PITCHANDIKULAM FOREST

(A Unit under Auroville Foundation)

Here's our garden : An Experience guide

Eco-Schools Program

Environment Education in schools

Tamil Nadu

2022-23

Eco-Schools Program
Environment Education through Practical Ecology
Guide for Teachers and Educators

Edition
Version 1 : Compilation Edition
This guide is a work in progress and therefore it is up to the choice of the user to be updated of the later releases which will be available on the website.
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Transforming Education for Sustainable Futures
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"Developing a Model of Holistic Environmental Education including Teacher Training for Eco-Schools in Tamil Nadu"

- through which this guide has been compiled.

Record of Contribution and Team

This guide is a compilation of the highlights of the education program conducted by Pitchandikulam Forest over a span of more than 30 years and derived from over 50 years of experiential work since the beginning of Auroville Township.

Many dedicated educators have worked on various versions of the teaching material and are collectively acknowledged and affirmed for their contribution.

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Gratitude to Pitchandikulam Forest Community

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- 2019 - current: Tata Communication Limited, CSR program
- 2022-23: Australian Consulate-General, Chennai through their Direct Aid Program.

Forward

Hello there! A very good time of the day to you, wherever on the globe you are!

A hearty welcome from Pitchandikulam Forest!

A 70 acre restored forest that was begun in 1973 in Auroville, Pitchandikulam Forest has for almost 50 years worked with the land, to help restore forests and water bodies with indigenous flora, work with communities and provide livelihood opportunities. Emerging from years of experience is the need for educational reform that focuses on reconnecting our connection with nature, not only intellectually, but also physically - to be truly conscious of our place in time of humanity's ecological awareness.

The activities compiled in this guide are selected for their ease and have been tested in various schools over the years, or are new derivatives that are currently being tested in schools. Further versions of this guide will be available on our website. This guide, along with providing training for our newly recruited educators, will also support teachers we work with in schools.

We hence encourage the use of this guide to open our eyes wider, let our hearts feel deeper and our hands to act in service of nature.

Pitchandikulam Forest Team
December 2022

**Auroville is an international intentional township in South India (Villupuram district, Tamil Nadu) that is home to many ecological restoration and sustainability endeavors.*

Special thanks to Nyla Coelho,
whose book “Tending a School Garden” was a great resource,
and helped acknowledge the need for easy to use guides for setting up school gardens.

As this exploration guide was created with the focus on reconnecting with nature
and engaging with concepts in the short durations available during school hours,
We highly recommend Nyla Coelho’s books for those called to delve deeper.

Thank you, Nyla,
for your commitment to creating wholesome schools across the country.

Using this guide

This guide is compiled with the intention of supporting gardening initiatives in schools while providing environment education. It can also be useful for supporting community and home gardens.

The guide subtly covers many aspects of restoration ecology, at the scale of a garden. This can enrich classroom engagement and broaden perspectives. Most of the activities can be used to enhance school curriculums.

The activities work best with small student to teacher ratios, with a maximum of 15 students for every teacher.

The guide can be used by both full-time teachers and nature educators, for students and for self-explorations.

This guide is meant to light up a way forward and
bring up deeper questions that could prompt further exploration.

It is not an instruction manual.

This guide is contextualized for use in Tamil Nadu, but can be modified for any region.

While the guide refers to Auroville forests in general in some places, it does not speak for the whole. The experiences are predominantly derived from that of the stewards of Pitchandikulam Forest.

Content

Introduction

The beginning of the forests in Auroville, including Pitchandikulam Forest in 1973, was a picture of degradation.

The land was barren from severe deforestation and the task to restore it had to be done from scratch - literally. Without large machinery, transportation or electricity, much of the manpower went into digging the unforgiving ground to plant trees.

As people from all over the world joined the Auroville experiment, many of them began planting to create shade from the hot sun. And like any good experiment, they faced many challenges - some of which were the

formidable heat that killed the saplings, the torrents of monsoon rains that washed away the topsoil into the sea and grazing animals making a quick meal of growing trees.

Now, how did the forests grow despite all these challenges?

And perhaps an even bigger question - Why did people choose to do it this way?

"It was an opportunity to be low-tech and sustainable, as we went about generating energy from solar panels and pumping water from windmills - that too only for our basic needs. Innovations from across the world were experimented on. It was truly a revolutionary time" remembers Joss Brooks, the steward of Pitchandikulam Forest.

"We were told to sit quietly, and listen to the land, and see what it wanted. And play! With the innocence of children, to truly bring a new way of living in harmony with nature" he continues.

While everyone has their own unique reasons, there was/is a general desire to understand nature, to form a deeper, more meaningful connection with it and to be of service to its spirit.

And for many, it meant returning to the fundamentals of nurturing land.

This led to the obvious seeking of knowledge that could only be found with people who have lived on the land for generations past - the indigenous people of the land : the Tamilians.

This knowledge, while commonplace for the Tamils and something they were fast losing in the light of the effects of colonization and modernisation, served as the guiding wisdom for the early restoration work. Outnumbering the early Aurovillians, they also provided much of the labor required.

With the intense collaboration, it was possible to overcome some of the challenges:

Preventing water from washing the topsoil away, and turning the sea red by building bunds and water retention landscapes.

Some non-native trees which love the sun and could provide shade for native trees to thrive were planted.

Learnings were tremendous, as everything that did not work - for instance: some of the pioneering tree species become invasive due to their high rate of propagation and now are not used the same way anymore.

Now, the forests are flourishing, and one of Auroville's vision is to be able to propagate solutions innovated by people from all over the world in Auroville, to the rest of the world.

1. We're in this together

A call for solidarity

The creation of gardens can be a fun activity filled with many learnings. It can also require easing into, so that students would be more likely to pay attention and keep themselves safe during the outdoor activities.

No school is an isolated entity. It also helps when other students in the school who are not involved directly in the gardening activities to be aware and considerate of the garden set-up. Following are some activities that help develop a garden friendly mindset amongst all stakeholders. Apart from these activities, connecting with parents, school staff and community members would add benefits. The School Management Committee can be a great avenue to ensure multiple levels of participation.

1.1.Grounding ourselves

Description	An activity that can be shared with the entirety of the school, is an exercise of settling into their bodies and becoming more aware of their surroundings.
Duration	2 - 10 mins (pick what is apt for your session).
Venue	Anywhere.
Objective	An ice-breaker to get students to get ready for the session, connect with nature, themselves and their friends.
Materials	Everything available around.
Precaution	Understanding the energy of the group is essential.
Resources	Find audio of nature sounds if needed.
Activity Flow	
Process	Prompts
Breathing	Take a deep breath.

	Feel the air entering your lungs, expanding its walls. Feel the rush of energy the breath of air provides. Feel the breath starting at the top of your head, then traveling down your spine, to your feet and into the ground, into the earth - to its very center. *Then,* feel it rush back up, along the spine and out as a breath.
Different senses	Close your eyes and listen deeply to the sounds around you. What is the sound closest to you? Even closer than that? Can you hear the sounds in your ear? *Now, go outward -* What sounds are prominent now? What is the farthest sound you can hear?
Focus on something	Focus on the far away sound. Pay deep attention to it. Then slowly bring it closer, and into your body. Send the sound along your spine and into the ground.

Deep rest	Shake your shoulders, loosen your jaw, jump up and down, then lay down if possible and take deep breaths. Feel the weight of your body sinking into the ground. *Relaxxx.*
Movement	Cup your hands together to resemble a seed. When asked to plant the seed, bend down and place hands over the ground. *What does a seed need to germinate?* Water the seed - use a hand to gesture watering, show sunlight, *and then*, the seed sprouts - the cupped hands open up, With more water and sunlight - repeat gestures, the tree grows - half squat, and grows - standing, then becomes big - spread out hands, Stretch big!
Laughter	The tree is standing tall. The leaves move with gentle wind - spread arms wide and shake the hands very slowly,

	The wind blows faster - wave arms above head, Even faster - increase speed of waving, There's a storm - wave wildly, Now, a cyclone - wave wilder, A huge cyclone, the tree groans and falls - students collapse to the ground in giggles. Look around at your friends, Make eye contact Relax.
Takeaways	It is important to be aware of the needs of the students around us. Accordingly, pick what works and change the duration or the prompts.
Impact	Helps students be comfortable as the session begins.
Measurable Impact	Observation of the changes in the students demeanor before and after the activity.
Level up!	Be creative, make your own grounding activities that help your students refresh and share it with us!

1.2.Garden Agreements

Description	Students are asked to prepare a list of agreements that would help them get the best out of their sessions, including safety precautions.
Duration	10 - 20 mins.
Venue	Anywhere; preferably in the view of the garden space if the set-up is ready.
Objective	To sensitize students for upcoming activities which would involve physical work. To foster their sense of agency and encourage their participation in all aspects.
Precaution	Avoid creating rules - the intention is to encourage self awareness not rigid compliance.
Resources	A list of possible agreements created by other stakeholders
Activity Flow	
Process	Prompts
Envision doing gardening activities / observe the garden	Take a deep breath. Walk along the garden space. Imagine how you would behave during the session.

	Will there be yelling? Will there be running around? If it is a terrace garden, will there be leaning over the parapet wall? Would they be interested in hearing what the teacher/educator has to say? How will we handle the tools? How would we work together in teams? What agreements do others want? Educators/teachers? Gardeners?
Making notes	Write the list of agreements down individually (worksheet can be used), and in a chart that can be displayed.
Impact	Creates a good transition into garden activities, ensures safety of students.
Measurable Impact	Incidents of accountability for actions in the garden.
Assignment	Create drawings with motivating words which can be displayed in the classroom
Follow-up	Making sure that the agreement charts are pasted on the allotted wall space.
Level up!	Can this activity be conducted regularly to update the agreements? Can the change in agreements be documented and analyzed? Try it out.

1.3.Community building with art

Description	Informing the school of the environment education program.
Duration	15 - 20 mins.
Venue	School campus, preferably during the school assembly.
Objective	Create awareness of the program and creation of the school garden to the whole school.
Materials	Depending on the medium of expression.
Precaution	Keep the awareness short and to the point if it is done during the school assembly. Ensure the working condition of all equipment, especially mikes & speakers. Check them a day before if required.
Resources	Information of the program, scripts, poster materials.
Activity Flow	
Process	Prompts
Sharing information	What is the program? Why is it important?

	How does it help the environment? Why is it important to know more about our environment? Is there going to be a garden in our school? Why? How can I be careful around the garden? How does it benefit our school?
Interactive	While it can be chaotic to achieve student interaction during school assemblies, making the session interactive as much as possible helps to make a better impression on the students. A minimum of yes or no questions can be incorporated.
Impact	The school is aware of gardening activities
Measurable Impact	The next day, check with the teachers about how the students responded after the performance.
Assignment	Challenge the Students to write a poem on the need for creating a school garden
Follow-up	Interested students would follow-up with their teachers to know more. The teachers will also find out about the students who are interested in participating in creating the garden. Posters of the program can be created (even by students) and put up visibly.
Level up!	Use traditional artforms like *villupattu* and *therukoothu*, so as to create awareness of the dying art forms included. Find out what is the local art that needs support!

Introduction

Opening our senses

Getting into action

Growing with our gardens

Exploring other Gardens

The biggest question before one decides to create a forest or a grassland or a garden is - context. As every location is unique, it requires concentrated effort in observing and analyzing the landscape to truly respond to it in ways that would increase its health. Before the invention of scientific methods and tools to study landscapes, humans have absorbed the natural world around us. Through the following activities, we take a step towards bridging the experiential gap in school learning environments.

2. Where are we?

Looking around us

In the age of smartphones, it is not very difficult to know one's location. But how much do we truly know about where we are? How aware are we of our proximity to services and nature that are not within our eyesight? How much of the area's ecological nuances are we aware of? How much of that is more than facts found in textbooks? The activities provided below would help create spaces to explore these questions along with students.

2.1. Sense of place

Description	Relating to the environment around us and learning where garden requirements of a school are.
Time	45 - 60 mins
Venue	Outdoors
Objective	To connect with the school environment and develop curiosity for things around us.
Materials	A worksheet can be prepared.
Precaution	Be aware of the surroundings when conducting outdoor sessions.
Resources	Maps of the area of different magnifications and layers, with the school marked
Activity Flow	
Process	Prompts
Direction circle, ice-breaker	Students can stand in a circle and identify the directions by seeing the position of the sun. They can also figure out important directions such as the direction of their

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	monsoon, nearest hospital, the ocean, etc. Activity 1.1 on how to ground oneself can be conducted as an alternative ice-breaker.
A walk around their school	Students go on a walk around the school to understand where the resources they require for their school garden will be available. Where does the water come from? Where are the taps located? Where does water stagnate after rains? Where is optimal sunlight? Where can soil be sourced? Where can composting be done and a nursery be created?
Impact	It would be possible to track how much the students observe their school campus.
Measurable Impact	Students can note down and prepare a chart of all the details discussed in the group. Repeated at the end of the year and compared with the chart made in the beginning of the year will show the impact of the session.
Assignment	Students can explore their neighborhood with their freshened perspective and compile their findings.
Follow-up	A sharing circle on how students feel about their environment now that they have spent some time observing it will help create action plans for the garden.
Level up!	Can the student compute their findings about their neighborhood environment and present it to their teachers and parents?

2.2. On a map

Description	Understanding where we are located and what is around us?
Time	30 mins - 45 mins
Venue	Both indoor/outdoor, preferably a quiet place.
Objective	To read a map of the neighborhood and identify components around the school.
Materials	A worksheet can be prepared.
Precaution	Ensure all students can hear and communicate their answers to prompts.
Resources	Maps of the area of different magnifications and layers, with the school marked.
Activity Flow	
Process	Prompts
Sharing circle, ice-breaker	Students can begin by sharing what they find interesting about their neighborhood. They can then be prompted to share anecdotes. Activity 1.1 on how to ground oneself can be conducted as an ice-breaker.

Reading a map	By looking at a map of their school marked on their locality, students can learn to read the map. They can relate to distance and time by questioning how far two points are. Where is the school? How long does it take to reach school on a two wheeler? By walking? What are the nearest landmarks? What are the nearby areas? Where are the transport services in the area?
Impact	Students recollect components from their environment which can build a sense of belonging when combined with other activities in the program.
Measurable Impact	Readings from a worksheet can be documented.
Assignment	Students can map the route from their house to the school.
Follow-up	Recollect the components discussed during the session often when talking about nature in the area so that students can visualize better.
Level up!	The more details that can be discussed, the richer this session can be. Students can also go ahead to plot the services found in the area, with an emphasis on ecologically friendly services.

3. Here comes the rain

Knowing where it flows

It is not only a matter of survival or creating a school garden, but also a significant part of our being to be able to connect with and understand how water works. By exploring the bigger picture, we become more aware of its role in our day to day lives. After all, we all live downstream.

3.1. Water sources of your land

Description	Paper crumple activity
Time	10 mins
Venue	Conduct the activity in an area where it would be fine to spill water.
Objective	Introduction to watershed.
Materials	Chart paper, sketch pens, sprayer bottles filled with water.
Precaution	Ensure students do not use too much water, especially when they are using their hands to sprinkle the water instead of a spray bottle.
Resources	Watershed maps, water bodies map
Activity Flow	
Process	Prompts
Crumple the paper	Crumple it gently to make sure the folds are large and visible. Place the paper on the ground without smoothening it.

	What does the surface look like? How does it resemble a land terrain? Point out the ridges and troughs, which act like relief features such as mountains, valleys and plains.
Use a sketch pen to highlight the ridges on the paper	Make sure the students use the sketch to make thick markings on the ridges they made as the thicker the markings, the more clearly they can make observations later.
Spray water on the paper	If there isn't a spray bottle use a hand to gently sprinkle water on the paper. The water will wash the sketch marks and flow down the troughs. How is the water moving? Where is the color darker? What is happening on the slopes? Where is the water collecting? Which parts are the ridge, gradient, valleys, streams, lakes, etc? Students would be able to see the color more intensely where the water pools in the troughs. The flow and the pools resemble rivers and lakes.
Tilt the paper	When the students tilt the paper very slightly, they observe how the colored water collects, flows along the paper out on one edge. What does the flow resemble?

	Has anyone seen the mouth of a river? Where does a river end? What would happen if the surface is covered with vegetation? What would happen if it was covered with modern construction?
Impact	The students understand the basics of watershed and can be encouraged to observe how water behaves in their environment.
Measurable Impact	If questioned well during the session, students can point out observations by themselves.
Assignment	Repeat the activity at home and note any more observations.
Follow-up	Students can observe their street/area during rains to see how water flows on land.
Level up!	During this activity, it would be difficult to show the absorbing and holding capacity of the land and its ability to slowly release the water. The same activity can be tried on different materials that can demonstrate that too.

3.2. Watershed

Description	Simple model of watershed
Time	20 mins
Venue	Outdoor, with access to soil/ ground.
Objective	To demonstrate the basic principles of a watershed through a model.
Materials	Soil, stones, shovel (if necessary) and a water bottle with water.
Precaution	Have caution when working with soil and using tools. Wash hands thoroughly afterwards.
Resources	Watershed map
Activity Flow	
Process	Prompts
Selecting the spot	It is important to select a spot with enough soil and no debris.

Making the model	Use the soil to create small continuous mounds that resemble the elevated boundary of a watershed. The mound should be at least a few inches high. The larger it is the easier it will be during demonstration but will require more water. Create more connecting mounds so that the final result resembles the crumpled paper.
Different phenomena that can be demonstrated	A bottle of water poured on the model would resemble rain. When a little water is poured over the mound, it demonstrates how the mound absorbs water. When more is poured gently over the same spot, it shows how the soil releases the excess water. Left for a while, one can see most of the water in the mound has been released due to gravity. When more water is poured, it would make dents in the soil resembling the movement of streams and rivers. The water will stagnate in places - resembling ponds and lakes. Deepen the streams and the ponds by using fingertips to dig into the soil. This is how rivers and lakes Pour more water again to demonstrate. How does the water flow? What happens when water moves slowly? What happens when it moves fast? Can you observe the phenomenon of ground water tables? Now, place stones along the mound, river and lakes, without obstructing the flow of water. How does the water drainage look like now? Place more stones covering the path of water. What happens now? How does this relate to development?

	How does it relate to flooding in urban areas vs rural areas?
Impact	Students connect various phenomena related to watershed to their observations in their neighborhood.
Measurable Impact	Students can take down notes on their colored sheets from the previous activities.
Assignment	Share the session with parents and others in the community and collect feedback.
Follow-up	Students can share the feedback that their parents and others in the community provided and look for more learnings.
Level up!	Make a more complex watershed! Grow seedlings on the hills, create cascading water systems, demonstrate erosion, maybe even create underground water storage areas!

3.3. Water retention landscapes

Description	The practice of creating water retention landscapes.
Time	45 mins
Venue	Outdoor, during gardening sessions in an area where the ground has a slight slope.
Objective	To demonstrate the need and benefits of creating water retention landscapes.
Materials	Cocopeat, water, small shovel.
Precaution	Be careful when using tools. When working with cocopeat, those with dust allergy must take precautions of closing their nose with a cloth when working, or work with it after it is fully damp. Some experience allergies when touching it and hence must refrain from working. They can help pour water.
Resources	Watershed map, map of the ari system, pictures of river mouths (deltas).
Activity Flow	
Process	Prompts
Selecting the spot	It is important to select a spot with a hard surface and slight slope so that water will

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	drain in a particular direction. This is usually best done in a terrace near the water drain hole, and during a gardening session where coco peat is being prepared for use.
Prepare the coco peat	Break the coco peat block using a shovel and by pouring water. The block will absorb a lot of the water and expand. It can then be withered into fine texture. Continue pouring water until the coco peat is soaked. Squeeze the water out of the coco peat to remove excess salts. The water will start to drain along the ground slope.
Observe the movement of water and change the flow by changing the landscape	Once it begins to drain while the squeezing of the coco peat continues, some of the coco peat will drain with the water due to its lightweight. As they move, the heavier particles settle creating small rivulets. After a while, the settled coco peat and the rivulets will resemble the mouth of a river - delta. Even as the coco peat settles, left to drain, we will lose a lot of it. Hence, use hands to accumulate the coco peat moving towards the drain in a small bund to obstruct the flow of water. When collecting the coco peat by disturbing the sediments and rivulets, one can notice how the lack of obstruction increases the speed of the water flow - much like how destruction of the river landscape changes its flow and increases risk of flooding. The water then hits the small bund, slows down and gets retained in a pool. The heavier and lighter particles are stopped by the bund where it deposits itself. The water slowly

	drains out the other side. On a larger scale this can be related to creating bunds for channeling water on land and slopes for water management.
Impact	Students are exposed to a complex phenomenon in a simple way. They get excited when they can observe so much when doing something fun and messy.
Measurable Impact	If questioned well during the session, students can point out observations by themselves.
Assignment	Share the session with parents and others in the community and collect feedback.
Follow-up	Students can share the feedback that their parents and others in the community provided and look for more learnings.
Level up!	Be creative, make your own grounding activities that help your students refresh and share it with us!

4. Knock,Knock. Who's there?

We're all a team

Can a garden really flourish with just plants? No way! There will be so much more to garden - it will have its own ecosystem. Much of our lives are intertwined with the various crawling critters and chirping birds around us. Let us explore it more so that we can better create a healthy ecosystem in our gardens.

4.1. Biodiversity survey

Description	Observing the biodiversity students observe around them in their school campus.
Time	45 - 60 mins
Venue	Outdoor in the school campus.
Objective	To increase students' awareness of their environment through observation & reflection.
Materials	Note or worksheet, binoculars and magnifying lens (optional).
Precaution	Discuss not harming insects or plants during the session or otherwise.
Resources	Field guide books / resource persons / flashcards / posters / apps on identifying the biodiversity around us.
Activity Flow	
Process	Prompts
Grounding activity	Begin the session by opening the senses to their environment. They then observe the different living things around them - birds, insects, plants, animals; anything that they

	can observe in the given time. Binoculars & magnifying glasses can be used if available.
Noting down observation	They can note down their observations in various complexity as decided by the educator - they can draw, write the species, class and the count how many of them they saw, they can note its behavior and describe where they found it and more. The various resources can be used to identify their observations.
Reflection circle	After observation, they can share their findings with the rest of their class. What was their favorite observation? What was an unexpected observation? Was there a connection between where an observation was made & what was observed? What does this activity illustrate about biodiversity?
Impact	Students observe their environment more thoroughly, and analyze their findings.
Measurable Impact	The list of observations that the students make can be indicative of responses.
Assignment	Make observations at home and in the neighborhood!
Follow-up	What did the students observe at home and in their neighborhood? How does it compare to the biodiversity in their school? What could be the factors affecting the outcomes?
Level up!	Students can make a masterlist of observations for their school campus and repeat it every 3 months.

4.2. Ecosystems

Description	Exploring the components of a garden ecosystem.
Duration	45 mins
Venue	Outdoor session.
Objective	To delve into deeper understanding of the components of an ecosystem and relating it to a garden ecosystem.
Materials	Chart, drawing material, scissors, roll of thread.
Precaution	Exercise caution when using scissors.
Resources	Flash cards can be prepared.
Activity Flow	
Process	Prompts
What is around them	The students do the grounding activity 1.1 and expand their senses. They then observe what is around them.

	In their observations what is biotic and abiotic? What is their environment composed of?
What lives in a garden	What in their environment will they also find in a garden? What is the difference between the environment around them and the one they can expect in a garden? Encourage the students to include all the things the can think of including air, water, sunshine, worms, nutrients in the soil, pots, tools, common sense (why not?), their passion, etc.
Draw them	The students then draw the components on pieces of chart.
Web of life activity	Selecting one chart of each student, they hold it as they stand in a circle. The end of a thread is given to the student holding the sun, an ultimate source of energy. It will then be passed down the food chain starting with producers and ending in predators. The passing of thread can stop when all the students have at least two connections. What do all the connections look like? Is the ecosystem stable? What will make it destabilize? Introduce threats to the ecosystem. If a component gets hurt, they take 2 steps forward. If that pulls on the end of another component they move forward just enough to keep the thread connected. If a component would die, then the student should drop their thread. If a student has their thread dropped from all those they were connected to, then the component dies. What happens to the garden ecosystem after each threat?

Reflection	The students closely observe the effect of each threat and reflect on it. They help it inform their gardening plan.
Impact	Students connect to the ecosystem around them, and understand the need to see the bigger picture if they want a healthy garden.
Measurable Impact	The students can note down how they feel this will help create a healthy garden.
Assignment	Students observe the ecosystem of their neighborhood and report back their findings.
Follow-up	The garden can be monitored and referenced to the initial steps taken through this activity to ensure a healthy ecosystem.
Level up!	Do the web of life activity for larger ecosystems! Have fun learning about the components too along the way.

4.3. Indigenous species

Description	Botanical survey of the school campus
Duration	60 mins - 90 mins, more time if the school has more plants
Venue	Outdoor spaces in the school
Objective	To create curiosity about plants and develop an understanding of indigenous species
Materials	Note or worksheet
Precaution	When outdoors, the students need to be mindful. Discuss not harming insects or plants during the session or otherwise.
Resources	Field guide books / resource persons / flashcards / posters/ apps on identifying the flora
Activity Flow	
Process	Prompts
Botany survey	A botanical survey is conducted with the students of the flora in their school campus. A list is compiled.

Identifying indigenous species	Using various resources, the indigenous species are identified. How similar are they to other exotic plants? Where else have they spotted these plants? Have they heard of it before? How many of them are considered weeds? Their benefits are highlighted. The need for conservation and converting the stigma of the “weeds” are emphasized.
Impact	Students understand the importance of indigenous species.
Measurable Impact	The botanical survey list can be used to inform the gardening activities - plants already found in the campus can be avoided, if the school has very few indigenous species then more can be introduced.
Assignment	Share the list with parents and others in the community and reflect with them.
Follow-up	Students can share the reflections and stories that their parents and others in the community provided - many would be more familiar with the indigenous species.
Level up!	Students can make labels and boards for the plants and trees that they identified. They can also make the list into a chart that can be put up in the school.

5. What's this place?

Looking through the pages of history

The nature we observe around us has been observed and documented by our species for a long time. As we look back at the history, we find many interesting correlations to the present culture we experience. Most subtly, the continued admiration and enthralment when in deep contact with nature and our landscapes.

5.1 Landscapes in Tamil Literature

Description	Exploring the landscapes found in Tamil literature.
Duration	60 - 90 mins
Venue	Outdoor session.
Objective	To explore the references to nature in Tamil literature, the connection people have had with their land and its relevance to the present ecological challenges.
Materials	Chart, drawing material, list of life unique to the 5 sangam landscapes of Tamil Nadu.
Precaution	Exercise caution when using scissors.
Resources	Terrain map of Tamil Nadu.
Activity Flow	
Process	Prompts
Imagining the past	The students close their eyes and imagine what the earth would have looked like at a certain period. Draw attention to what man's relationship to nature was then - 10 years

	ago, 50 years ago, 100 years ago, 200 years ago, 500 years ago, 1000 years ago, 2000 years ago, 10000 years ago, 15000 years ago.
Excerpts from Tamil literature	Coming back to the past where ancestors wrote down their connection with nature in their literature, read some excerpts from Tamil literature. The 5 landscapes of sangam era are well known and covered in Tamil Nadu's State Board syllabus.
Terrain map of Tamil Nadu	Show the terrain map of Tamil Nadu to illustrate the 5 landscapes and discuss. Why did literature identify these 5 landscapes? How accurate are they? What is the importance of their uniqueness? How is it relevant to the current environmental crisis? Which landscape is their school and home located in?
Draw life unique to the landscapes	Students can spend time analyzing the characteristics of a particular landscape and draw lifeforms they think would be unique to the area. Discuss with the group about why they think so.
Connecting with livelihoods	As humans interact intimately with nature for their survival, how did livelihoods develop tangentially? And how is it relevant to modern times considering many of them are rapidly becoming extinct? Which livelihoods are associated with the landscape where the school is? What is their status? What is their relationship to sustainability?

Relevance to school garden	How does understanding the landscape where the school is, its associated flora and fauna affect the garden plan? The points can be discussed and put up near the garden and implemented where applicable.
Impact	Students connect with their landscape and it helps them add value to their gardening practice.
Measurable Impact	The drawings students make and discussions they have can indicate qualitative impact. The implementations made through this activity can be tracked over time for benefits.
Assignment	Ask parents and elders what they know about the 5 landscapes and how they think it is still relevant to current times.
Follow-up	Students can share their findings from their discussion with their parents.
Level up!	Conduct interviews with elders still practicing the traditional livelihoods and chart the challenges that they go through in sustaining their practices.

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6. Remembering the Future Garden

Where the past meets the future in the present

With the threat of climate change upon us in the present, it is important to learn from the ancient wisdom of the land, from the stories of our ancestors that still resonate in our biology as we dream forward into our collective future where our species is in harmony with itself and nature.

6.1. Envisioning activity

Description	Using imagination to create a vision for the garden
Duration	30 - 45 mins
Venue	Outdoor session.
Objective	To use creative imagination to understand and co-create a vision for the garden that will help make a systematic plan and provide encouragement along the way.
Materials	Paper, drawing materials, picture of the garden space (optional).
Precaution	-
Resources	Examples of envisioning that created change.
Activity Flow	
Process	Prompts
Observe the senses	Use activity 1.1 to be rounded and deeply connected with all the physical senses.

Observe the space	Expand the range of awareness to the garden space and stay in silence for a few minutes.
Envision a garden	Envision what all they would like to see in their garden - plants, animals, birds, sunshine, water, soil, insects, butterflies. What would the containers look like? If space is available for a ground garden, how would the beds look like? How would they like to feel when walking in the garden? Doing gardening activities?
Making notes, creating drawings	Students can make a list of what can be added to and removed from the space. They can create drawings and if they have a photo of the spot, they can draw their vision over it.
Impact	Students are able to do in-depth observation and clarity in requirements.
Measurable Impact	Notes and drawings made can be analyzed to see how it helped plan the garden.
Assignment	Look up some interesting gardens around the world and how they envision
Follow-up	Few months into the gardening work, look back at the vision and reflect on how much of it has been realized, what has changed, etc.
Level up!	Make a vision board for the entire class! Put it up near the garden where students can continue adding components to it as they work on their garden.

6.2. Plan of the garden

Description	To make the plan of the garden.
Duration	60 - 90 mins
Venue	The garden space.
Objective	To spatially understand the garden and plan for its requirements and activities.
Materials	Measuring tape, paper, scale, writing materials.
Precaution	Measuring tape can be tricky to use and will need proper handling so as to not malfunction. Ensure the students using the tape cooperate well.
Resources	A sample garden plan.
Activity Flow	
Process	Prompts
Creating a garden map	Students use a measuring tape to measure the size of the garden space. The plan is drawn to scale on a chart and the areas and existing components are marked.

Observing the garden and make notes	Then keenly observing the garden, a list of materials required is made. What containers are needed? Tools? Soil? Compost? Seeds? A discussion on where to procure them. How much labor is required? Will the garden need a fence? How will the plants be watered? Where will the tools be stored? How can upcycled materials be used? How to divide the work? And more.
Create a timeline	A timeline for the activities can be made with the help of the educators, and the prep work can be timed accordingly.
Impact	Students learn how to plan, organize and work as a team.
Measurable Impact	It would be able to analyze the notes taken by the students and measure how much it helps their work.
Assignment	Share the garden plan with the parents and ask them for their input.
Follow-up	Share the input from parents with the rest of the class and update the plan if everyone agrees on an idea that can be implemented.
Level up!	Make the map on a chart that can be displayed, and continue updating it as the students work on their garden.

The biggest question before one decides to create a forest or a grassland or a garden is - context. As every location is unique, it requires concentrated effort in observing and analyzing the landscape to truly respond to it in ways that would increase its health. Before the invention of scientific methods and tools to study landscapes, humans have absorbed the natural world around us. Through the following activities, we take a step towards bridging the experiential gap in school learning environments.

7 Earth beneath our feet

We return to what we are made of

We often talk about how important it is to eat nutritious food so that our bodies will be healthy. But where does our food get the nutrition from? From the earth beneath our feet of course! This rich and complex micro-universe has evolved over millennia to support life on earth. But in recent decades, exploited by commercial farming practices, soil all over the world is growing weary. Let us learn how we can give back to the soil - how we've always known to give back.

7.1. Parts of soil

Description	To understand the parts of soil and their role in the ecosystem
Duration	60 - 90 mins
Venue	Outdoor, near an area with soil
Objective	To help students understand the important role soil plays in the health of entire ecosystems and how to connect with it.
Materials	Soil, magnifying glass, small transparent containers, shovel.
Precaution	Have caution when working with soil and using tools. Wash hands thoroughly afterwards.
Resources	Sensory chart of parts of soil.
Activity Flow	
Process	Prompts
Soil in the campus	Students take a walk around the campus observing different types of soil based on the

	changes in color and texture.
Collecting samples	They can collect small samples during their walks, especially from the garden area.
Noting the observations	They make notes by observing the sample. Where did they find it? Was it near a water source? Are there trees/plants nearby? What is its color, texture and smell? Does it have humus content? What are the living beings they observed in the area they collected the sample? Are there any signs of mycelium? How suitable is the soil sample from the garden area suitable for gardening? Does it have a good amount of microbes? What is the relationship between microbes in the soil and human health?
Making a flowchart	Students make a flow chart connecting the health of the soil to the health of humans, other living beings and the ecosystem. They also highlight the various ways in which the health of the soil is compromised and the consequences.
Remedies	How can soil health be improved? - can be a discussion amongst the students.

Impact	Students observe the micro-level activity occurring in the soil and relate it to the bigger picture of environmental health.
Measurable Impact	Students can collect samples of the garden soil after a few months to reassess its health.
Assignment	Ask parents what measures they take at home or that they are familiar with that would improve the health of soil.
Follow-up	Students can share their findings from their discussion with their parents. They can also track the humus level in the soil of their garden by testing it in regular intervals.
Level up!	Try different gardening techniques in different parts of the garden to experiment which ones give better results for soil quality improvement. Measure it based on materials used, their availability, accessibility and cost, the time required, richness of soil, ease of procedure and more.

7.2. Soil Preparation

Description	Preparing the soil for the school garden
Duration	60 - 90 mins, and repeated as necessary
Venue	In the garden space
Objective	To understand the different ways in which healthy soil can be prepared for the garden.th.
Materials	As per analysis of the garden - soil, coco peat, vermicompost, mulch, water, organic matter, tools, transparent containers.
Precaution	Have caution when working with soil & using tools. Once done, wash hands thoroughly.
Resources	Samples of healthy soil.
Activity Flow	
Process	Prompts
Soil requirement	The design of each school garden will be unique if it reflects the needs of the school and its stakeholders (students, teachers, staff, parents, surrounding community, watershed).

	Based on that, and majorly if the garden is going to be created on the ground or in containers, the requirements for preparing the soil can be formulated. Major requirements are coco peat, vermicompost, red soil, neem cake and manure.
Procure the materials	Students can discuss how much of the materials will be needed and where they can be found. Sometimes the soil in the school might be good enough to use too.
Prepare the soil	The students can use appropriate tools to prepare the soil according to the need. It is important to keep a written track of the materials, quantities, date, cost and process.
Monitor soil health	Students can collect samples every month to monitor the health of the soil.
Impact	Students learn how to create healthy soil by doing it themselves.
Measurable Impact	The health of the soil can be monitored regularly.
Assignment	Students can research various ways of improving soil health & try that on a small scale.
Follow-up	The results from their experiments can be recorded and discussed.
Level up!	Students can explore ways to measure the health of the soil on other parameters such as potassium, nitrogen and phosphorus,

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