

CLIMATE CHANGE AND CLIMATE LITERACY IN INDIA — SOME KEY ASPECTS FOR CONSIDERATION IN THE CURRICULUM

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Climate change is such a threat to human existence that world leaders meet and negotiate to take appropriate measures to address it. Although the Government of India is committed to tackling it, the issue has not caught the attention of its people, and hence it is not a part of daily discourses, not even in educational institutions. A closer look at the existing curriculum reveals that the emphasis given to climate change is inadequate, and climate change is yet to be streamlined in the curriculum. The article provides a perspective on how to incorporate climate change education and the possible challenges to be overcome to bring about climate literacy.

Keywords: Climate change education, Climate literacy, Curriculum, Threat-multiplier

Introduction

So much is said about climate change, so much so that global meetings are organised, forums are created, platforms are provided for world leaders to talk and negotiate climate change. Such is the importance and urgency to take on the 'Armageddon' of the day, or so it seems. However, the pace and reluctance with which we are moving is reason enough to be suspicious if we are even serious about climate change and honestly try to address it. We seem to believe theoretically, but practically, we are no different from those who outrightly deny human-caused climate change. If we were so convinced of its urgency to tackle, countries would not be 'negotiating' so much, unlike what we see today. Every human soul on earth would be 'dousing the fire' (mitigating) or preparing to protect oneself from it (adapting)! One wonders what could be the possible reasons for rejection and also for such passivity or

inaction. Is it sheer ignorance? Is there vested interest economically? Are not the evidence enough? Did scientists fail to communicate the message well? Have we failed to nurture climate-literate students and citizens? With this backdrop, the article discusses the strategies that have been adopted to tackle climate change globally with special reference to India. It will primarily focus on how and what aspects of climate change need to be incorporated into the curriculum in schools and colleges and the challenges in this endeavour. Some suggestions on incorporating climate change in the school curriculum have also been provided in brief.

Overview of Global Initiatives on Climate Change

It might surprise many of us to know that one of the earliest warnings about global warming can be traced back to 1912 in *Popular Mechanics Magazine*, March 1912 issue, which shows a photograph of a coal plant with the caption, "The furnaces of the world are now

burning about 2,000,000,000 tons of coal a year. When this is burned, united with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This makes the air a more effective blanket for the earth and raises its temperature. The effect may be considerable in a few centuries” (Molena, 1912, p.341).

Today, climate change is undoubtedly the most significant threat facing the world, a threat so frightening that borrowing from what Al Gore used in his keynote address at the 2018 Nobel Peace Prize Forum on “How to Solve the Climate Crisis?”, we need “all hands on deck” if we are to tackle this daunting challenge facing us. Recognizing this, the United Nations set up the Intergovernmental Panel on Climate Change (IPCC) in 1988, and subsequently, the United Nations Framework Convention on Climate Change (UNFCCC), an international intergovernmental treaty, was adopted in 1992. Since then, there have been rounds of meetings of the Conference of Parties (CoPs) under the Framework. At the same time, there has been significant progress in terms of research on climate change. The famous ‘hockey stick’ graph that is referred to in the context of climate change was first published in 1999 by Michael Mann and colleagues (Mann, et al., 1999) as an extension of their 1998 paper in 1998 in *Nature* (Mann, et al., 1998). This graph found a place in the 2001 report of the IPCC. Today, climate change is being heavily researched and needfully so. We have more than sufficient data to warn ourselves about the terrifying impacts of climate change. No doubt, significant developments have taken place at the CoPs. For example, the Kyoto Protocol was adopted in 1997 at the CoP-3 meeting held in Kyoto, Japan, in December

1997, wherein it was decided that countries party to the Protocol would implement policies in “achieving its quantified emission limitation and reduction commitments” (UN, 1998). The central aim of the Paris Agreement is: “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels...” (UN, 2015).

However, as countries such as the United States announced to pull out of the Paris Agreement while other countries were working on their Intended Nationally Determined Contributions (INDCs), a ‘tsunami’ rocked the world when the IPCC in October 2018 came out with an emergency report titled ‘Global Warming of 1.5°C’. The report stressed the disastrous consequences of what a 2°C increase would do compared to a 1.5°C increase in global average temperature from the pre-industrial time. For example, the report mentioned that limiting global warming to 1.5°C is projected to lower global mean sea level rise; reduce impacts on biodiversity and ecosystems; including species loss and extinction; reduce increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels; reduce climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth, etc. (IPCC, 2018). Soon after this report came out, there was a meeting of the CoP-24 at Katowice, Poland, in December 2018. The outcome was more about agreeing to put the Paris Agreement into practice inviting Parties to make use of the information contained in the special IPCC October report in their discussions under all relevant agenda items of the subsidiary and governing bodies

(https://unfccc.int/sites/default/files/resource/cp24_auv_1cp24_final.pdf). Subsequently, the UN Climate Change Conference CoP-25 took place in Madrid, Spain, in 2019. The outcome of the conference was not satisfactory, as is evident from the statement by the Executive Secretary of UN Climate Change, Patricia Espinosa, on the outcome of CoP-25 when she said, "We need to be clear that the conference did not result in agreement on the guidelines for a much-needed carbon market – an essential part of the toolkit to raise ambition that can harness the potential of the private sector and generate finance for adaptation. Developed countries have yet to fully address the calls from developing countries for enhanced support in finance, technology, and capacity building, without which they cannot green their economies and build adequate resilience to climate change. High-emitting countries did not send a clear enough signal that they are ready to improve their climate strategies..." (<https://unfccc.int/news/statement-by-the-executive-secretary-of-un-climate-change-patricia-espinosa-on-the-outcome-of-cop25>). The IPCC also comes out with reports occasionally on various aspects of climate change, such as the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories that provide methodologies for estimating national inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases, special reports titled "Climate Change and Land" in 2019, "The Ocean and Cryosphere in a Changing Climate" in 2019, etc. (<https://www.ipcc.ch/reports/>). Nevertheless, there are reasons not to lose hope as there also appears some silver lining with the change in the administration in the United States. This is significant not only because the United States is one of the

highest emitters of greenhouse gases but also because of all other decisions that would be taken in terms of funding for research, innovation, or even the humanitarian sector, etc.

In the World Economic Forum 2019 held at Davos, most prominent leaders of the world, such as the UN Secretary-General, New Zealand, and Netherland Prime Ministers, also spoke of the urgent and vital need to protect the environment with Japan's Prime Minister emphasizing that climate action would be a top priority. Furthermore, in the Global Risks Report 2019 brought out by the World Economic Forum, of the top five Global Risks in Terms of Likelihood for 2019, the top three are related to climate change, i.e., extreme weather events, failure of climate-change mitigation and adaptation and natural disasters (WEF, 2019). In the same line, the WEF 2020 was held in January 2020, and not surprisingly, climate change and its risks emerged as the top issue.

India's Response to Climate Change

Ironically, while India ranks at number 14 (for 2017) in the Global Climate Risk Index 2019 (German Watch, 2018), climate change is yet to receive adequate attention in our daily public conversations, even in educational institutions. This is despite the fact that the Government of India acknowledges the impacts climate change is going to have on India. The Government of India, in its report entitled "Climate Change and India: A 4x4 Assessment – A Sectoral and Regional Analysis for the 2030s," mentioned that no other country in the world is said to be as vulnerable, on so many dimensions, to climate change as India (MoEF, 2010). In order to stress and highlight India's concern for climate change, it has also renamed

the Ministry of Environment and Forests as Ministry of Environment, Forest and Climate Change. It is also evident from India's Intended Nationally Determined Contribution document that climate change is undoubtedly a priority area (MoEF&CC, 2015).

However, if the public had seriously considered climate change to be a real issue, it should have been an important consideration in everyday discourses, including education. Unfortunately, this is not happening, at least for now. However, this does not mean we disagree with the scientific consensus about climate change. It is just that we do not talk about it. The fact that we do not talk about it or debate about climate change, as it is in some countries like the United States, can be a good sign, as well as bad. Good, because it will be easier to implement policies and actions without much resistance. Bad, because we may passively accept whatever is imposed upon us without critically thinking or questioning possible solutions, or even scrutinizing scientific findings. Passivity towards such a threatening issue seems too huge a risk to take. However, it does seem that we do not 'see' or 'feel' climate change happening, and, therefore, the passivity exhibited towards the issue. Otherwise, by now, we would be already acting "as if the house was on fire," as the sixteen-year-old climate activist Greta Thunberg put it at Davos 2019.

Climate Change Education in India

Education is considered a powerful tool to transform societies and, thereby, nations. Therefore, the importance of climate change education cannot be overemphasized. Recognizing its importance, the National Science Teachers Association even had to

issue a statement that climate change is given its due emphasis in the curriculum (NSTA, 2018). The goal of including climate change in the curriculum is to bring about climate literacy amongst the students. Climate literacy is defined as "an understanding of your influence on climate and climate's influence on you and society" (USGCRP, 2009). This implies that climate change is not only a subject matter of science but is interdisciplinary in nature. While science provides the basic understanding of how the climate works, the social sciences can provide the necessary knowledge about economics and its social implications and empower students with an understanding about polity and climate change, historical perspective of climate change, indigenous knowledge and climate change, implications of climate change on language, literature, and culture. Arts, too, have unique ways to portray climate change through different art forms. While the best curriculum for climate change education would be to discuss it holistically, the existing school structures do not support such an interdisciplinary approach (Chang and Pascua, 2017). Hence, a systematic approach through various disciplinary areas such as science, social science, language, arts, and humanities remains the best available option.

I. Present Status

While studies around the world indicate that students' knowledge about climate change is poor or superficial with erroneous information or misconceptions, for example, Singaporean students not able to connect its causes with impacts and hold misconceptions (Chang, 2014; Chang and Pascua, 2016), or poor knowledge exhibited amongst high school students in Austria and Denmark (Harker-schuch, et al., 2013), there is minimal

research on Indian students' knowledge about climate change and their preparedness to tackle the issues associated with climate change by way of mitigation or adaptation. Although not for students, one that can be cited here is a study conducted among Indian adults by Leiserowitz, et al. (2013) of Yale University. They found that only 19% were aware and convinced of the reality and danger of climate change and highly supportive of national actions to mitigate the threat, while a huge chunk (16%) of the participants had never heard of climate change and had no opinion about it, even when it was described to them.

Nevertheless, the existing curriculum of the school and college will give a fair idea about how much students can learn about climate change in the best scenario and what aspects of climate change have been focussed on in those syllabi.

(i) The current school curriculum in India at a glance

Climate change can be found incorporated in the school curriculum, especially in disciplinary subjects such as science and geography. We can find topics such as the greenhouse effect, climate change, ocean currents, etc., in the curriculum of these subjects. However, climate change is yet to be streamlined in the curriculum, unlike other 'established' concepts. For example, if we look into the syllabus developed by NCERT (NCERT, 2006a; NCERT, 2006b), the concept of photosynthesis has been systematically introduced spirally in the curriculum of Science for Class VII and Class X and further in Biology Class XI with increasing depth. A similar pattern is followed for other concepts as well, such as reproduction, digestion,

sound, motion, electricity, chemical reactions, etc. Unlike these streamlined concepts, a systematic approach to climate literacy is missing in the curriculum. Topics related to climate change are included haphazardly and piece-meal. In addition, most of the critical topics fundamental to learning climate change do not find a place in the curriculum. For example, the basic idea of how scientists measure climate so as to arrive at the global average temperature, how has the temperature changed over the past two centuries which is attributed to anthropogenic activities, or what is the evidence of climate change or why polar regions are getting warmer faster, how different sectors in India will be impacted, etc., are yet to find a place in the curriculum. Given the emergency state we are approaching due to climate change; one would expect that climate change education would form the overarching theme in the curriculum. On the contrary, very few topics have been covered. However, it is essential to point out here that the existing school curriculum was developed based on the National Curriculum Framework-2005. Many of the data about climate science that we have today were not available then. And hence that could be one valid reason the curriculum did not emphasise climate change education. While textbooks are reviewed regularly before reprinting, patchwork to add some topics related to climate change would not be helpful. It would require a complete reorganisation of the curriculum in different subjects if climate change is to be incorporated systematically. Therefore, one can only expect a meaningful and comprehensive change in the curriculum only after the country brings out a new curriculum framework.

(iii) Curriculum in higher education

Of late, it is encouraging to find that environmental science departments are being added to different universities. Such departments provide avenues for an in-depth course and research on climate change. While the compulsory Environmental Studies course for all higher education institutes as per the Hon'ble Supreme Court's order includes climate change and global warming as one of the umpteen topics in the course, it is to be seen how such an isolated approach to climate change will serve the purpose. In addition to incorporating climate change as a separate topic, connecting all other topics in the course with climate change will be helpful.

II. Dimensions for Climate Change Education

This section will discuss the different dimensions that need to be incorporated in climate change education. This will give curriculum developers and educators ideas about the concerns to be considered while dealing with climate change education.

Despite its complexity, today, we know much about climate science, and more keeps unraveling as new findings are added by researchers each day. If humans were the only ones to deal with a 1 degree Celsius rise in temperature, it would not have been so much a problem. We would have come up with certain technologies that would help us cope with that. However, as we know, it is much more complicated and far-reaching, resulting in the worsening of the issues already prevalent today. For example, cyclones are becoming more intense, there is more rainfall in less time, floods are becoming more frequent and severe, etc. Therefore climate change is known to be a threat multiplier. Such

ramifications that climate change can have must necessarily form part of the curriculum. Some dimensions for consideration are briefly discussed below.

- (a) **Agriculture:** Due to global warming, not only oceans but even lands will get warmer and drier which will impact the soil quality. There will be frequent or erratic droughts and floods. The warming of higher altitudes will impact crop production in such places. Pest dynamics are going to change. All of these are going to impact crop production. Carbon dioxide increase will reduce nutrients in wheat, rice, etc. These will have impacts on different dimensions such as food security which could result in tension within and between countries by manipulating import and export of food items; there will be an issue of Internally Displaced People (IDP) due to the movement of farmers to bigger towns and cities or even migration to and from other neighbouring countries. This will, in turn, change the demographics of such towns and cities and put pressure on the limited available resources; reduction in nutrients in crops can impact the health of those who are already vulnerable. In this situation, scientists are likely to develop different kinds of Genetically Modified (GM) crops to tackle food scarcity and security due to climate change.
- (b) **Health:** Health is another sector where climate change is expected to impact severely. There will be an increase in the incidence and geographical range of climate-sensitive infectious diseases such as malaria, dengue, tick-borne

diseases, etc. (USGCRP, 2009). Those with respiratory diseases, such as, asthma or those vulnerable to other diseases will be hit hardest. These will be exacerbated by poverty.

(c) Sea level rise and ocean acidification:

Although coastal India will not be soon inundated underwater due to sea-level rises like what we see in Kirabati or Bangladesh, coastal life will definitely be impacted. Sea will be closer to the mainland, affecting settlements close to the sea. New levies will have to be built. More seawater will get into the mainland affecting agriculture and drinking water. The marine ecosystem will be most affected due to ocean acidification from increased carbon dioxide in seawater.

(d) Water scarcity: The rainfall pattern will be more haphazard due to climate change and will cause some places to be drier and some places to be wetter. This will be aggravated by warming atmospheric temperature that will cause the lands to be drier. This will impact water availability for agriculture, domestic use, industries, etc. Forest-fed rivers are likely to be drier with lesser rain. We are already faced with a water war between states due to river water sharing. On the other hand, rivers that are also fed by glaciers to some extent may show some changes in their characteristics. For example, if the Himalayan glacier recedes drastically, it will impact rivers such as the Ganga.

(e) Biodiversity: We were already losing biodiversity due to habitat loss. This

will now be aggravated by temperature rise. We will soon be losing organisms, especially those sensitive to temperature since they are not likely to adapt to the temperature shock so fast. As such, conservation strategies will change and will be more complicated by the addition of the complex climate change factors. We might have to give up on the conservation of some species and focus on some organisms. In addition, prey-predator dynamics will change, impacting the ecosystem.

(f) Economy: The economy of the country will be impacted due to the adverse effects of climate change. At the same time, business strategies will change eventually. For example, in coastal areas, insurance companies could give their customers the option to get insurance for their houses due to sea-level rise, etc.

(g) Climate justice: Climate change will have the worst impact on vulnerable populations – physical or mental disability, marginalized populations, indigenous populations, technologically-handicapped citizens, economically vulnerable sections of the society, small islands, those living in places with poor medical facilities, outdoor workers, etc.

(h) Climate refugees: There will be an increase in refugees due to reduced availability of water, food, and land, competition and conflict among humans and its impact on the lives and security of the refugees and economy and security of the places where refuge is sought. In addition, we had earlier

mentioned the issue of IDPs resulting due to the impact of climate change on agriculture.

The above discussion tells us that every dimension of our lives will be impacted by climate change. Given the enormous consequences it will have, we cannot afford to restrict the teaching of climate change in science or geography alone as it is presently practised. As mentioned earlier, every discipline offers something to make students climate-literate.

III. Content Outline for Climate Change Education

Another important consideration in climate change education is identifying the contents that need to be included. Figure 1 broadly outlines the topics that need to be incorporated in the curriculum in appropriate disciplines so that students are given the opportunity to understand the various aspects of climate change (*Shimray, 2018*). They are grouped under the following heads:

1. Climate System
2. Causes of Climate Change
3. Measuring and Modelling Climate
4. Impacts of Climate Change
5. Human Responses to Climate Change

As shown in Fig. 1, the topics included are numerous. Systematic mapping of the topics/ concepts will be required to appropriately reflect them at relevant places in different subjects and classes. While taking up this task, it will also be crucial to identify the core essentials (in terms of concept and competency) to be incorporated as part of compulsory Curriculum for ALL students (for climate literacy) and those that can be incorporated into optional subjects (for

climate expertise). This step will be crucial towards streamlining climate change in the curriculum. The figure clearly depicts the interdisciplinary nature of climate change. Climate literacy cannot be achieved through one subject. It will require the collective contribution of different subject disciplines. However, this is easier said than done, as we shall see when discussing the challenges.

IV. Challenges in Climate Change Education in India

There are several challenges when it comes to implementing climate change in the curriculum.

- (i) When to start teaching?

We know that climate science is complex, and it requires some level of mental maturity to understand it. Therefore, what will be the appropriate class to start teaching about climate change is a reasonable question to ask.

- (ii) What to teach where?

We have discussed earlier the interdisciplinary nature of climate change. However, it will be a herculean task to work out a feasible curriculum to incorporate climate change in different disciplines and ensure that students get the 'whole' even as they are fed in 'pieces.'

- (iii) Should we focus only on mitigation and adaptation?

Studies have found that conveying the complexities of climate science can be difficult, while equipping students on how to mitigate and adapt to climate change is much easier (*Gardiner, 2014*). While teaching climate science will be inevitable, it will not be easy to empower students towards mitigation and adaptation.

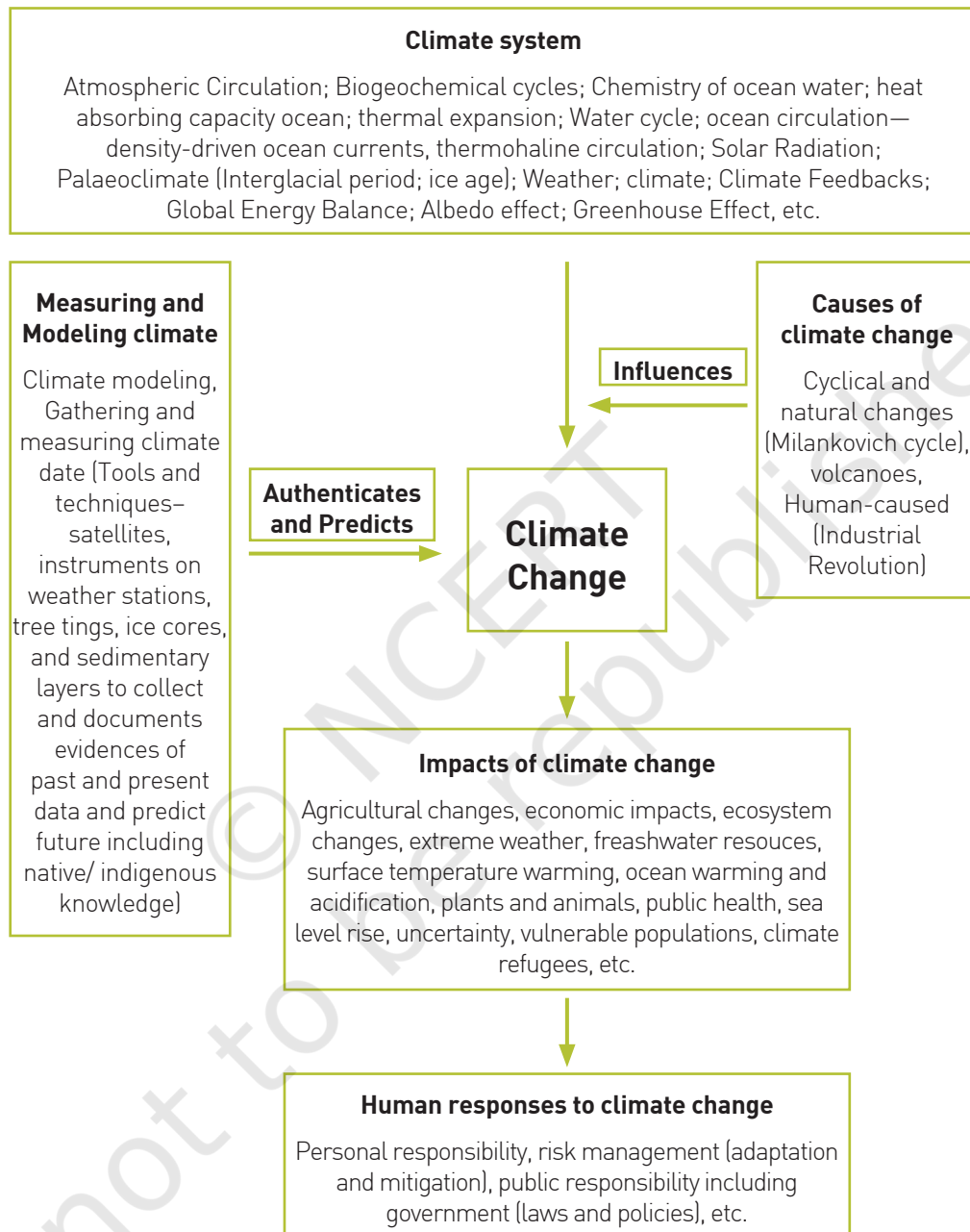


Fig. 1: Content outline for climate change education

(iv) How to make it tangible?

The question of whether climate change is real or not is settled. However, since many do not directly see or feel the impacts, it is a challenge to present it convincingly to students. As a result, students perceive the issue as a distant threat or not relevant to them (Chang, 2014; Newstadt, 2015). What makes the matter worse is that climate change is discussed in terms of decades and not necessarily what is happening at the moment. For example, a particular year may be exceptionally cold compared to other years, yet it does not mean that there is no global warming. The impact is different in different parts of the country or the world. Temperature is also not uniformly increasing, but the average global temperature increases. Therefore, the more significant challenge is to down-scale the climate data or the impact to make it relevant to a smaller geographical area instead of fixating the issue to a global scale so that students can comprehend and contextualize the information. It cannot be denied that climate change itself is a complex phenomenon—the intriguing result of an increase in greenhouse gases, the impact on the average global temperature, atmosphere, and oceans, the effects on precipitation, sea-level rise, and our lives and livelihood, etc. Unless an attempt is made to make these as tangible as possible, the issue will remain too abstract to students and render them lose interest in the issue.

(v) How to communicate about climate change?

Climate change is complex and communicating about it is even more complicated. The hundreds of factors

contributing to climate change, the different possible models, data and graphs generated, the various predictions brought forth, etc., are not easily understood by all. Therefore, this information has to be made quantifiable and tailor-made for different audiences in easy-to-understand tables and graphs, animations on various aspects of climate science or its impacts, simplified diagrams, etc. Scientists alone cannot do this daunting task. Teachers, teacher educators, and students have to come along and work in collaboration with scientists to accomplish the task. We are aware of the misconceptions that can arise because of a lack of appropriate or clear information from authentic sources, as we saw in the recent Kerala flood, which was, without authenticity, attributed to climate change by many, including media. However, this claim has been refuted, and the flood has been, to some extent, attributed to ecological mismanagement (Mishra and Shah, 2018). Such misinformation tends to cause more confusion about climate change.

(vi) Have we prepared our teachers?

Climate change is a relatively new topic for many teachers. While some teachers in India are already teaching some aspects of climate change during their teaching of science or geography, teachers, in general, have not been trained to teach climate change specifically in their preparatory courses or in their degree courses. Such lack of training or limited training leads to climate confusion amongst teachers, ultimately reflected in their teaching (Plutzer, et al., 2016). Therefore pointed efforts must be made to prepare teachers accordingly.

- (vii) Do we have space for climate change in the school schedule?

The National Education Policy 2020 (NEP-2020)* broadly considers climate change one of the critical issues to focus on. Although there is no specific mention of it under the School Education section, climate change concerns can be incorporated under environmental education. How strongly it will be incorporated is the question. It is also to be noted that our students are already bogged down with the existing curriculum. Therefore, incorporating it into the existing curriculum without burdening students will be a real challenge. This will require meticulous and systematic planning. For example, the 10-day bagless period suggested by NEP-2020 could be explored to engage students in activities that will enhance their capacities on climate change.

V. Some Suggestions to Incorporate Climate Change in the School Curriculum

After understanding the challenges for climate change education, the following briefly discusses how climate change can be more effectively incorporated into the curriculum. In order to achieve this, several aspects have to be taken into consideration. For example, which topics must be included in the curriculum for which class, what resources should be used, which strategy or approach should be used, etc.

Primary stage: At the primary stage, it is not advisable to introduce scientific terminologies

used in the context of climate change.

Instead, students may be introduced to the ideas they can relate with, such as those of rainfall and changes in the pattern, absorption of light by darker objects or reflection by objects with light, give them an experience of a greenhouse, vegetables, and flowers found in different seasons, scarcity of water, etc. Familiarizing them by allowing them to experience themselves or sharing their experience or what they learn from society will be an excellent way to start.

Upper Primary stage: Students may be introduced to different concepts of the climate system at the upper primary stage, as listed in Fig. 1. They can also be introduced to natural and human-caused climate change, impacts of climate change and human responses, and some aspects of measuring and modelling climate. It is crucial to involve them in climate action at this stage—what they, and others, can do to reduce or adapt to climate change. Students need to be engaged in a lot of critical thinking tasks, for example, what will happen to crops and farmers if it gets warmer and warmer, what happens to people in small islands and the coastal areas if sea level continues to rise, how much more energy we will consume if the temperature keeps on increasing, what kinds of laws and policies should be implemented, etc. A lot of debates and discussions can be taken up at this stage. Simulations, videos, pictures, etc., can be used in addition to hands-on experiences.

Secondary and Higher Secondary stage:

The learnings of the previous stage can be strengthened further as students learn

*The Original reference was Draft NEP-2019 but by the time of publication of this issue, NEP-2020 was published and hence modified accordingly..

more profoundly about the concepts and concerns introduced in the upper primary stage. Measuring and modelling may be emphasized in this stage. In addition to learning deeper about climate science and its impacts, the focus at this stage should be about becoming a responsible citizen. They may be introduced to global climate issues, challenges, efforts in different countries, etc. With a focus on problem-solving, they may be allowed to develop a comprehensive plan to tackle climate change which could be in terms of policy, laws, governance, agriculture, transportation, communication, energy production, risk management, zoonotic diseases, etc. This can be given as an individual task or a group task.

Conclusion

There is no denying that climate change is the greatest challenge facing the world today. There is added pressure on developing countries like India, whose route to development is heavily carbon-dependent. Yet we must act and act fast at that. Towards this, first, we need systemic reform in education. Pointed efforts need to be made to not only include but emphasize climate change in all education-related activities—courses, curriculum, or syllabus and policy documents. By doing this, climate change can find adequate space in the curriculum, whether for schools or colleges. All the dimensions of climate change and contents outlined in this article need to be included systematically. Second, scientists/researchers/professors dealing with climate change in universities or other institutes and

educators (teacher educators and school teachers) need to work together to come out with audience-specific resources catering to the needs of the users. Platforms such as *Rashtriya Avishkar Abhiyan* under the Ministry of Human Resource Development or the INSPIRE (Innovation in Science Pursuit for Inspired Research) programme managed by the Department of Science and Technology could also be a channel to take up such activities. This is the least that we can do to start with if we say climate change is real and is a threat to our existence. Since there seems to be a clear gap between the challenges facing climate change and the existing curriculum in our schools or colleges, all our attempts should be to fill this gap. Towards this, we need to streamline climate change in the curriculum, map climate change-related concepts for different subjects and classes, develop an appropriate syllabus, textbooks, and other resources, equip teachers and teacher educators, provide necessary infrastructure and space and time in the school curriculum.

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