-10 years. It mentions that as the leading economies have been “on life support provided by the central banks since the financial crisis”, and given the pandemic, this is likely to continue for another decade, and national debts will keep rising.⁵⁰

The power of big businesses is expected to grow further. NIC (2021) assumes that large platform corporations could “drive **continued trade globalization**”. These powerful firms are also “likely to try to exert influence in political and social arenas.”⁵¹

Some reports suggest that by 2030 **a growing proportion of the world’s population will be middle class** – defined as “individuals falling anywhere between 67- 200% of the median income in a country.”⁵² A large part of these people will be situated in emerging economies, especially in China. The gap between the very rich and very poor is also expected to increase. There is a consensus that by 2030, **1% of the world’s population will likely own two-thirds of the world’s wealth**. This means their wealth will continue to grow compared to the present.⁵³

As a logical consequence, the growing global population and middle class tends to be associated with rising emissions linked to energy consumption and energy generation, which are projected to keep increasing in parallel.⁵⁴

UNEP (2021) expects that the rate of consumption, that has tripled over the last 50 years, will likely grow further. It explicitly states that “the quantity of materials consumed per capita when all resources mobilized globally to the final consumer is taken into account (material footprint of consumption) is highest in high-income countries”⁵⁵, acknowledging that so called “economically developed” countries will retain the largest environmental footprint in the future.

1.5. Call for transformation

According to Inger Andersen, Executive Director of the United Nations Environment Programme, “*loss of biodiversity and ecosystem integrity, together with climate change and pollution will undermine our efforts on 80 percent of assessed SDG Targets.*”⁵⁶ As António Guterres, Secretary-General of the United Nations says, “**Humanity is waging war on nature. This is senseless and suicidal.**”⁵⁷ In addition, UNEP (2021) concludes that society has been “failing to meet most of its commitments to limit environmental damage” and that the achievement of the SDGs is threatened by a number of environmental risks of an escalating and mutually reinforcing nature.

Nevertheless, UNEP has come forward with a projection detailing what would be needed to get back on track to achieve the Sustainable Development Goals by 2030. Announcing that “*Making peace with nature is the defining task of the coming decades*” it urgently **calls for the Earth’s environmental emergencies to be addressed together**, emphasising the interconnected nature of climate change, loss of biodiversity, land degradation and air and water pollution. UNEP (2021) calls for limiting global warming, specifying that “net carbon dioxide emissions need to decline by 45 per cent by 2030 compared with 2010 levels and reach net zero by 2050 to

put the world on a pathway to 1.5°C with a probability of about 50 per cent, whereas more ambitious targets would be necessary for higher certainty. A pathway to 2°C would require global emissions to be reduced by 25 per cent by 2030 compared with 2010 levels and reach net zero by around 2070. Both pathways entail rapid transformations in areas including energy systems, land use, agriculture, forest protection, urban development, infrastructure and lifestyles.”⁵⁸

This projection further suggests that “loss of biodiversity can only be halted and reversed by providing space dedicated for nature while also addressing drivers such as changing land and sea use, overexploitation, climate change, pollution and invasive alien species.” A similar sense of urgency and ambition are needed to transform other systems, including how we produce our food and manage our water, land and oceans.

UNEP (2021) calls for a “**repair**” by adopting a model that would put people’s well-being and planetary health first, as the overriding imperative. It calls for solutions that recognise how our environmental, social and development challenges are interconnected. Taking a **whole-of-society approach**, it envisions shifting values, worldviews as well as financial and economic systems.⁵⁹ The central objective of this model would be to build a global coalition for carbon neutrality. António Guterres, Secretary-General of the United Nations, assumes that “if adopted by every country, city, financial institution and company around the world, the drive to reach net-zero emissions by 2050 can still avert the worst impacts of climate change.”⁶⁰

However, critical scholars⁶¹ remind us of the importance of carefully considering any proposals for a global solution based on a ‘one-size fits all’ approach. Can it be fully accountable to the various communities that are unevenly affected by contemporary global challenges? Moreover, it is important to take into consideration that this proposition comes at a time when social cohesion and trust in established institutions has been undermined, and inequalities, social fragmentation, and political extremism are bringing many societies to a point of crisis. The implementation of such a proposal will take place in a future where the trends described above will overlap, which will likely be a world of heightened volatility, uncertainty, complexity and

ambiguity. A world where, as NIC (2021) puts it, “despite being more necessary and urgent, developing a ‘culture of preparedness’ and proactively shaping the future has become more difficult and testing.”⁶²

Future challenges, risks and trends:

Climate change: climate disruption

- at the current rate, global warming will likely exceed 1.5°C by 2040
- causing more frequent heat waves, droughts, forest fires, floods
- affecting every part of the world, burdening disproportionately the most vulnerable populations, causing large-scale human migration

Unravelling of the web of life: ecosystem crisis

- **mass biodiversity loss**
 - one million species of plants and animals is threatened with extinction⁶³
- **soil degradation, overexploitation and pollution of waters**
 - 3/4 of the land and 2/3 of the oceans are impacted by humans⁶⁴
 - billions of people may be adversely affected

Hyperconnected yet fragmented, contested and quickly changing world

- **global health crisis, global psychological crisis**
- **population growth, urbanisation**
- **social fragmentation, political polarisation, destabilisation**
- **rapid advances in technology**
- **rising national debts, powerful firms, richer elites**
 - increased complexity, uncertainty, unpredictability and fragility

Part

2

What is the role of education in these times of transition?

The purpose of this section is to explore the role of education, and particularly transformative education, in these times of social and ecological crisis and transition, as outlined in the section above.





2.1. Call for an education that heals, repairs, repurposes, and renews

As Andreotti (2021b) observes, “if we consider the waves of disruption and instability that were already unfolding before the global pandemic, and that were intensified by it, the phrase the ‘end of the world as we know it’⁶⁵ seems appropriate to describe our current circumstances.”⁶⁶ For educators, there is a lot of work ahead to engage across our differences with the complexities and uncertainties related to these global trends, and to consider how to best prepare learners to respond to the current context of multiple crises.

Critical scholars are reminding us that historically, education has been focused on steering learning towards objectives to secure human survival and the reproduction of cultural norms and ideals.⁶⁷ However, in our current context, a number of scholars are arguing that these objectives are mutually exclusive, as **the reproduction of dominant Western cultural ideals related to economic prosperity and metropolitan consumerist individualism pose a threat to human survival.**⁶⁸

The *Social tipping dynamics for stabilizing Earth’s climate by 2050* research paper acknowledges that however important education is in bolstering an understanding of the causes and effects of climate change, “it is also

necessary **to counter the often overlooked shadow side of education**, since the secondary and higher levels of education are currently associated with higher resource use.”⁶⁹ This seemingly technical nuance can give us a sense of the scope of the questions the educational system will need to face.

In response to the need to reimagine how knowledge and learning can shape the futures of humanity in a context of increasing complexity, uncertainty, precarity and fragility, UNESCO launched ***The Futures of Education initiative*** in 2019. Its aim is to look to 2050 and beyond in order to “rethink how knowledge, learning and education may address the challenges and opportunities, both those foreseen for the future and those with us in the present.” Based on its *Visioning and Framing the Futures of Education* report (2021) and *Progress Report* (2021) **UNESCO calls for a fundamentally different vision of education.**

Observing that the traditional model of economic growth is in crisis, UNESCO calls into question established development and education approaches, stating that “this current historical juncture requires us to re-vision knowledge, and rethink the purposes of education” because “we cannot continue just doing more of the

same if we want to address ecological and technological disruptions and reach 2050 with a world where people live well together and with the planet.”⁷⁰ Admitting that education across the globe today falls short of aspirations that schools and learning can support wellbeing and equity for all, and a healthy relationship with the planet, UNESCO (2021) concludes that “**we must ask: have our current education systems reached the limit of their possibilities? Do our difficulties lie in the very ways education itself is organized? Do some of our challenges in fact stem from what and how we educate?**”⁷¹

2.2. What is the role of transformative education?

These questions are not new for scholars, researchers and educators engaged in diverse strands of transformative education. They have been underpinning their analysis and work for a long time, especially in the critical strands. Given that the core of **transformative education** is preparing learners to respond to global issues and challenges, **it is well positioned to contribute to**

thinking about the kind of learning we may need to cope with the challenges foreseen for the future.

Transformative education, anchored by the 2030 Agenda SDG Target 4.7, is understood as a lifelong learning process designed to equip people with the knowledge and skills needed to promote sustainable development, through the development of key competencies such as critical thinking and global citizenship. SDG Target 4.7 describes education as transformative when it is value-based and designed to promote global citizenship, sustainable development, human rights, gender equality, peace and appreciation of cultural diversity. Aimed at fostering engaged, active and critical learners and building constructive and democratic approaches to difference, it also recognises a connection between personal, individual development and systemic change.

Education is considered transformative when it enables “a structural shift of knowledge and attitudes.”⁷² In terms of transformative competencies, Helin (2021) lists critical thinking and reflection, questioning of one’s assumptions, and addressing complexity, difference and uncertainty. Her research shows that even “more emphasis should be put on **dealing with uncertainty, addressing unequal power**





relationships, and the establishment of inclusive, just and democratic societies to overcome the polarisation present in our societies and develop ways to combat extremism.”

One of the key contributions in working for global justice is **the critical and decolonial orientation of some strands of transformative education**. Transformative education has always aimed to counteract dominant norms and paradigms. As a point of reference, Pashby et al. (2020) completed a useful meta- review of the different typologies of Global Citizenship Education (GCE), pointing out the key differences between neoliberal, liberal, critical, and postcritical orientations in GCE.

Research by Helin (2021) concludes that there is currently no comprehensive global framework outlining the transformative competences of the different educations under SDG Target 4.7. On the one hand, this reduces the chances of the different educations to complement each other,⁷² but on the other hand, it allows for a multitude of approaches and ideas (Suša, 2019). One important aspect to take into account here is that ideas about required competencies change over time. Whilst there are frameworks developed for ‘global competencies’, ‘global citizenship competencies’, ‘competencies for sustainable development’ or ‘sustainability competencies’,⁷⁴ as Bourne (2018) explains, frameworks for transformative competencies in the present, were constructed to respond to the challenges and opportunities posed by the economic and cultural dimensions of globalisation. As the upcoming world will be very different, most likely in some aspects beyond our current imagination, the nature of the new realities will have to be taken into consideration when developing any future frameworks.

The UNESCO report *Futures of Education: Learning to become - together with people, planet and technology*, is expected to be released in November 2021 and to provide a vision for education for 2050. According to its *Progress Report* (2021) it seems the focus will be on a “humanistic approach to education and development”, guided by **a concern about “improving the quality of human life without compromising future generations and our supporting eco-systems”**. UNESCO (2021) calls for a radical reframing of education, that should be “regenerated as a public good and a collective global responsibility that can strengthen our common humanity and ensure sustainable relationships with others, with nature, and with technology”. It emphasises that this requires us to “navigate plural realities across communities in both the North and South” and plural “futures” of education. Therefore, it explicitly doesn’t try to define a single future and impose it on the world. Admitting it would be unrealistic to think we can anticipate how the world will be in 2050, **it calls for an opening of our imaginations to a plurality of possible futures** – “futures that sustain diverse ways of knowing and being while enabling cooperation and collective action around common causes.”⁷⁵

As a possible way to help set the world on paths towards more just and sustainable futures for all, UNESCO (2021) started to explore the regenerative potential of education, offering the concept of **regenerative education, described as education that heals, repairs, repurposes, and renews**.⁷⁶ Such a vision encompasses the commitment of diverse strands of education under the SDG Target 4.7 and could serve as an orientation for its future direction.



In terms of healing, repairing, repurposing, and renewing, transformative education develops critical thinking skills related to difficult and uncomfortable questions.

- How has education been complicit in developments related to the current situation?
- How does it perpetuate the ways of thinking, relating and acting that has brought us to this unprecedented stage of multiple global crises, whereby non-human life on Earth is in sharp decline and we may be heading towards what looks like the edge of human extinction?
- Is it even ethical to perpetuate the cultural norms and ideals that have brought us to this potential social and environmental collapse? And can the cultural paradigm that created this situation also point us to a way out?
- In the context of future major disruptions in our cognitive, affective, relational, economic and ecological environments, how can education prepare all of us to engage with these challenges in sober, sensible, creative and responsible ways? ⁷⁷
- How can education support a shift towards a reconfiguration of the systems we rely on based on deep social and ecological accountability?

These questions are being considered in more critical strands of transformative education, which suggest we may need to start learning to look deeper. Given that we have been socialised into predominantly modern Western societies, we must urgently reflect on our ways of being, knowing and doing, in order to avoid unconsciously perpetuating the underlying patterns of the very same system that created the global harm in the first place.

Part

3

**What kind of learning
do we need in a world of
increasing complexity,
uncertainty and fragility?**



3.1 Developing capacities to relate differently to each other and the planet

Research suggests that multiple levels of learning can be relevant for coping with the numerous challenges of the future. As established in Part 1 of this paper, the anticipated challenges of the future are environmental (climate crisis and ecosystems in crisis), social (increased polarisation and fragmentation) and economic (increased inequalities). These challenges are accompanied by increased calls for transformation of the relationships between people and planet.

This part of the publication explores 1) the development of cognitive abilities to address the driving forces behind the degradation of life on the planet and 2) the development of dispositions enabling learners to relate to each other and the world in a radically different way. This kind of learning can be particularly relevant in the light of calls for humanity to fit within planetary boundaries and have human dignity and ethical solidarity as core organising principles.

3.1.1. Learning from social and historical violence of the dominant world-view

“The ways that the planet has been transformed by human activity have profound implications for the purposes of education and organization of learning in the future. For too long, education has been based on a growth-focused modernist development paradigm.”⁷⁸

(UNESCO, 2021)

We cannot address the driving forces behind the degradation of life on our planet, nor the current development paradigm and its required transformation, without taking into consideration their ontological background. Because this is what is translated into the epistemologies (ways of knowing) and methodologies that are the basis for this transformation.

If we are to focus on epistemological, methodological, and pedagogical shifts, transformative education should be able to **address the underlying assumptions** forming its ontological position, especially **given** that they likely constitute **the dominant understanding of reality within a globalised, capitalist, neoliberal system.**





The term ontology comes from Ancient Greek, *ontos* meaning ‘being’, and *logos* roughly meaning ‘understanding’. A metaphor by Ahenakew (2016) illustrates ontology as the root of an intellectual and cultural tradition, while epistemologies, and different ways of knowing, form the trunk, branches and fruits. A modernist techno-scientific positivism is a strong root in many of our lives. But there are many different trees with different roots. There is a diverse variety of roots within intellectual traditions of Indigenous peoples across the world. Many traditions of knowledge do include considerations of being and therefore engage in ontology.

Essentially, Modernity is the predominant ontology in our world. Modernity/coloniality can be understood as being rooted in **a relational system that naturalises hierarchies that place humans above other-than-human beings, and hierarchies that place certain humans above others** – especially white/European people above racialised and Indigenous people.⁷⁹

From this relational system stems: a political system organised by nation-states; an economic system organised by (racial) capitalism and dependant on exploitation, denying rights to property and land, and ecological destruction; and a knowledge system organised by universal reason, an overreliance on empirical evidence, and an undervaluing and harming of knowledge systems that diverge from this.

The nature of **the modern-colonial habit of being** is captured in these four **denials that are defences against the social and ecological realities of our situation.**⁸⁰

- the denial of systemic, historical and ongoing violence and of complicity in harm (the fact that our comforts, securities and enjoyments are subsidised by expropriation and exploitation somewhere else);
- the denial of the limits of the planet and of the unsustainability of modernity- coloniality (the fact that the finite earth-metabolism cannot sustain exponential growth, consumption, extraction, exploitation and expropriation indefinitely);
- the denial of entanglement (our insistence in seeing ourselves as separate from each other and the land, rather than ‘entangled’ within a living wider metabolism that is bio-intelligent);
- the denial of the magnitude and the complexity of the multiple problems we need to face together (the tendency to look for simplistic solutions that make us feel and look good and that may address symptoms, but not the root causes of our collective complex predicament).

Many Indigenous people and communities across the world continue to resist the modern colonial worldview. The following example by a Canadian scholar of Indigenous Studies Glen Coulthard (2010) illustrates how the ethical foundation of Indigenous ontologies are at odds with the modernist orientation:

*“In the Yellowknives Dene (or Weledeh) dialect of Dogrib, “land” (or dè) is translated ... as that which encompasses ... people and animals, rocks and trees, lakes and rivers, and so on. ... we are as much a part of the land as any other element. ... human beings are not the only constituent believed to embody spirit or agency. Ethically, this meant that humans held certain obligations to the land, animals, plants, and lakes in much the same way that we hold obligations to other people.”*⁸¹

The UNESCO background paper *Learning to become with the world: Education for future survival* (Common Worlds Research Collective, 2020) argues that “any attempts to achieve sustainable futures by continuing to separate

humans off from the rest of the world are delusional and futile, even if the intentions are well meaning.”⁸² Today UNESCO (2021) calls for reframing humanism, suggesting we need “**a new understanding of humanism that recognizes we cannot separate humanity from the planet and all other living beings**”.⁸³

The concept of regenerative education introduced by UNESCO (2021) underlines the need for healing and for reparative justice through the valorisation of cultures and epistemologies that are often marginalised. A possible reimagining of curricula and teaching based on non-majoritarian points of view, alternative traditions and indigenous ways of being and knowing, also stems from UNESCO’s (2021) calls for **intellectual decolonization and epistemic diversity**.⁸⁴ An imperative in this call for the encounters of epistemologies is to “sustain diversity”, not merely include it. Maintaining sustainable relationships with each other in this sense requires the

capacity to mediate relationships between dominant and marginalised ways of knowing without “simplifying” them in terms of the dominant paradigm. Transformative education aims to develop our capacity to ethically engage with the complex dynamics of such encounters.

To this end, Andreotti (2012), offers “**HEADS UP**”, a framework based on a list of problematic patterns (Hegemony, Ethnocentrism, Ahistoricism, Depoliticisation, Uncomplicated solutions, and Paternalism) that educational initiatives can easily gloss over when facing the complexities of global issues. This analysis suggests that “we need to learn to expand the legacy of possibilities that we have inherited, if we are to learn to engage with the complexity, plurality, inequality and uncertainty of our inter-dependent lives in a finite planet.”⁸⁵

Shifts in habitual patterns of actions: dispositions instead of capacities

As we engage with each other differently, we may need to expand our disposition for engagement with multiple and complex forms of societal inequalities. “Dispositions for global mindedness” were conceptualised as “habitual patterns of action that emerge in complex ways which are context-dependent” (Andreotti, Biesta, and Ahenakew; 2015).

Unlike capacities or competencies, dispositions are non-linear. They are also not connected to developmental stages, and can become latent or manifest with differing degrees of commitment.⁸⁶

The following are examples of questions from Andreotti and Kerr’s (2018) research conducted among teacher trainees. Answers to these questions provide insights into narratives that may be at work in terms of how one frames inequalities, thereby revealing the kind of dispositions that are being developed.

“In a teaching placement, imagine you are asked the following questions by an eight-year-old child. You don’t have time to respond at length. What would be your immediate short response (max 3 sentences)?

- [from a child recently arrived in Canada] *Why is it that some people have so much and others have so little?*
- [from a visible minority child born in Canada] *Why is it that more teachers and bosses are white?*
- [from an Aboriginal child] *My grandma says the salmon are the spirit of our ancestors. Is that true?*
- [from a child of high socio-economic background] *If people keep cutting down forests and polluting the water, we will not be able to survive. Why are adults still doing that?”⁸⁷*

3.1.3. Learning to live in and with the world, without occupying its centre

How can education support a shift towards a reconfiguration of the systems we rely on based on deep social and ecological accountability?

According to UNESCO (2021), a key inspiration for regenerative forms of education is the need to respond to environmental crises and ways of living that far exceed the carrying capacity of the planet. Parts of the Global North currently live as if there were 5 Earths at their disposal.⁸⁸ How can we establish relationships which allow for the well-being of all within one planet while relating in a just and caring way to the natural world? The Futures of Education initiative is clear that “moving towards a new ecologically oriented understanding of humanity that integrates our ways of relating to Earth, requires an urgent rethinking of education in the 2050 horizon.”⁸⁹

“Education is one of the crucial ways we rework our relationships with a more-than-human world.”

(UNESCO, 2021)

While there may be a consensus that current formal education still prepares students for the world of the past, rather than for possible worlds of the future (Gardner, 2011),⁹⁰ debates around modern education have been about whether it should be about the transfer of content, which places the teacher and a predefined curriculum at the centre of the process; or about the learner’s construction of knowledge, where the teacher places the learners’ learning process at the centre, focusing on their preferences and motivations.

Although a learner-centred approach prevails in transformative education, Biesta (2016) points out that when the learning process arises from an ‘ecological’⁹¹ perspective, arising from the self and returning to the

self, then the self cannot become a subject of inquiry.⁹² Moreover, both the centring of teachers and the centring of learners leads to the codification of the world (by learners or teachers), rather than **to an encounter with the world on the world’s terms** (Biesta 2016).

In order to make this possible, Biesta (2016; 2019) offers another option, which “relies on the idea that freedom has to do with establishing a ‘grown up’ relationship with what may have authority in our lives; a process in which authority becomes “authorised”. In other words, the educational task is to “arouse the desire in another human being for wanting to exist in and with the world in a grown-up way, as a subject”.⁹³

“The grown-up way acknowledges the alterity and integrity of what and who is other... that world out there is neither a world of our own making nor a world that is just at our disposal.”⁹⁴ It’s important to notice that the **“grown-up-ness” is not a “developmental stage”**. Biesta uses the term as an “existential quality”. So what characterises the ‘grown up way’ is **the quality of existing in the world and making space for what exists there**. Additionally, Meirieu (2007) suggests that learning, where we are the subject, is learning to be the “one who lives in the world, without occupying the centre of the world”.⁹⁵ Biesta (2019) speaks of the “uncoercive rearrangement of desires”⁹⁶ suggesting that ‘grownupness’ is not about suppressing one’s desires, but existing in a state where desires are questioned: whether “what we desire is desirable for our own lives and lives we live with others.”⁹⁷

Therefore, part of this learning process is to create the conditions which enable us to challenge and question who and what we are, the nature of reality, the conditions that allow us to be and to understand being in certain ways, and how others (human, non-human, and more-than human) experience existence differently.⁹⁸ In this respect, the work of the educator may be about **arousing a desire in the learner for wanting to exist in a state where they keep questioning their desires**.

3.2. Developing capacities to face the magnitude of the problems

This section explores approaches to learning which become relevant in terms of facing the consequences of inevitable climate disruption and environmental decline, which were outlined in detail in Part 1 of this publication.

*In the context of future major disruptions in our cognitive, affective, relational, economic and ecological environments, how can education prepare all of us to engage in sober, sensible, creative and responsible ways with these challenges?*⁹⁹

Drawing attention to how formal education has been complicit in the reproduction of both historical, systemic violence and unsustainability, Andreotti (2021a) offers a distinction between educational approaches that focus on personal empowerment and the mastery of knowledge and skills, and educational approaches that see the role of education in association with the non-coercive re-arrangement of desires.

For the standard mode of modern education, she uses an analogy of ‘filling up cups’ with knowledge, competencies and skills to address ignorance, or the image of a person climbing or conquering a peak, where learners are prepared to arrive at a state of mastery, readiness and confidence to function in a given world. Andreotti refers to these types of educations as “mastery education”. Conversely, she proposes an approach provisionally termed “**depth education**” to **address the disavowals and denials (defences against the social and ecological realities of our situation), in a way that centres neither the teacher, nor the learner, but the world itself.**¹⁰⁰

In order to centre the world as a dynamic entity, or living metabolism, Andreotti (2021a) suggests “the starting point is the expansion of our collective capacity to hold space for multiplicity, plurality, complexity, uncertainty,

ambivalence, paradoxes, tensions and failure. This is no easy task since modern education tends to calibrate our desires exactly in the opposite direction.”¹⁰¹ Rather than focusing on ‘content’, depth education focuses on **creating social-pedagogical ‘containers’ that can hold difference, dissonance, discomfort and dissensus in generative ways.** Without these containers Andreotti (2021a) points out that “we are left with superficial and precarious engagements that tend to fall apart when tensions and disagreements surface, especially in the contemporary context of information overload and social fragmentation.”¹⁰²

An example of ‘depth education’

“A pattern evident in discussions in the climate movement is about whether or not the potential, likelihood or inevitability of social and ecological collapse should be brought to the table as a topic of conversation in movements focused on climate change or in education. On one side of the argument there are those who believe that it is irresponsible to talk about the likelihood of social or ecological collapse in any circumstance (Ray 2020). This position is justified by the assumption that without hope in the continuity of the current system, the majority of people will become cynical, irresponsible or mentally ill: they will either give up on supporting struggles for change, or on life altogether, or they will live the remainder of their lives as best they can in hyper-individualistic ways without any concerns about consequences to others or the planet.

On the other side of the argument there are those who believe that collapse is highly likely or inevitable in our lifetime, that it may lead to human extinction, and that it is better to prepare for the world as we know it to fall apart in ways that are more generative and less violent (Whyte 2020). Within this group, although there may be agreement on the likelihood of collapse, or the demise of modernity, there are many propositions of what to do as a response.

Rather than choosing one side of the debate, an approach to GCE based on depth education would map this conversation with students, tracing assumptions and (layered) implications without losing sight of complexity, responsibility or complicity in harm.”¹⁰³

This approach to transformative education can “**develop capacities, dispositions and stamina amongst learners to hold space for difficult and painful engagements without feeling overwhelmed and immobilised** or demanding to be rescued from discomfort.”¹⁰⁴ In the world where global challenges culminate, this can become an important asset to **maintain stamina for work towards transformative change in the long haul**. It can also support development of dispositions that are necessary for difficult conversations about the role of education in preparing us all to “confront the potential for social and ecological collapse in our lifetime,”¹⁰⁵ whether this happens or not. In any case, UNESCO (2021) admits that “even if efforts to put the world on a fully sustainable path were successful, changes to Earth’s ecosystems would still have many ramifications.”¹⁰⁶ A metaphor that Andreotti (2021a:11) offers as an image depicting this approach is “learning to walk a tightrope between naive hope and desperate hopelessness, with honesty, humility, humour and hyper-self-reflexivity.”

As well as developing the dispositions useful for coping with the unpredictability of the future while aiming at transformative change, it is also important to focus on “**learning to face the limits of our individual and collective imaginaries, and to confront the difficulty of imagining otherwise without projecting onto the future and thus reproducing more of the same.**”¹⁰⁷ Stein (2019) refers to “**negative capabilities**” which are conceptualised in relation to positive capabilities (skills, knowledge, competencies). Although both are important, French, Simpson, Harvey (2009) suggest negative capabilities prepare one to “be oriented towards the unknown, towards creative insight of the moment and hence towards ‘the edges’ of their ignorance”.¹⁰⁸

Negative capabilities evoke a sense of humility, acknowledging that “the intellectual work that is needed is not to produce predetermined, universal solutions that will provide guaranteed outcomes, but rather partial, provisional responses that will enable certain possibilities, and foreclose others, even as they will not necessarily “resolve” the overarching challenges we face.”¹⁰⁹

Negative capabilities can prepare learners to

- engage with and learn from unfamiliar cultural paradigms
- situate our own perspective as one of many possible perspectives
- be able to learn at the edges of our own knowledge and of existing systems
- engage generatively with the ‘range of alternative social arrangements just beyond the horizon of the prevailing possible’ (the ‘adjacent possible’)¹¹⁰
- ‘denaturalise’ patterns of social relationships that are premised on hierarchies of human value and unethical engagements with difference¹¹¹
- ask new kinds of questions about the difficulties of collectively addressing local and global challenges

Negative capabilities can also support learners to reduce their desire for uncomplicated outcomes. They also serve to strengthen their engagement with complex forms of social and ecological accountability.

‘Adjacent possibles are the range of alternative social arrangements just beyond the horizon of the prevailing possible’.¹¹² Adjacent possibilities are not always evident despite their relative proximity, but once recognised and engaged with, they can evoke learning which enables us to question the limits of what appears possible in new ways. Such learning can possibly support our capacity to innovate for futures that we cannot yet know or imagine.

3.3. Developing capacities to navigate uncertainty amid rapid changes

This section looks at the types of approach to transformative learning which best respond to increasing vulnerability, uncertainty, complexity and ambiguity related to the world of the future, and realities we cannot yet imagine.

As early as 2011, Bauman identified the educational challenges of our current era, which he described as ‘liquid modernity.’ This may be relevant in assessing future scenarios, because the main way in which ‘liquid modernity’ differs from modernity’s previous iterations is the ‘excess of information’. **We produce more information than humans have the capacity to process and absorb.** According to Bauman, this ‘information flood’, paired with enduring challenges from across the political spectrum to various forms of authority, including knowledge authority, have **disrupted the very possibility of establishing consensus about the common good and the way forward.** It has also led to a fracturing of common sense and attention.¹¹³

While this could have the potential to open up possibilities for a pluralism of knowledges, Stein (2021) observes that what we largely find instead is that “many people are increasingly encased within their own personalised knowledge bubbles, which are even more individualised than collective social echo chambers. Within these knowledge bubbles, people tend to build their own virtual realities around what is convenient and affirming.”¹¹⁴

One of the main characteristics of ‘liquid modernity’ is the fast pace of change. This has major implications for both the educational system and the learning process. Bauman (2011) reflected on the shift from previous eras of modernity to the present using the metaphor of ballistic missiles versus smart missiles. Ballistic missiles determine their path before they start moving, and neither their target nor trajectory can change as they move. “Smart missiles, unlike their ballistic elder cousins, learn as they go. So what they need to be supplied with initially is the ability to learn, and learn fast”.¹¹⁵ However problematic this metaphor may be with its military content, Stein (2021) acknowledges that it hits the nail on the head in terms of highlighting how increasingly difficult it is to predict and plan for the future in ways that we previously did. However, with new technologies appearing on the horizon and rapidly spreading, it is easy to assume that the pace of change will only accelerate. Which means **educators will face the difficulty of predetermining which theories or practices will be most useful at any given moment in time.**



3.3.1. Transformative education for volatile, uncertain, complex and ambiguous times

The current and future situation of the world as it faces numerous overlapping ‘wicked problems’¹¹⁶ can be summarised by the acronym ‘**VUCA**’: **volatile, uncertain, complex and ambiguous**.¹¹⁷ The foresight reports suggest that the increased connectivity of the future will likely shape a world that is both inextricably bound by connectivity and fragmentation in different directions, with societies divided over core visions, values and truths. Forecasted disruptions in the world of work due to technological advancements, particularly around artificial intelligence and automation, are expected to have massive, yet-unknown effects, such as underemployment and precarious employment, leaving the future of the world of work uncertain.¹¹⁸ There is a sense of radical uncertainty about governance and democratic participation. UNESCO (2021) draws our attention to the way demographic shifts will have considerable implications for education, as extended human longevity could mean that in some areas four generations will be co-living in the same space-time in a way not ever seen in history. All these projections are likely to unfold against the backdrop of the environmental and climate crisis.

Stein (2021) points out that the theories of change in critical GCE often consist of (1) a description of the primary problem with our existing social, political, and economic system, followed by (2) a prescription that purports to ‘solve’ that problem. However, she considers

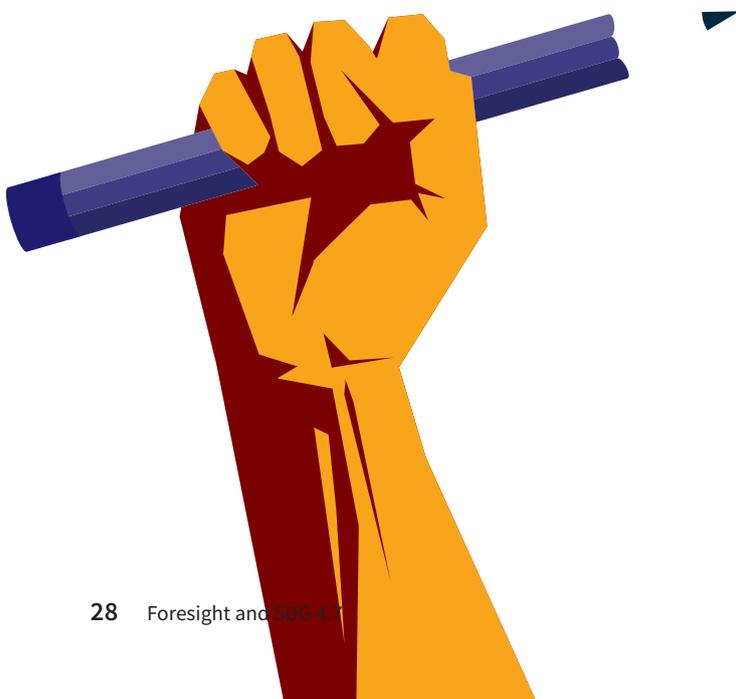
the description–prescription formula as the product of a previous era in which futures were more stable, certain, and straightforward, so it was possible to imagine and plan for them. Given the extent to which times are changing, Stein (2021) questions the extent to which a description–prescription approach to GCE is relevant within a VUCA context.

Drawing on this, she emphasises that we might need to reimagine Global Citizenship Education in ways that are both **strategically responsive** to current systemic crises, and **ethically responsive** to the ongoing colonial conditions that are at the root of these crises. An approach to GCE that she proposes in this context moves **beyond the transmission of static competencies or content**, and instead facilitates the deepening of learners’ capacities for **ongoing self-reflexivity, accountability, and discernment**.¹¹⁹

As an approach to GCE that might be better suited for VUCA times, Stein (2021) proposes that we might prepare learners to:

- confront the increasing volatility, uncertainty, complexity and ambiguity of our current system with more self-reflexivity, accountability, and discernment;
- connect recent changes in this system to ongoing colonial legacies of violence and unsustainability, and implicate themselves as inheritors of those legacies – understanding that we can be both part of the problem, and part of the solution;
- approach the future in ways that do not presume either the continuity of this system, nor its replacement with a prefabricated alternative system, and that understand the simultaneous indispensability and insufficiency of all knowledges in this process.

Stein (2021) suggests a focus on the development of the following skills and capacities for any GCE approach suited to VUCA times. Although she refers to GCE, the principles are applicable to other strands of transformative education:



Developing **critical literacy** is a crucial dimension of transformative education. Yet Stein (2021) suggests that responsiveness to VUCA times may also mean to acknowledge that there will likely be a diversity of descriptions of the problems, and many different prescriptions about how they should be addressed. She suggests not to adjudicate which one is the ‘right’ one, but to “seek to contextualise each of them with due consideration of the tensions between them, and the differential power each holds, in ways that denaturalise the received common sense.”¹²⁰ The intention is to “prepare learners to make their own **critically informed, contextually relevant, socially and ecologically accountable assessments and decisions** as they face the challenges of a constantly and quickly changing world. In other words, the idea is to support students’ ongoing discernment rather than to transmit static content about what to think.”¹²¹

Affective literacy Stein (2021) observes that human behaviours are not just intellectually shaped by what and how one thinks but also affectively shaped by what and how one desires.¹²² As Biesta (2020) notes, this requires staying with the question of ‘whether what I desire ... is what I should be desiring. Whether what I desire is going to help or hinder in living my life well, with others, on a planet that only has a limited capacity for meeting our desires.’¹²³

A GCE for VUCA times would also recognise the need to **develop and deepen capacities for relational rigour** that can be defined as “an approach that interrupts modern/colonial tendencies to treat relationships as utility-maximising transactions between two separate parties, and instead **fosters relationships that recognise our independence with each other and all beings** on a shared, finite, living planet, and that thus seek to foster trust, respect, reciprocity, accountability, and consent.” (Whyte 2020 in Stein 2021: 9).

3.3.2. Learning from “epistemologies of crises”

The Potawatomi scholar Kyle Whyte (2020) puts forward compelling arguments against any single prescription for the future. He suggests the term “epistemologies of crisis”,

which refers to knowing the world in such a way that a certain present is experienced as new, unprecedented and urgent. From a transformative education perspective, there are several insights worth taking into account in light of current urgent calls for fundamental system-wide transformation.

Whyte (2020) observes that “when the sense of urgency suggests that swiftness of action is needed, there either may be moral sacrifices that have to be made or ethics and justice are not elevated to a level of serious attention.”¹²⁴ In this way, **colonisation is typically pitched as being about crisis**. “People who perpetrate colonialism often imagine that their wrongful actions are defensible because they are responding to some crisis. They assume that to respond to a crisis, it is possible to suspend certain concerns about justice and morality.”¹²⁵

In opposition to these problematic dynamics, Whyte offers an “epistemology of coordination”. This interpretation of certain Indigenous intellectual traditions refers to ways of knowing the world that emphasise the importance of moral bonds, kinships and mutual responsibilities for generating the capacity to respond to constant change. This **involves high standards of responsibility, with special attention given to relationships of care, reciprocity, and consent**. Such relationships are conducive to responding to expected and drastic changes without validating harm or violence. Whyte doesn’t offer ‘epistemologies of coordination’ as some sort of solution to the current challenges, but rather as “much needed approaches to knowledge in education, culture, and society. Their practice would go a long way to transform unjust and immoral responses to real or perceived crises.”¹²⁶

As multiple global challenges drive calls for swift, solution-oriented actions in our present and future, epistemologies of coordination can help draw our attention to the problem of how responses to urgency can betray ethics and justice. This teaches us to assess the impacts of actions by their contributions to the quality of relationships among humans and non-humans alike.

Conclusion

The reviewed forecast and trend reports suggest that shared global challenges are likely to manifest themselves more frequently and intensely in all regions of the world in the upcoming decades. Consequently, increasing levels of uncertainty, precarity and fragility may turn the world into a more complex place than ever before. With the foresight of new technologies appearing and swiftly spreading, the pace of change is likely to accelerate, possibly making it increasingly difficult to predict and plan for the future in ways that we previously did. Educators will need to learn to work across differences, with complexities and uncertainties related to the global trends, and consider how to prepare learners to engage with the current context of multiple crises in sensible, creative and responsible ways.

Research suggests that to cope with these multiple challenges, several levels of learning may need to be taken into account.

At one level, if humanity is to learn how to shift current lifestyles towards a sustainable way of life within planetary boundaries, then it is vital to help learners develop the **capacities to be able to relate radically differently to each other and the planet**. Transformative education can support learners to develop the cognitive abilities required to **address the driving forces behind the degradation of life** on our planet, to make the link between current problems and ongoing colonial legacies of violence and unsustainability, and to analyse one's complicity in this context and understand that we can be both part of the problem and part of the solution. Transformative learning can facilitate an **understanding of the fact that we cannot separate humanity from the planet and all other living beings** and that humanity may need to learn how to live in and with the world without occupying its centre.

Another level may be that humanity will have to learn how to cope with the potential difficult consequences of the climate crisis and environmental decline. In this case, developing the **capacities to face new, complex, changing and challenging realities with a deep sense of social and ecological accountability** is essential. Learners will need to develop **abilities, dispositions and stamina to hold space for difficult and painful engagements without feeling overwhelmed** and immobilised. In order to do so, rather than focusing on fixed 'content', it would be helpful to create social-pedagogical 'containers' that can hold difference, dissonance, dissensus, plurality, complexity, uncertainty, ambivalence, paradoxes, tensions and failure in generative ways.¹²⁷ This may support the development of stamina to work for transformative change in the long haul despite the challenging context.

Finally, future increased connectivity may shape a world that is both hyperconnected by technology and fragmented over core visions, values and truths. The future world may be a world of **increasing vulnerability, uncertainty, complexity and ambiguity** where changes happen at an unprecedented pace. In this context, a strategic response may be to **move beyond the transmission of static competencies or content and instead facilitate the deepening of learners' capacities for ongoing self-reflexivity, accountability, and discernment**.¹²⁸

This report is not trying to define a 'single approach' towards the future, but rather supports the call to open our imaginations to a plurality of models of regenerative education that UNESCO describes as **education that heals, repairs, repurposes, and renews**, so as to better be able to address what is present and ahead of us.



Footnotes

- 1 Andreotti (2021)
- 2 Stein (2021)
- 3 ESPAS 2019
- 4 Andreotti et al. 2018
- 5 Preparing for the end of the world as we know it | openDemocracy
- 6 Forum for the Future 2020: p. 4
- 7 UNEP 2021: p. 69
- 8 UNEP 2021: p. 21
- 9 UNEP 2021: p. 14
- 10 UNEP 2021: p.28
- 11 UNEP 2021: p.28
- 12 UNEP 2021: p. 28
- 13 ESPAS 2019: p. 8
- 14 IPCC 2018: p. 6
- 15 UNEP 2020: p. 35
- 16 UNEP 2021: p. 25
- 17 UNEP 2021: p. 14
- 18 NIC 2021: p. 14
- 19 UNEP 2021: p. 28
- 20 Salick & Byg, 2007; Parks & Roberts, 2006 in Indigenous Climate Action 2021
- 21 Whyte 2017: p.16 (emphasis added)
- 22 NIC 2021: p.30
- 23 NIC 2021: p.32
- 24 ESPAS 2019: p.8
- 25 UNEP 2021: p.23
- 26 Forum for the Future 2020: p.9
- 27 ESPAS 2019: p.2
- 28 ESPAS 2019: p.10
- 29 NIC 2021: p.18
- 30 ESPAS 2019: p.12
- 31 UNEP 2021: p.96
- 32 UNEP 2021: p. 14
- 33 UNEP 2021: p.14
- 34 NIC 2021: p.1
- 35 ESPAS 2019: p.3
- 36 SOIF 2021: p.3
- 37 SOIF 2021: p.3
- 38 SOIF 2021: p.3
- 39 Forum for the Future 2020: p.28
- 40 NIC 2021: p.58
- 41 Forum for the Future 2020: p.23
- 42 NIC 2021: p.58
- 43 Vinuesa, Azizpour, Leite et al. 2020
- 44 ESPAS 2019: p.3
- 45 NIC 2021: p.54
- 46 NIC 2021: p.2
- 47 NIC 2021: p.65
- 48 NIC 2021: p.2
- 49 NIC 2021: p.65
- 50 SOIF 2021: p.3
- 51 NIC 2021: p.7
- 52 ESPAS 2019: p.14
- 53 ESPAS 2019: p.14
- 54 ESPAS 2019: p.9
- 55 UNEP 2021: p.58
- 56 UNEP 2021: p.5
- 57 UNEP 2021: p.4
- 58 UNEP 2021: p.15
- 59 UNEP 2021: p.5
- 60 UNEP 2021: p.4
- 61 Stein 2021
- 62 ESPAS 2019: p.2
- 63 UNEP 2021: p.23
- 64 UNEP 2021: p.14
- 65 Kingsnorth and Hine 2009; Ferreira Da Silva 2014 in Andreotti, 2021b: p.2
- 66 Andreotti, 2021b: p.2
- 67 Andreotti 2021b: p.2
- 68 Kopnina, 2016, 2020; Sund and Pashby, 2018; Wals, 2019; Misiaszek, 2020 in Andreotti 2021b
- 69 Otto et al. 2020: p.2361
- 70 UNESCO 2021: p.2
- 71 UNESCO 2021: p.10
- 72 Bridge 47 2019
- 73 Helin 2021
- 74 Helin 2021
- 75 UNESCO 2021: p.3
- 76 UNESCO 2021: p.3
- 77 Andreotti 2021a: p.2
- 78 UNESCO 2021: p.8
- 79 Ahenakew 2016; Davis and Todd 2017; Silva 2014; Wynter 2003 in Stein 2021
- 80 Andreotti 2021b: p.4
- 81 Coulthard 2010: p. 80
- 82 Common Worlds Research Collective, 2020: p.3
- 83 UNESCO 2021: p.3
- 84 UNESCO 2021: p.10
- 85 Andreotti 2012: p.1
- 86 Andreotti, Kerr 2018: p.58
- 87 Andreotti, Kerr 2018: p. 59
- 88 www.footprintnetwork.org
- 89 UNESCO 2021: p.8
- 90 Gardner 2011
- 91 Levinas 1994 in Biesta 2019: p.58
- 92 Biesta 2016: p. 376
- 93 Biesta 2019: p. 53
- 94 Biesta 2019: p.53
- 95 Meirieu 2007: p. 96
- 96 Spivak 2004 in Biesta 2019: p.58
- 97 Biesta 2019: p.58
- 98 Andreotti et al. 2018
- 99 Andreotti 2021b: p.2
- 100 Andreotti 2021a: p.3
- 101 Andreotti 2021a: p.4
- 102 Andreotti 2021a: p.4
- 103 Andreotti 2021a: p.9
- 104 Andreotti 2021a: p.5 (emphasis added)
- 105 Andreotti 2021a: p.1
- 106 UNESCO 2021: p.8
- 107 Stein 2019: p.10
- 108 French, Simpson, Harvey 2009: p.4
- 109 Stein 2019: p.10
- 110 McGowan et al. 2017: p.6
- 111 Ahenakew 2016
- 112 McGowan et al. 2017: p.6
- 113 Stein 2021
- 114 Stein 2021: p.3
- 115 Bauman 2011: p.17 in Stein 2021: p.3
- 116 Van Berkel and Manickam, 2020 in Stein 2021: p. 1
- 117 Bennett and Lemoine 2014; Truant, Corazza, and Scagnelli 2017; Waller et al. 2019 in Stein 2021
- 118 UNESCO 2021: p.9
- 119 Stein 2021: p.4
- 120 Stein 2021: p.8
- 121 Stein 2021: p.8
- 122 Ahmed 2012; Taylor 2013; Zembylas 2018 in Stein 2021
- 123 Biesta 2020 in Stein 2021: p.9
- 124 Whyte 2020: p.5
- 125 Whyte 2020: p. 1
- 126 Whyte 2020: p.2
- 127 Andreotti 2021a
- 128 Stein 2021

References

- Ahenakew, C. 2016. "Grafting Indigenous ways of knowing onto non-Indigenous ways of being: The (underestimated) challenges of a decolonial imagination." *International Review of Qualitative Research*, 9(3), 323-340.
- Ahenakew, C. n.d. "Indigenous Contributions to Cognitive, Affective and Relational Wholistic Wellbeing." [unpublished version – author copy].
- Andreotti, V. 2021a. "Depth education and the possibility of GCE otherwise." *Globalisation, Societies and Education*. Available at: <https://doi.org/10.1080/14767724.2021.1904214>
- Andreotti, V. 2021b. "The task of education as we confront the potential for social and ecological collapse." *Ethics and Education*. Available at: <https://doi.org/10.1080/17449642.2021.1896632>
- Andreotti, V., Stein, S., Sutherland, A., Pashby, K., Susa, R., & Amsler, S. 2018. "Mobilising different conversations about global justice in education: Toward alternative futures in uncertain times." *Policy & Practice: A Development Education Review* 26: 9–41.
- Andreotti, V.; Kerr, J. 2018. "Recognizing More-Than-Human Relations in Social Justice Research." *Teacher Education A Journal of the California Council on Teacher Education*. Volume 27, Number 2
- Andreotti, V. 2012. "HEADS UP." In *Critical Literacy: Theories and Practices* 6:1.
- Biesta, G. 2020. "Trying to be at Home in the World: New Parameters for Art Education." Artlink. www.artlink.com.au/articles/4781/trying-to-be-at-home-in-the-world-new-parameters-f/.
- Biesta, G. 2019. "What is the Educational Task? Arousing the Desire for Wanting to Exist in the World in a Grown-up Way." *Pedagogía y Saberes* 50. 51–61.
- Biesta, G. 2016. "The Rediscovery of Teaching: On robot vacuum cleaners, non-egological education and the limits of the hermeneutical world view." *Educational Philosophy and Theory* 48(4), 374– 392. <https://doi.org/10.1080/00131857.2015.1041442>
- Bridge47. 2019. *Envision 4.7 Policy Paper: Transformative Education*.
- Common Worlds Research Collective. 2020. "Learning to Become with the World: Education for Future Survival, UNESCO Background Paper for the Futures of Education Initiative." Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000374032>
- Coulthard, G. 2010. "Place Against Empire: Understanding Indigenous Anti-Colonialism." *Affinities: A Journal of Radical Theory, Culture, and Action*. Volume 4, Number 2, Fall 2010, pp. 79-83.
- European Strategy and Policy Analysis System (2019). *Global trends to 2030. Challenges and choices for Europe*. Available here: <https://ec.europa.eu/assets/epsc/pages/espas/index.html>

French, R., Simpson, P., & Harvey, C. 2009. "Negative capability": A contribution to the understanding of creative leadership." *Psychoanalytic studies of organizations: Contributions from the International Society for the Psychoanalytic Study of Organizations* (pp. 197-216.)

Forum for the Future (2020). *From system shock to system change – time to transform the future of sustainability*. Available here: <https://www.thefuturescentre.org/fos/>

Gardner, H. 2011. *Frames of Mind: The Theory of Multiple Intelligences*. Basic Books, New York.

Gesturing Towards Decolonial Futures Collective. 2020.

"Preparing for the end of the world as we know it".

Available at: <https://www.opendemocracy.net/en/oureconomy/preparing-end-world-we-know-it/>

Indigenous Climate Action (2021). *Decolonizing Climate Policy in Canada: Phase 1 Report*.

Hellin, J. 2021. "Competencies forSDG Target 4.7." Bridge47.

IPCC. 2018. *Summary for Policymakers*. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. World Meteorological Organization, Geneva, Switzerland.

Levinas, E. 1994. *Outside the subject*. Stanford, CA: Stanford University Press.

McGowan, K., Westley, F., & Tjörnbo, O. (2017). "The history of social innovation." In F. Westley & K. McGowan (Eds.), *The evolution of social innovation: Building resilience through transitions* (pp. 1-17). Cheltenham, UK: Edward Elgar.

Meirieu, P. 2007. *Pedagogie: Le devoir de ré sister* [Education: The duty to resist]. Issy-les Moulineaux: ESF edite

National Intelligence Council. 2021. *Global trends 2040. A more contested world*.

Available here: https://www.dni.gov/files/ODNI/documents/assessments/GlobalTrends_2040.pdf

Otto, I.; Donges, J.; Cremades, R.; Bhowmik, A.; Hewitt, R.; Lucht, W.; Rockström, J.; Allerberger, F.; McCaffrey, M.; Doe, S.; Lenferna, A.; Morán, N.; Vuuren, D.; Schellnhuber, H. 2020. "Social tipping dynamics for stabilizing Earth's climate by 2050." *Proceedings of the National Academy of Sciences*. 117. 201900577. 10.1073/pnas.1900577117.

School of International Futures. 2021. *The long pandemic: after the COVID-19 crisis*.

Available here: <https://soif.org.uk/app/uploads/2021/02/SOIF-The-Long-Pandemic.pdf>

Stein, S. 2021. "Reimagining global citizenship education for a volatile, uncertain, complex, and ambiguous (VUCA) world." *Globalisation, Societies and Education*.

Available at: <https://doi.org/10.1080/14767724.2021.1904212>

- Stein, S., V. Andreotti, R. Suša, C. Ahenakew, and Čajková, T. 2020a. “From “Education for Sustainable Development” to “Education for the End of the World as We Know It”” *Educational Philosophy and Theory* 1–14. doi:10.1080/00131857.2020.1835646.
- Stein, S., V. Andreotti, R. Suša, S. Amsler, D. Hunt, C. Ahenakew, E. Jimmy, et al. 2020b. “Gesturing Towards Decolonial Futures: Lessons Learned Thus Far.” *Nordic Journal of Comparative and International Education* (NJCIE) 4 (1): 43–65.
- Stein, S. 2019. “The Ethical and Ecological Limits of Sustainability: A Decolonial Approach to Climate Change in Higher Education.” *Australian Journal of Environmental Education* 35 (3): 198–212. Available at: <https://doi.org/10.1017/aee.2019.17>
- United Nations Environment Programme. 2021. *Making Peace with Nature. A scientific blueprint to tackle the climate, biodiversity and pollution emergencies.* Available here: <https://www.unep.org/resources/making-peace-nature>
- United Nations Environment Programme. 2020. *Emissions Gap Report 2020.* Nairobi.
- UNESCO. 2020. *Visioning and Framing the Futures of Education.* February 2020.
- UNESCO. 2021. *International Commission on the Futures of Education Progress Report.* March 2021.
- UNESCO. 2021. “Berlin Declaration on Education for Sustainable Development.”
- Vinuesa, R., Azizpour, H., Leite, I. et al. 2020. “The role of artificial intelligence in achieving the Sustainable Development Goals.” *Nat Commun* 11, 233. <https://doi.org/10.1038/s41467-019-14108-y>
- Westley, F. 2017. “Recognizing transformative potential.” In F. Westley & K. McGowan (Eds.), *The evolution of social innovation: Building resilience through transitions* (pp. 1-17). Oxford: Edward Elgar.
- Whyte, K. 2020. “Against Crisis Epistemology.” In *Handbook of Critical Indigenous Studies*, edited by B. Hokowhitu, A. Moreton-Robinson, L. Tuhiwai-Smith, S. Larkin, and C. Andersen. Routledge.
- Whyte, K. 2017. “Is It Colonial Deja Vu? Indigenous Peoples and Climate Injustice.” *Humanities for the Environment: Integrating Knowledges, Forging New Constellations of Practice.* Edited by J. Adamson, M. Davis, and H. Huang, pgs. 88-104. Earthscan Publications.



This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of the 14 project partners and can in no way be taken to reflect the views of the European Union.

