GREEN SCHOOL

in South India

Become a green ambassador and a gardener thanks to school!

Experience feedbacks and practical guide to implement in your school in order to sensitize the students to environmental issues and passing on idea of actions to take.

SOL, Alternatives Agroécologiques et Solidaires

Achnowledgments

We would like to thank all the people and organisations involved in the Green School Project that allowed its implementation and reinforcement over the years. We want to give a special thanks to all the people and organisations that contributed to the Green Schools project and its reinforcement over the years: the CEO and AEO of Marakkanam Block, the Chennai Centre for Environmental education, the coordinators, animators and volunteers of the project, the Catamaran centre, the Children and Third-World Help Foundation (FAET), the Raja – Danièle Marcovici Foundation and the Occitanie Region.

Table of contents

Preface

This educational booklet is the result of 5 years of implementation of a project led from 2013 to 2018 with 50 primary schools in the Marakkanam Block, in Tamil Nadu State in South India: the Green School project, led by SOL in partnership with Solidarité India.

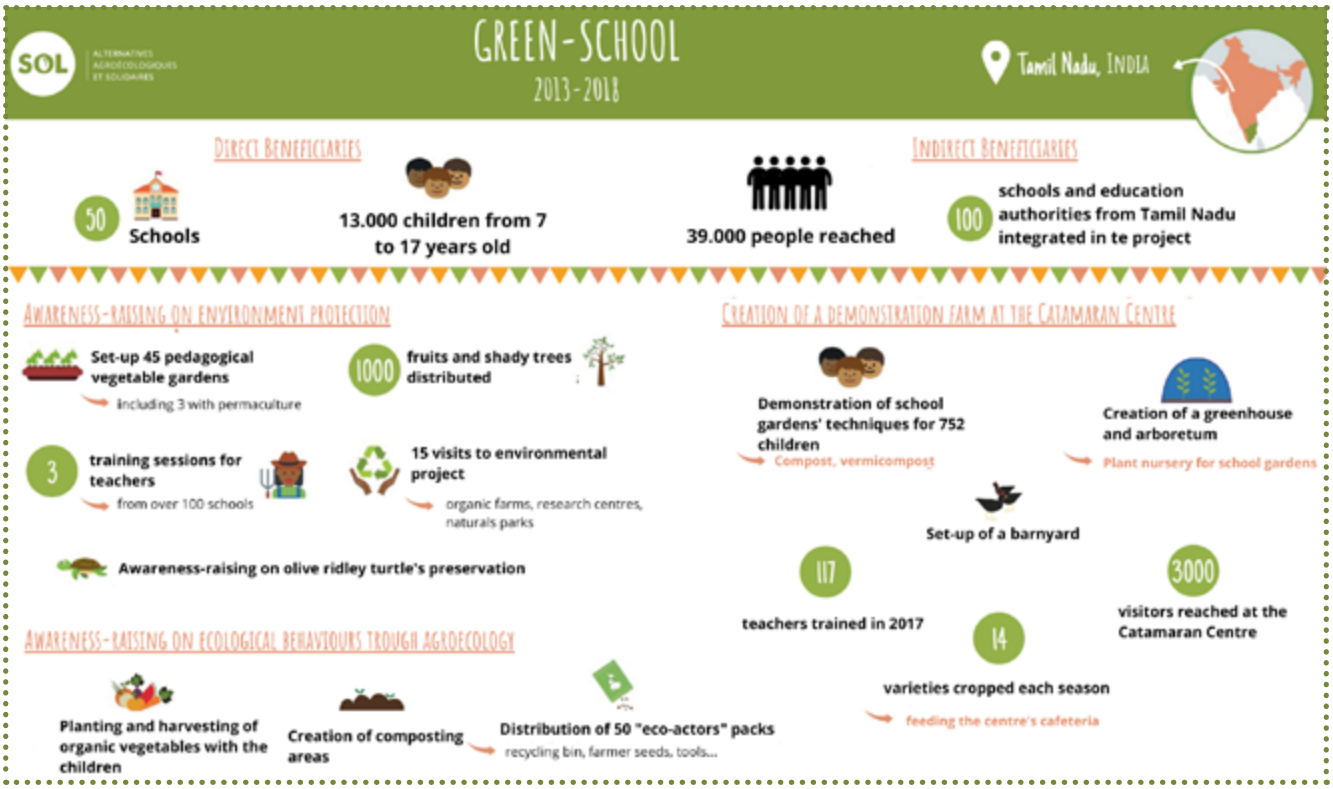
The project was initiated after we assessed that one of the most constraining obstacles to changing our ways of life comes from the promotion of an intensive economic growth model at the expense of the environment.

The Green School Project allowed the creation of **45 school gardens** in the Marakkanam region and **awareness-raising among over 13,000 children** on various topics such as waste recycling, gardening, climate change and biodiversity protection that are important for our planet.

Based on this experience, **the booklet aims at handing tools and techniques to primary and secondary schools' teachers as well as to any organisation wishing to set up environment education activities to raise awareness among young people on environmental and food issues** through the implementation of a school garden. It appears indispensable to teach ecological values and behaviours to the future generations while they are at school. Indeed, the schooling period is a real transition as for their self-development and conscientisation on the world that surrounds them.

Setting up playful and practical activities make it possible for pupils to directly comprehend climate change consequences and the importance of a responsible use of natural resources. We are convinced that children will then be more likely to raise awareness among their own parents. Indeed, they contribute to the evolution of mentalities on the necessity of environment protection (recycling, respecting natural resources such as water, soil and forest), on local consumption promotion and on the use of climate change-resilient farmer seeds that have better nutritional value.

This tool aims at **training citizens to be aware of their environment, of the climate changes affecting their territories and who know how to face them.** It is now primordial to preserve the future generations and to train the decision-makers of tomorrow in order to preserve the planet and adapt our societies to more resilient and sustainable ways of life. Thus, it is essential to raise awareness among the young generations, leaders of tomorrow, on existing alternatives.



THIS DOCUMENT IS SEPARATED INTO 4 PARTIES :

1 → **presentation of Green School** whitch clarifies SOL's experience and the project's results

2 → **feedbacks, advices and ideas** on how to implement a school garden

3 → **suggestion of awareness-raising activities** to be set up alongside the school garden

4 → feedbacks on how to **organise visits of environmental projects**

The detailed techniques and advices given in the booklet come from the experience of SOL and its partners in South India. ***However, they can be adapted to other areas and climatic conditions and they can serve as a basis to implement your own school garden.***

The Green School project

The necessity to change agricultural and food systems through environment and human-friendly agricultural practices is increasingly important, in South India and elsewhere in the world.

In the same time, agroecological models have shown their viability and pertinence to face current environmental and agricultural issues. Green School aims at **handing the agroecology model and the essential preservation of the environment to the young generations.** On one hand, because they are the one who will be tomorrow agents of change. On the other hand, because young people challenge their family and loved-ones and they share what they are being taught at school. By creating gardens, growing trees and vegetables, recycling waste, observing the cycle of nature and by learning the environmental risks of human activity, the children will integrate a vision and skills.

This whole learning process will allow them to initiate a transformation of individual and collective behaviours in order to build a more environment and human-friendly future.

The Green School project was based on these reflexions. It was implemented by Solidarité India and SOL in Tamil Nadu, India, from 2013 to 2018. There is about 72 million of people living in Tamil Nadu. In spite of the fact that it is one of the most industrialised Indian state, its economy depends heavily on agriculture. **About 60 % of its population lives in rural areas and 37% of the state population still lives under the poverty line. The schools of the project are located in a 50km area around Pondichery, mainly in rural areas.**

The project also allowed the development of a school farm of education and demonstration within the **Catamaran education and**

training centre, wich was created in 2013 by Solidarité India. The Catamaran centre served as a support for Green School, facilitated the presentation of various agroecological techniques taught at the schools and enabled the training of local teachers to environment awareness-raising. Moreover, the visits to various centres allowed awareness-raising among 3000 people on the project's topics.

A demonstration garden was also created within the Catamaran centre. It acted as a model for all school gardens at a wider scale: use of 14 traditional seed varieties, use of organic products, vermicomposting with a local-fabricated composter, drip irrigation techniques as well as planting and conservation techniques similar to those in the school gardens. The creation of a plant nursery also allowed the distribution of plants in the schools of the project. The demonstration garden served as a support for the training of the pupils and teachers. Indeed, the teachers from the schools of the project were trained to the various pedagogical aspects of environment education. Concrete ideas of activities and action to be set up, as well as pedagogical supports were distributed to them in order to pursue the activities in class with their pupils.

Moreover, within its environment protection activities, the Catamaran centre also allowed the settlement of a partnership with the "Water and Forests" department, which is a protection unit for sea turtles. Awareness was raised among the children on actions to protect olive ridley sea turtles, that lay every year on local beaches, in the area of the project. They are increasingly threatened by overfishing, beach pollution and eggs poaching.

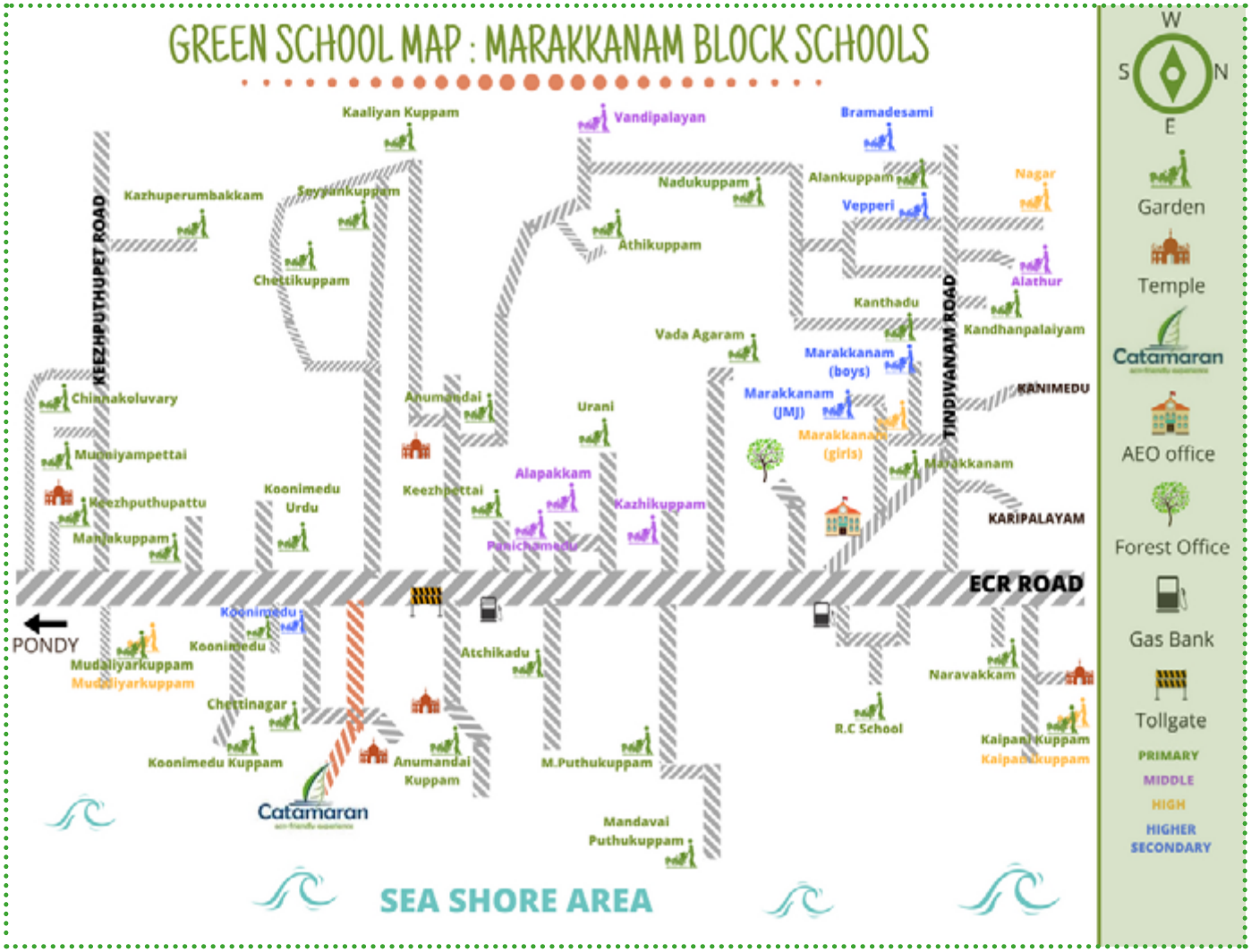
Thus, the Green School Project aimed **at promoting education and awareness-raising on climate change among children and teachers within Tamil Nadu region.**

To do so, two approached were followed :

→ **Training and awareness-raising among children aged from 7 to 17 on environment protection and especially on the creation of "school gardens", as well as on eco-friendly behaviours.**

→ **Reproduction of the pilot project in other regions and school structures, thanks to a strong visibility in medias, schools, universities, academic inspections, ministries, etc.**

After Phase I, that lasted from 2013 to 2015 and included 11 schools, 45 schools joined the second phase of the project between 2015 and 2018. **In total, awareness was raised among over 13.000 children on environment protection.** Thanks to the school gardens, children also beneficiated from organic vegetables at lunch times, which came directly from their gardens.



Passing on knowledge through school gardens

School gardens allow **the transmission of knowledge on nature and ecosystems thanks to playful practicing of gardening**. Pupils were invited to work the land, to sow, to water the garden, to understand the climate's impacts on agriculture and biodiversity, as well as to use agroecological techniques.

As children were leaving their classrooms to learn on-site, they were very enthusiastic and motivated about the activities organised in the gardens. Some of them even brought plants from home to plant in the garden, or created gardens at home after the project. Now, they are able to recognize organic vegetables from non-organic ones, they can cook the vegetables harvested in the garden and they understand how plants can grow and feed us.

Within the Green School project, 45 schools in Tamil Nadu created gardens and the initiative was a real success in the region. The project was even recognised by regional education authorities!

1. Notes de SUD n°22, «L'agroécologie paysanne: alternative sociétale pour des systémes agricoles et alimentaires durables», Mars 2020

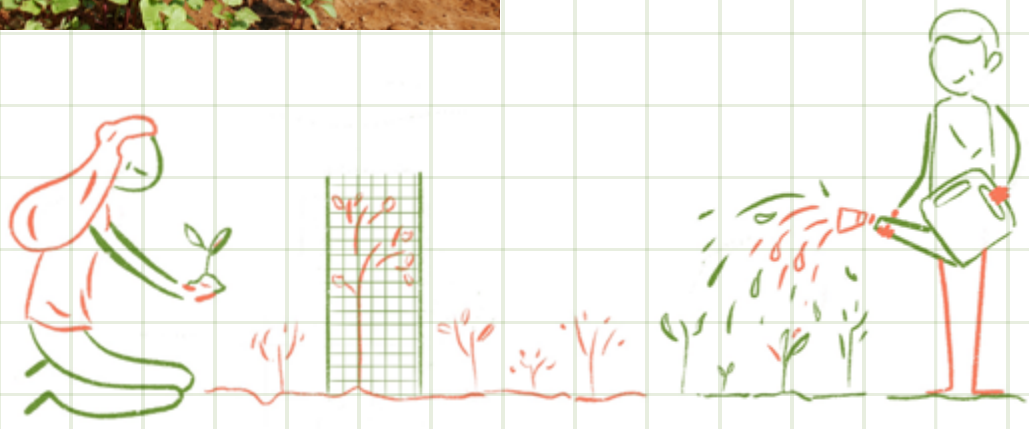
WHY A SCHOOL GARDEN ?

The school garden allows awareness-raising among children on many environmental and health issues: water managing, healthy food and balanced diet, respect of biodiversity, waste recycling, agroecology, etc. The activities organised through the creation of school gardens allow for pupils the assimilation of many skills, such as :

- ☑ *Understanding the importance of agroecology*
- ☑ *Knowing the difference between organic and non-organic agriculture*
- ☑ *Understanding the cycle of nature*
- ☑ *Recognising several types of cereals, vegetables and plants*
- ☑ *Growing plants*
- ☑ *Maintaining and irrigating the garden*
- ☑ *Composting*
- ☑ *Learning about several natural inputs (such as PanjaKavya or Neem oil)*
- ☑ *Cooperating with other pupils to reach goals collectively*

Create your own school garden !

One of the benefits of gardening is that **the required skills are accessible to anyone who has good-willing, observation and motivation.** You can follow the advices given in this booklet or research books and resources online. For example, the Tending a Schoolyard Garden[1] book will present you precisely the steps required to create a vegetable garden.



1. *Nyla Coelho, Tending a Schoolyard Garden, New Delhi, NEG-FIRE, 2014, 70p.*

What are the required authorisations ?

To lauch the activity, you will need **permission and support from regional and local institutions.**

For example, within the project, the following authorisations were mandatory :

- *The AEO's for primary schools (pupils from 5 to 10 years old).*
- *The DEO's for primary-secondary schools (pupuls from 10 to 13 years old).*
- *The CEO's for high schools (pupils from 10 to 17 years old).*
- *The school principal's or the form teacher's.*

These are the authorisations requested in the region where Green School took place. If you wish to implement a school garden in another region, we advise you to verify the procedures.

How much time per week ?

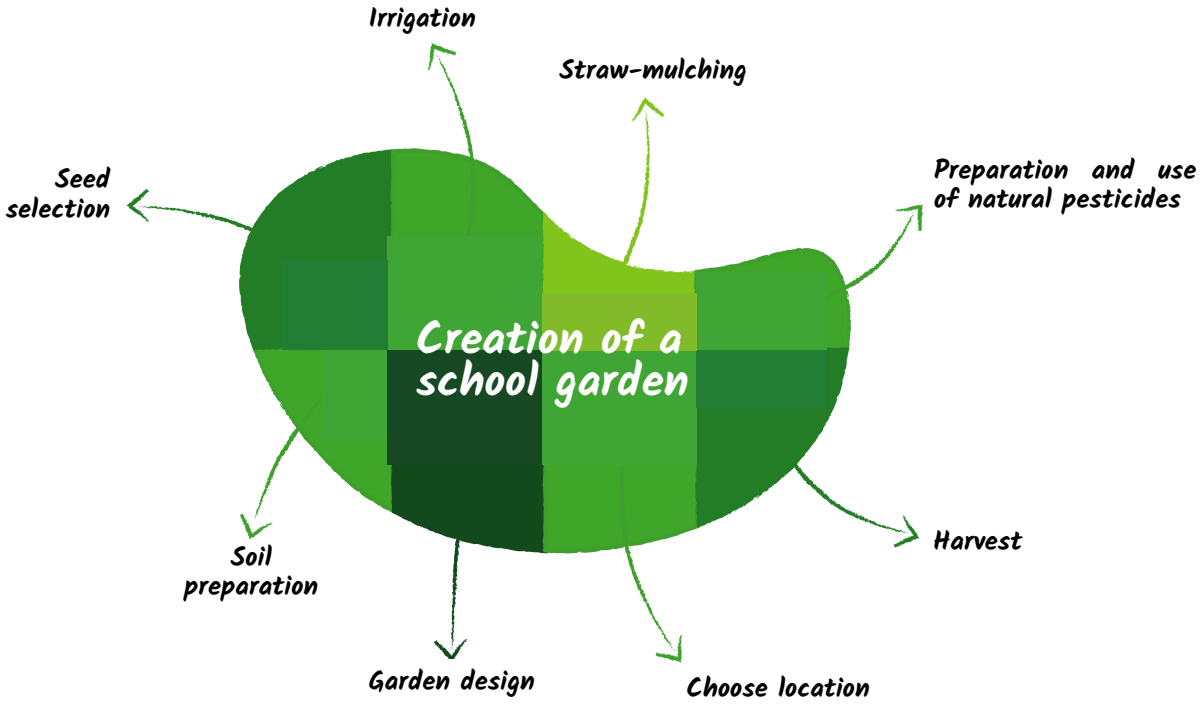
You should dedicate about 2 half-days per week for the school garden. These two half-days can be divided between indoors activities (recycling, cooking, etc.) and outdoors activities (watering, harvest, mulching, etc.)

What are the financial needs ?

It is important to evaluate the tools and equipment needed before starting. You should calculate whatever you will need to buy because once you have an estimation, you will be able to ask help from the school, or recuperate equipment from the families or people that do not need it.

1. *Panchayats are local Indian governments that work at the scale of the villages.*

STEPS TO CREATE A SCHOOL GARDEN



I / Where should you place the garden ?

In order to create an agroecological garden, first you should realise a precise map of the school, with its infrastructures and other resources such as the school buildings or watering places. This will help you find the location of the garden, which has to be located near water and in a non-passing space.

Decisive criteria :

Location : *prefer an area is both accessible and an isolated space of the passage which can be easily fenced, if necessary*

Sufficient surface area : *the garden's surface area will depend on your goals. You should have enough space to pass between plants (cf. the following drawing represents a garden of 4x7 meters, and 7-8 poles with 15 meters of fence were needed to protect it).*

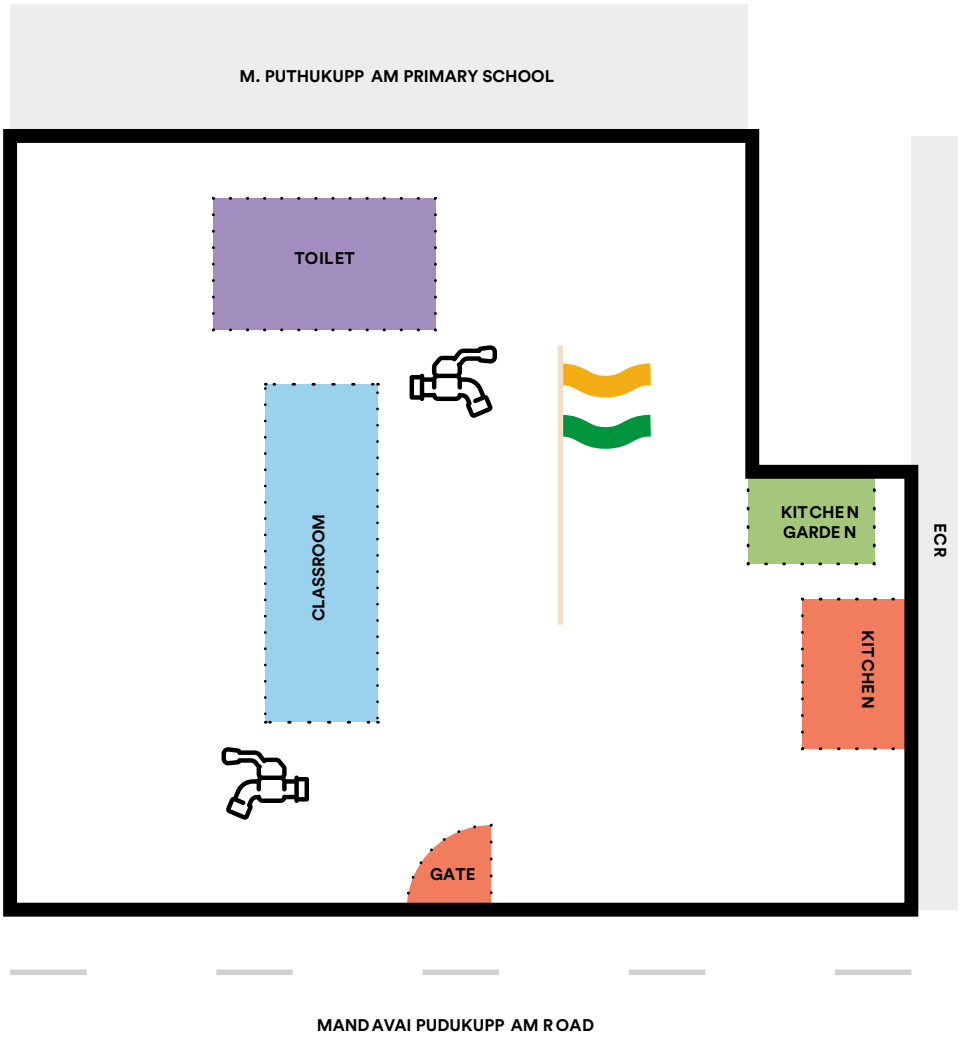
Good sun exposition : *plants need sun to grow.*

Close water supply : *to be able to water the garden regularly, a close water supply is essential and will spare you the efforts to carry it.*

Soil's type : *you should choose a flat soil for drainage issues, with the less amount of rocks possible. The more fertile is the soil, the better the garden is. To fertilise it, you can use natural fertilisers or straw-mulching techniques.*

Others : *other criteria can be decisive for your garden such as eventual dangers (wild animals, wandering livestock...)*

Example : map of Puthukuppam :



By drawing a map, you will be able to calculate how many poles and metres of fence are needed to close your garden. Do not forget you can help yourselves with building's walls.

CONSTRUCTION ET EQUIPMENT

Are you ready to go ? Here are the steps followed by the schools during the project.

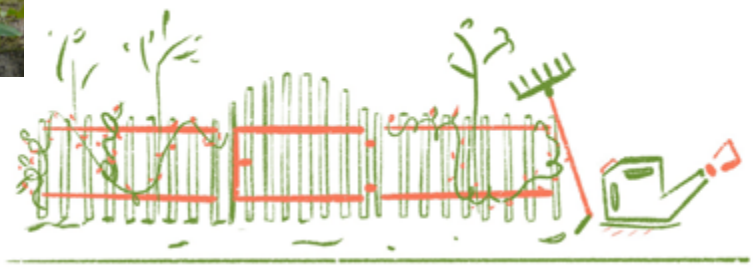
Installation of the fence and garden door :

The first step was to build the garden fences to prevent wild animal eating or damaging the plants. To plant 4 poles, you will need :

- ☑ *1 cement bag*
- ☑ *1 sand bag*
- ☑ *2 gravel bags*

To install the poles and fences, you will need :

- ☑ *2 days of labour*
- ☑ *1 mason*
- ☑ *1 person to help them*
- ☑ *1 carpenter to build and install the door*



2 / What about the design ?

The garden plan will also depend on your goals. You should take sun exposition into account, put stakes and nets to facilitate climbing plants' growth and dedicate a place for compost, which can be outside of the garden. You should also make sure to create aisles to walk between the rows and work in the garden.

If there is a building nearby, you can take advantage of it by installing a rainwater recovery system to water your plants.

Do not hesitate to take example of the gardens around you and of the ones in this booklet. The advice given should be adapted to the specific conditions of your locality.

In the area, some schools were attacked by monkeys and some gardens were destroyed. That is why it can be necessary to add nests to protect the garden.

In order to avoid the damages caused by the people passing by, it important to warn neighbours from the very beginning of the project. It can be interesting to install an explanatory board at the front, to explain them that it is the school's vegetable garden and that any damage or stealing can be sentenced.

The **rows containing the vegetables can be from 1 to 3 metre-large.**

Prepare an **experimentation area** where you will be able to test and learn with the pupils. You will also need an area for medical plants and for the flowers and plants that are easy to maintain.

Here are some examples of the medical plants used during the project: lemongrass, oregano, Tulsi basil...

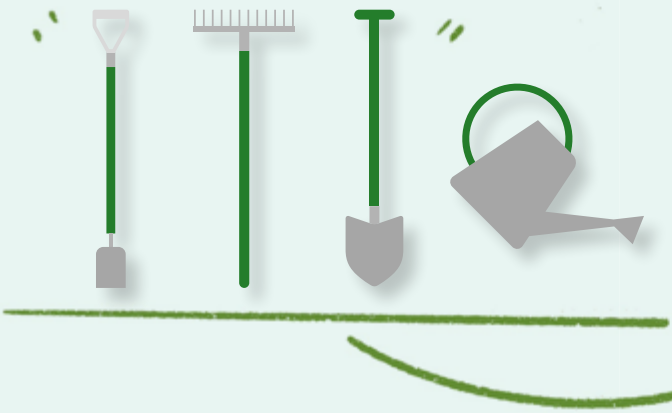
You should also anticipate **an area to wash your hands and wash the gardening tools after using** (a concrete platform could be useful). Moreover, you should plan to have a **closed area to store the tools and it is important to define collective rules for each tool's using and maintenance.**

Draw the map of your garden in a large white paper and try to associate vertical planting (e.g. tomatoes) and open ground planting. You can involve the pupils in this process.

Required tools:

Within Green School project, the following tools were indispensable and systematically distributed :

- ☑ *A hoe*
- ☑ *A rake*
- ☑ *A watering can*
- ☑ *A shovel / spade / trowel*



It is preferable to have good quality tools and more than one of each.

3 / Soil preparation

Pupils can help you in this step. It can be easier to work in small groups.

Depending on the type and condition of your soil, it can be necessary to fertilise it to ensure good looking vegetables. For example, in the area of the project we used red sand, which is rich in mineral.

Establishing food and green waste composting can also be considered in the school. To store it, you can build or buy a tank and put it in an isolated area. Then, you will have to mix this compost with the dirt where you grow your plants. This process will fertilise your soil and enable plants to grow faster.

To know more about composting, you can read the Home Composting[1] booklet.

Activities you will have to do every year before planting :

- ☑ *Prepare the soil with hoe*
- ☑ *Remove the rocks from the ground*
- ☑ *Level the soil so that it is as flat as possible*

The pupils can both participate and observe. It can be useful to ask a gardener to help you with this task.

1. *reStore, Home Composting, Chennai, Copyleft, 2012, 23p.*

Example of agroecological techniques to improve your soil :

1. Dig a hole of 3m long on 1m length and 1m high.
2. Put layers int this order : wood, coconut shell, green leaves, dry leaves and a mix of compost and dirt.
3. For each layer, put a tiny layer of dirt + natural input such as **Panjakavya** (cf. drawing) which helps with substances' decomposition. Plants will then be able to absorb directly nutrients and the roots will grow better. Finally, plants will grow faster..

This technique can be used where the soil fertility is not sufficient, for example in a sandy soil.

4 / Gardening : picking the seeds

Choosing and obtaining the seeds

Investigate and ask farmers around your school which varieties of plants, vegetables and fruits are adapted to local environment. The more adapted the variety, the faster it will grow and resist to diseases and the better will be the crop. For every species and varieties chosen, you can start with the seed or the patch to grow them in your garden. Ask around you if there are farmer seeds1 available in the area for this variety. Ask if it is possible to have some quantity to start the garden.

Within the Green School project, the following seed were distributed to the schools :

Tomato	Chili peper	Eggplant	Radish	Gumbo
Beans (3 varieties)	Runner bean	Calabash	Bitter gourd	Snake gourd
Luffa	Cucumber			

Palakeerai (spinach) - Field sagewort – Green amaranth – Thandukeerai (red amaranth) – Roselle (hibiscus).

1. Farmer seeds are environment-adapted seeds that come from natural selection methods and ancestral know-hows.

The time of growth, the sowing season and the children's eating habits *are also criteria to take into account when choosing the varieties. Do not hesitate to associate the pupils in this process of choosing.*

You can sow directly into the soil, following the steps below. However, if the weather is bad, it can be necessary to sow in pots first, in a greenhouse protected from the cold, before growing them into the garden. The sowing method depends of the varieties chosen and of the local conditions.

To sow, it is important to :

1. ***Air the soil,*** *by plowing the dirt*
2. ***Add compost*** *if it is not already done, and mix it with the dirt*
3. ***Be careful to let sufficient space between the seeds*** *(the space also depends of the varieties chosen)*
4. ***Associate plants*** *that allow the repulsion os fome diseases or insects*
5. ***Respect the ideal depth when sowing*** *(about 3 toimes their size)*

It is important to explain to children in a simple and precise way how to seed. You should ask for precision about the varieties when you buy them at a store or when you exchange them with a farmer.

You can plant two stakes and tension a wire over the seed rows to be able to recognise them, and also to attach plants to it.

5 / Garden irrigation

Irrigation is a key factor for a successful garden! Firstly, **make sure that water can infiltrate around the plants'**

crops. During 15 days following the sowing, it is better to water them with a sprinkler apple than directly with the watering can or the hose.

Avoid watering them during sunlight, in the heat, because water would evaporate and it could stress the plants.

6 / Straw-mulching

To face the heat during the dry season, you can use this agroecological technique that consists in recovering the soil with a vegetal layer called mulch. To compose this layer, you should use dried flowers, tree branches, fibres, bark, stalks, hay (...) which can be picked up by the pupils outside the school.

This will keep your plants chilled, avoiding direct sun and limiting evaporation after the watering. It can also prevent damages caused by the rain during other seasons and it helps creating organic material.

Remove weeds *and dry the roots so that they do not take root again. Then, put them where you removed them in order to nourish the soil.*

7 / Natural inputs

Observe your garden to see if the plants are growing well and check possible issues with mushrooms, insect pest or diseases.

Within the project, the following recipes were learnt and applied :

Panchagavya : ingredients

- 2 litres of curds
- 2 litres of mils
- ½ litre of Ghee
- 3 litres of cow urine
- 5 kg of cow dung
- 10 bananas (Poovan)
- 3 kg of Jaggey or sugar
- 3 litres of coconut water or water

This indian recipe is used as a natural pesticide and growth-developper.

Preparation : Mix the ghee and the cow dung and let the mixture macerate for 3 days. Mix the dung daily and wash your hands carefully afterwards. Then, add a mix of banana and sugar and put the whole mixture into a closed recipient. For a better use, it is best to let it rest for approximately 20 days. Every day and every night, you should stir in the mixture with a stick. Finally, mix the whole preparation with water to be able to spray it.

Natural pesticide made with ginger, garlic and chili. Ingrédients :

- 1 kg of ginger
- 1 kg of garlic
- ½ kg of chilli paste

Préparation : Mix the ingredients finely chopped and filter the juice to obtain a batter. Dilute it with water to spray it on insects and parasites.

Plant and Neem oil decoction : Ingrédients :

- Banyan leaves
- Neem leaves
- Chaste tree leaves
- Tulsi leaves
- Water
- Cow urine

Preparation : Chop all the leaves and soak them in water and cow urine for 15 days. Then, you will obtain an excellent natural pesticide!

8 / Harvest

Harvest is the most exciting moment for children but you should check if the vegetables are really mature enough to be picked up.

After washing the vegetables, cook them at school !

For example, within the project, the vegetables were used to add fresh and organic vegetables to the food ration served in the schools. This was part of the Indian government strategy “Mid-day meal”. Thanks to the vegetables harvested in the school gardens, children had access to a more diverse and nutrient-rich food.

To prepare harvesting, it is useful to organise a calendar for the production of each variety, for the sowing methods and for the use of natural input

Example of calendar below :

GRAINES	PÉRIODE DE SEMIS	MANIÈRE DE PLANTATION	MISE EN TERRE	DURÉE DE LA RÉCOLTE	APPORTS NATURELS	LUTTE CONTRE LES RAVAGEURS
 Tomato	J F M A M J J A S O N D	Trench	Nursery re-plantation	3 months	- Panjakavya - Amirtha karaisal (cow dung and urine + sugar + water) - vermicompost	- Herbal decoction - Natural pesticide (ginger + garlic + chilli paste) - Cow urine
 Chilli	J F M A M J J A S O N D	Trench	Nursery re-plantation	3 -4 months	Panjakavya - ’Amirtha karaisal (bcow dung and urine + sugar + water) - vermicompost	- Herbal decoction

Brinjal 	**J**	**F**	**M**	**A**	Trench	Nursery re-plantation	2 month after plantation, once a week	- Cow dung + herbal decoction - Leaves compost	- Cow dung - Herbal decoction - Natural pesticide (ginger + garlic + chilli)
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Lady's finger 	**J**	**F**	**M**	**A**	Trench	2 seeds every 30cm	45 days afer sowing, every 2 days	- Leaf compost - Vermicompost	- Cow dung ash - Herbal decoction
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Cluster beans 	**J**	**F**	**M**	**A**	Trench, seedlings in the sides	2 seeds every 15cm Espacement de 15 cm	3 months after sowing, every 2 days	- Cow dung - Enriched leaf compost	- Herbal decoction
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Radish 	**J**	**F**	**M**	**A**	Trench gardening	2 seeds every 10cm 1.25cm depth	45 days after sowing	- Enriched leaves compost	- Crushed seeds and neems + water
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Bottle gourd 	**J**	**F**	**M**	**A**	Circular pit	5 seeds in a circle	70 days after sowing	- Cow dungi - Enriched leaves compost	- Herbal decoction
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Bitter gourd 	**J**	**F**	**M**	**A**	Circular pit	4 seeds	2 months after sowing, every week	- Cow dung -- Enriched leaf compost	- Herbal decoction
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
Snake gourd 	**J**	**F**	**M**	**A**	Circular pit	3 seeds	80 days after sowing, every week	- Cow dung - Enriched leaves compost	- Herbal decoction -Panjakavya
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					

Ridge gourd 	**J**	F	M	A	Circular pit	seeds	2 months after sowing	- Cow dung - Enriched leaf compost	- Herbal decoction - Panjakavya
	M	**J**	J	A					
	S	O	N	**D**					
 Cucumber	J	**F**	**M**	A	Circular pit	5 seeds	45 days after sowing, about 8-10 times	- Cow dung - Enriched leaf compost	- Herbal decoction
	M	J	**J**	A					
	S	O	N	D					
 Spinach	**J**	**F**	**M**	**A**	Plot	Based on the needs	25 days after sowing	- Cow dung - Enriched leaf compost	- Natural pesticide made out of ginger, garlic and chilli
	M	**J**	**J**	**A**					
	S	**O**	**N**	**D**					
 Palak	J	**F**	M	**A**	Trench from 8 to 10 inches	Based on the needs	30 days after sowing	- Cow dung - Enriched lead compost	- Cow urine
	M	J	J	A					
	S	O	**N**	D					

This table must be adaptes to the clomate and to the varieties chosen for your school garden.

Bonus, plant shady trees !

In addition to the vegetable garden, you can also plant shady trees inside or even outside the school to make the environment greener and bring shade to the garden. This would be appreciable especially when the weather is hot. To do so, you will need nests and locally-adapted tree plants.

These shady trees can be planted during a special event, such as on environment day, to reinforce the children's motivation.

Once the trees are planted, you need to take good care of them, as you do for the plants: protect them from external attacks, water them regularly, prune them and add straw at the base to protect the roots.

In the schools of the project, we planted the following trees and bushes :

- ☑ *Currant bush (Ribes)*
- ☑ *Millettia pinnata*
- ☑ *Almond (Prunus dulcis)*
- ☑ *Citrus*
- ☑ *Emblic (Phyllanthus emblica)*
- ☑ *Portia (Thespesia populne)*
- ☑ *Guava (Thespesia populne)*
- ☑ *Pomegranate tree (Punica granatum)*

9/ Garden follow-up

If you need support, it can be interesting to have an animator coming from outside once every two months to guide you and teach you the various techniques necessary for the well-functioning of the garden..

One of the garden's main goals is to train the pupils. Either with an animator or individually, you can organise sessions on a specific topic such as irrigation, vegetable harvest, compost management, weeds, waste, etc.

In order to improve the activities and the garden crops, as well as to facilitate the daily maintenance of the garden, **you can organise follow-up documents for you and your students.** Thus, you will be able to better comprehend what has been assimilated and what has not, along with ideas to improve the activities.

For example, within the Green School project, a group of pupils were in charge of the garden every week under the responsibility of their teacher. A moment was dedicated every day to watering and weeding. However, harvest was done collectively by the whole class. The pupils were then writing the activities on the garden follow-up documents, in order to keep the rest of the class informed about the garden's progress..

It is essential to hold a diary, where you would write all the information and observation related to the garden, such as the sowing dates, the expenses, the crops, eventual diseases, climatic issues, etc.

ALTERNATIVE : GARDENS ON ROOFS

If you do not have appropriate soil or if the conditions are too rough, you can choose to do the garden on a roof.

Within the Green School project, a roof garden was created in Panichamedu school.

Results were impressive: the vegetable and medical plants crops were fructuous and allowed the children's supply. The garden has become a model, it was recognised by education authorities and local organisations that highlighted the initiative. **The children of the school even received a national price !**

Eucalyptus poles, tight nests, binding strings and clamps were used to build a shelter.

Half of the space was dedicated to climbing plants (luffa, bitter melons, beans) and the other half to vegetables (eggplants, tomatoes, chillies, okra, potatoes and beans).

You can use plastic or wood trays, plant pots or polystyrene boxes, that can be collected easily and freely from fishermen for example.

First layer : a mix of dirt and compost.
Second layer : dried leaves

This system is very efficient and does not need a lot of compost.

ACTIVITY CALENDAR

Even if some months are more intense in terms of labour or maintenance, there is something to do every month of the year if you want a successful school garden. That is why it is necessary to adapt activities to the available time during the week and to take holiday periods into account. Winter is the perfect season to prepare your calendar for the year !

Here is an example of an activity calendar followed by the teachers of Green School :

MONTHS SCHOOL YEAR	ACTIVITIES IN THE GARDEN	SCHOOL TIME AND HOLIDAYS
JUNE	Fench repair and land preparatory	Schools reopening and students admission
JULY	Sowing work	Students admission
AUGUST	Garden maintenance, greens and vegetables harvesting	15th Independence Day
SEPTEMBER	Garden maintenance, greens and vegetables harvesting	Quaterly exams and 10 days holidays
OCTOBER	Greens sowing work (short time crop)	—
NOVEMBER	Garden maintenance, greens and vegetables harvesting	—
DÉCEMBER	Garden maintenance, greens and vegetables harvesting	Half yearly exams and Christmas holidays for 10 days
JANUARY	Sowing work	School reopening, one week Pongal holidays and 26th Republic days
FEBRUARY	Garden maintenance, greens and vegetables harvesting	High secondary students' practical written exams
MARCH	Garden maintenance, greens and vegetables harvesting	High school and Higher secondary students' exams
APRIL	Garden maintenance, greens and vegetables harvesting	Primary and Middle schools' exams
MAY	Garden maintenance	Summer holidays

SUCCES FACTORS OF THE GARDEN

Talk about the project around you and raise awareness among local people on the school garden and on its impacts on the environment and on the children's health.

You should also network ! Try to involve the local representant (in France the maire, in India the Panchayat's president) or to meet with other schools to enhance their motivation and exchange with those who already own a vegetable garden.

You could also create **"Green Patrols"** with your pupils. Their goal will be to raise awareness among their entourage (parents, neighbours, friends, municipality, etc.) on respecting the environment and protecting biodiversity, taking into account the specific issues of the area.

For example, within the Green School project, a Green Patrol was trained in each school of the project. The children from these Green Patrols participated in special trainings to be able to present the project and raise awareness around them on climate change. Once trained, the children became true ambassadors of the project and thus, allowed its diffusion.

Skills learnt throught the creation of a school garden :

- ☑ Preparation of compost, natural inputs and pesticides
- ☑ Understanding of management techniques to integrate parasites and animals' role in agriculture, in the cycle of nature and into the interactions existing between ecosystems
- ☑ Use of various gardening tools
- ☑ Observation and analysis of the effects of climate change on agriculture
- ☑ Collective work

Challenges to take up

- ☐ Gain support from your colleagues and administration
- ☐ Find time for gardening activities
- ☐ Understand the main goals and stakes of the garden
- ☐ Keep the motivation
- ☐ Gain support from neighbours
- ☐ Make additional efforts to nourish your soil if it is sandy (more compost, better watering, better irrigation, etc.)
- ☐ Make sure that watering is possible all year

The Little Gardener's Guide

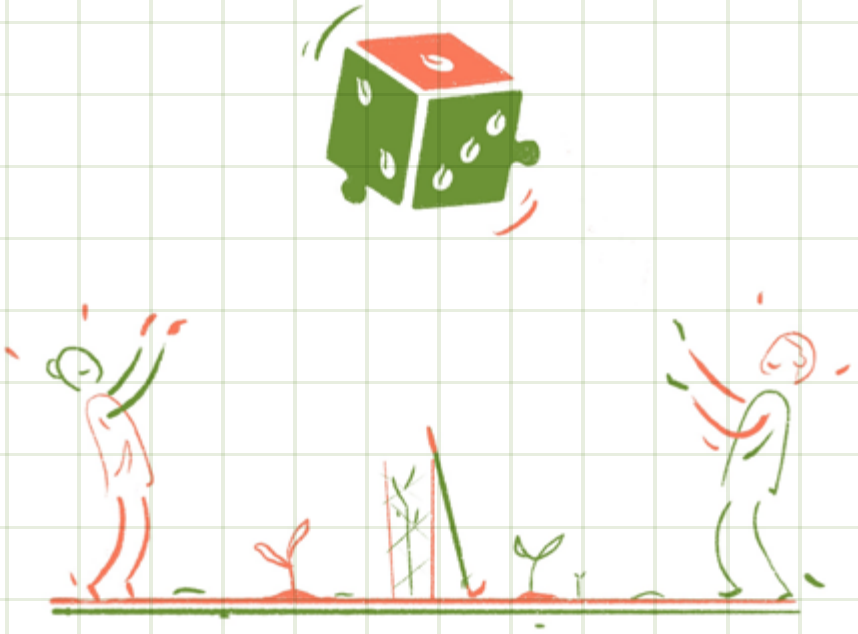
- Walk between the rows to avoid stepping seeds or plants
- Do not run or play in the garden
- Put your tools away and tidy after using them
- Put your tools away after using them to prevent hurting someone
- Wash your hands and feet when you are done
- Wash the fruits and vegetables after harvesting
- Do not hurt or play with the insects
- Call the teacher if you see dangerous animals or insects (snake)
- Listen to the teacher

Raise awareness among pupils on environement issues

As for the school garden, the animation activities set up within Green School aimed at mixing pedagogy and fun. Indeed, several animations were created by the animators of the project.

The educative games proposed to the pupils allowed them to understand and memorise the information transmitted on various topics.

You can find below the description of the animations organised within the 45 schools of the project.



WASTE MANAGEMENT ANIMATION

Duration : 45min

You will need :

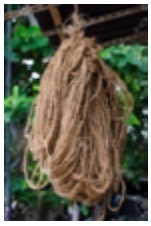
→ One bin for household waste

→ One bin for recycling

→ Paramapatham's game board

→ The waste decomposition table

The following table contains information about several objects or products that can be found at school, as well as the amount of time needed for their degradation in the environment. Some posters, illustrated with common-use products, will allow children to better understand. It is best to display the table next to the bins for children to see it.

Name of the materials	Decomposition time	Images
Paper	2-3 weeks	
Books and newspapers	6 weeks	
Vegetables, fruits, leaves and cardboards	5 months	
Woven coco fibre, matchbixes and eggboxes	3-14 months	

Cigarettes & diapers	1-3 years	
Wood materials	13 years	
Aluminium materials	15 years	
Polystyrene	80 years	
Iron materials and cans	200 years	
Plastic materials	400 years	
Fishing nests	600 years	
Glass materials	More than 600 years or several centuries	

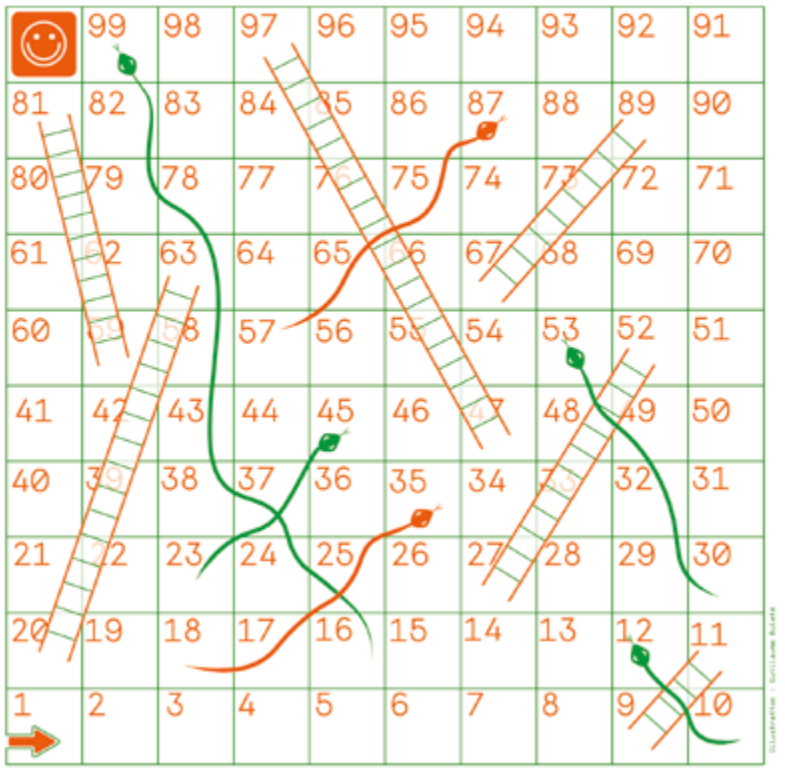
Example of game : The Paramapatham game, or game of the Ladder and the Snake.

The waste that can degrade easily and rapidly are “positive” for the environment. Thus, they are assimilated as “ladders” which allows progression into the game. On the contrary, the products whose degradation is slow are negative for the environment and considered as snakes, that make you go backwards.

The animation :

- **The waste collection is operated by the pupils,** inside the school.
- The animators held **a presentation on the importance of waste sorting and on the decomposition time** of each type of waste, with the table as a support.
- **The pupils separate biodegradable waste, that goes to the compost, from non-biodegradable but recyclable one, that goes to the recycle bin.** The compost will then be used for the school garden.

Game of the Ladder and the Snake
or the Paramapatham game



This animation resulted a success. The pupils learnt how to distinguish biodegradable and non-biodegradable waste, evaluate the time of its decomposition, and they realised the impacts that they can have on the environment. They started recycling and assimilated the concept of “reduce, reuse, and recycle”.

HAND HYGIENE ANIMATION

Duration : 45 min

Requirements :

- → A glass bowl
- → 3 glasses
- → A towel
- → Soap
- → The following leaflet

Animation :

- First, the animator starts with **presenting the importance of washing one's hands after gardening :** not washing your hands allow the proliferation of microbes and germs, which afterwards can be found in the food and vegetables you eat. In the schools of the project, teachers raised awareness on the necessity of hands washing to avoid stomach pain, diarrhoeas, jaundice, skin infection, etc.
- Then, **a demonstration is done in front of all the pupils.**
- **You can start a challenge** to see who has the cleanest hands.

TRIVIAL PURSUIT GAME

Duration : 45 min

Requirements :

→ Game rules

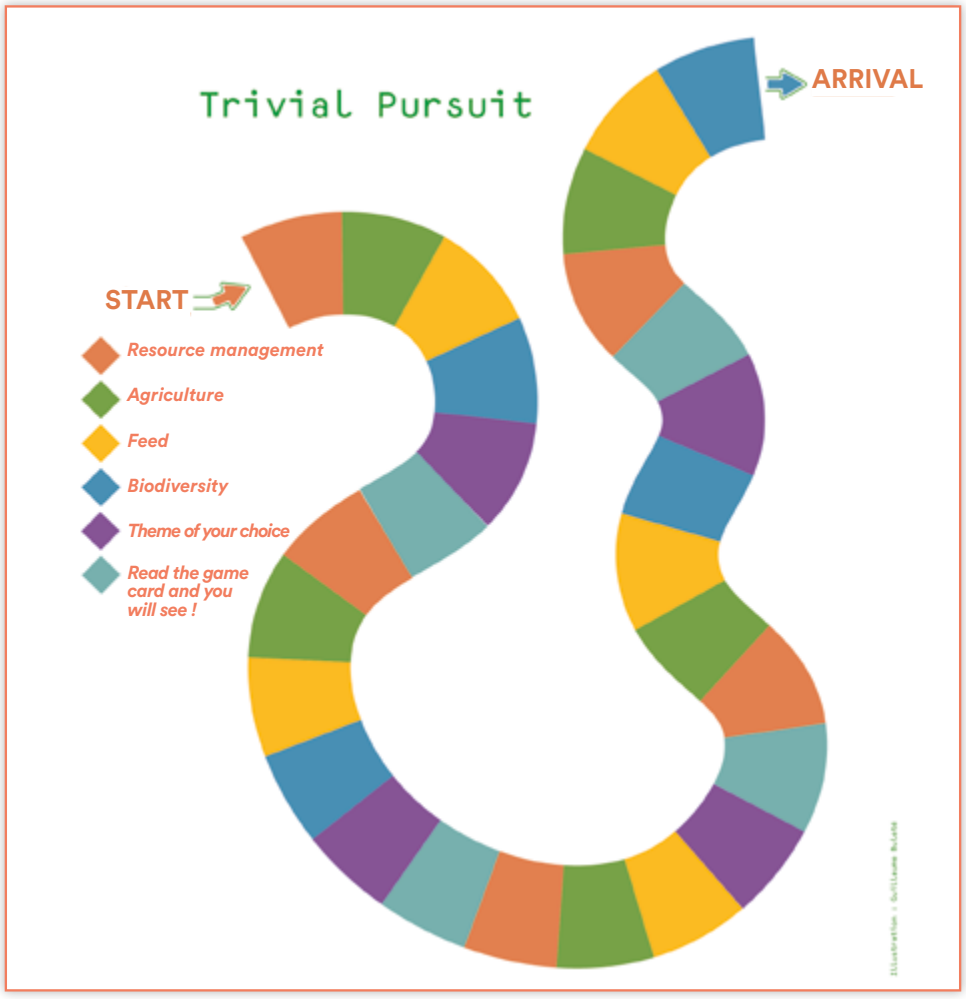
→ Game board

→ Question cards (can be downloaded here : https://www.sol-asso.fr/rapport-bio-ecoles-2020/)

→ A dice

Animation : The final goal is to be the first to reach the final case. The younger starts playing.

- Each player starts his/her turn asking a question (the right answer is highlighted)
- If the player is right, then he/she can roll the dice and put his/her pion. After that, his/her turn is over. If the player is wrong, he/she stays in the same case and his/her turn is over.
- During his/her first turn, each player has to choose on which topic he wants to be answering the question, and then topics will depend on the case where the player is located.



WEB OF LIFE GAME

Duration : 45 min

Requirements :

→ The drawings of living beings (to be downloaded here : https://www.sol-asso.fr/rapport-bio-ecoles-2020/)

→ A ball of wool

Animation :

- **All pupils are placed in a circle.** The circle can be composed of 24 children maximum.
- The animator is in the centre of the circle and starts with **the explanation of all forms of life existing on the planet** (plants, animals, microorganisms) and their interactions.
- One of the pupils starts. The animator wraps one of the thread's extremity around the pupil's finger. The child as to say **"I am connected to ____ because ____"** saying one of his/her classmate's name. Then, the animator wraps the thread around this other child's finger, and so on. For example, the rain can say "I am connected to rice, because rice needs me for its growth". Children must ask "What do I need?" or "Who needs me?".
- The link between characters can be indirect. For example, the human can say "I am connected to the banian fig because I like to sit under in the shade".
- At the beginning, a child cannot be connected more than once to another character. Once every player is linked to someone, **the game can go on, creating other connections** until reaching the end of the ball of wool.
- Once a web is spun between all children, the animator **highlights the interactions established between all forms of life.** The web represents the complexity and the interdependences existing in the environment. To ensure that children all feel connected, the animator can ask to one or two children to pull their finger towards them and then ask to the other who felt the tension.
- It is also possible to **simulate the extinction of one specie,** deleting one character from the circle, and then explaining the consequences of such a disappearance. Children will directly feel how the change affected the thread connecting them.

OTHER ANIMATION IDEAS

It is possible to complete the previous animations with presentations on various topics, explaining the impacts of climate change and the current alternatives :

→ Water : impacts related to water pollution and waste

→ Climate change : definition, causes and solutions to face these changes

→ Biodiversity : impacts related to its preservation, to food security for example

→ Seeds : presentation of preservation and multiplication methods

Several resources are available on these topics, such as CPREECC (Chennai Centre for Environmental Education) books:

- **The book on WATER**
- **The book on Climate Change**
- **The « Environmental Education Manual »**
- **The book called « Biodiversity »**

You can also organise animations with the Eco'Landi game, created by our French partner within the Small Farms Internationals project. This game aims at raising awareness among children on agroecological gardening.

To enhance the activities' benefits on environment, you can encourage your pupils to talk about these activities to their family and social circle! This will allow their diffusion.

To go further, you can also :

- **Set up street theatre** with songs on environment, in order to establish a positive dynamic for collective awareness-raising to be possible outside the school, reaching the neighbourhood.
- **Stimulate children to use their skills and knowledge** on environment, by encouraging them to draw, sing, write, etc.

Visit to environmental projects

In addition to the implementation of school gardens and to the organisation of animations, some visits to **environmental projects can be organised** within organic farms, research centres or natural parks. These visits allow children to discover environment preservation places and also to change from their school routine.

For example, within Green School, children visited the Vasavankuppam centre for the conservation of olive ridley turtle, the botanic garden in Pondichéry and the planetarium. These visits allowed **awareness-raising among the pupils on biodiversity and ecosystems preservation, in a playful way.**

The pupils and teachers also visited the Catamaran centre, where they had trainings on agroecological techniques to develop their school garden and environment-related activities.

If there are environment initiatives nearby your school, you should try to organise discovery visits for your pupils.

In brief

As an example, here is a brief of the equipment needed for the creation of a school garden as well as for the animations.

Equipement	Quantity
Fences with door and lock	1 or 2
Seeds	If needed
Waste bin	1
Table for the project and advices	1
Puzzle and animation kit	1
Trees and nest	If needed
Gardening kit (tools)	1
Irrigation tube, watering can or water can	1
High frame, for climbing plants	1
Follow-up document for the garden	1
Education kit	1
Natural compost, fertiliser or natural inputs	If needed

Pupils and Teachers' testimonies

"I love this program because we have the opportunity to work with nature, with the garden. It is a good way to learn organic and traditional agricultural methods! I have learnt a lot! First, I have learnt how to make compost, using the leaves that we collected under the trees and how to make trenches to maintain the garden in a good shape. Secondly, I have learnt that it is important to clean the school and the garden. Third, I have learnt that we cannot walk with our shoes in the garden to avoid hurting the plants !"

Jasmine, 11 yo, student at Chettikuppam's school

"We have learnt many things on various topics, especially waste recycling, renewal resources management and on the importance of biodiversity. We would like to continue the project in our school. I will never lose the motivation passed on by Green School to raise awareness on environment among the pupils."

Gandhimathi, teacher at Pudukuppam's school

"The vegetable garden set up in our school by Green School has been very useful for our pupils. Calabashes, gumbos, luffas and beans were harvested and we used them to prepare the lunches in the school. These vegetables grew with organic inputs only and thanks to techniques respecting the health of children. The pupils were very interested by the activities, especially irrigation, weeding and inputs in the garden. I am very happy when hearing the children talking about the project, and following the advices to reproduce the garden at home"

Janaki. M, teacher

« I learned how to grow a vegetal garden and how protect it and manage weeds. This will be very useful for me in life. When my classmates and I work in this garden, we are very happy and this activity inspires us. Thanks to the school garden, we have the motivation to make one at home »

Pradeep, 10 years old, student

« We learnt how important organic agriculture as well as the difference between organic and non-organic materials thanks to the Green School project.»

Sanja, student at Chinnakoluvary's school

« Creating a garden is a very good learning process for all the pupils. It brings confidence in every child. From childhood, pupils start to learn about organic agriculture and it helps them for their future. Students show a great interest for gardening. They use their own vegetables for their own meals. They formed a group and worked together. It gives them team spirit.»

Mrs. Sammanasumara, teacher at Chinnakoluvary's school

« Organic vegetables allow our bodies to be healthy. The Green School project teach us a lot about organic agriculture. Thanks to it, I have planted several trees at home! »

Bargunan, student at Konimedu's school

Examples of gardens before/after

Resources

In English :

- The animation kit for teachers developed by the CPR Environmental Education Centre
- Nyla Coelho, Tending a Schoolyard Garden, New Delhi, NEGFIRE, 2014, 70p.
- reStore, Home Composting, Chennai, Copyleft, 2012, 23p
- The numerous publications on the CPR Environmental Education Centre's website.
- Navdanya, Young Ecologist Program : http://www.navdanya.org/attachments/Latest_Publications13.pdf

In French :

- Eco-schools program : https://www.eco-ecole.org/
- Educational resources on Alimenterre's website : https://www.alimenterre.org/la-plateforme
- Educational activities developed by Artisans du Monde : https://www.artisansdumonde.org/comprendre/se-former/nos-animations-pedagogiques-182
- Educational tools and activities developed by SOL and its partners: Eco'landi game, awareness-raising kits, comic book

SOL, Alternatives Agroécologiques et Solidaires

Headquarters : 20 rue de Rochechouart 75009 Paris

Offices : 1 rue Jouxt-Aigues 31000 Toulouse, France/ Chez 21 Paysans, 2 Rue Valperga, 06000 Nice, France

Contact

Tel : +33 (0)1 48 78 33 26

Mail : contact@sol-asso.fr

To know more : www.sol-asso.fr

Facebook : @SOLassociation

Twitter : @SOL_association

Instagram : @SOLassociation

Youtube : SOL : Alternatives Agroécologiques et Solidaires

Publication : SOL, Alternatives Agroécologiques et Solidaires

Editing : SOL's team

Graphic design : Guillaume Buleté

Photo credits : SOL

Year of publication : 2020