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## **Eco-Anxiety: Impact on Generation Z's Mental Health and the Contemporary Significance of Environmental Awareness and Education**

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## **Abstract**

*The escalating impacts of climate change and global warming are jeopardizing humanity's future on earth. Lack of action against the matter has proliferated the occurrence as well as the intensity of natural calamities. Moreover, several species around the world are undergoing a decline in their population, suggesting that the 6th mass extinction is well underway. Owing to such devastating repercussions of climate change and the persistent human interference with nature, environmental concerns are now affecting the mental health of most human beings. "Eco-anxiety", the persistent worry about the future of earth due to the ongoing climate crisis, global warming, and environmental degradation, is very much prevalent today. This paper dives deep into the matter by predominantly focussing on the impact of climate change on Generation Z's mental health, as they are the upcoming leaders who will be running the world in the near future. Through shedding light on past events that have brought about the current status quo, the paper discusses a brief timeline of climate change and environmental degradation. The latter part of the paper particularly focuses on how the youth is coping with environmental degradation and climate anxiety, and what significance can environmental awareness and education have on guaranteeing them a safe future have then been analysed. After meticulous evaluation, the authors discuss potential solutions that can help relieve the burden youth feel to take care of our precious environment. The subject matter aims to comply with three of the 17 Sustainable Development Goals (SDGs) put forth by the United Nations, namely: SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 13 (Climate Action).*

**Keywords:** *eco-anxiety, climate change, generation Z (gen z/zoomers), mental health, environmental education, awareness*

## **1.0 Introduction**

Due to the persistent inclination towards economic development and capitalistic growth, anthropogenic activities have catalysed the loss of our natural world. For decades, the strategic approach to accomplish developmental agendas have gone beyond planetary constraints,

triggering a change in climate and the ultimate rise in natural calamities.

Going back in time, from 2000-2019, the average number of annual natural disasters were recorded to be 185 (Pandey, 2020). It is alarming that about 416 disasters took place in 2020 alone, more than double the average of the last 20 years (Statista, 2021). In the last two decades, the rate of disasters has nearly doubled, recording about 7,348 calamities, compared to 4,212 between 1980-1999 (CRED, 2020). Some extreme weather events that took place in 2021 were the forest fires in Greece, Turkey, California, Australia, India, Siberia, etc.; floods across India, China, Germany, Netherlands, the US, Oman, Belgium, France, etc.; heatwaves in Canada and North America; tropical cyclones in the Indian Ocean; droughts in parts of the US, Brazil, Mexico, Madagascar, etc.; rainfall on Greenland's highest peak, all added to the misery in people's lives while Covid-19 very much looms around.

Climate change is wreaking havoc in almost every nook and corner of our planet. Unfortunately, countries least responsible are also facing the consequences of global warming. With experts waving red flags and a lack of immediate action by world leaders, concerns for mankind's future on earth are rising. Through the course of the past few years, people, especially those belonging to Generation Z/ gen Z- the demographic cohort succeeding millennials, born between mid-to-late 1990s and early 2010s- have become increasingly aware of the accelerating environmental degradation and its consequent effects on climate change. This awareness has palpably contributed to a change in people's methods of interacting with the environment but has also led to them being overwhelmed and fearful about the future of the planet considering the exacerbating climatic conditions. More often than not, it has been observed that an acute sense of helplessness also emerges from such a feeling which makes people see themselves as just one insignificant entity on the planet unable to overcome the crisis. According to medical professionals, feeling powerless in the face of impending doom raises stress levels and induces anxiety. In 2017, the American Psychological Association referred to this condition as eco-anxiety (Basu, 2019).

Lancet Planetary Health recently published a study that found that 56% of 10,000 young people (aged 16-25) interviewed across 10 countries have agreed with the statement "humanity is doomed" (Galer, 2021), which shows the tragedy of the crisis' impact on Generation Z. If seen from the standpoint of Generation Z, this age group is practically living and growing up in the era of climate change. What they are witnessing in the present times are clear indications of an approaching environmental catastrophe.

From a rational point of view, the ecological damage that has been done thus far, which is fuelling extreme weather events, will take a considerable period and effort to restore. The UN has declared the current decade as the "Decade on Ecosystem Restoration", calling for all hands on deck to together rebuild a sustainable and ecologically sound world. While awareness is a crucial aspect to make this declaration a reality, environmental education will also play a significant role.

## **2.0 The Trajectory of Global Warming and Environmental Degradation**

In 2015, when the landmark Paris Climate Agreement was formulated, 196 countries pledged to limit the global temperature rise well below 2 degree Celsius, preferably 1.5 degrees Celsius. If the temperature rise surpasses the two degrees threshold, more deadly heatwaves, storms, droughts, and sea-level rise are expected to escalate (Brown, 2019).

Presently, according to the National Oceanic and Atmospheric Administration, the average global temperature from January 2021 to August 2021 was recorded to be 0.82 degrees Celsius above the 20th-century average (NCEI, 2021). With only 0.82 degrees Celsius rise, the world witnessed devastating floods in parts of India, Oman, Netherlands, the US, Belgium, China, France, Germany, etc; deadly heat waves in Canada and North America; first time in recorded history, rainfall on the highest peak in Greenland, ravaging forest fires in Turkey, Greece, Canada, California, India, Siberia, etc; severe droughts in parts of the US, Brazil, Mexico, Madagascar; July 2021 was officially the hottest month recorded on earth; etc, all in the first 8 months of 2021. One can only imagine what would be the state of the planet when temperatures go beyond 2 degrees Celsius.

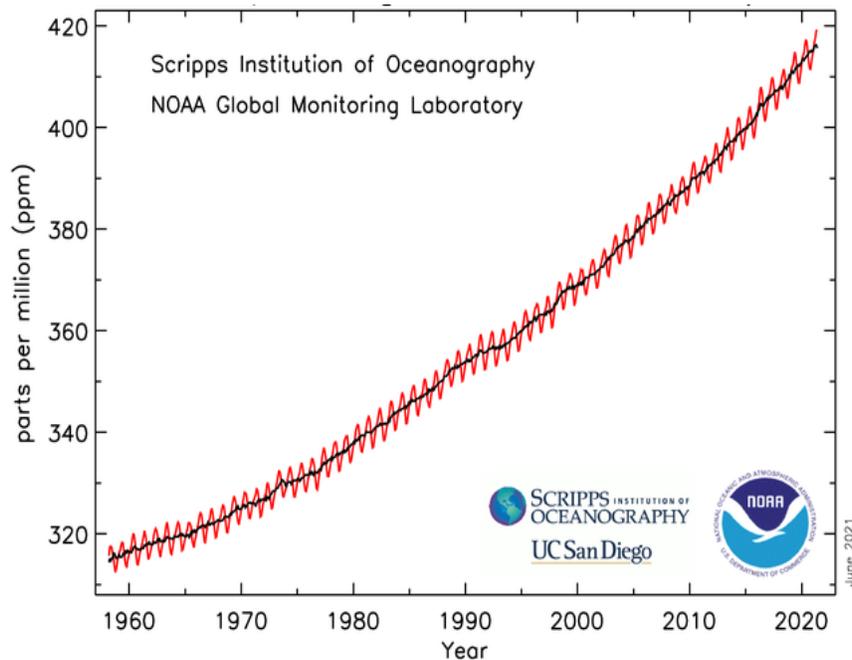
## **2.1 How did We Get Here?**

In the 1800s, the human population was estimated to be nearly 1 billion (Mittal, 2013). The agricultural revolution was thriving while the industrial revolution gradually gained momentum. As anthropogenic activities increasingly cascaded, several scientists began experiments and studies to prove that human activities can affect the planet's climate.

One of the significant studies of the time was one done by a Swedish chemist, Svante Arrhenius in 1895. He studied how decreasing and increasing the levels of carbon dioxide in the atmosphere can fluctuate global temperatures. His calculations showed that if CO<sub>2</sub> levels were halved, global temperatures could decrease by about 5 degrees Celsius, and vice versa, hinting at how global warming can potentially take place (Rodhe et al., 1997). However, the results did not garner much futuristic concern (History of the Greenhouse Effect and Global Warming, n.d.).

Around the 1930s, the population grew to 2 billion, and carbon emissions, due to extensive burning of fossil fuels, reached about 1 billion tonnes per year (BBC News, 2013). As a result of this increase in atmospheric carbon, it was a British engineer, Guy Stewart Callendar, who compiled temperature measurements from the late 19th century and showed that for the preceding 50 years, global land temperatures had risen, thus addressing global warming. Yet again, scepticism continued to prevail in the scientific community (*How We Discovered the Climate Problem*, 2019). 20 years later, came Charles David Keeling, a geochemist in 1958, who set out to measure CO<sub>2</sub> concentrations in the atmosphere, which went on to prove the rising concentrations of atmospheric carbon dioxide, as well as the resulting warming (American Chemical Society, n.d.). With the Scripps Institution of Oceanography, Keeling began his daily CO<sub>2</sub> measurements in the clear air atop the Mauna Loa Volcano in Hawaii, extrapolating the infamous zig-zag progression - *the Keeling Curve*. The very first reading of the measurements showed the concentration of carbon dioxide to be 313 ppm (parts per million). [*Today, as of May 2021, the CO<sub>2</sub> concentration is 419 ppm, the highest level since accurate measurements began 63 years ago (Stein, 2021)*] ((Mulvaney, 2020).

Figure 1.0 Atmospheric CO<sub>2</sub> monitored at Mauna Loa Observatory



Source: NOAA Global Monitoring Laboratory, 2021

*Note: This graph displays the dramatic rise of carbon dioxide in the atmosphere as measured by NOAA at the Mauna Loa Atmospheric Baseline Observatory and the Scripps Institution of Oceanography. The Keeling Curve refers to the annual variation ( NOAA Global Monitoring Laboratory, 2021).*

Later, with the advent of computer modelling, more refined and prominent calculations became possible, with most of the climate modelling predicting a fairly accurate relationship between increasing atmospheric greenhouse gases and rising global temperatures (Roberts, 2019). By the late 1970s, global temperatures had begun to rise, but it wasn't until 1988 that global warming finally began to gather some much-needed attention. At that point in time, the summer of 1988 was recorded to be the hottest one ever (Weart, 2012). During this period, the human population had reached 5 billion, with carbon emissions, from fossil fuel burning and industry, reaching six billion tonnes per year (BBC News, 2013).

In June 1988, witnessing the hottest summer, NASA scientist - Dr James Hansen presented graphic models before the US Congress and testified saying he and his team were 99 per cent sure that global warming was upon us (Hansen, n.d.). In the following year, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to study and collate the scientific reasoning behind climate change, as well as highlight the subsequent social, political, and economic impacts. The IPCC has been providing its assessment reports ever since. The IPCC's first assessment report in 1990 shed light on the fact that the global temperatures had risen by 0.3-0.4 degrees Celsius over the last century. They concluded by saying anthropogenic emissions are adding to the atmosphere's natural complement of greenhouse gases, and that the addition would be expected to result in warming (BBC News, 2013). With global warming finally on the map, a number of experts took it upon themselves to study the consequences of climate change. And almost every prophecy made involved extreme heat waves, droughts, powerful cyclones and hurricanes, sea-level rise, melting of ice caps, and more (Weart, 2012). The outcome of a warming climate was certainly not fruitful for the future of humanity.

Every IPCC report since has continued to claim that humans are profoundly responsible for global warming since the 1950s (BBC News, 2013). This brings us to their sixth and latest assessment report, 'Climate Change 2021: The Physical Science Basis', released in August 2021, which, according to the UN's Secretary-General - António Guterres is a 'Code Red' for humanity (United Nations, 2021). To date, nearly 75% of earth's ice-free land has been altered by humans. There has been a 68% decline in the monitored population of mammals, birds, amphibians, reptiles, and fish between 1970 to 2016. Globally, nearly two-thirds of wildlife has disappeared (WWF International, 2020). Humans are overusing 56% of the earth's biocapacity, the ecosystem's capacity to produce biological materials used by people and to absorb waste materials generated by humans (Glossary, 2020). In the last 50 years, there has been a paradigm shift in the human lifestyle due to rapid urbanisation, a change in consumption patterns, overpopulation, global trade, all of which have come at a huge cost to nature and the stability of the earth's operating systems (WWF International, 2020). The IPCC's latest report, '*Climate*

*Change 2021: The Physical Science Basis* by Working Group I warns that if business continues as usual, with no immediate and large-scale reductions in greenhouse gas emissions, limiting warming close to 1.5 or even 2 degrees Celsius will be beyond reach. Since 1850-1900, human activities are responsible for nearly 1.1 degrees Celsius of warming. Considering this, it is likely that in the next 20 years, global temperatures can exceed the 1.5 degrees threshold, intensifying natural hazards and their consequences (IPCC, 2021).

As per the *WMO Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970 – 2019)*, weather, climate, and water hazards accounted for 50% of all disasters, 45% of all reported deaths, and 74% of all economic losses from 1970 to 2019 (World Meteorological Organization, 2021). Hitherto, almost every scientific report discussing global warming or climate change has been persistently ringing alarm bells for humanity to get its act together and rise to the occasion. Evidently, efforts have fallen short, the consequences of which are lucid, as natural disasters are increasingly wreaking havoc each year in every part of the world.

### **3.0 The Deteriorating Environment and its Impact on Generation Z's Mental Health**

In June 2021, Deloitte, one of the world's leading consulting firms, released its annual *Global 2021 Millennial and Gen-Z Survey*, providing the international community insights into the most pressing concerns of millennials and Generation Z. The survey stated how climate change/protecting the environment was the number one concern for Gen Z (Jahns, 2021). In another recent study, academics and professionals at the University of Bath, Stanford Medicine Centre for Innovation in Global Health, Oxford Health NHS Foundation Trust, and others surveyed 10,000 young people from across 10 countries to study their fears about the climate crisis. Published in the *Lancet Planetary Health*, the study found out that climate-related anxiety (eco-anxiety) and distress is affecting 45% of the participants, with 56% believing humanity is doomed! (Galer, 2021). Similarly, in a research article published by Pew Research Centre in June 2021, the findings revealed that about 69% of Gen Z social media users said that it made them

feel anxious about the future the last time they saw content on social media that addressed climate change (Thigpen & Tyson, 2021). The results of such surveys are evidence enough that Gen Z is carefully looking at the bigger picture and is acquainted with the urgency for action. Not only that, but they are also conscious of the role that they play in environmental activism and now stand at the forefront of climate action.

Considering how alert Gen Z has become in contemporary times, their indulgence in climate action and environmental protection has taken a toll on them - most grievously on their mental health - thus making eco-anxiety a widespread issue. Before getting onto the nuances of eco-anxiety as a concept, it is imperative to note that even in the present time, mental health is not kept on the same pedestal as physical health. This simply means that the mitigation of the diverse effects of eco-anxiety is an even more complex task because it directly adds to the already present mental health challenges.

### **3.1 Eco-Anxiety: Symptoms and Manifestations**

Currently, eco-anxiety is not listed as a mental health disorder under the Diagnostic and Statistical Manual of Mental Disorders (DSM) because its diagnostic criteria are still unclear. (Huizen, 2019). However, with the surge in the number of people who experience it, other related terms have also come up, such as, "*climate change distress*," "*eco-trauma*," "*eco-angst*," and "*ecological grief*," to name a few, which particularly acknowledge that this concern often involves symptoms beyond those of anxiety alone. The demoralising feeling of powerlessness is just one way in which eco-anxiety comes up to the surface. Other potential symptoms include:

1. Anger or frustration at those who ignore climate change, with governments that refuse to take necessary measures, or elder generations for not doing more to address climate change
2. A fatalistic way of thinking
3. Shame or guilt related to one's personal carbon footprint

4. A post-traumatic stress disorder after experiencing the consequences of climate change
5. Anxiety, depression, or panic
6. Grief or sadness on realizing that natural environments and wildlife populations are being rapidly lost
7. Obsessive thinking about climate change

These feelings can contribute to secondary issues like sleep problems, appetite changes, difficulty in concentrating, the tension in relationships, especially where views regarding climate change do not match, and the feelings might also become so overwhelming that one could throw themselves into distractions to avoid those fears (Raypole, 2020). Taking into account how meme culture is so deeply ingrained in the lives of this demographic cohort, it cannot be overlooked how Gen Z in the midst of the pandemic took the internet by storm as they used a facade of memes to mask their despair about the planet's bleak future, with the most common assertion being "Why Should I Study For a Future I Won't Have?" as a response to stress, Gen Z practically resorted to dark humour as a coping mechanism.

People from Generation Z have also often stated that the climate crisis could have been avoided if some considerable action had been taken earlier. One can absolutely not deny the frustration that the inaction produces and the despair that it brings along affects them drastically. In a Youtube video posted by BuzzFeedOz in April 2020 on climate change, Dani, a teen activist mentioned how they are witnessing real-life events, inducing fear which is real in every sense (Scott, 2020). The impact, thus, visibly enough, has been undeniably severe.

Approaching the conclusion of this subsection, it is crucial to note how experts and professionals have time and again reiterated that eco-anxiety serves as a survival incentive, a distinct emotional response that drives humanity to seek solutions to climate change. An opinion piece published in The Pitt News in October 2020 was titled "*Gen Z's Eco-Anxiety is Our Best Chance at Reversing Climate Change*". However true it might be, capitalising on the distress of Gen Z is not the most viable way out of such a grave situation. Although governments,

corporations and businesses are now pledging to make things right, there is no significant progress, yet, that assures a safe and sound future. As a result, futuristic concerns among citizens, especially those belonging to Generation Z, are on the rise, gradually crippling many with fear. The global community, therefore, requires something more substantial and extensive to remedy the environmental damage or at least prevent its further escalation, because, it is true that lack of appropriate action only adds to the preexisting whammy, and each year of inaction only brings us closer to entirely irreversible situations.

#### **4.0 Significance of Environmental Education and Awareness**

Having environmental knowledge builds a strong foundation, allowing one to be conscious enough to make choices that will not come at the cost of the planet. Educating ourselves to explore the ecosystem we live in, helps us be mindful of the resources we consume. This makes it possible to understand the root cause of an environmental problem, as well as in coming up with a solution. Comprehensive environmental awareness at a young age potentially instils a reverential attitude towards nature and the environment. Making them understand the importance of a well-functioning ecosystem, of how man is a part of nature and not apart from it, the role of rich biodiversity, why conservation is the key, or the consequences when there is an imbalance in the natural systems, etc., enhances environmental literacy, inculcating critical thinking and decision-making skills.

In present times, as the world is grappling with the consequences of global warming and climate change, every nation is in dire need of mass environmental awareness, especially in countries such as Mozambique, Zimbabwe, Bahamas, Japan, Malawi, Afghanistan, and India, because they are the ones most vulnerable to climate change as per the Global Climate Risk Index 2021 (Eckstein et al., 2021).

Over the years, however, increasing environmental concerns and awareness has gradually started to show positive results. According to a report published in May 2021 by the Economist Intelligence Unit (EIU), commissioned by the World Wildlife Fund (WWF), spanning over 54

countries (80% of the world population), with 2016 as the base, Google searches for sustainable goods & services, and terms related to nature loss and biodiversity increased by 71% and 16%, respectively (WWF International, 2021). Twitter saw a 65% rise in the number of posts related to nature loss and biodiversity. Campaigns related to biodiversity collected more than 150 million signatures. As of 2019, 127 countries have passed legislation restricting the use of single-use plastics. In 2020, implementing sustainability measures was one of the top priorities of 60% of fashion brands in North America and Europe (WWF International, 2021). This report goes on to prove that with awareness in place, the sheer possibility of a sustainable change can become a reality one day. Environmental education can ease the process of transitioning to a sustainable future. Being environmentally literate makes one realize that environment and development are interdependent, allowing decision-makers to draft environmentally sound policies, while also benefiting the social and economic contexts.

In addition, being environmentally conscious leaves no room for policymakers to deceive and greenwash, since citizens can potentially see through the lies, raise concerns, ask questions, demand clarification, determine the real competence of their leaders and can also call them out. The last thing any governing leader would want is to see its supporters lose confidence in them. How humanity prioritizes and deals with climate change in the next few years will determine the fate of its future. Building a climate-resilient and sustainable world calls for behavioural changes from all sectors of society. Implementing environmental knowledge beyond semester exams will contribute to safeguarding the future of today's as well as the youth of the next generation.

## **5.0 Recommendations**

By now it has been understood that climate change is a global crisis, and environmental degradation contributes significantly to its aggravation. The impact that it has on Generation Z is intense, and the foreseeable repercussions of not catering to the issue at the earliest are in multitudes. Seeing how the crisis manifests itself in a variety of ways, fishing out an array of solutions becomes a prerequisite.

### **5.1 Environmental Advocacy and Education**

Lately, planetary concerns have been convincing an increasing number of people to tweak their lifestyle choices. However, it is not only about taking cognisance of sustainable practices and ethical consumption methods on an individual level but also about propagating and implementing those on a macro level. India and China, the top two populated countries in the world, have a window of opportunity to become the trendsetters of sustainability. If the governments in both countries play their cards right, the rest of the world can look up to them as the champions of sustainability and follow suit. These countries can use their population as assets to bring about a massive eco revolution, assuring the fearful youth all around the globe that humanity is not all doomed. At the moment, the youth population (18-29 years) in India is nearly 261 million (Bang, 2021). This is more than the entire population of almost all countries in the world except for China, the US, and Indonesia (*Total Population by Country 2021*, 2021). This gives India an advantage for harnessing the capability of this demographic dividend to not only fuel the nation's economy but also push for sustainable development. Considering how Gen Z is so inclined towards social responsibility and environmental impact, countries that are largely populated by this demographic cohort must involve and tap into the potential of their youth to solve the climate crisis, but not to the extent that it leaves the younger generation feeling it is entirely their job to do so. Populous countries must leverage environmental awareness to their benefit and lead the rest of the world by example.

Gaining knowledge about any subject helps one in comprehending its nuances. Our environment is one valuable possession and knowing the state it is in provides the much-needed push for action. Thus, environmental education and literacy should be considered of utmost importance, especially in contemporary times when the environmental conditions are only worsening. On the academic front, a well-curated curriculum that is relevant to the environmental status quo, their locale, and one that caters to every age group, especially the young, is the need of the hour. The curriculum should not necessarily be limited to educational institutions but should also be made available on government and other public websites with proper course content for easy access.

## **5.2 Mental Healthcare for Gen Z**

Affordable access to mental healthcare is one of the most workable and rather crucial remedies to eco-anxiety. Therapy and the institution of support groups can definitely go a long way in providing much-needed assistance to zoomers to cope with the prevailing situations and look towards the future with some optimism. Support groups not only provide the necessary sense of support but also the much-required cohesiveness, and space for cooperation between members who are dealing with a particular crisis/challenge.

The coming together of environmental and clinical psychologists to help people manage their triggers can prove to be highly beneficial. Educators should undergo training on how to impart age-appropriate climate change knowledge, respond to students' mental and emotional reactions to the curriculum, and support healthy mental health coping strategies. Lastly, the integration of young people's voices, needs and priorities, particularly generation Z's, should be given adequate attention when authorities work on the formulation of mental health policies and climate action programs (Aylward et al., 2021)

## **5.3 Collective Support from other Stakeholders, i.e., all Inhabitants of Planet Earth**

The entire international community needs to acknowledge the fact that the onus for climate action does not only fall upon Gen Z. This pressure needs to be taken away from them because the issue is widespread and not limited to a particular age group. Environmental degradation is equally detrimental for everyone, and does not just jeopardise the future of Gen Z and millennials, but puts the future of the entire planet at stake. World leaders, governments, philanthropists, and every industry/business/corporation that plays even a trivial part in resource depletion and/or environmental deterioration, must work towards its protection. Every individual inhabitant is a stakeholder and it is the collective effort that counts. The more we delay acting against climate change, the more burden we put on the shoulders of the youth and the upcoming generation to correct the mistakes of the past, which is utterly unfair.

## **6.0 Conclusion**

It is unequivocal that mitigating the climate crisis is going to take a significant portion of humanity's time. And in doing so, moments of climate despair and exasperation are bound to arise, two conditions sufficient enough to shoot up anxiety levels. The extent of environmental damage done thus far is colossal. As a result, measures to control and mitigate the imminent catastrophe ought to be an international priority. Using environmental education to start conversations and educate others, or to design tangible solutions to mitigate climate change's impact, makes a substantial difference. People in power spearheading sustainability by leveraging environmental knowledge can potentially help the fearful youth, who are uncertain about their future, to relax and keep eco-anxiety at bay. One should take special cognisance of the fact that the youth of today are the stakeholders of tomorrow. Inaction, incompetence, ignorance, and negligence shown by the leaders of yesterday as well as today have only added to the burden on the next generation of leaders. Thus, environmental literacy is indispensable now more than ever to make sure the progress made thus far continues with more learned and competent leaders in the future. Needless to say, the power that we as people of the world hold, if used judiciously, can lead us towards the greater, collective good. The main aim is to transition ourselves from a cohort of people that are residing in the era of climate despair to a responsible cohort that would bequeath the future generations with hope for the planet's ecological and climatic conditions.

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