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LESSONS IN EXPERIENTIAL LEARNING FROM A BIOSPHERE RESERVE

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ABSTRACT

Learning from the field is at the core of the approach that Keystone Foundation, a non-governmental organisation (NGO) based in the Nilgiri Biosphere Reserve, Western Ghats, India has been engaged in since its inception in 1993. As a group for eco-development initiatives, we engage with children and the youth from local to global, and formal and non-formal institutions. Through this report, we used the opportunity to reflect on our experiments with field learning and alternative pedagogies that are currently ongoing through the Nilgiri Field Learning Centre (a collaboration between Keystone Foundation and Cornell University) and the Climate Smart School initiative, which has been implemented in 15 schools (both private and government run). We seek to: a) explore the knowledge produced and the pedagogical approaches that have been enabled; b) examine the impact of field learning in terms of capacity; and c) reflect on our efforts at mainstreaming these pedagogies through government schools. Additionally, we collaborated with alumni from the field learning programmes to conduct a survey to assess the status of education among children belonging to indigenous communities in the Nilgiris. We did this by conducting a systematic review of all field learning pedagogies undertaken at Keystone Foundation. We implemented a climate curriculum for middle schools. We undertook a primary survey of the status of education among indigenous children through interviews with different stakeholders such as students, parents, teachers and educators. Through student and educator reflections on the field programme and climate curriculum, we learnt that their primary takeaway was knowledge that enables being responsive to a changing ecosystem. Students underwent transformative experiences when they were challenged to revisit their assumptions on field experiences. This, we believe, has contributed to an outcome of creating “perceptive leadership” within individuals and in communities. Climate educators take up this role as they are locally trained to become climate champions in the schools and communities where they live. They see for themselves a place in the future of an education that is responsive and relevant to a biosphere reserve. While local schools for indigenous children lack facilities, guidance and infrastructure, there are deeper questions about language, culture and discrimination that need to be investigated. In conclusion, while we initiated the process of reimagining education in the context of a biosphere reserve, we encourage local community members to take this forward.

BACKGROUND

Keystone Foundation is a not-for-profit registered trust established in 1993 with the vision of working with indigenous hill communities in the Nilgiri Biosphere Reserve (NBR). The foundation bases its efforts on the understanding that the conservation of natural resources and human development are intrinsically interlinked. Through eco-development initiatives that focus on livelihoods and ecology as an integral whole, the organisation contributes to the well-being of both communities and the environment simultaneously. Keystone's projects have spanned the three states of the NBR, with communities across 150 villages. The organisation learns from and works with pastoralist Todas, artisan Kotas, hunter-gatherer Kurumbas and Nayakas, and agriculturist Irulas and Soligas, all of whom make up the unique sociocultural diversity of the reserve. These indigenous communities also live within the ecological diversity of the reserve, where elevation forms a gradient from 30 metres above sea level (masl) to 2,600 masl, encompassing dry and wet forests, tall evergreen trees and even grasslands with short evergreen trees. The current reality of these communities involves a life that combines the traditional livelihoods of their ancestors and work opportunities that the region offers, such as wage work in plantations, driving jeeps/taxis and working for the forest department as frontline staff. Many of them have completed school at least till the primary level, but only a few have made it to middle school and an even smaller number have graduated or completed higher education.

Education from the field is a prime focus within Keystone Foundation to build capacity and empower the local youth towards conservation. To this end, Keystone works with schools on nature education programmes and climate change curricula to encourage the youth to become conservation leaders. In communities, the organisation trains stewards in methods for ecological monitoring, connects with village elders to promote youth engagement in their communities and provides fellowships for people to engage with and record cultural traditions of their own. Keystone's involvement in setting up "Community Foundations" with youth groups in the region also works towards the revival of sociocultural tradition and livelihood options. Collaborations with academic institutes have resulted in innovative field learning approaches to better understand current issues and suggest solutions.

As we reflect on our experiments with field learning and alternative pedagogies, we set out to

- Explore the knowledge that has been produced and the pedagogical approaches that have been enabled.
- Examine the impacts of field learning in terms of capacity development, the shift in practices and the professional trajectories of the indigenous youth.
- Reflect on our efforts at mainstreaming these pedagogies through government schools, especially in the development and implementation of a climate curriculum for middle school.
- Assess the status of education for indigenous children in the Nilgiris through the efforts of the alumni of the Nilgiri Field Learning Centre (NFLC).

We wanted to reflect on the various longitudinal field learning experiences in order to suggest a model that may be relevant to the context of Adivasi youth living in a biosphere reserve. The lessons we are learning

from our experiments with alternative pedagogies—like that of the climate curriculum and NFLC—require structural changes that can lead to improved outcomes in primary and higher primary education. As the alumni of the NFLC embark on a journey to assess the status of education for their communities, they are able to suggest, in general and specific ways, improvements that can bring positive change to the prevalent education system.

Our research process was guided by the following approach:

- A systematic collation of field learning pedagogies, especially that of the NFLC, was undertaken to document impacts on the Adivasi youth who were part of the programme. Review and feedback of students were assessed to summarise key insights and observations on the programme and their overall experiences of field learning in a biosphere. The insights from “learning from a biosphere” was used to form the basis for a transformation in education processes intended for Adivasi youth.
- Based on the experience of running the Barefoot Ecology programme, a curriculum for climate change was drawn up and piloted across 15 schools in the biosphere. The curriculum was implemented in each of these schools and the process was leveraged for reflections on how alternative pedagogies in a biosphere could be used to deepen transformative learning. The climate curriculum is a product of this research and can form the basis of sustainability education in schools at the primary and middle school levels.
- A systematic survey of mainstream education for Adivasi children in the various schools of the region was taken up to assess its status by including perspectives of students, parents and teachers, among other stakeholders. We anticipate that insights from this survey can inform policy to improve outcomes for Adivasi education in the Nilgiris district and by extension, inform structural reforms in the education system.

LEARNING FROM A BIOSPHERE: NILGIRI FIELD LEARNING CENTRE

In 2013, a group of practitioners and academics mooted the idea to develop a living field course within the ecological, social and cultural context of the NBR. This programme would encompass mutual exchange between and within researchers, practitioners, students and indigenous people. The diversity of fields and modules of study would open different aptitudes, talents and perspectives and create a new breed of “perceptive leaders”. Multidisciplinary approaches were proposed to explore sustainable use, livelihood trade-offs, institutional development, relevance/significance of culture and traditional ecological knowledge, payment for ecosystem services, human–wildlife conflict management, and biodiversity loss, among other sub-themes.

A decade later, this field course has been conducted eight times (two years were lost to the COVID-19 pandemic) and brought together five faculty and 30 students from Cornell University, 15 practitioners from Keystone Foundation, and 60 local indigenous students to live, learn and dream together of sustainable futures for the planet.

In the following sections, we reflect on the NFLC and our larger field learning experiences, focusing on the need for such a course, the pedagogical approaches used and the knowledge produced as an outcome.

What is a Field Learning Centre?

A field learning centre is a place where communities, researchers, civil society and governance meet and step out to the living classroom that a biosphere has to offer.

A field learning centre

- Attempts to find local solutions to global issues and brings global insights into local situations.
- Applies and uses opportunities for science from the ground, but also for science to the ground.
- Integrates with government initiatives and programmes for upscaling, modification, validation and replication.
- Learns from interdisciplinary modules with cross-learning and sharing.

The aim is cross-learning and sharing through applied knowledge and native ground wisdom; a combination of science and traditions.

Why a Field Learning Centre?

A field learning centre provides a place for practice, learning and experiences from a strategic perspective, giving scholars, students and practitioners an opportunity to challenge themselves and engage with how things work on the ground—principally in the fields of ecology, economy and development. Here, one can test and create diverse methods and approaches, and most importantly, listen to what communities have to say. This space of learning and interaction urges one to develop creative solutions and new understanding in highly complex, biodiversity-rich societies with a growing population. A biosphere is a dynamic space where the social and ecological elements constantly interact with each other. As we witness unregulated and unchecked development, there are signs of perturbations that could possibly drive the biosphere to a tipping point. How is the resilience of an ancient land like the Nilgiris responding, adapting and continuing? The need to study interactions and learn from ecologically fragile areas is becoming imminent in the face of extreme and unpredictable climate events that threaten the sociocultural and ecological fabric of such regions. How can a field learning centre propel research from the ground and ask questions in ways that can lead to action being driven from the ground? For this to become a reality, there is a need for local researchers, who have the advantage of local wisdom, to be trained in formal research skills so that they can become perceptive leaders who will bring the necessary change.

Course Content

The NFLC offers an interdisciplinary approach to learning and research, which stresses mixed methods of qualitative and quantitative nature and descriptive and analytical approaches to understanding questions from the field. The classroom is designed for diversity and inclusivity, and curriculum content is designed to facilitate dialogue, discussion and deliberation across varying scales and levels. An initial seven weeks of engaging with theory leads to a five-week research phase, which ends with a deliberation with the community and all the stakeholders about the research, its findings and policy implications. Each day starts with a specially designed exercise called “crossing boundaries”, which aims to bridge the divide

between indigenous–non-indigenous, national–international, Tamil-indigenous languages–English, formally literate–informally educated and class–race. The day ends with significant time spent on “debriefs”, where lessons are unpacked, feelings surface and tensions are discussed. Journal writing is an important part of the experience and students are expected to keep a personal diary and a professional diary of daily events and thoughts. All themes (as outlined in Table 1) are explored through classroom teaching, discussion and analysis, dialogue with stakeholders, site visits, and reflective exercises.

Figure 1: Presenting to the village



Source: Keystone Foundation, 2016

Figure 2: Nilgiri Field Learning Centre graduation



Source: Keystone Foundation, 2016

Figure 3: Nilgiri Field Learning Centre class debrief



Source: Keystone Foundation, 2016

Figure 4: Nilgiri Field Learning Centre presentation to the village



Source: Keystone Foundation, 2016

Figure 5: Debrief in the field



Source: Keystone Foundation, 2017

Figure 6: Classroom activity



Source: Keystone Foundation, 2018

Table 1: Thematic structure of the Nilgiri Field Learning Centre developed collaboratively by faculty at Cornell University and experts at Keystone Foundation

<p>THEME 00: Setting the context/ethical considerations in research/sustainable development</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Establish classroom and NFLC considerations and rules/set the tone b) Establish ethical considerations in research c) Learn to observe and note observer effects d) Start learning about interviewing, mapping and representation 	<p>THEME 01: Ecology and biodiversity management in human use landscapes: Case of the NBR</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Conservation principles b) Tropical forests and their diversity c) Wildlife management and biology d) Water resources of the NBR e) Lesser-known diversity and insects f) Field trip NBR Bus g) Field experiments on campus 	<p>THEME 02: Livelihoods in transition</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Understand the relationship between natural resource base and livelihoods b) Understand changes over time in the natural resource base and subsequently in livelihood systems 	<p>THEME 03: Governance/ Whose reserve is it anyway?</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Understand the governance structure, which comprises the government, civil society organisations and private enterprises b) Understand changes to the governance structure with regard to land use, politics and the economic basis of the NBR c) Understand basic services and their provision as a core governance question d) Learn participatory techniques to represent the governance structure as experienced in daily life 	<p>THEME 04: Indigenous communities and worldviews</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Understand the situation and life worlds of indigenous groups of the NBR b) Explore interpretive and analytical tools that become available through ethnographic analysis of societies (particularly indigenous groups in the NBR) c) Continue with interviewing, listening, observation, mapping and participatory research skills 	<p>THEME 04A: Indigenous communities and worldviews</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Start the unit on food/nutrition and traditional health systems 	<p>THEME 05: Trade and markets</p> <p>GOALS:</p> <ul style="list-style-type: none"> a) Understand the role of commodity development and market solutions in development b) Understand the commodity chain (with honey being the critical product) and the process of bringing it to the market c) Understand systems and regulations that govern production and movement of such products d) Collect data to understand a problem using the honeybee case
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Source: Nilgiri Field Learning Centre, Keystone Foundation, 2015

What Kind of Knowledge has been Produced?

The programme has been kept simple, interactive and subtle to build on traditional practices from the ground up and blend them with theoretical knowledge. The knowledge strands of conservation, enterprise and livelihoods, which are at the core of the work at Keystone Foundation, form the basis of curriculum content. The research projects undertaken by students on the topics listed below yield a repository of knowledge that is temporally and spatially located in the NBR. Table 2 gives an overview of the research topics and thematic areas covered till date. Interestingly, not many attempts were made to cross these thematic areas, except for only two as seen here. Outlined below are some of the broad results from the studies:

- Nutrition and diet diversity: Ration supplies through the Public Distribution System (PDS) and supplements by the Anganwadis, Village Health Nurses and other welfare measures impact the choices people make regarding their diets as they often opt for freely available options. The presence of kitchen gardens, access to land for farming and lack of access to welfare lead to more traditional millet-based diets as well.
- Waste and water: Water distribution networks and waste management efforts by local residents and panchayats seldom understand hill ecosystems. The relationship between forests and wildlife movement was deeply linked. The informal sector of the hills that recycles waste and takes it down to the plains was mapped. Stakeholders and influencers of an underlying economy were documented.
- Traditional knowledge systems and local health issues: Looking at health from an anthropological perspective and the role of traditional healers and modern practitioners on health and well-being issues makes this research uniquely placed between global health issues and indigenous ways of healing. Mental health, trust deficit, alcoholism and domestic violence are rampant in indigenous communities.
- Biodiversity conservation and wildlife: This research specifically maps the movement of urban wildlife—in this case, the gaur or the Indian bison—documenting their shelter areas, usage of tea plantations for transit and access to water sources. It points to the need for planning of shared commons in the biosphere where human beings and wildlife are dependent on common resources.
- The agriculture systems of the indigenous people of the NBR are little understood. The wise use of fallow lands, the need for tenure for traditional agriculture, the role of seed banks and adapting to changing climate patterns comprise an integral part of this research. The value addition units which are run by women from the villages today have federated to form the Aadhimalai Pazhanagudiyinar Producer Company Limited (APPCL), where women are in leadership positions, negotiating with government authorities like the forest department and the markets which are controlled by small to big traders.
- Governance systems: The Forest Rights Act and the local government have jurisdiction from the village level and the panchayat, to the city and district of Coimbatore. The research traces these governance systems: the forest department, revenue department and their links with local villages to compare that to the governance systems of counties, states and federal structures located within Ithaca in New York state, USA.

At the end of the research stage, results are shared with the communities who have engaged in this research. This has often led to intense discussions and in many cases served to catalyse change in the region. For instance, the status of sanitary workers came to the fore with these studies and immediate action was taken by the local panchayat to provide them with safety gear and pay regular wages. More recently, the underlying caste tensions came to the fore, especially about the sharing of water between adjoining villages. There has been a resolution between the villages since then.

Table 2: Theme-wise list of research projects in the Nilgiri Biosphere Reserve between 2015 and 2022 as part of the Nilgiri Field Learning Centre

Year	Title	Theme
2015	Forest Use & Forest Governance in Mettukkal: A Study in Economic Security	Natural Resource Governance
2015	Investigating the Implications of Changing Dietary Diversity among Adivasi Communities	Community Wellness
2015	Water and Waste Project	Water and Sanitation
2015	Infant Feeding: Knowledge, Beliefs, and Practices among Adivasi Communities	Community Wellness
2015	Comparing Kurumba Health Perspectives: Community Wellness and Traditional Healing	Community Wellness
2016	The Elephant in the Room: Fallow Land in Aracode Valley	Natural Resource Governance
2016	Exploring the Relationship between Gaur and People in the Urbanizing Kotagiri Context	Biodiversity Conservation
2016	Water and Waste Project	Water and Sanitation
2016	The Dynamics of Diet Diversity in Dhalamokai	Community Wellness
2016	Infant Feeding	Community Wellness
2016	Community Wellness	Community Wellness
2017	Infant & Young Child Feeding Practices and Social Support for Mothers in Iruula Villages	Community Wellness
2017	Causes and Implications of Fecal Contamination in the Coonor Watershed: An Indigenous Village-level Exploration of Spatial, Structural, and Cultural Mediators	Water and Sanitation
2017	Exploring Health Determinants of Mothers and Children in Non-Tribal Communities	Community Wellness
2017	Human – Wildlife Conflict: The Case of Gaur in Kotagiri	Biodiversity Conservation
2017	Barriers to Cultivation – An Interrogation of Land-Use Decisions in Adivasi Communities	Natural Resource Governance
2017	Assessing the Capacity of Communities in the Sathyamangalam Tiger Reserve to Attain and Secure Community Forest Rights	Natural Resource Governance
2017	Waste Management in the Nilgiris and Beyond	Water and Sanitation
2017	Community Wellness	Community Wellness
2019	Conservation Agreements	Natural Resource Governance
2019	Kurumba Healers	Community Wellness
2019	Thresholds of Life	Community Wellness
2019	Water and Waste Project	Water and Sanitation
2019	Wild Edible Plants	Biodiversity Conservation
2022	Water and Waste Linking with Human–Wildlife Conflict in Peri-urban Areas of Kotagiri	Water and Sanitation Biodiversity

Source: Compiled by the authors

At the end of every session, there is a reflection paper that the students write and submit. These reflections were expected to be free flowing, giving students the choice to discuss and reflect on portions or the whole process of the 15 weeks. In order to understand the impacts of the NFLC, we revisited the 23 available reflections and have crystallised from these detailed notes under three headings: the knowledge that enables a response to a rapidly changing ecosystem; the pedagogies that have enabled this; and the impact on the fellows.

Knowledge that enables better response to a rapidly changing ecosystem

The embedded nature of the NFLC within the local community and a region like the NBR has helped students gain a nuanced approach to education, experience, learning and engagement. It is not a typical project with deliverables and outcomes, and student learning is central to the process: How they perceive, how they learn to see, observe, analyse and use their home-grown native knowledge and literature. Each knowledge system is therefore challenged as to what the theory states and what the practice reveals. Thus, in many ways, they become more prepared to changing ecosystems and realities on the ground. For example, nutrition issues in the village prompted researching the village health delivery system and talking to various key entities such as the health officer, the primary health centre and the district health department. At each level the complexities grow, but the gaps in the implementation mechanisms become clear and so does the knowledge of what is missing and how to possibly fix it. The quote below shows how the field research forced students to respond to the context by shifting their perspectives and being more open. A Cornell University student, in their reflection note, wrote:

"I thought it would have more to do with what we think of 'planning' as in a Western sense... When it became clear to me we were to become intimately acquainted with the landscape of only one or two villages, both in terms of economics and governance, my interest in the project shifted from the planning aspect I had anticipated to the justice aspect that came to reveal itself."

The very basis of one's understanding is challenged, and students sometimes found themselves on shaky ground when faced with the complexities of the situation on the field. Another student wrote,

"After a semester of speaking to individuals directly affected by the drought, the transition away from traditional millet farming to wage labour work, my confidence in my grasp of the material has lessened. I realize now that I much better understand the complexities of the subjects that I had studied in an academic setting. I recognize the oversimplification of the interrelated nature of politics, culture, environment and economy, which allowed for these subjects to be somewhat neatly divided into subjects for different classes to take on. Having conducted fieldwork, watching the problems I have studied come up in everyday conversations and recognizing the large number of stakeholders involved directly and indirectly in every issue, I know that there is so much I still do not know. My confidence has lessened but this is not at all a bad thing."

Enabling pedagogical experiences

Cornell and Keystone have jointly co-created the pedagogical platform of the NFLC from observations, reading, practice, field visits and group work to language learning and cross-boundary exercises. In

simple activities, we have built the learning curriculum, monitored it and documented it closely. Cornell students have gained more from the NFLC in the face of it, while the Adivasi communities have been empowered with more confidence by co-learning and co-creating, sharing, and discussing themes and topics. Some took it for granted, which they have been made aware of, how that helps their thinking process and analysis. We need more data, analysis and case studies to arrive at what Adivasis gained from this experiment. We see this process with them as more nuanced, marinated and process-driven than the Cornelians, who have gained rich grassroots insights, living and life-changing situations. This pedagogy-turned-experience is deeper; we have yet to find the tools and measurements to capture this holistically. A student from Cornell reflected on the Keystone research partner:

“Honestly, I was probably overly fascinated with him—but for someone so quiet and relatively shy, he was remarkably articulate, sharp and hugely knowledgeable. I gave myself the impression that he must be drawn to this research topic, like me, out of some absurd, insatiable curiosity; consequently, I expected him to be as invested in the work as I.”

The following comment from another Cornell student was often voiced by Keystone students when reflecting on their research partners:

“She was unwilling to communicate with me, and I had to find ways to force decisions out of her: Should we go and get lunch now? Are you ready to move on to the next debrief question? Should we take a break?”

Research partners are selected early in the course and the partnership starts to form through joint class exercises and assignments. It was not as if they were thrown into the field without getting to know each other. Yet, what is stark is the nature of cross-cultural learning experiences: that these are not naturally formed and to some extent have to be forced. Eventually, every research experience brought out something unique that was both personal and owned by the researcher. So, in the NFLC experience as well, we have seen how a great degree of learning has come from this “forced collaboration”; no student was permitted to undertake the research alone.

Demonstrable impact via the students

Most of the students are in leadership positions, doing original work. Some have joined Keystone and hold key responsibilities. Confidence, insights, frank dialogues and narratives, in a field up, have enormous potential. In many ways, Keystone Foundation’s 30 years of work in grassroots action research, developing a relationship with indigenous communities and making them partners in building this institution, has enabled the NFLC to grow in this super petri dish. So, each module, component, lecture, practice and narrative has a field reality, process, village or lab to visit, observe the dynamics and read from literature, thereby creating a strong innovative educational experience that goes beyond the book and curriculum. Ten years is still a very short time to measure “perceptible leadership”, which is the aim of the NFLC. The demonstrable impact of the success of the NFLC will be seen in how the fellows leverage this experience going forward. In the future, we wish to host an alumni meeting for reflection and next steps on deepening our engagement with them and expand this learning so that it gets mainstreamed in their lives. While this is happening in subtle

ways already, the demonstrable impact remains in-built and inner. A Keystone student reflected on how they had to let go of their presumptions as they began to research on their own communities and landscapes.

As students step out of the NFLC classroom, they carry with them a sense of a broadened perspective and a vision for their lives that will force them to look beyond the obvious. A Cornell student said,

“The NFLC is full of contradictions that work together: humility and confidence, empowerment without dependence, and inside knowledge with outside expertise. I hope to use these contradictions to better understand people and problems that they face.”

The NFLC is a continuing partnership for new ways to engage with and develop the Adivasi youth. For Cornell University, it is a way to internationalise knowledge and self-awareness. From the larger platform of the 15-week course, post-COVID-19, there has been a change to focus more on global health in a summer programme format for a shorter duration of 6 weeks, which is now the NFLP. The model of teaching remains the same, with a mix of theory and research with Cornell and Keystone students. The themes are focused on issues around community wellness and health. For Keystone Foundation, it is a great way to get our health workers onboarded as they participate in the NFLC.¹

The NFLC as a programme was directed at students who were graduates and Adivasi youth who had completed schooling. It was aimed at higher learning and education levels. Over the years, several programmes that were conducted in the area of conservation education were intended for school-going students, namely, primary and middle schoolers. These included village elder programmes, conservation education summer camps and wildlife education programmes, which were run through school nature clubs. The instructors of these programmes were often staff of the organisation and local experts from the Adivasi community. The Barefoot Ecologists, who were local community members trained to document changes to the environment, took classes in local schools on topics related to forests and the climate. They brought to the classroom experiences that they had recorded and documented from their work. This approach channelled a way for us to engage in a more formal sense with local government schools by bringing together a curriculum on ecological development in a biosphere reserve. The climate curriculum was one such effort in converging multiple learning efforts into a structured offering.

INTRODUCING CLIMATE CHANGE CURRICULUM IN GOVERNMENT SCHOOLS

Training and capacity building of local communities and indigenous people has always been a part of the approach for implementing projects in the NBR. Training in diverse activities such as beekeeping with native bees, natural farming, value addition of forest produce, monitoring wildlife, water, forests and

¹ For further reading on the Nilgiri Field Learning Centre, see:

- <https://blogs.cornell.edu/nflc/>
- <https://practiceconnect.azimpremjiuniversity.edu.in/where-many-worlds-meet-nilgiris-field-learning-centre/>
- <https://www.currentconservation.org/slow-conservation-in-the-nilgiris-field-learning-center-an-integrative-model-of-education-research-and-practice-2/>

farms to record interactions and changes, community-based journalism and community health have, over the years, produced who we refer to as Barefoot Ecologists: beekeepers, wildlife and water stewards, health workers and so on; that is, local community resource persons. These local experts are from within indigenous communities, comprising the youth, women, men and elders. Their training has thus created a pedagogy for sustainable livelihoods. Implicit in this pedagogy for sustainable development is the theme of climate change. The NFLC is held within the Keystone Foundation campus. With the climate change curriculum, which was built over the years through our interactions with communities in the NBR, we decided to take it out of our campuses and field offices and offer it to the district education authorities. Our effort to mainstream alternative pedagogies that were often run on the periphery as “nature clubs” or “eco clubs” is now happening through the climate change programme in Keystone Foundation. As part of climate change education, practical projects with students are underway to influence the environmental curriculum at the district level, especially for the NBR.

Vision Statement

“Nurturing climate champions for the holistic well-being of Nilgiri Biosphere Reserve.” This echoes our aspiration to transform climate education in the government schools of the NBR, beginning with 14 schools. Our aim is to nurture climate champions through investigative, experiential and project-based learning pedagogy. We foresee them to be agents of change in society and build a community of climate-aware citizens for the holistic well-being of NBR. Besides, schools are envisioned as the knowledge hubs of climate change with their commitment to doing good for the planet and our communities. This work builds on decades of progress made and lessons learnt in the NBR since Keystone Foundation was founded in 1993. The idea of Climate Smart Schools aims to set a firm foundation for a new era of growth in the field of climate education.

Context

An overview of the Nilgiri Biosphere Reserve

The NBR was the first biosphere reserve to be established in India in 1986. It was declared as a UNESCO World Heritage Site in 2012. Spread across the states of Tamil Nadu, Karnataka and Kerala, it has a total surface area of 552,000 hectares (ha), which includes: (a) a core area of 124,000 ha; (b) a buffer zone of 357,400 ha; (c) and a transition zone of 70,600 ha (UNESCO, 2018).

The biosphere reserve falls within the Western Ghats and is represented by unique and threatened ecosystems, including a host of forest systems ranging from seasonal rain forests in the low hills, tropical montane forests and grasslands in the higher reaches, to moist deciduous forests, scrub and dry deciduous forests towards the plains in the eastern end.

The region is noted for its rich biodiversity. It houses about 3,500 species of flowering plants, out of which 1,500 are endemic to the Western Ghats. The fauna consists of over 100 species of mammals, 550 species of birds, 30 species of reptiles and amphibians, 300 species of butterflies, a large number of invertebrates and many more species that await discovery by scientists. It is home to a number of tribes, who have unique rituals and traditions, particularly relating to healthcare and nature reverence/conservation.

Nilgiri Biosphere Reserve and climate change

Since 2014, climate-related disasters have greatly impacted the NBR. Long-term weather patterns have been disrupted and the fragile ecosystem of the NBR is facing the brunt of climate change. The frequency in extreme weather events has increased, leading to floods, droughts and landslides in the region, affecting humans and nature alike. Below are some snippets from reports and articles covering these events.

On August 8, 2019, the Avalanche and Emerald valley regions, which are part of the Kundha watershed, received an unprecedented 900-millimetre (mm) rainfall within 24 hours. It broke the record for the highest rainfall in Tamil Nadu, by nearly twice the amount. Over four days, the region experienced close to 2,500 mm rainfall. (Bosco, 2020)

'The drought was so severe in 2016-17 that even underground aquifers began drying up. For the first time, because of lack of drinking water, the then collector had to order digging of bore wells for water supply,' Innocent Divya, Nilgiris District Collector, told indiaclimatedialogue.net. 'I see this as a critical sign of change in the ecosystem. We have to wake up and act immediately.' (Arasu, 2018)

The lack of predictability in rainfall has also interfered with the traditional agricultural practices of the indigenous people of the Nilgiris. It has affected honey production, a major cottage industry in the region. 'I have been told that the flowering patterns of many plants and trees in the region have changed and this is having an effect on how bees forage and therefore having an adverse effect on honey production,' says Anita Varghese of the Keystone Foundation. (Arasu, 2018)

In Wayanad, close to 10,000 people are holed up in various relief camps. Residents of Meppadi's Puthumala village are facing the brunt of heavy rains and floods. At one of the relief camps, several people were seen wailing as they were trying to locate their kin. ("Kerala rains and floods", 2019)

Keystone Foundation's experience of education in the Nilgiri Biosphere Reserve

Education has always been an integral part of Keystone's work. Nature education through field courses, nature camps and village elder programmes has been undertaken continuously in the informal space of education. "Where the Kurinji Blooms" was a biodiversity module that emerged from our education experience in the NBR (https://www.cepf.net/sites/default/files/keystone_56176_technicalreport.pdf).

Objectives of the Climate Smart School

As climate change related impacts and issues are on rise, our efforts are directed to increase children's awareness on the state of their environment. These include

- Creating a climate curriculum, which uses a local lens to understand the global climatic phenomenon.
- Developing a cohort of climate educators who are from the landscape.
- Transforming the Climate Smart School to Community Climate Centres as a knowledge hub to take climate education beyond classrooms to parents.
- Building linkages on climate with the local government—the panchayat and the relevant district office—to make the Nilgiris district a model for the state of Tamil Nadu in terms of climate education.

Approach

Figure 7: The whole school approach to climate change



Source: Keystone Foundation, 2022

The approach used for the Climate Smart Schools is inspired by the whole school approach from *Getting Climate-Ready: A Guide for Schools on Climate Action* (UNESCO, 2016). It focuses on the school with the active involvement of internal and external stakeholders for climate action. It has four main aspects:

- Teaching and learning with a climate curriculum and the active role of climate educators. Here, priority is given to the local lens to explain the global phenomenon.
- Facilities and operations for a school to adopt green infrastructure by opting for energy efficient lighting, water saving devices, kitchen gardens, native plant nurseries, waste management facilities and weather stations.
- School governance: Internally, the involvement of the principal and teachers makes it easy to decide on climate actions that are necessary for the school. But the involvement of the school management committee with parents who understand the work would bring in more inclusivity. The next step would be to have a climate action committee in the school with the principal, the coordinating teacher, student representatives and a climate educator to steer the climate actions and monitor them.
- Community partnerships: Involving external stakeholders is a must for the success of the project. Community partnerships are also important to take climate education beyond the classroom. We envision the schools to become Community Climate Centres that would act as climate change knowledge hubs. Through the provision of timely weather forecasts and knowledge dissemination on climate smart solutions and climate resilience by demonstration models in the school, it will engage the communities around the school in climate talks.

The school as a Community Climate Centre would cross-link education and action with the concerned and relevant line agencies of the government, like panchayats. The goal would be to empower people to act on climate change and build a community of committed climate-aware citizens.

The whole school approach also follows the principle of “plan, practice and monitor”. Once the climate actions are planned and practiced, there is a need to monitor them as well. The results from the monitoring exercise, like energy and water audits, would feed into the planning and practice of climate actions.

Stakeholders

Stakeholders in the Climate Smart Schools initiative include the Keystone Foundation project team and other relevant programme team members, climate educators, students, teachers, principal, education department, disaster management cell, panchayat and other relevant line agencies of the government.

Figure 8: Map of Climate Smart Schools in the Nilgiri Biosphere Reserve



Note: Fourteen schools are part of the Climate Smart School initiative in 2022. These include 10 schools in the Nilgiris district and one in Erode district of Tamil Nadu; one school in Chamarajanagar district of Karnataka; one in Malappuram district and one in Wayanad district of Kerala.

Source: Map prepared by Keystone Foundation

Climate Curriculum

The Climate Smart curriculum is designed for students of Class 6 to 8. It comprises six lessons: weather monitoring, energy conservation, water conservation, sustainable food production, native plants and eco-restoration, and waste management. The framework of the curriculum is designed to allow students to investigate the climate aspects of their region and is experiential in nature, using techniques of learning by doing and non-formal and cooperative learning. A combination of field visits with information and communications technology (ICT) aids in building an understanding about climate change. It is aligned to the science and social science syllabus of the Tamil Nadu state board.

Expected outcome of the Climate Smart curriculum: Critical, creative and future thinking skills

The climate curriculum encourages critical thinking, where students question and critically examine the climate aspects that they have observed, experienced or heard. The curriculum also encourages students to think creatively about solutions to climate issues in their schools and homes, and prompts future thinking about climate actions.

Journey so Far

In the first phase of Climate Smart Schools, we completed six lesson plans with activities on kitchen gardens and energy audits, among others.

Mind maps as an assessment tool

In the classroom, we used mind maps as a tool to assess the students’ understanding of climate change.

The first mind map exercise was conducted in August 2021, before starting the lesson plans, to assess the words that students knew or could connect to climate change. The second mind map exercise was conducted in December that year to know if the students had expanded their vocabulary and learnt more terms connected to climate change. We used word clouds as a mode of visualisation to see the difference in the mind maps between August and December. We created one word cloud per school, feeding all the words into the mind map from all the students involved in the session. The bigger the word in a word cloud, the more it is repeated.

Through these word clouds, we can see the difference in how many new words students have learnt and are able to connect with climate change. In the beginning, the common words students wrote were “rainy”, “sunny”, “weather” and so on, but after the completion of two lessons, they were able to link words such as “pollution”, “greenhouse gas”, “hygrometer” and “global warming”. (See Figures 9–13 for the word clouds created for the schools.)

Figure 9: Keirbetta School, August 2022



Source: Keystone Foundation, 2022

Figure 10: Keirbetta School, December 2022



Source: Keystone Foundation, 2022

Figure 11: Milidhane School, August 2022



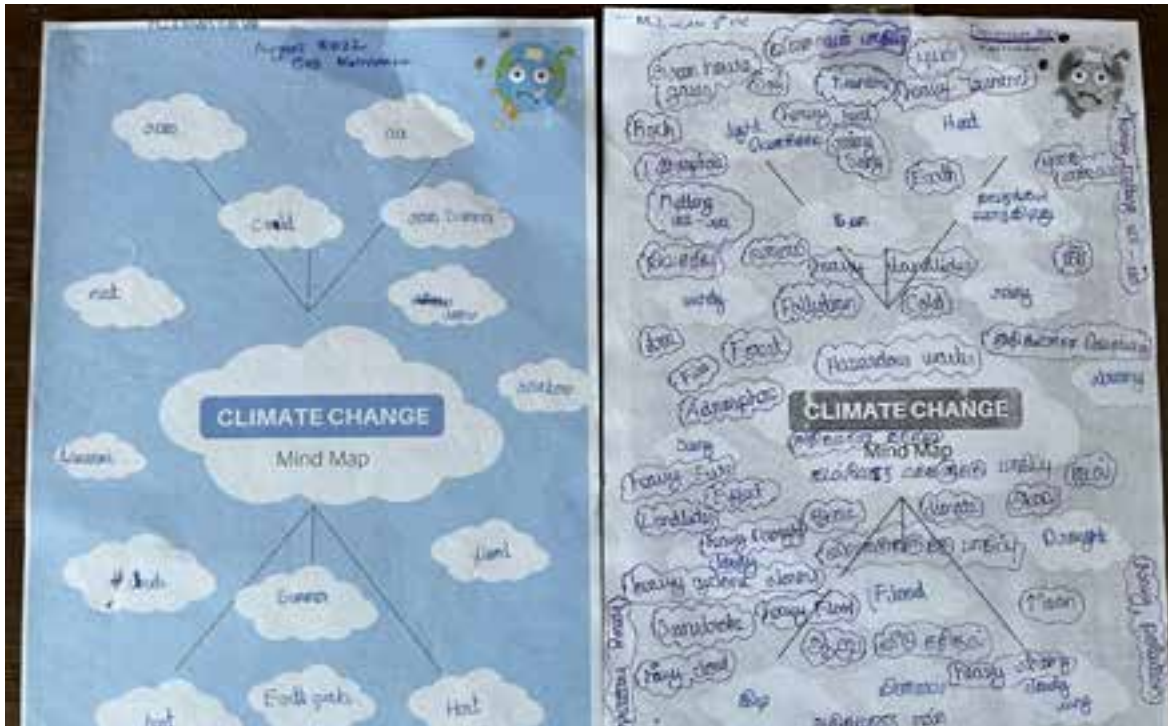
Source: Keystone Foundation, 2022

Figure 12: Milidhane School, December 2022



Source: Keystone Foundation, 2022

Figure 13: Mind map exercise before and after the module



Source: Keystone Foundation, 2022

Cooperative learning as part of the pedagogy

The Climate Smart Schools curriculum is all about cooperative learning, as students come from different backgrounds and hold many different perspectives. During group work, they get to bring those perspectives together. We saw students discuss the local context of tea plantations and human-wildlife interactions,

Figure 14: Climate educator who is also a Barefoot Ecologist



Source: Keystone Foundation, 2022

Figure 15: Learning about the impact of climate on bees



Source: Keystone Foundation, 2022

sharing their emotional attachment to the landscape while also talking about global examples like penguins in Antarctica and global warming.

Through the storytelling method, with the cooperative learning approach, diverse perspectives were built:

- Local and global perspectives;
- Human and non-human perspectives;
- Past, present and future perspectives;
- Emotional, value-based and fact-based perspectives; and
- Ecological calendars.

This engagement brought together the linkages within climate change, and the local and global contexts were expressed well by the students. For instance, we are working with students, parents and teachers to create ecological calendars for their village or hamlet, which promote awareness of traditional ecological knowledge of different natural phenomena, uncultivated food, traditional crops, traditional practices associated with agriculture and other non-timber forest products (NTFPs), especially among the younger generation. It is a community-led research and action project on climate change with discussions on the impact of climate change on agricultural practices, crops and productivity, helping explore potential new strategies.

Climate Educators

Climate educators are the people from indigenous and local communities who know their landscape and the issues faced in these regions. They act as a bridge to link the local aspects of climatic experience with formal education. They are climate storytellers, native nursery raisers, community mobilisers, farmers,

Barefoot Ecologists, wildlife stewards and seed keepers. We produced a short video to give an overview of the programme and introduce these climate educators: <https://youtu.be/ekbUKOB9HJ4>

Steps towards becoming a climate educator

As part of their capacity building, climate educators undergo training on climate and technology with Mobitech, a software company located in Erode that makes weather stations for local farmers. The climate educators also undergo nature education training on planning and assessment of sessions with Zoo Outreach, a local non-governmental organisation (NGO) that covers conservation education on issues of wildlife, among other activities. Other cohort-based trainings cover beekeeping, native nurseries, climate histories and a storytelling workshop.

The approach to the training is holistic, interdisciplinary and integrated. Due to different contexts in each state, we follow cohort-based learning. Other than these formal trainings, we have monthly meetings to discuss the lesson plans and the educators share experiences from their sessions.

Both students and teachers participate in peer-based learning through this programme, sharing the lessons learnt amongst themselves and gaining subject growth, experience and understanding on the linkages between climate and all other aspects of life. As a result of such capacity building, we have witnessed the personal growth of these climate educators and the successful linkage of their skill sets and experiences to the climate curriculum.

Glimpse of sharing by climate educators

Below are some responses from climate educators located in the various districts where the Climate Smart Schools programme has been initiated.

Greta, Kotagiri:

"In the beginning, I was worried about automated weather station because I didn't know how to teach students about it. As I learnt more about it, I became confident. During the classes, students asked me what the spoon-looking device on the weather station was, they were curious to know whether they can measure their body temperature with the thermometer in the weather station. Since I have the app in my mobile showing the weather data, even when it drizzles, I am eager to check the measurements."

Manimeghalai, Kotagiri:

"After working in government office and Illam Thedi Kalvi scheme for evening tuitions, teaching in Climate Smart School is a very new experience for me. Learning about energy efficient devices and renewable energy through the Climate Smart School helped me to know about the difference between conventional tube lights and LED bulbs. The students said that during rainy season the classrooms used to be very dark, but now the LED provides good light. We plan to teach and conduct an energy audit in the coming months with the students."

Ponnamma, Kotagiri:

"I have worked mostly in the field with Keystone Foundation for six years and have taken many trainings. The first one I took was with the Radio Kotagiri about women's health and through that experience, I started to read many books on home medicines and women's health and now I could

see its full utilisation when in the weather lesson, I could link diseases to seasons and importance of nutrition in the changing climate.”

Shylaja, Kotagiri:

“I have worked at Keystone Foundation for six years and have taken many trainings on wildlife, plant nurseries, beekeeping etc. I wondered, how would these trainings be useful for Climate Smart Schools? When we did the kitchen gardens, I knew how much mud to put and what fertilisers to use, so the nursery training I had was useful. My beekeeping training will also be helpful because we plan to keep bee boxes in schools so we can teach students about pollinators.”

Shivanna, Punanjanur:

“Since my younger days, I had great interest in plants from my grandparents, who taught me about seasonal plants, seeds etc. I have raised a nursery to conserve native plants, because many changes in the forest are making these native plants population to decrease. We have given native plants to schools to teach students and increase interest in native plants. Ten years ago, the trees given to some school has grown into huge trees now.”

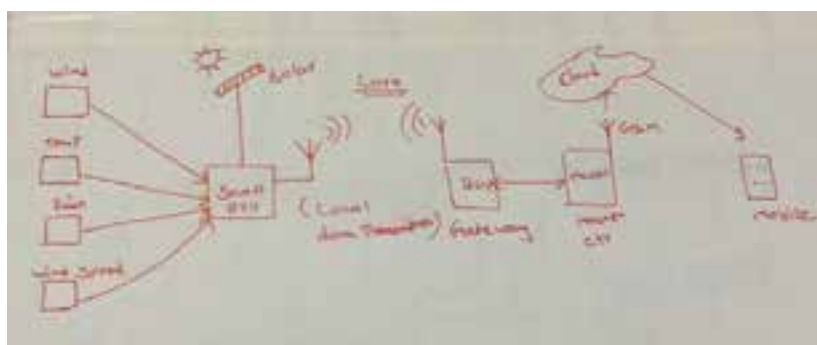
Faseela, Nilambur:

“I am from Nilambur, where most people are Adivasi. Most people don’t farm because they collect wild foods. However, with access restrictions to collect wild foods, people don’t eat wild foods or other nutritious foods. As a result, there is high nutrition deficiency in the region. We have made a small kitchen garden for the community and given them seeds to sow in their backyards. Likewise, the kitchen gardens in schools are seen as connect from students to home to know about the nutrition and local food diversity. We also involve the panchayat in this project. To make Climate Smart School as a success is a dream for me.”

Information and Communications Technology in Climate Smart Schools

Automated weather station is the ICT used in the Climate Smart Schools. Our technology partner is Mobitech Wireless (<https://mobitechwireless.in/>).

Figure 16: How does the automated weather station work?



Source: Keystone Foundation, 2022

The automated weather station measures temperature, humidity, wind speed and direction, and rainfall.

The weather station is placed outdoors with sensors for the above-mentioned parameters. It has a Sensor Control Unit (SCON) connected to it, which works with a backup of solar power. SCON collects the data from the sensors and transmits it to a Master Control Unit (MCON). In our schools, MCON works with the help of a GSM SIM card. MCON collects field data from SCON and communicates with all remote devices through the cloud server. This data can be accessed on mobile phones via the Mobitech app. The app can be downloaded from the Google Play Store by searching for "DCON". Each weather station can be connected to 10 mobile phones. The weather data is real-time data, and for the data to be continuous the MCON has to be switched on at all times.

Outcomes Envisioned for the Climate Smart Schools

As per the vision statement, nurturing climate champions for the holistic well-being of the NBR is the outcome envisioned for the Climate Smart Schools. The climate champions will play a central role beyond school, working towards climate change education and awareness. Play is an important part of making this change happen. The evidence of climate change and its effects in the Nilgiris is starkly visible, with indigenous communities facing multidimensional challenges. This has affected their habitat and livelihood as well as the biodiversity of the region. To combat these challenges, there is a need for climate action by all stakeholders. Climate champions will be the focal nodes to encourage shared pathways and advocate climate smart actions.

The first step would be to engage the parents of the students in this effort. The idea of climate champions aims to harness the potential of the youth in the region by creating a network of students from all the Climate Smart Schools and work towards innovative student-led solutions. The programme continues to engage with government schools and is now running successfully. The climate curriculum, which is connected to the biosphere and has been developed for primary and middle schools, has been yet another way for us to capture lessons from the biosphere and tailor it to different levels of learners. The NFLC takes the complexity of a socio-ecological system like that of the NBR to graduate-level students while the climate curriculum addresses a similar complexity through the lens of climate change. In both pedagogies, the biosphere sits as the primary basis for the learning. The curriculum becomes very relatable and real for the learner when they are able to experience the lessons even as they step out of their classrooms. In field-based learning, the boundaries of the classroom become blurred as students learn from observation, experience and listening to the people who have lived in a particular ecology.

While the NFLC is primarily run within the campus and the field sites of Keystone Foundation, the climate curriculum is implemented in government schools. There is interest in taking the climate curriculum to other schools in the state and we need to work on this in the coming years. We also need to forge alliances with similar efforts in the state, whether they be located in other geographies like oceans, farms or dry forests. The need to engage with universities in India to enable curricula like the NFLC to also be available for local students is a priority for us. For many of the Adivasi graduates from the NFLC, the opportunity to study in a university is a remote one and to sit together as partners and equals with a university student seems further away. As the Keystone NFLC alumni came together to reflect on their learning experiences, they were also keen to reflect on their educational experiences growing up. Many of them are parents and see the quality of education that their children are receiving. It was this reflection about what the NFLC

has offered and what the climate curriculum is offering that led the alumni to set out to assess the status of primary education among Adivasi areas of the Nilgiris district.

A REIMAGINED EDUCATION FOR AND BY INDIGENOUS PEOPLE

The NFLC and our efforts at running a climate curriculum in government schools have been our direct experiences with teaching an alternate pedagogy that stems from the NBR. A group of alumni from the NFLC programme were interested in understanding the situation in formal schools where indigenous children are currently studying. Our search for any studies undertaken in the past on education for indigenous children in the Nilgiris, especially the eastern slopes, yielded no results. This lack of a baseline needed to be addressed and the alumni decided to take this up earnestly. It was this motivation that led us to design and implement a short survey on the status of education and engage in discussions with elders, teachers, students and educators to understand the present state of education and the various stakeholders' perceptions of the same. We also encouraged the researchers to reflect on their own education after formal schooling and reimagine an education for their communities and for future generations.

We created a script to describe the project, clarifying anonymity and risks, and asking the consent of participants to use their words and photos from our conversations in the report we developed. We audio recorded the reading of this consent form and the confirmation of consent from interviewees when in the field. Our research tools included a list of relevant stakeholders to talk with and a thorough set of questions, both general and specific, to each stakeholder to prompt conversations. The questions were not intended as a script for the interview, but more as a guiding tool. Our team had multiple meetings to create a useful list of questions, categorise them by stakeholder, translate them and understand them so that we were ready for fieldwork, to collect information and stories. Each team member had a packet of these questions to use in the field, as well as phones to record audio and notebooks and pens to take notes throughout the discussion. Team members committed to a certain number of conversations with various stakeholders and conducted fieldwork from mid-September to the beginning of November 2021 in multiple Adivasi communities with which our team and Keystone Foundation are connected. In working with multiple indigenous communities for this project, we also worked with numerous languages, including Irula and Toda. As the NFLC alumni collected responses from the field, they translated information from their own mother tongues into Tamil, which our translator then converted to English for this final report.

Results from the field

A total of 30 interviews were conducted with varying stakeholders, including students, teachers, parents and NGO workers. The focus was on government-run schools, especially the government tribal residential (GTR) schools. Some of the emerging themes are outlined below:

- Lack of facilities in present-day schools: While facilities have definitely improved from the days of the previous generation, better toilets, sports facilities, computers and extracurricular activities are needed if schools for indigenous children are to develop into strong institutions that would serve them

as they grow up in a modern world.

- Distance of the schools and lack of transportation to get to them were also pointed out. A higher education graduate identified this need for the future: *"The government should build schools in the village. The school should be in 1 km distance as the students can walk. Only then all the village tribal children will study without any obstacle"*.
- Opting out of education: Students dropped out of school, especially after middle school, for mainly economic reasons, having to attend to family responsibilities, lack of interest, fear and not being able to comprehend the courses. A need for more support to help such children re-enter the schooling system was felt. A teacher reflected that the current system benefits brilliant students; the use of the word "brilliant" (translated from Tamil to English) also pushes the idea that a student must be exceptionally smart to learn well in this environment. *"If this kind of teaching does not work for many students, then it is worth changing methods to better support the majority of students"*.

We listened to a few stories around mistreatment in classrooms that took the form of neglect or even beatings. When we asked a current student what he wanted to change in his school, he simply stated: *"Very strict"*.

Is the school a place where culture can be taught? Parents want better lives for their children: in their careers, their education, their emotions and their passions. One parent even foreshadowed the mechanised direction in which society is heading and the worry that education is the best solution and there was no other way for improving their lives.

We noticed a theme emerge around the loss of indigenous culture and the need to save these customs through teaching in schools. The idea of culture loss is corroborated in a higher education graduate's narrative, who said that she knew little about her culture until she finished her education and left the school system. Other stakeholders brought alternative opinions to the table around how tribal students should interact with their cultures. Although differences exist in the method of exposure, almost every stakeholder we talked to acknowledged the importance of sharing cultural knowledge and practices with children in their communities. In these opinions, stakeholders mentioned that other students go to schools with indigenous children, so teaching indigenous cultures would not apply to the entire class and would therefore not make sense. Additionally, some of these statements drew clear distinctions between the school and the community in terms of responsibility for cultural teaching. We also have to consider that multiple indigenous cultures with their own knowledge and customs exist, even among the stakeholders we interviewed, so this diversity should be reflected upon in cultural classes rather than individual communities teaching their own children about their traditions.

What makes a good school? The role of an inspiring teacher and the connections they are able to make with the students seems like the overriding factor with regard to indigenous students opting to stay in school. Placing this as a sole burden on the teacher is not fair, although parents understand but feel helpless when questions of their contribution to their children's education come up.

Opportunities built into the formal education system that involve exploration outside of the classroom are also beneficial to tribal students in exposing them to different fields of study and application, diversifying their experiences, and validating other forms and sources of learning that exist beyond the school. An alumnus of the NFLC programme reflected on her outside learning: *"I had opportunities to travel to many places, I got that opportunity through NFLC"*. There was a chance for her to know about how her community people are outside. She also got a chance to speak with the foreign students in English. She may not have talked much with them but had spoken some words in English, which was a good experience.

What does the future hold? A few higher education graduates went on to pursue agriculture or work in private companies. The group of parents we interviewed were engaged in a wide range of jobs, such as ASHA health worker, agriculture jobs, taxi driver, estate watchman and honey harvester, as well as three mentions of wage work. All five tribal elders stated agriculture as their livelihoods. Agriculture, therefore, seems to remain a consistent livelihood option through the generations.

The school, on the one hand, provides an environment for students that controls their exposure and shelters them from the harsh societal realities that may negatively affect their behaviour. Society outside of formal education comes with lessons that may not always play a positive role in people's lives, especially younger indigenous children. We have heard concerns about bad habits in children. Both school and community learning can also negatively impact the development of indigenous students. The many realms of learning must therefore work together to support children and indigenous communities and provide positive experiences for growth.

We attempted to cover the topic of potential discrimination in a sensitive manner when talking with our stakeholders, especially indigenous students, using language like "differential treatment" in relation to teachers and friends at school. However, none of the current students, the children who do not attend school or the higher education graduates we interviewed mentioned experiencing any discrimination in schools.

These personal accounts in which discrimination was absent honestly surprised us, given the amount of literature on tribal education in India that highlights negative incidents of discrimination towards indigenous students in the school system. We certainly do not have a full scope of the situation, so we cannot conclude that discrimination does not occur in government schools in the Nilgiris. However, we find the lack of these harmful interactions a positive point for the students we met.

Looking into student experiences in school and thinking about the possibility of adding indigenous culture lessons into curriculums, both centre the indigenous students' well-being and connection to their cultures in the educational system. However, in our conversations with a few stakeholders, we came across some perspectives that work to uphold negative stereotypes about indigenous students and communities and reinforce the unfair barriers they face in the opportunities available to them.

These two positions reflect the issues that arise in approaching interactions and collaborations with indigenous students and communities. The teacher's quote makes a major assumption that *"other types of education may not suit students who are members of tribes because those pathways do not necessarily*

lead to immediate financial returns" which the teacher believes is the only goal of indigenous students. These perspectives can very easily lead to excluding indigenous students from these opportunities because outsiders determine that this is better for them. Making these distinctions further perpetuates the historic and systemic marginalisation of indigenous communities. On a somewhat similar note, an NGO representative casted doubt on the place of indigenous people in fields like medicine and engineering, pushing the outsider opinion that focusing on their historic and stereotypical talents is best for these communities. If we box indigenous students into opportunities that only build on the skills they are familiar with, how will they grow and pursue dreams outside of these boxes? Additionally, the qualification on accepting that indigenous students can become doctors and engineers if they save their cultural uniqueness places an unfair burden on them to carry their traditions and represent their communities to serve outsiders who find their cultures important to preserve. The desire and will to preserve indigenous cultures should come from the communities themselves; nothing must hinder indigenous children from reaching goals that stretch beyond their communities.

After completing the NFLC course, in a conversation with the programme director, one youth talked about wanting to go back to his community lifestyle of being a pastoralist as there was anxiety about whether his parents would accept his decision. Four years later, he has succeeded in pursuing his dream of rediscovering his cultural calling. Yet another student asked very poignantly, *"If you don't offer me a job after this course, shall I just go back to raising goats in my village?"* Thus, we have seen that there are different starting and landing points which are shaped by individual aspirations.

FUTURE VISIONS

In our conversations with stakeholders about their experiences in schools, we heard people identify friends, facilities, good methods of teaching and games as the reasons they liked school. We also wanted to look towards the future with them. We have already touched upon one aspect of this vision, in possibly incorporating classes on indigenous cultures into schools. In this section, we present additional facets of education that indigenous communities want for their children.

We previously discussed the current realities of facilities in schools, revealing some dire situations that the students face and the importance of infrastructure in incentivising and supporting students to attend classes.

Adding onto the desire to change teaching methods, a number of indigenous people also want to see more practical material added into education; lessons that are applicable to their children's lives in society. We talked to a higher education student who mentioned, *"But if they teach practically as in school, they can teach many things so I believe through that we can get a better education"*.

Both experiential and practical learning are included in indigenous communities' visions of the future of indigenous education. However, teaching methods and life lessons require effective language mediums

to successfully reach and positively impact students. In our conversations, stakeholders also brought up the dissonance that occurred between indigenous students and the teaching mediums used in school. One higher education graduate described his experience that since he was a Commerce graduate from 2014, he had studied the subject in English and graduated, although his schooling was in Tamil. Another higher education degree holder commented, *"For the small children Tamil is a big problem, so at home they have to teach some things in Tamil"*.

A perceived hierarchy of language emerged in the parents' statement, prioritising English. In these statements, the indigenous languages that students grow up with as their mother tongue were not mentioned. What if we imagined an education where the mother tongues of indigenous students were used to facilitate the learning transition into school? A college teacher we interviewed unpacked this idea further: *"Now if a person from the tribal community itself comes and takes class in their language, that will have a separate response. The students will study with interest and full involvement."*

These statements not only hold space for bringing the students' indigenous backgrounds into education but also envision a more institutionalised way to meet students where they are with language. Using their mother tongue for instruction and hiring tribal teachers to implement this learning can address the challenges of transition from home to state, national and international languages that one higher education student had previously discussed. The college teacher's sentiments resonate with an even larger national and international discourse on the use of mother tongue mediums and multilingual education for indigenous students across the world.

Limitations of our Study

While we analyse the interviews our team conducted with stakeholders in the field, we must also acknowledge the limitations of our work. We completed a total of 30 interviews among five different communities, talking to two groups of indigenous peoples, the Irulas and the Todas. Our results do not speak for all indigenous communities or all members of each stakeholder group, and this was never our intent.

Possibilities for Future Work

Through this inquiry, we plan to influence, advocate and scale up a higher quality of education for indigenous youth and adults; one that will prepare them to participate in the process of governance and decision-making that influences their lives. Additional efforts building off of this initial report will include conducting workshops and taking up discussions with state education departments and other role players in Adivasi education to share our findings and advocate for community-led reforms in indigenous education within the Nilgiris and the Coimbatore district. We will collaborate with partners from Keystone Foundation to initiate similar efforts in their regions as part of ongoing training programmes with our networks. There exists great potential for additional future studies to delve deeper into specific aspects of indigenous education and instigate these conversations with other tribal communities around the country.

We also have much to learn from other models of indigenous education, both within India and internationally. In conjunction with our own efforts on the ground, we will continue our exploration into alternative learning systems. We hope to identify aspects of these educational experiences that are of

interest to local indigenous communities in our region and work with stakeholders to propose, implement, evaluate and improve these initiatives for our indigenous students.

Figure 17: A village elder teaching about the forest, in the forest



Source: Keystone Foundation, 2022

Figure 18: A village elder teaching about natural farming in the local school



Source: Keystone Foundation, 2022

CONCLUSION

While documenting the experiences gained from the NFLC, we have used our experiences as well as those shared by students and faculty in their reflection writings to arrive at our findings. We know that the NFLC experience has been transformational for a majority of the students both from Cornell and Keystone. The students have taken with them a widened perspective of learning from the biosphere or any landscape that is a constant interaction of the social and the ecological. This model of field learning has enabled the production of knowledge that incorporates theory and practice, while situated in a place that we are calling “the field”. The knowledge produced has been about real challenges faced by people, wildlife and natural resources in an ecologically fragile area. While the biosphere is largely comprised of forests, it has a high diversity of indigenous cultures and people, who are very few in number. Their lives, which were intricately linked with the forests, land and rivers, have now been altered to adapt to wage economies, government housing and tea plantations. This change has brought roads, which means access to health and education. The students explore and disentangle the complexities of natural resource governance and community wellness as indigenous people straddle traditional lifestyles with modern-day livelihood options. In the case of rapidly urbanising townships like that of the hill town of Kotagiri, poorly managed water distribution and sanitation throws light on the apathy of the local administration to the plight of the marginalised urban poor, who are migrants and settlers with little say in matters of the district. Many students reflected on what it means to learn from such a place and to understand that all is not what it seems. They reflected on their privilege and position as they aim to blend in with communities while doing their research. The programme has effectively enabled students to become perceptive leaders who have come out in search of something different.

The need for mainstreaming this model of field learning needs to be taken up and our efforts to introduce a climate curriculum in the government schools of the district is a step in that direction. Formulating a strict curriculum that dovetails with the existing teaching materials in schools ensures that teachers do not feel burdened by having to teach yet another subject. Through the climate educators who are trained by Keystone and introducing more learning by doing, the curriculum is being implemented for the second year now.

When working with government schools, we are well aware of the condition of the schools, and we have seen how the schools located in towns and close to urban areas are far better than those set up in remote villages. The need for a systemic transformation in education, especially when it comes to Adivasi children, needed to be explored. The NFLC alumni who took up this study assessed the realities, needs and aspirations of their community. They used their research skills learnt at the NFLC to undertake this study. While their findings point to a lack of facilities, guidance and infrastructure, there are deeper questions about language, culture and discrimination, which they know cannot be addressed through the introduction of curriculum. One of the researchers was invited to present before the state government authorities and though it was a good opportunity to share, the researchers are not hopeful of bringing about change. They would much rather imagine a school which they had visited and feel that is within their control and can be achieved in this lifetime.

REFERENCES

Arasu, S. (2018, February 9). Nilgiris threatened by climate change. *The Wire Science*. [science.thewire.in/environment/nilgiris-climate-change-rainfall/](https://www.thewire.in/environment/nilgiris-climate-change-rainfall/)

Bosco, G. V. (2020, August 3). Peril in the hills: Extreme weather a danger for Nilgiri ecosystem. *Down to Earth*. www.downtoearth.org.in/news/climate-change/peril-in-the-hills-extreme-weather-a-danger-for-nilgiri-ecosystem-72620

Heavy rains hit normal life in Nilgiris district, holiday for schools, colleges. (2022, December 14). *Outlook*. www.outlookindia.com/national/heavy-rains-hit-normal-life-in-nilgiris-district-holiday-for-schools-colleges-news-244840

Holiday for schools, colleges in Nilgiris today. (2019, October 22). *The Hindu*. www.thehindu.com/news/cities/Coimbatore/holiday-for-schools-colleges-in-nilgiris-today/article29762360.ece

Kerala rains and floods; Landscape of Wayanad's Meppadi altered by huge landslide. (2019, August 9). *India Today*. www.indiatoday.in/india/story/kerala-rains-floods-landslides-wayanad-meppadi-weather-rescue-1579235-2019-08-09

UNESCO. (2016). *Getting climate-ready: A guide for schools on climate action*. <https://www.unclearn.org/wp-content/uploads/library/246740e.pdf>

UNESCO. (2018). Nilgiri biosphere reserve, India. en.unesco.org/biosphere/aspac/nilgiri

ANNEXURE A - LESSON PLAN FOR CLIMATE EDUCATORS



Climate Smart Schools - Lesson Plan for Climate Educators

What is Climate Change?

Age Group	6th to 8th Grade
Class Duration	60 to 90 minutes
Objective	To understand the concept of climate change and link it to the local context.
Vocabulary	<p>Climate Change: Climate change is the change in the average weather conditions such as temperature, rainfall, humidity, wind in a region over a long period of time at least for 30 years.</p> <p>The earth's climate has constantly been changing even long before humans came into the earth. But for the last 150 years human activity has fastened the climate change due to emission of greenhouse gases.</p>
	Atmosphere: The envelope (covering) of gases surrounding the earth.
	Ozone Layer: A layer in the earth's stratosphere at an altitude of about 10 km (6.2 miles) containing a high concentration of ozone, which absorbs most of the ultraviolet radiation reaching the earth from the sun.
	Greenhouse Gases: Gases that has the ability to trap the heat in the atmosphere are called greenhouse gases. Greenhouse gases include carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), ozone (O ₃), and fluorinated gases.
	Greenhouse Effect: The greenhouse effect happens when certain gases, which are known as greenhouse gases, accumulate in earth's atmosphere. When greenhouse gases in the Earth's atmosphere trap the sun's heat, this process makes earth much warmer than normal. the greenhouse effect is one of the things that makes earth a comfortable place to live. But when it crosses the limit, it creates lot of problems like climate change, global warming.

	<p>Carbon: Carbon is an element (chemical element). It is solid. The human body is about 20% carbon. This carbon is not present as an element, but is joined with atoms of other elements, such as hydrogen and oxygen. All living things consist mostly of carbon-containing compounds.</p> <p>Carbon is one of the elements in periodic table.</p>
	<p>Element: Chemical element, also called element, any substance that cannot be decomposed into simpler substances by ordinary chemical processes.</p> <p>https://www.britannica.com/science/chemical-element</p>
	<p>Carbon Source: The source from where carbon is released into atmosphere is called carbon source. Carbon is released back into the atmosphere through respiration by animals and plants. It is also released by burning materials such as wood, oil and gas.</p>
	<p>Carbon Footprint: Carbon footprint is the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by any actions.</p>
	<p>Carbon Sink: Any system that can absorb or capture carbon and decrease the amount of carbon in the atmosphere.</p> <p>Examples of carbon sink: oceans, forests, wetlands etc.</p>
	<p>Global Warming: Global warming is the long-term warming of the planet's overall temperature. Though this warming trend has been going on for a long time, its pace has significantly increased in the last hundred years due to the burning of fossil fuels.</p>
	<p>Fossil Fuels: Fossil fuels are the fuels, buried remains of plants and animals that lived millions of years ago. Because of their origins, fossil fuels have a high carbon content. They are mainly used as fuel to get energy for transportation, industries etc. Examples: Coal, crude oil, and natural gas.</p>
	<p>Sea Level Rise: Sea level rise refers to the average increase in the water level of the earth's oceans. Rising seas is one of the effects of climate change. On average sea levels have swelled over 8 inches (about 23 cm) since 1880, with about three of those inches gained in the last 25 years (NationalGeographic.com).</p>
	<p>Invasive Species: An invasive species is "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health".</p> <p>The invasive species can be any living organism: plant, animal and even microbes.</p> <p>Climate change increases the effect of invasive species and supports its spread.</p>

Materials Needed	Chart papers, sketch pens, colour pencils, gum, cello tape. Activity sheets: Say your Story using the Pictures Effects of Climate Change Climate Change Word Play Why is Climate Change Happening? Past and the Present Climate: Back in Time
Student Learning Outcomes	This lesson explores to measure the student's understanding and awareness about the climate change. The lesson is aimed to engage the students in conversation about climate change and weather monitoring by observation, local examples and visual methods. By the end of the lesson, the student should be able to know the major vocabulary and basic concepts linked with climate change.
Skills	Storytelling, identifying the weather monitoring equipment, using the periodic table, reading the weather of the day.
Curriculum Strands	Class 6, Term 2: Unit 3: Changes around Us; Unit 4: Air Class 7, Term 2: Unit 1: Resources - Fossil Fuels Class 8, Term 2: Unit 2: Hazards - Natural and Human Made Hazards
Reference Links	https://www.bbc.co.uk/bitesize/topics/zstp34j/articles/zhhdqhv (to understand carbon) https://www.youtube.com/watch?v=x_sJzVe9P_8 (to understand greenhouse gas effect) https://www.youtube.com/watch?v=OoW2PlvMpZs (to understand carbon sink) https://education.nationalgeographic.org/resource/carbon-sources-and-sinks https://www.bgs.ac.uk/discovering-geology/climate-change/the-carbon-story/ (to know more on carbon source and carbon cycle) https://www.nrdc.org/stories/fossil-fuels-dirty-facts#sec-what-is (about fossil fuels) https://ugc.berkeley.edu/background-content/sea-level-rise/ (for sea level rise) https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Invasive-Species

Lesson Overview:

- Pre-assessment of students' understanding of climate change;
- Introducing the concepts of climate change
- Understanding the weather monitoring through weather station in their school
- Discuss and document the community's knowledge on climate change across generations.

Lesson Procedure:

- Point to keep in mind: Please use the local contexts and examples in all the activities to link the students to their locality.
- This curriculum is to connect them to the changes happening around and link to any of their experiences.
- Please document their responses to your questions and add in the report sheet shared.
- Please take note of vocabulary that you used or came up in your class while engaging with the students

Activity 1: Introducing the Topic: Climate Change Storytelling

In order to assess the students' knowledge and their experience about climate change, engage them in storytelling activity using the climate change storytelling sheet shared. Ask them to use the pictures in the sheet and come up with a story. They can draw more pictures and also add narratives. This is a group exercise. So, divide the students into smaller groups of 4 to 5 and conduct this exercise.

Once the students complete their stories, ask one or two groups to present it and then you can give the introduction to climate change.

1. What is climate change? Define it and introduce the words greenhouse gases, global warming, carbon sink etc.
2. Link it to the local context about the changes they see in climate.
3. Please explain again about the difference between climate and weather and the revision of weather monitoring equipment. Here use the equipment flash cards and check their identification skill and explain about it.

Activity 2: Effects of Climate Change

To initiate discussion on the effects of climate change, use Activity Sheet 2: Match the word with the correct picture.

This exercise can be in pairs. Once all finish the exercise, discuss the correct answers and the terms: melting sea ice and the Arctic, Antarctic, how when the ice melts, the sea level rises and its effects on people and nature. Increase in the occurrence of floods, droughts and wildfires. Increase in spread of invasive species.

Please note: use examples of floods, droughts and invasive species from your region.

Activity 3: Climate Change Word Play

Let the students read through Activity Sheet 3 and notice the words used. Divide the students in pair and let them work on it. Once finished, use the key answers and discuss it.

Ask for examples of words like carbon sink, greenhouse gases, pollutants, carbon sources, fossil fuels.

Discuss the question: What are carbon sources and carbon sinks in your place? For instance, in the Nilgiris, wetlands and forests like Longwood Shola are examples of carbon sinks.

Activity 4: Why is Climate Change Happening?

Divide the students into groups depending on the strength of the class. Let them discuss the Activity 4 and fill in the sheet from the words given.

Once they finish, check the answer with the key given to you. Discuss the words about climate change, try to understand the knowledge of the students on those words.

Explain why climate change is happening. You can use the videos below to get a better understanding.

<https://youtu.be/wzPUM-Ytpz4>

<https://youtu.be/WkvPdUtYhX8>

Activity 5: Wrap-up Exercise: Past and Present Climate - Back in Time

Use Activity Sheet 5 and explain the activity thoroughly. Some key points to share and discuss:

1. The time period required for climate change, which is at least 30 years.
2. Why elders in the community or our houses can play a major role in understanding the change in our climate and surroundings.
3. They can fill the last column, "My age", in the sheet and have it discussed.



Activity 1: Say your Story Using the Pictures





Activity 2: Effects of Climate Change

Match the word with the correct picture.

Melting sea ice



Sea level rise



Wildfire



Flood



Drought



Invasive species





Activity 3: Climate Change Word Play

Task: Draw a line between the word and its correct definition to match them.

atmosphere

substances like oil and coal that are made of buried animals and plants and burned for energy

carbon sinks

long-term changes in typical weather of a region, as Earth's atmosphere changes

deforestation

substances that harm air, water, or land

greenhouse gases

all physical surroundings on Earth, both living and nonliving parts

pollutants

anything that absorbs and stores carbon

environments

gases in Earth's atmosphere that trap heat

carbon sources

the air that surrounds the Earth

greenhouse effect

when gases in the atmosphere trap in the Sun's heat and warm the Earth

climate change

anything that releases a lot of carbon

fossil fuels

cutting down and clearing forests



Activity 4: Why is Climate Change Happening?

WORDS ABOUT CLIMATE CHANGE

atmosphere fossil fuels carbon source deforestation
pollutants environments greenhouse gases
greenhouse effect carbon sinks climate change

Task: Choose the words from above that best complete each sentence below.

The major cause of _____ is us, people releasing _____ into the _____. These pollutants are called _____. Burning _____ like coal and oil put the harmful gases into Earth's atmosphere. These gases are a _____ because they contain the element carbon, like methane and carbon dioxide. They thicken the atmosphere and trap in the heat that comes from sunlight, which makes Earth warmer. This is called the _____ because it is similar to the way a greenhouse keeps in warmth for plants to grow. Carbon that we release can be taken out of the atmosphere to balance the amount of carbon we are releasing. A lot of carbon stays in the atmosphere and warms the planet. Now Earth is warming so much from the greenhouse gas effect that the climate is changing and impacting _____, wildlife, and people around the world.



Activity 5: Past and Present Climate – Back in Time

Below is an activity page from *Our Changing Climate*, a child-friendly climate change handbook by UNICEF Zimbabwe.

Past and Present Climate - Back in time!

It is easier to see changes over many years. The older the people are in our community, the more they have seen and experienced. This is true even for climate change. For this activity identify at least 3 relatives from 3 generations (a generation represents all the people born and living at about the same time).

In this case we will look at these generations:

- a. Your grandparents age group
- b. Your parents age group
- c. Your age group

Ask all three of them the following questions and write the answers down.

Questions for the three relatives

1. Temperature

- a. What were the temperature conditions in winter when you were my age?
- b. What were the temperature conditions in summer when you were my age?

2. Rainfall

- a. In which month did it start to rain and in which month did the rains end.
- b. Did you have floods? If yes how often?
- c. Did you have droughts? If yes how often?
- d. Was the rain more or less than it is now?

3. Vegetation and animals

- a. Which wild fruits and plants did you eat and are they still found?
- b. Which insects and animals did they hunt and can you still find them now?

4. Harvests

- a. Which crops did you grow and eat when you were my age?
- b. Were the harvests more or less than they are now?

You can use the table overleaf to input your answers.

Climate change trends

Grandparent

Parent

My age

Winter

Temperature

Summer

Temperature

Crops that you grew
and ate?

Rainfall start

Rainfall end

Floods: How often?

Droughts: How often?

Wild fruits and
plants that you ate?

Animals and insects
that you ate?

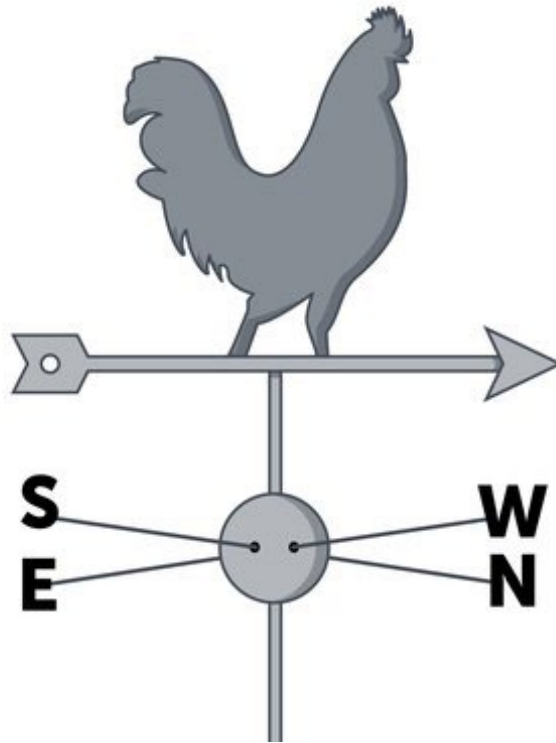
Were harvests
more or less than
they are now?

Compare the answers from the 3 people interviewed and answer the following questions.

1. Has climate changed from the time your grandparents were young children?
2. How reliable do you think this information is?

Flash Cards

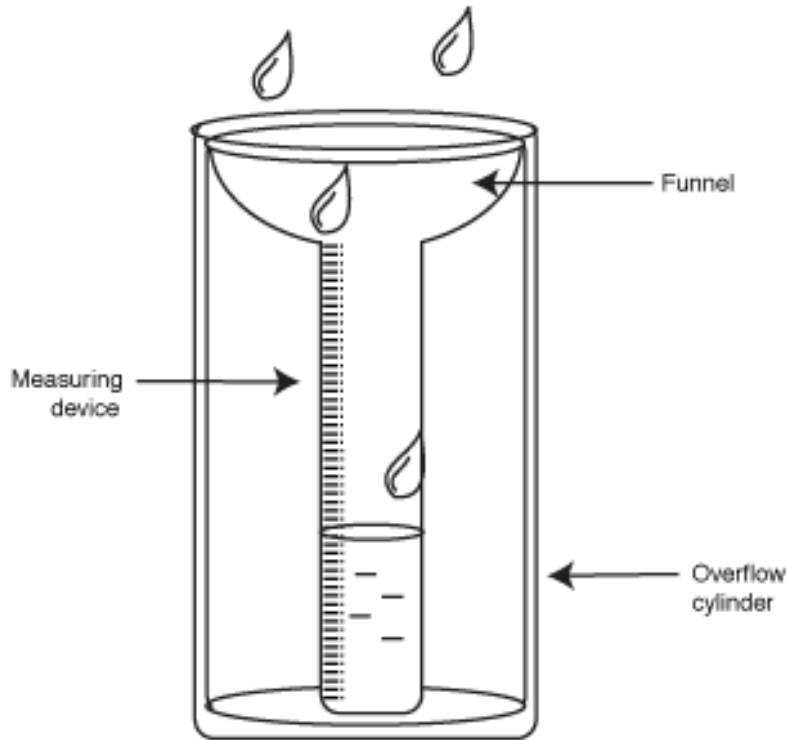
WIND VANE



THERMOMETER



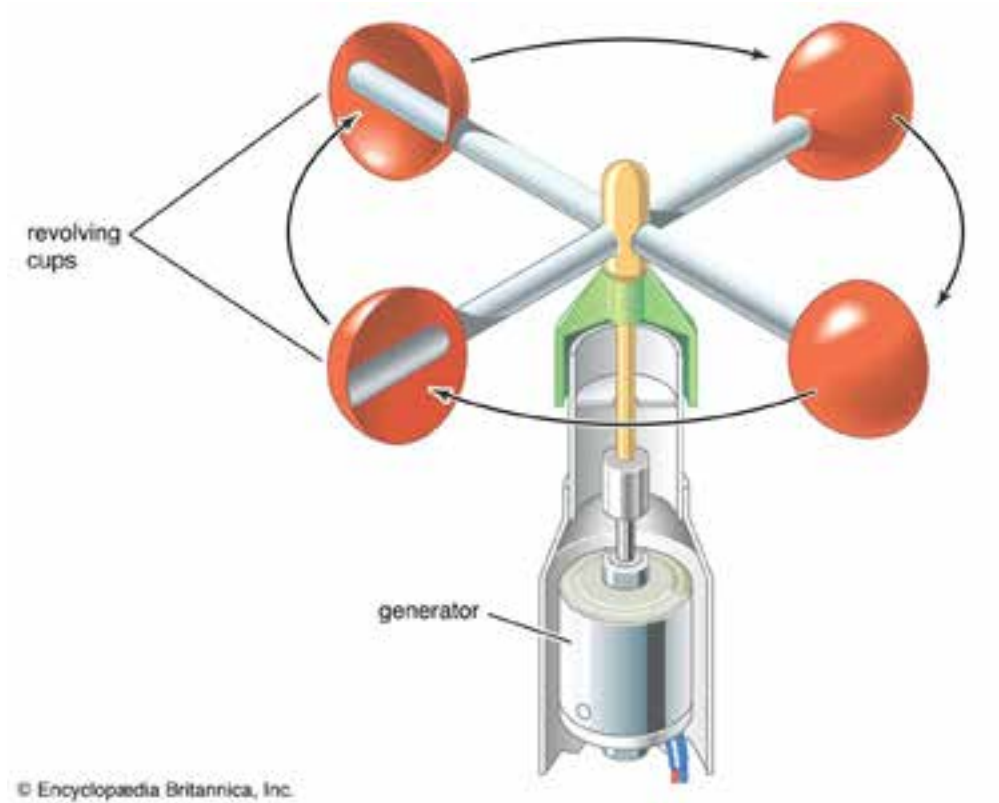
RAIN GAUGE



HYGROMETER



ANEMOMETER



ANNEXURE B

Status of Education of Tribal Groups in the Nilgiris and Coimbatore Districts

Below is a list of questions used for the survey arranged according to the different stakeholders interviewed.

Stakeholders to reach out to:

- NFLC alumni
- Students (aged 12–18)
- Teachers
- Parents
- Elders
- Graduate/higher education students
- Parent teacher associations/groups (PTAs)
- School management and board members
- Block-level education officer
- Tribal Welfare Department
- Tribal Resource Center (TRC)
- NGOs
- Gudalur group (Vidyodaya Trust)
- Self-help groups (SHGs)
- Trusts (ex: Lion's Club) that provide full scholarships

Questions (categorised by stakeholder):

General questions (applicable to everyone)

Lived experience around education

- What is your educational background?
- Which school(s) did you go to? Why?
- What kinds of classes did you take at your school(s)?
- What kind of support systems did your school have? (Ex: separate toilets, child helplines, counselling, mental health support, menstrual health support etc.)
- What kinds of extracurricular activities did you participate in at school?
- What did you like about your school and what did you not like about your school?
- How has your education applied to your work?

Alternative learning experiences (skills and knowledge gained outside of school)

- What do you do for a living?
- What skills have you learned outside of school and how did you learn them? Who taught them to you? (Parents, elders, friends, NGOs etc.)
- How do these skills apply to your work and life now?

Personal perspectives on current education and future goals

- What is good about the current education system and opportunities for tribal students that you would want to keep the same?
- What is bad about the current education system and opportunities for tribal students that you would want to change?
- How have you developed these perceptions of the current education system? (From your own personal experience, your children or relatives, your community etc.)
- If you had the chance to design the best education for tribal students in your opinion without restrictions, how would the education system look like?
 - Thinking about what would be good for your own children, relatives, community
 - Would you want to include aspects of your culture? Change what is taught? Redo the grading system or exams? These kinds of changes etc.

NFLC alumni

- How did you hear about and become involved in the NFLC programme?
- How was your experience in the NFLC programme?
- After graduating from the NFLC programme, what have you been doing? Where are you situated now?
- How do you feel the NFLC programme has impacted you? In what ways?

Students (aged 12–18)

- What standard are you in? What classes do you take?
- What kinds of extracurricular activities do you do outside of school?
- What do you like about your school? What do you want to change in your school?
- What do you want to be when you grow up? What are your future dreams/aspirations and how might you achieve them?
- Do you talk to your parents about your experiences at school? What do you talk about?
- (Ex: Your day at school, your teachers, your classmates, classes, homework, future goals/dreams, future opportunities in higher education etc.)
- Does your school have other students from tribal groups?
- Do you perceive differences in how your teachers treat you compared to other students?
- Are you friends with other students belonging to tribal groups? Are you friends with other students who do not belong to tribal groups? How do you treat each other?
- If you don't attend school, what are some of your reasons for not going?
- When did you stop going to school?
- How do you spend your time instead of going to school?

Teachers

- What standard do you teach? What classes do you teach at your school?
- How long have you been teaching at your school? Have you taught at other schools before this one? Which ones?
- What do you like about this school and what would you want to change?
- How do you feel about the lessons you teach and the students you teach at your school?

- What kinds of support do you receive from others as a teacher at your school?
- What changes have occurred in your school in the time you have been teaching here?
- How have teaching methods changed or stayed the same?
- How have lessons/curriculum taught in class changed or stayed the same?
- How have expectations for students changed or stayed the same?
- How have expectations for you as a teacher changed or stayed the same?
- How has the school schedule changed or stayed the same?
- How have the school campus and buildings changed or stayed the same?
- Does your school have a parent teacher association (PTA group) and do you participate?
- What do you think are reasons for student dropout?

Parents

- Which school do you send your children to? Why?
- What do you like about the school your children go to and what would you change?
- What kinds of classes and extracurricular activities are available for your child at school?
- What kind of support systems does your child's school have? (Ex: separate toilets, child helplines, counselling, mental health support, menstrual health support etc.)
- What additional incentives or benefits do kids receive in schools and where do they come from? (Ex: meal, uniform, notebooks, laptops, raincoats, bicycles, resources etc.)
- Do you talk to your child/children about their experiences at school? What do you talk about?
- (Ex: Their day at school, their teachers, classmates, classes, homework, future goals/dreams, future opportunities in higher education etc.)
- Does your school have a parent teacher association (PTA group) and do you participate?
- Are there other schools that you would prefer to send your kids to? Why?
- If your child/children do not attend school, what are some of the reasons for not going?
- When did they stop going to school?
- How do they spend their time instead of going to school?
- What do you think about this decision not to go to school?

Elders

- What kind of education do you want for your own kids/grandkids, your community?
- How has education changed in your lifetime?
- What kind of skills and knowledge outside of school do you find important to pass on to younger generations?
- What are your hopes and fears for students of this generation?

Graduate/higher education students (aged 18 and above)

- What classes do you take; what degree are you pursuing and why?
- What motivated you to pursue higher education?
- What careers are you thinking about in the future?
- What do you like about your school and what would you change?
- What support systems are available to you? (Ex: counselling, mental health support, menstrual hygiene support, academic support etc.)

- What kinds of extracurricular activities do you do outside of school?
- How do you think your school compares to other schools in the region?
- As a member of an indigenous community, do you experience discrimination in your school?

Parent teacher associations (PTAs)/School management and board members

- What does quality education for tribal peoples mean to you? What does this look like?
- What changes have occurred in your school while you have worked with the PTA/board?
- What kinds of work do you do as a PTA member to support quality education for tribal groups?
- How might your school compare to other schools in the region in terms of providing quality education to students of tribal communities?
- Do you perceive similarities or differences between tribal and non-tribal students? What might these be?

Block-level education officer/Tribal Welfare Department

- What does quality education for tribal peoples mean to you? What does this look like?
- What kinds of work do you do to support quality education for tribal groups?
- How do you think education for tribal peoples has changed over time?
- What are some model schools in your area that you think do a good job in providing quality education for tribal groups? How are they providing quality education?
- What are some challenges you face in your work? What are some positive highlights?
- What are some similarities and/or differences that you perceive among tribal communities in terms of education level and access to education?

Tribal Resource Center (TRC)/NGOs working on education for tribal communities

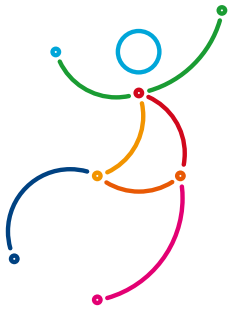
- What does quality education for tribal peoples mean to you? What does this look like?
- How do you think education for tribal peoples has changed over time?
- What are some model schools that you think do a good job in providing quality education for tribal groups? How are they providing quality education?
- What kinds of work do you do to support quality education for tribal groups?
- What are some challenges you face in your work? What are some positive highlights?
- What are some similarities and/or differences that you perceive among tribal communities in terms of education level and access to education?

Gudalur group (Vidyodaya Trust)

- What does quality education for tribal peoples mean to you? What does this look like?
- What kinds of work do you do to support quality education for tribal groups?
- What kinds of questions are you asking stakeholders to better understand the status of education for tribal communities in Gudalur?
- What are some challenges you face in your work? What are some positive highlights?
- How do you think education for tribal peoples has changed over time?
- What are some model schools that you think do a good job in providing quality education for tribal groups in your area? How are they providing quality education?
- What are some similarities and/or differences that you perceive among tribal communities in terms of education level and access to education?

Trusts/Self-help groups

- What does quality education for tribal peoples mean to you? What does this look like?
- What kinds of work do you do to support quality education for tribal groups?
- What are your criteria for selecting students to award them educational scholarships/education loans?
- What are your goals/hopes for the students you support with your scholarships/loans?



TE | SF

TESF is a GCRF funded Network Plus, coordinated out of the University of Bristol, working with partners in India, Rwanda, Somalia/Somaliland, South Africa, the United Kingdom and the Netherlands.

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