



The Earth is what we all have in common.



ACTIVITY MANUAL

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VRAKSH FOUNDATION



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1. About SAVTHERTH

- SAVTHERTH is about raising awareness about the importance of protecting our planet and taking action. Despite attempts in recent decades to tackle environmental problems, our Mother Earth is currently facing a plethora of concerns. Issues such as pollution, land degradation and global warming still persist, due to the exploitation of earth at an alarming rate.
- It appears that in dealing with environmental issues, legal frameworks do exist at global and bilateral level, ranging from holding states responsible for their breaches of international obligations, to cooperating internationally among states and to swapping debts of a nation for undertaking environmental friendly projects. Yet the overall health of the earth has not been satisfactory, and instead, is deteriorating.
- Our actions have been not favored protecting this planet, and we have experienced an increasing recurrence of natural disasters. This movement intends to play a role in protecting the environment to date.
- The activities will further highlight the use of the new formula and approach known as 'debt-for-nature swap which can be an effective way of sustaining the environment. As environmental problems are piling up around us and the earth is on the brink of a planetary emergency, this paper further intends to identify the ultimate key to solve this global problem.

1.1 Problem Statement

Despite attempts in recent decades to tackle environmental problems, our earth is currently facing a plethora of concerns. The persistence of pollution illustrates the alarming rate of environmental exploitation and degradation.

1.2 Objectives

To enhance the quality of our global environment for the benefit of all people while promoting a better understanding of the effects our society has on the long-term health of our planet.

1.3 Core values of the SAVTHERTH

It is more relevant and more important to teach students about the Earth and the challenges we are facing today. Students are the future and if anyone is going to make a difference and start the new ways of protecting students it is our students.

Let the Spirit of SAVTHERTH Go On For All the Year

Awareness and inspiring activities in schools are a great ways to educate children about climate change, reduce pollution, protect biodiversity, local community work, classroom integrated activities and more.

Here are 5 core values to inculcate among students and also as parents, educators and schools, we all should be the role models in practicing them in our everyday living.

- Benefits of Trees in the World
- Easy Ways to Reduce Energy
- Importance of Recycling



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- Water Conservation
- E-Waste Disposal Wisely

1.4 Global Findings

It appears that in dealing with environmental issues, legal frameworks do exist at global and bilateral level, ranging from state responsibility, to cooperating internationally and to swapping debts of states for undertaking environmental friendly projects. However, despite all the laws favoring the protection of the earth, excessive pollution and non-sustainable activities have exacerbated environmental degradation leading to increasing frequency of natural disasters. Our actions have favored not the protection of this planet, but its destruction.

As per Toner buzz research “In 2019, approximately 9 million acres of rainforests were destroyed. Deforestation causes approximately \$2 trillion to \$4.5 trillion in lost biodiversity each year. 4.2% of the world's tree cover loss was between 1990 and 2020. By 2030, there may be only 10% of the world's rainforests left.”

As per World Bank in article **catalyzing clean air in India**- All of India's 1.4 billion people (100% of the country's population) are exposed to unhealthy levels of ambient PM 2.5 – the most harmful pollutant - emanating from multiple sources.

As per the Global Climate Report 2022- The global surface temperature for January 2022 was 0.89°C (1.60°F) above the 20th century average and the sixth highest for January since global records began in 1880. The last eight Januarys (2015–2022) rank among the 10 warmest Januarys on record. January 2022 also marked the 46th consecutive January and the 445th consecutive month with temperatures, at least nominally, above average.

As per UN report- The GEO-6 report on LAC states that greenhouse gas emissions are growing in the region as a result of urbanization, economic growth, energy consumption, land use changes and other factors. Agriculture has had a strong impact on the emission of nitrous oxide and carbon dioxide. Nitrous oxide emissions – from soils, leaching and runoff, direct emissions, and animal manure – increased by about 29 per cent between 2000 and 2010. The abundance of beef and dairy cattle in the region has also increased methane emissions, which grew by 19 per cent between 2000 and 2010.

Most of the cities in the region for which data are available have concentrations of particulate matter (PM) above World Health Organization (WHO) guidelines. Monterrey in Mexico, for example, has measured concentrations of PM2.5 of 85.9, well above the WHO recommended limit of 20. The region's urban population increased by more than 35 million people between 2010 and 2015, and is expected to climb to a total of 567 million persons by 2025. More than 100 million people already live in areas where they are at risk from air pollution.



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Level 1: Tree Plantation, Garden Making & Olympiad

2.1 Activity 1: Tree Plantation Drive: Importance and Guidelines

Universally, trees have been an important part of urban landscapes for millennia since they offer adequate benefits to humanity. Studies highlighted the positive impacts of biodiversity conservation in the students' academic performance but there is still lack of literature pertaining to its role on the promotion of environmental education in India. On this note, this initiative aimed to analyse the school students' perceptions and experiences on participating in a tree planting activity, identify the implications of tree planting activity in studying Earth and Life Sciences, and explore the perceived constraints and opportunities. The module design is descriptive-qualitative in nature. Based on the qualitative data analysis, five themes have emerged such as:

- (1) Simple yet beneficial;
- (2) Opportunities and constraints;
- (3) Practical application of learning;
- (4) Environmental awareness promotion; and
- (5) Mitigating environmental degradation.

In conclusion, tree planting activity as a part of the field study program in schools is one of the most effective ways to combat and slow down the effect of global warming while promoting the students' academic interests. This initiative will also highlight the positive impact of tree planting by improving the students' perceptions of life, community, and environment which is the goal of 21st century education. Lastly, the initiative recommends the development of extension programs to school communities in India and worldwide that will arouse the interests and participations of the students to tree planting activity, gardening and ecological tours by partnering with relevant organizations and agencies.

2.1.1 Benefits of Tree and Reforestation

The idea of urban forestry is insufficiently understood and often disregarded in Nepal even though the planting of trees has been an essential and significant share of their human settlements. One study investigated urban peoples' awareness towards urban forests and the observed benefits related to the consumption and presence of urban forests in Lalitpur, Nepal. The results inferred that most respondents held affirmative attitudes to urban forests and were mindful of the benefits delivered. There was still greenery weakening in the city despite the participation of different agents from government and non-governmental organizations in urban forests promotions. Because of the city's suffering from water, air, and soil pollution, the damage and degradation of urban forests unfavourably affected the ecosystems. The local government has endorsed urban greenery in recent years; though, there are no supplementary legislations or regulations leading to urban forestry. According to Pawar and Rothkar (2015), forests are vital for human life because they offer a varied range of resources such



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as absorbing carbon or acting as carbon sink, generating oxygen which is important for life's existence on earth so they are also known as earth lung, aiding to regulate hydrological cycle, world's climatic condition, water purification, providing habitat to wildlife, decreasing global warming, absorbing poisonous gases and noise, reducing pollution, preserving soil, and mitigating natural threats like floods and landslides. However, currently forest cover is quickly diminishing due to various causes such as development of agriculture, urbanization, road construction, industrial plants and factories that constitute the major and severe danger to the forestry that lead to serious destruction of the environment. Furthermore, Sivarajah et al. (2018) confirmed that human exposure to green surroundings and vegetation is broadly known to benefit both physical and mental health conditions. But there was no investigation yet on the particular effects of tree cover, diversity, and species structure on the academic performance of students.

There was a suggestion about the importance of urban forestry investments in those schools where effects of tree cover and species composition were most marked that showed the maximum level of external encounters. Based on the article about the benefits of trees for liveable and sustainable communities authored by Skoff and Cavender (2019), we are living in a period swayed by humans to the fact that the Earth's systems are now reformed. Also, the world's major population lives in cities. The United Nations General Assembly formed the United Nations Sustainable Development Goals (UN SDG) to progress the value of life for people and to come across their needs in a shifting world. The greatest encounters of our era were bounded in these comprehensive goals. Planting and protecting trees particularly in cities where the bulk of people live are effective approaches to contribute in accomplishing these goals. They directed a critical review of the benefits of trees that stimulate health and social well-being by eliminating air pollution, decreasing stress, boosting physical activity, and supporting social ties and community. Trees can decrease urban temperatures while cities are getting warmer while they provide the animals with home and food.

2.1.2 Mission

SAVTHEARTH mission is to inspire students to protect mother earth for our children's future. Through our educational programs, publications and multi-media outreach, SAVTHEARTH is dedicated to three objectives; connecting people with nature, safeguarding mother earth and wild places and providing solutions to climate change.

SAVTHEARTH extends its programmatic connections for adults and youth by offering an opportunity to learn about the importance of trees to our planet's health, the ability to have a tangible experience to make a difference by planting trees and dedication to pass on an appreciation for nature to future generations.

Trees for mother earth program provides adult leaders with fun, hands-on science-based activities to help young people learn about the importance of trees and how to plant and take care of trees for the future. This initiative aims to educate and prepare a generation of environmental stewards, expand the world inventory of trees and to protect and improve natural resources.

2.1.3 Become a Tree Steward: Plant a Tree



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Trees are an important part of eco-systems across the planet. Trees provide vital resources, clean our air, protect us from weather and provide enjoyment. Planting a tree with a child is a great way to help

Children understand the role of trees in the environment and also understand how each person can make a difference in their own community. Tree planting provides “the roots” for building future appreciation and stewardship for nature.

This guide will assist you on how to plan, prepare and execute your tree planting event, whether you are planting one tree or 100s. There are three sections to this guide: planning, planting, and caring for your trees. Each section provides step-by-step procedures on how to implement each process and hints for success. It is important to remember that trees, once planted, will need continual care. It is important to build this time for caring for the trees into your planning progress.

This guide can be used in conjunction with the age appropriate (K-18) activity booklet. The activities are designed to provide you an opportunity to learn about trees from how they grow, to wildlife benefits to benefits to humans.

These activities can be done before, during and after your tree planting.

2.1.4 Planning to plant your trees

Getting ready to plant takes some planning, investigation and analysis. This is a great opportunity to learn more about your community. This section will walk you through the planning stages. Anticipate spending about 2 weeks – month in your planning stages depending on the location you wish to plant your trees in.

Step 1: Identifying your site

Select between one to three different locations where you would like to plant trees. You will need multiple locations to consider since not all locations are appropriate in the long run to have trees. Some suggested locations you can explore in your community are:

- School
- Library
- City Hall
- Senior Center
- Community center
- Temple/Gurudwara/Masjid/Church
- Street (sidewalk)
- Your own backyard
- An apartment complex



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The site should be able to host fully grown trees between 9 ft. to 40 ft. of higher when fully grown.

Step 2: Assessing Your Site

After selecting a few potential sites, you need to determine which of the sites appropriate place to plant your trees is.

Who Owns The Land?

Check to see who owns the land that you are thinking about planting the trees on. Ensure you have all the permissions to plant trees and know how many trees may be planted in the area. Make sure to get written permission. Look Up

- **Do You See Power Lines Over Your Head?**

If you do, the tree you plant should be a low-growing tree (see table below). If you want to plant a tall tree, look for another site without power lines overhead.

Use this table to figure out if you want to plant a short, medium, or tall tree.

Tree Size	Height Of Tree At Maturity
Short	Less than 25 feet
Medium	25 to 40 feet
Tall	More than 40 feet

Look Around

Do You See A Road, Sidewalk, Or Curb Nearby?

Tree roots can grow outward underground beyond the distance of their crowns. Trees need enough soil to grow and survive for a long time. Roads or sidewalks can keep water and nutrients from getting down to the roots and limit the amount of available soil. Tree roots may lift a sidewalk over time if the area is too small. If you know your tree will grow to be tall and will have an extensive rooting system, be sure your planting area is large enough.

Planting Area	Size Of Tree (at maturity) You Can Plant
Minimum size 3 ft. x 3 ft. or 9 sq. ft	Short: Less than 25 feet
Minimum size 4 ft. x 4 ft. or 16 sq. ft.	Medium: 25 to 40 feet
Greater than 4 ft. x 4 ft.	Tall: More than 40 feet



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IS THERE A HOUSE OR OTHER PERMANENT STRUCTURE NEARBY?

The shade from deciduous trees planted on the east or west sides of a house can help to keep it cooler and conserve energy in the summer. Because deciduous trees lose their leaves, they will let in the sun to warm your home in the winter.

Conifers can provide a wind screen in the winter. It is important not only to pick the right kind of tree, but also to plant it the right distance from the house.

Size Of TreeAt Maturity	Distance From Wall Of Building
Short (25 feet orless)	10 feet
Medium(25 to 40 feet)	15 feet
Large (40 feet +)	20 feet

ARE OTHER TREES NEARBY?

There are several reasons not to plant trees too close to each other. Some trees need lots of light from the sun to grow while shorter forest understory trees need less. If a tree that requires full sun is planted in the shade of a larger tree, it will not grow as well.

HOW MUCH SUNLIGHT DOES THIS SPOT GET?

Go to your site in the morning and then again in the afternoon on a sunny day to properly categorize it. These are the categories you can choose from to describe your site:

- Full sun: 6 hours or more a day
- Partial sun: 4 to 6 hours a day
- Shady: Fewer than 4 hours a day

IS A WATER SOURCE, LIKE A FAUCET, NEARBY TO WATER THE YOUNG TREE?

Trees need water to grow, especially for the first two years after planting. The easier it is to bring water to the site, the more likely you are to give it a sufficient amount of water.

Know the right kind of tree to choose, you should know what kind of soil you have.

Conduct a soil experiment. To test your tree planting site, dig a hole about 18 inches deep and 12 inches wide. Fill the hole with water. Now carefully time the water draining from the hole. If the water drains away within an hour, the soil has good drainage. If it takes a few hours to a whole day to drain, the soil has slow or “fair” drainage. If the water takes more than a day to drain, the soil has poor drainage.

Your local Cooperative Extension service can assist you with telling you what type of soil is present.



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Once you have identified three locations, complete the chart with the Street Address (including name of site), owner of site (if known, or continue with next step), pros of planting at this location and cons of planting at this location.

Look Down

MIGHT THERE BE PIPES OR WIRES UNDERGROUND?

It can be dangerous to dig a hole if there are buried electric wires, cable wires, telephone wires, water pipes, natural gas lines, or septic tanks.

Before you do any digging in the India, call us and have utilities marked for free.

Typically, the soil depth needed to plant trees by hand does not impact utilities, but this step is recommended in any urban or developed settings.

HOW FAST DOES WATER DRAIN FROM THE SOIL?

Different types of trees need different types of soils. If water does not drain from the soil quickly, air cannot move in and through the soil because small places are filled with water. The roots of some trees need less air and can live in soil that drains slowly, like those trees native to wetland areas.

The roots of other kinds of trees can live in soil that drains water very fast and may be drought-tolerant too.

Step 3: Determine Your Final Location

Use the chart below to help you weigh the benefits for planting in each location you selected. When you finish your inventory, determine if one of the three locations has more benefits or even “less hoops” for planting. Get permits or permission in writing. Getting permission may take a selecting a public site like a park may be easier.

Write down the sites name, location and owner, then jot down notes from your investigation about what you discover. Select three site options for planting, and list the pros and cons of each. These will help you make a final decision.				
Address	Owner	Up	Down	Around
1				
2				
3				

Step 4: Determine two planting dates for when you will plant your tree

Trees should be planted either in the spring or fall to ensure the tree will have a good chance to grow strong for many years. Select two days (about 1 week apart) when you can plant trees. You will need to provide these dates when you order your trees. Order plants a few days prior to your planting date and don't plant if it not the right time to plant trees for your area.



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Select Two Possible Planting Dates

Planting date	Date to order trees
1	
2	

Step 5: Secure permission to plant.

Identify who owns the property where you wish to plant your trees. Many of the locations you may select may be owned by someone else, such as, the local city or other authority. You will need to approach the owner to secure permission to plant the trees.

SUGGESTED TALKING POINTS FOR YOUR CONVERSATION

- Introduce yourself and identify the SAVTHEARTH you are volunteering with.
- Explain the whole idea.
- Working with children to understand the importance of trees for the environment, the community and how to care for a living object.
- Trees will be cared for at least a year to help them get established by students.
- You will working with the students to learn about trees through a series of activities before you plant.
- You will provide all the materials and will ensure the area is left in the same way it was found or better.

SECURE WRITTEN PERMISSION FROM THE SITE OWNER

Using the sample language below, print out and have you and the site owner agree to grant you permission to plant trees at the site.

Trees for SAVTHEARTH Tree Planting Agreement

I _____ am a volunteer with _____. As part of our program, our group will participating in the Plantation drive for Module with SAVTHEARTH to plant trees and help youth become stewards of their local community by caring for trees they plant.

We have identify _____ as an appropriate planting location and have worked with _____ to secure permission to plant _____ on _____ (day option 1) or on _____. I agree to ensure the planting site is as neat or neater when done .planting.

We _____ agree to commitment to care for the tree for one year by watering and tending to the tree.



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If there are questions about the planting or the program, please contact Anmol Chawla, Director of SAVTHEARTH, or 8368120234.

2.1.5 Get Ready to Plant

Once you have identified and secured your location to plant your trees. You will need to complete a few additional task before you are ready to plant the trees on your selected dates.

Step 1: Time Allotment

Planning and Preparing for Your Planting Day

2-4 hours preparation time (requirement before planting)—gathering material and supplies, 2-4 hours to plant.

Step 2: Gathering your materials

Planting trees requires specific tools and resources. Use the checklist below to be sure you have all your supplies.

What you need for planting	You Will Need Safety Items
Round-head shovels (1 per pair)	First aid supplies
Hand trowels (1 per pair)	Sunscreen
Gloves (pair for each person)	Bug/Tick Repellent
Scissors to remove any tags (one)	Hand wipes
Utility knife to cut away container (if needed)	Drinking Water
Wood chip mulch (1 bag per small tree)	Snacks
Soil* (one bag per small tree)	
Wheelbarrow (for mulch)	
Water source, hose or bucket (for trees)	
Tree shelter tubes* (if needed)	
Wooden stakes* (if needed)	
Hammer or Mallet* (if needed)	

Step 3: Preparing Your Site and Selecting Your Trees

- Total planting area required will depend on the number of trees you are going to plant and how close together the trees are planted. Remember to follow the instruction for each variety of tree on how far apart to plant.
- Distance for planting depends on the type of tree and final height of a grown tree. If trees are planted 6 to 8 feet apart then no transplanting will be necessary. Seedlings may be planted closer together if future transplanting is possible.
- The planting spots should be cleared of heavy brush and grass. Brush should be cleared and all roots removed to ensure the plant does not grow back and grass should be removed (roots and all) from the spots where you are planting the trees. You do not need to clear-cut the whole area to turn the soil for the entire site, just where the tree will be planted.



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- If the soil is compacted or hard to dig, you may need to pre-dig the holes or have a digging bar, pick, augur, or other equipment available.
- Determine how to provide water to the trees for both the planting event and for ongoing care. Trees require ongoing watering during the first year.

Step 4: Selecting and Purchasing Your Trees.

What Type of Tree Should You Plant?

Talk to a nursery professional or local arborist for suggestions and to find out what might be available locally.

Using a tree field guide, you can look up information about trees and their characteristics such as size at maturity, preferred native to the habitat, tolerance for different kinds of soil, amount of sun and drainage needed, etc.

You might want to make a list of the site characteristics determined through your site assessment to help narrow down your choices. Once you have identified possible trees best-suited to your site, find out if those trees have spring flowers, berries, nuts, or fall leaf color that you might like. Native trees that can provide food for wildlife are a wonderful choice, and the larger the tree, the more benefits it will provide to the Earth over its life span.

What Type of Package Will Your Tree Be In?

Tree nurseries provide trees in different packages.

BARE-ROOT

It is very important to keep the roots of bare-root trees moist at all times and to plant them as soon as you can (within 10 days). Bare-root trees are available only part of the year. They must be planted when they are dormant, but otherwise are very easy to plant.

CONTAINER-GROWN OR PLUGGED SEEDLINGS

This type of tree is grown in soil above ground in pots or shipped as soil “plugged” seedlings. You can plant these trees any time, but the fall and early spring are ideal for most climates.

Storing Your Tree at Home

If you are not going to plant your tree as soon as you get it home or when it arrives at your house, keep it in a shady place and pay close attention to your tree until it is planted.

BARE-ROOT

A bare-root tree should be planted as soon as you get it. If that is impossible, keep the tree in the shade with its roots wrapped with moistened paper or in a plastic bag, but only for a day or two at most. Spray water on the roots to keep them moist. Don't let the roots dry out!



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CONTAINER-GROWN OR PLUGGED

A container-grown or plugged tree dries out very quickly so keep the soil moist (but not soaking wet) until you plant it. Water the tree slowly just until water runs from the bottom of the container. Check it every day; many need water every day in the summer.

Planting Trees

Now that you have selected your site, gathered your materials, identified when to plant your trees and selected your tree, it is time to understand how to plant your trees in the ground. Your trees will come in one of two forms; 1) container or plug (with dirt); or 2) bare-root (without dirt).

The next section will describe how to plant each type.

How to Plant a Container-Grown or Plugged Seedling Tree

- First you need to dig a hole for the tree using a shovel or hand trowel.
- Locate the tree's root flare. A tree's root flare is just above the top most roots. It is important to plant the tree at this height and no deeper.

Notice that the height of the root ball is not the same as the height of the container. The height of the root ball is shorter than the height of the container because the nursery allows space at the top of the container for water and fertilizer.

- Dig a hole 2 to 3 times wider than the diameter of the root ball. Carefully remove the tree from its container and loosen the roots so they are not encircling the tree. Take your time to loosen the soil and untangle the roots that may have become pot bound. Set the tree in the center of the hole. Before you add any soil, make sure that the tree is straight and it is not too deep.
- The soil you dug out of the hole is called backfill. You will use it to fill the hole back up. First, put some backfill in the hole around the root ball. Use your hands to press the soil down gently. Then add more soil to fill up the rest of the hole. Add water to settle the soil. Let the water drain, then check to make sure that the top-most root on the tree is still just below the top of the hole. If it settled deeper in the soil, pull the tree up slightly and rework the soil around the roots.
- When you are finished, some backfill will likely be left over from the hole. Use your hands to make a 3-inch-high donut-shaped mound (berm) around the edge of the root ball with the remaining backfill. When you water the tree, the berm will help make sure the water doesn't run off.



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How to Plant a Bare-Root Tree

Bare-root trees are planted differently from the other kinds of trees. You must keep the roots of a bare-root tree moist and in the shade before you plant the tree.

- Dig a hole that is wide enough for the roots to spread out without crowding each other. The hole should be about 6 to 12 inches wider than the roots are when they spread out. Don't dig the hole too deep. Use a shovel or hand trowel.
- Make a cone-shaped mound of soil in the bottom of the hole. Set your tree on this mound and spread the roots around it. Since the roots are not covered by soil, they are very fragile. Be careful when you are handling the tree.
- Make sure that the topmost root on the tree is just below the top of the hole. The topmost root is the first root you come to from the top down. Look carefully because if you plant the tree too deep, it may die.
- Hold the tree upright and add soil to the hole in layers. As you add each layer of soil, gently press it down with your hands. When the hole is half full, add water to settle the soil. Let the water drain, then check to make sure that the topmost root on the tree is still just below the top soil level. If it settled deeper in the soil, pull the tree up slightly and rework the soil around the roots. Now you can finish filling up the rest of the hole. Add the soil in layers again, pressing down each layer with your hands.
- Use your hands to make a 3-inch- high donut-shaped mound around the edge of the roots with soil. When you water your tree, this "berm" will make sure all of the water goes right to the roots.

2.1.6 Caring for Trees after Planting

You found your tree a good home, now you need to care for it and help it grow properly.

Water

The most important thing you can do for your new tree is to water it, often enough to keep the soil moist, about once a week. If it doesn't rain you will need to use a hose, buckets, or gallon jugs.

At each watering, your tree should get about 5 gallons of water for every inch of trunk diameter. Hold up a ruler to the tree trunk to figure out the diameter. For example, if you have a tree with a half-inch trunk diameter, it should get at least 2 1/2 gallons of water.

Occasionally dig at least 3 inches into the soil to check the moisture level. If you think you are keeping the soil too soggy, don't water the tree as often. Be careful not to wash the soil away from the roots with the stream of water. After a few years, you can water the tree less often, but be sure to check the soil moisture from time to time.

Mulch

If your tree is larger than a seedling, the next most important thing to do is to put mulch around the base. Mulch is a tree's best friend and can be made of bark, wood chips, straw, etc.



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WHY MULCH IS GOOD AROUND TREES

- Mulch can help the soil hold moisture longer. Without mulch, water evaporates much faster.
- Mulch can keep weeds and grass from growing around your tree. Weeds and grass compete with the tree for water and nutrients.
- Mulch helps keep the soil cooler in warm weather and warmer in cold weather. This helps roots grow.

Mulch keeps the lawnmower and weed trimmer away from your tree. Accidental contact from these tools can kill your tree.

Put down the mulch in a circle one to three feet out from the trunk of the tree and two to three inches deep around the tree. Then pull the mulch two to three inches away from the tree trunk. If mulch sits right on or next to the bark, it can cause the trunk to decay. Take a couple of steps away from your tree and admire your work.

Using Tree Shelters

Tree shelters are 2 to 5 feet tall tubes or wire cages to enclose seedlings to protect them from lawn mowers, weeds, wind, animals, drought, and trampling.

THE HOW AND WHY OF TREE SHELTERS

- Using tree shelters creates a greenhouse effect around seedlings that can significantly improve growth rates and establishment success.
- Tree shelters do not work as well in shaded conditions and are recommended for deciduous trees only.
- Installation of the tree shelter will vary depending on the brand. In general, place the tube or cage over the planted tree and then place the wooden stake through the side loops on the tube. Pound the wooden stake into the ground to firmly anchor the shelter, deep enough into the ground to keep strong winds from blowing down the shelter.
- A plastic mesh cap will keep birds and wasps from nesting in the tubes.
- Tree shelters should typically be removed two to three years after installation and must be maintained to ensure that they are stable and kept free of shading weeds and grasses.
- Order tree shelters online or check with your local department of natural resources for supplies or tips on ordering.

2.1.7 Aftercare Tips

Trees are living things and while they are extremely resilient, you can make it easier for a tree to survive and thrive.

- Tree seedlings may be affected by the competition of weeds and grasses, so regular weeding is beneficial.
- Refresh any mulch annually.
- The smaller root systems of seedlings will dry out faster than those of larger trees so water seedlings more frequent taking care not to over-water.
- During dry weather, water the tree generously every week or 10 days during the first year.



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- If the trees are initially planted close together, you will need to consider transplanting once they mature.

Use the Tree Care Calendar on the next page to build your after care project for each month.

2.1.8 Make the Commitment to be a Steward for Your Tree

Using the calendar, plan on each month spending time to care and check on your tree(s). Trees in the first year and up to three years need to be tended to just as you tend to your flowers or other garden plants. Please follow the calendar and the steps to help your tree become bigger and stronger so you can continue to visit it for years to come. Remember the life span of a tree, depending on variety, can be 20-100 or more years.

January

Inspect trees for disease, insects or vandalism

Pick up free mulch from local county landfill

February

Inspect trees for disease, insects or vandalism

March

Remove winter mulch soaked with salt or dog waste

Apply three to four inches of mulch around base of the tree to form a ring

April

If planted near the street or sidewalk, wash salt off trees while the ground is still frozen

May

Water weekly if the soil around the trees is dry (Water each tree with 15 to 20 gallons of water)

Using a hand trowel, loosen the top two to three inches of soil around tree roots

Plant small flowers or bulbs around the base of your trees

June

Inspect depth of mulch. Mulch should be three to four inches thick Water weekly

Inspect trees for disease, insects or vandalism Pull weeds.

July

Water weekly Pull weeds

Inspect for insects and diseases

August



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Water weekly Pull weeds

Inspect for insects and diseases

September

Water weekly

Remove stakes and ties from trees that have been in the ground for more than two years

October

Water young evergreen trees before the ground freezes Plant bulbs around the base of your trees

Refresh mulch ring around the base of your trees Take a “Little” to an urban forest

November

Water young evergreen trees before the ground freezes Inspect trees for disease, insects or vandalism

December

Place tree branches around trees to absorb salt and dog waste

2.2 Level 1 Setting up school garden: Importance and Guidelines

With more and more gardens popping up across the continent, many parents and teachers are asking themselves what all the fuss is about. Are school gardens becoming an essential fixture in the schoolyard just like jungle gyms and swing sets? And if so, why?

It's no secret that gardens provide many benefits over and above the fresh produce. There are some excellent reasons why more and more schools are taking the plunge.

2.2.1 Benefits of School Gardens

- **School gardens help children learn.**

Gardening is the study of life. The simple act of caring for living soil and plants gives children a foundation for understanding the principles of birth, growth, maturity, death, competition, cooperation and many other lessons that transfer to human lives. In a school garden, children experience these lessons ‘hands on’ through a learning method that is rich and inclusive to varied learning abilities. The results teachers see every day are now supported by science: school gardens can help our children learn better, both academically and emotionally.

- **Gardening together strengthens ties between school and community.**

School gardening programs offer opportunities for community members to get involved, reducing the social isolation of seniors with skills to share and connecting children to older generations. They also help connect schools to local businesses and groups when they request sponsorship or volunteer assistance.



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- **Getting their hands dirty helps connect children with nature.**

Children who garden get a close-up look at natural processes and the living organisms that thrive in these environments. By learning to care for a living, breathing ecosystem, children develop an understanding of nature's importance in their lives and the lives of other beings. This fosters a culture of environmental stewardship.

- **Gardening strengthens children's immune systems.**

There's more and more evidence that getting dirty exposes us to a variety of microbes that can fortify our health and balance our immune systems against our overly sterilized world. This is particularly true for children who benefit from reduced allergies and asthma when exposed early in life to dirt and the outdoors. The vitamin D they absorb when gardening doesn't hurt, either!

- **Working in a school garden helps children stay active, reducing obesity.**

Teachers across the country agree: when children garden, they move their bodies more than when passively listening in a classroom. Jumping, bending, lifting, and stretching all take place during a typical gardening session.

- **Gardening moderates moods and eases anxiety.**

There's some evidence that exposure to the beneficial microbes in soil can help regulate the neurotransmitters affecting our brain's emotional state. A whole practice involving exposing yourself to green spaces to lift the mood has even emerged globally, with convincing results. But gardens are more than just another green space: they're hands-on, outdoor classrooms that teach children self-regulation and mindfulness—both of which have been shown to decrease anxiety and depression.

- **Children who garden at school develop empathy and practice risk.**

Teachers who garden with their students notice increased empathy towards other students and the organisms living in their school patch. That's because tending to a 'bug hotel' or watching birds and earthworms thrive in the garden helps children understand the interdependency of nature. A garden also provides the perfect place for children to learn about boundaries and responsibility by practicing new activities in a safe space. Using a paring knife, trying out a hammer, or balancing on the edge of a raised bed are all ways for children to test their edges and learn new skills in a supportive environment.

- **Teaching and food gardens improve children's diets.**

Academics and journalists agree: children who garden eat more fresh vegetables. This extends beyond what they nibble on during classroom gardening time. Apparently just having a garden at school increases their intake of vegetables at home. And that's good news for parents, teachers, and kids.

Whatever your reasons for wanting to start a school garden, the benefits are many. So how can you help a garden come to your school?

Where to Start



The Earth is what we all have in common.

Getting your garden from idea to harvest is a journey with many steps. Luckily many others have travelled this road before. The following list includes five key steps recommended by teachers and parents with experience operating successful gardens. If you've already completed your design and are looking for materials to order, visit our school garden site for more information about Raised Garden Beds, Planters, Rain Barrels, Composters, watering items and gardening supplies.

2.2.2 Form a Garden Committee

While it might only take a single motivated educator to start a school garden, forming a committee early in the process will give your garden longevity and help prevent burnout for any one member.

A garden committee makes decisions about how a school's garden will look, what it will be used for, and how it will operate. The committee may start as primarily a planning body that later morphs into an operational committee, or it may simply offer direction for a garden coordinator. Whatever model you choose, the committee should ideally consist of 5-10 members representing the following areas:

Your school's administration

Teaching staff

Students

Parents

Community volunteers

If your school garden will support your school cafeteria or another nearby food program, it's a good idea to include a representative from your school's food service department as well. The more diversity you can achieve, the better representation you will have and the better the end results.

Aim to find committee members with a passion for the project, along with a broad range of skills.

Duties might include:

Developmental Stage				
Fundraising	Communications	Liaising with community	Coordinating	Fundraising
Operational Stage				
Fundraising	Event planning	Scheduling	Maintenance	Planting/weeding

You can structure your garden committee like a regular board with a chairperson to organize meetings and communicate details, or opt for something more informal. Either way, be sure your school's administration is involved and informed. Getting parents involved from the beginning also helps families take more ownership down the road.

2.2.3 Determine Goals for Your Garden

Once you have your committee in place, determining goals for your garden is an important next step. Schools build gardens for different reasons. Here are some common goals and objectives.



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To provide outdoor, hands-on learning.

The classic teaching garden helps teachers provide their students with real-life learning. The hands-on environment compliments lessons about plant and insect life cycles, along with experiential activities like building a bug hotel, Art, math, English, and social studies: all these lessons can find a home in the teaching garden.

To cultivate food for school programs.

Some schools use school gardens to augment their school lunch or food services programs. Fresh greens, tomatoes, cucumbers, and more can all end up in the kitchen or in the school cafeteria salad bar.

To send fresh fruits and vegetables home with students.

In some locations, children don't have access to fresh produce or lack the resources at home to afford them. Schools gardens can provide the chance to experience vine-ripened goodness while meeting the goals of the curriculum.

To reduce school-generated food waste.

Adding a composting system to a school garden helps teach children about the decomposition process and eliminating food waste. Many schools even encourage teachers and students to bring compostable from home to really get the process going.

To provide a therapeutic space for children and young adults.

Gardens are peaceful, healing spaces where many can find rest and respite from the world around them. Many therapeutic programs feature gardens for their healing abilities.

Identifying the primary and secondary goals for your garden will help you determine what size and style of garden you need. Once you have a sense of your garden's direction, consider the following questions to further hone your vision:

- Who will use the garden? Which grade levels will spend time in the garden? How will they use the space? Some schools assign one bed for each class to tend, while others share the beds over multiple classrooms.
- How often will students use the garden? Biological processes are always taking place in the garden—not just during planting and harvest time. Aim to have children visit the garden weekly during your gardening season and less frequently when things are dormant. Even when things appear to be sleeping, there are still lessons to learn. Regular visits will help children develop a connection with the space.
- Who will be responsible for scheduling? Someone on your garden's committee, usually a teacher, will need to oversee the timing of classroom visits. Too many children in the garden at once can take pleasure out of the experience.
- Who else is needed to accomplish your goals? If your plan is to provide the school cafeteria with fresh vegetables for part of the year, you'll need to plan your activities around local seed and



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harvest times. Consult local experts through your neighbourhood nursery or extension office to get information right for your climate and soil conditions.

2.2.4 Find Your Site

Now that you know the main purposes for your garden, review available sites and determine which one is right for your needs. Along the way, consider the following questions.

How much space do you need to meet your goals?

How many beds do you plan to install to produce food for your school's needs? What is the best way to divide that space into beds? What other items (compost bin, tool shed, potting tables or benches, trellises, etc.) do you need? The answers to these questions will help you design the configuration of your beds and how much space you need to contain them.

Is there enough sun?

Direct exposure to sunlight is one of the most important needs your garden will have. While salad greens need about 4 hours of sunlight each day, your site will ideally have 7-8 hours of sunlight to accommodate the broadest range of fruits and vegetables. If you're unsure how much light your site gets, use a sunlight calculator to be sure.

Where is your water access?

Your site should ideally be no more than one hose length away from the nearest faucet or standpipe. If you plan to install in-ground irrigation, the distance away from your water source will affect the pressure needed to get water to your site.

What type of beds will you use?

While a traditional in-ground garden is the simplest to install, it requires that good quality soil be available onsite. You can order additional soil or well-seasoned compost to augment what's there, but there should be something to start with. Benefits of in-ground gardens include flexibility, good moisture retention, and the ability to add cold frames or hoop houses as needed to extend the growing season.

Raised beds are commonly used in school gardens because they make weed control easy and are accessible for all ages and abilities. They also come in a variety of heights, widths, and lengths. In most cases, use beds 3 or 4 feet wide so that children can reach the center of the bed without standing on the soil.

Raised garden boxes generally have no bottoms and sit directly on the soil. This is the ideal set-up. However, if you must install your beds on concrete, consider purchasing beds with integrated bases and increasing the height of your garden to at least 18 inches. Taller beds will give you more versatility in terms of what plants you can grow. Any garden beds that have bottoms fitted to them must be designed to ensure good drainage.

Many schools also use horse troughs, either alone or in conjunction with other raised beds.



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Can you go vertical?

Schools wanting to get the most out of their space often add vertical elements. This includes trellises on raised garden beds, wall pockets of varying sizes hanging on fences or walls, and stacked garden towers in a central, accessible location. Just be sure to place vertical elements so they don't shade any beds behind them (e.g. place them south of shorter beds if you're located in the northern hemisphere).

What type of soil is on site?

The key to successful gardening is building and maintaining healthy soil. Starting with healthy, living soil gives your garden the nutrients it needs to thrive. And while you can add fertilizer before planting, healthy soil is more than just nutrients. The best soil structure is fluffy, lightly textured, and full of organic matter that's continually breaking down. It provides enough air pockets for roots to infiltrate and water to travel.

If there is dirt available on site, conduct a soil test to find out what nutrients you can add. Performing a simple squeeze test will help you further evaluate your soil's tilth and organic matter content.

If, like most soils, yours needs help, the best sources of organic nutrients are finished compost and well-rotted manure (at least two years old). Both of these can augment whatever soil is available on site for a winning combination of nutrients plus organic matter.

Is the site secure?

In most locations, gardens must be fenced to keep out animal pests and little feet looking for short cuts at recess. Factor your need for a fence into your initial site considerations. Is there a location close to an existing fence that could help reduce your expenses for full perimeter fencing?

Even if you don't have much foot traffic or pests in the vicinity, consider securing your garden with a fence to deter human mischief. Locating your garden in a well-lit area with neighbors nearby is another way to discourage nighttime visitors.

2.2.5 Plan and Design Your Site

Working with a garden or landscape designer is often beyond the reach of schools sticking to a bare bones budget, yet it can also be a way to save costs in the long term.

To begin, talk with other schools in your district that already have successful gardens and ask who helped them with their design. If your garden will be small—just a few beds—the main question you'll need to answer is where to locate those beds and how to place them (see above). For larger gardens, there are other important considerations.

Consider the following elements as you begin the design process. Which ones would complement your garden? Which ones would support your teaching goals?

Bring a checklist to your first garden design meeting.



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Garden Components	Description
Teaching / gathering area	Small clearings with benches.
Potting benches or tables	For sowing and potting up plants, making paper pots using a press , or seed saving activities .
Fruit and vegetable beds	Raised or in-ground beds; horse trough beds; container gardens.
Annual and perennial flower beds	Butterfly and pollinator garden beds.
Trees and shrubs	Fruit trees , shrubs, and brambles.
Irrigation	Soaker hoses , drip irrigation, overhead sprinklers.
Greenhouse	To extend the growing season and/or as a seed starting area.
Storage shed	For storing tools, containers, seeds.
Composting area	Compost bins, tumblers , worm bins , etc.
Sink	Washing station for cleaning up hands and harvest.
Special features	Bug hotel, bee condos , pond , bird houses , bat houses , theme beds, etc.



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Once you have an idea of the elements you want in your garden, you can start to cost out what's possible for your space.

Starter Teaching Garden

If your primary goal is providing a hands-on learning opportunity, a basic teaching garden can consist of a few simple beds targeting crops that produce during the school year. This low-cost design features raised beds planted with vegetables, along with a small pollinator garden or insectary that can double as a cut flower garden. Including flowering plants in your design increases the learning opportunities for your garden as a whole.

Materials:

4 x 8 raised garden beds (4)

4 x 4 raised garden beds (2)

Raised bed climbing trellis (2)

Mixed vegetable and flower seeds

Beets

Broccoli

Carrots

Chard

Cucumber

Lettuce

Radishes

Winter squash

Sunflower

Nasturtiums

Shrubs/perennials:

Strawberries

Basil

Rosemary

Chives

Coneflower



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Blanket flower

Asters/sedum

School Food Garden

For a larger school whose goals include in-season food production for a cafeteria or food service program, the following design includes a variety of vegetables, flowers, and fruit:

Materials:

4 x 8' raised beds (12)

3.5' x 4.5' hexagonal raised bed (1)

1 compost bin

1 tool shed

1 in-ground pumpkin patch

Mixed vegetables, flowers, and shrubs as noted above, plus:

Raspberries

Tomatoes

Primary Sensory Garden

Thematic gardens are a great way to connect children with nature using an unconventional angle. This sensory garden targets children in the primary grades by engaging their senses of touch, smell, sight, and taste. The specific selection of plants in a variety of textures encourages handling, and in some cases, eating.

Materials:

3' x 6' L-shaped raised beds

3.5' x 4.5' hexagonal bed

Seedlings:

Taste: Basil, parsley, chives, rosemary, lettuce, strawberries

Smell: Lavender, thyme, anise hyssop, lemon balm

Sight: Nasturtiums, speckled lettuces, purple curly kale

Touch: Succulents, red flowering sedum, purple sage

2.2.6 Consider Materials



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With your new design in hand, consider what materials students and educators will need to make the most of your garden. This includes thinking about both the building and operational phases.

2.2.7 Funding and Information Sources

Long before you begin to compile your materials, you'll need to think about how to raise money for your garden. In most cases, schools apply for grants for start-up costs then manage their gardens through a combination of community donations and volunteer labor.

As you design your garden and build your list of supplies, consider what local sources might be available. Is there a local garden center that will give you a discount on supplies? Can families assist with installation to reduce or eliminate labor costs? Local service groups may also be eager to help through labor or monetary donations.



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3 Level 2: Cleanliness Drive, setting up bins & Olympiad

3.1 Cleanliness drive: Importance & Guidelines

Inappropriate hygiene behavior due to poor sanitation, water scarcity, and inferior water quality is disastrous for children of all age-groups and is a major cause of mortality for children under five. As school students spend long hours in school, so these conditions are also detrimental to their health of school-aged children. All the aspects of the schools i.e. the physical environment and cleanliness routines affect students. In lack of: limited ventilation, proper hand-washing facilities, and where toilets are in disrepair their growth can both physically and mentally be hampered. Too often, schools are places where children catch infection and fall ill.

Girls are particularly vulnerable to dropping out of school, partly because many are reluctant to continue their education when toilets and washing facilities are not private, not safe or unavailable.

3.1.1 Objective

For uniform cleanliness guidelines it is essential to have a standard operating procedure to ensure that all schools maintain set standards of cleanliness in their respective premises.

The purpose of this SOP is to improve current cleanliness level in the schools of India and involve students as change makers. The primary way to achieve the same is through inculcating good sanitation and hygiene practices amongst the staff and students. Schools are an established entry point for learning. They offer an opportunity to engage parents and community in general, either through knowledge dissemination via children or through direct involvement and demonstration at the school. Children are quick learners and adapt their behaviour more easily than adults; hence, they can be readily available change makers.

This SOP also targets to ensure proper waste management through recycling and processing of waste, and establish systems in the schools for cleanliness.

An assessment framework has also been defined in this document which can help the concerned school to improve its cleanliness maintenance processes and achieve a greater level of cleanliness than the existing ones.

These directions will be updated continually to incorporate new procedures and products. As it is dynamic in nature, the printed version of this document or part thereof should not be relied upon as a current reference document, hence, it is advisable to periodically check for updated version on the swachhbharaturban.gov.in portal. Any amendments to the procedures based upon requirement should be identified and incorporated as per the requirement. This document serves as the base document.

The actual allocation of resources and the actual frequency of cleaning may vary according to the local situations. It is important that all aspects of cleaning and sanitation provision are aligned with the Swachh Bharat Mission Guidelines and other relevant environment-related guidelines issued by the Government of India. The Standard Operating Procedures are set out in a detailed format to cover the issues required to implement proper cleaning of school complexes.



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- Each school should have a committee overseeing sanitation and cleanliness in the school premises to monitor and supervise the works being carried out by the responsible party (Management/Contracted Agency) and ensure compliance to the SOP. The committee should also ensure compliance to infrastructure requirements as laid out in this SOP. Further, in case of contracting an external agency to carry out the cleanliness works, Service Level Agreements should be drafted and signed by both parties.
- Ensure a clean environment for the students and staff through proper selection of agencies required for the job
- Regular surprise inspection of the premises to ensure compliance with the SOP
- Attain and maintain high standards of cleanliness and general upkeep
- Train, control and supervise staff under its establishment
- Control and issue of cleaning materials and equipment
- Maintain official records on staffing, cleaning materials and equipment
- Cleaning standards, frequency and accountability for cleaning are clearly defined (i.e., who cleans, what and how do they clean and when do they clean it)
- Cleaning schedules ensure that no area is missed from routine cleaning
- Statutory requirements are met in relation to Waste Management, Environment Protection Act, Food hygiene, and Pest control

Not just school management but parents are also expected to contribute in maintaining the cleanliness of school environment, either directly or indirectly in following way:

- Encourage children's regular school attendance, especially for girls
- Supporting hygiene promotion activities and events in the school and community
- Construct water, sanitation and hygiene facilities at home and encourage children to use them properly
- Promote healthy hygiene practices at home and in the community
- Participation in monitoring and corrective actions

3.1.2 5 S Methodology

There are five 5S phases: They can be translated from the Japanese as "sort", "straighten", "shine", "standardize", and "sustain".

Seiri (Sort)

Remove unnecessary items and dispose them properly

Make work easier by eliminating obstacles

Reduce chance of being disturbed with unnecessary items

Prevent accumulation of unnecessary items

Evaluate necessary items with regard to cost or other factors

Remove all parts not in use



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Segregate unwanted material from the workplace

Need fully skilled supervisor for checking on regular basis

Seiton (Systematic Arrangement)

Can also be translated as “set in order”, “straighten” or “streamline”

Arrange all necessary items so they can be easily selected for use

Prevent loss and waste of time

Make it easy to find and pick up necessary items

Ensure ‘first-come-first-served’ basis

Make workflow smooth and easy

All above work should be on regular base

Seiso (Shine)

Can also be translated as “sweep”, “sanitize”, “shine”, or “scrub”

Clean your workplace completely

Use cleaning as inspection

Prevent machinery and equipment deterioration

Keep workplace safe and easy to work

keep work place clean

Seiketsu (Standardize)

Standardize the best practices in the work area.

Maintain high standards of housekeeping and workplace organization at all times.

Maintain orderliness. Maintain everything in order and according to its standard.

Everything in its right place.(Chilled totes in chilled area, Dry totes in dry area.)

Every process has a standard

Shitsuke (Sustain)

To keep in working order

Also translates as “do without being told” (though this doesn’t begin with S)

Perform regular audits

Training and Discipline

Training is goal oriented process. Feedback on the impact of training is necessary monthly.



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3.1.3 Assessments & Inspections

Self-Evaluation

Three broad parameters infrastructure availability, maintenance of school premises and equipment, and feedback from students, staff and faculty members — are being proposed here for assessing / rating schools on overall cleanliness. The parameters for these ratings may also be utilized for conducting self-evaluation by the concerned authority to identify areas of improvement and intervention. The proposed parameters and their scoring are given below:

INFRASTRUCTURE (MAX. SCORE- 50)						
1.	Boundary wall around the school premises	In good condition	In broken condition		No boundary wall	
		4	2		0	
2.	Entrance/exit gate	In good condition	In broken condition		No gate	
		4	2		0	
4.	Corridors in the School	In good condition	In broken condition		No pavements	
		4	2		0	
5.	Dustbins	Color-segregated available within every 250 meters	Color-segregated available within every 500 meters	No color segregation available within every 250 meters	No color segregation available within every 500 meters	No dustbins available
		4	3	2	1	0
6.	Waste cartage equipment (e.g. rickshaws/ tractors/trolley/hand cart)	Available		Not available		
		2		0		
7.	Composting equipment/compost pit	Available		Not available		
		4		0		
8.	Cleaning equipment/brooms	Available in good condition	Available in poor condition		Not available	
		4	2		0	
	Toilets with	Available in good condition	Available in poor condition		No toilets available	



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9.	washbasins available for maintenance staff and domestic help	4		2		0
10.	Toilet facilities available for students	Separate facilities available for girls and boys, with at least one disabled friendly facility	Separate facilities available for boys and girls, without any disabled friendly facility	Common toilet facilities available, with at least one disabled friendly facility	Common toilet facilities available, without any disabled friendly facility	No toilets available
		4	3	2	1	0
11.	Toilet facilities available for visitors/parents/teaching and non-teaching staff	Separate facilities available for men and women, with at least one disabled friendly facility	Separate facilities available for men and women, without any disabled friendly facility	Common toilet facilities available, with at least one disabled friendly facility	Common toilet facilities available, without any disabled friendly facility	No toilets available
		4	3	2	1	0
12.	Stair Case/ Lift as applicable	Available in good condition		Available in poor condition		Not available
		4		2		0
13.	Covered sources of drinking water	Available in good condition		Available in poor condition		Not Available
		4		2		0
14.	Garden/Park /Lawn Area	Available in good condition		Available in poor condition		Not Available
		4		2		0
SUB-TOTAL (INFRASTRUCTURE SCORE)-A						

SERVICE/MAINTENANCE (MAX. SCORE- 30)				
1.	Cleaning within School premises	Swept daily	Swept periodically	Never swept
		4	2	0
2.	Toilet cleaning	Cleaned regularly	Cleaned sometimes	Never cleaned
		4	2	0



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3.	Toilet water availability	Available		Not available
		3		0
4.	Cleaning of water tanks/Swimming pools (wherever applicable)	Cleaned regularly	Cleaned sometimes	Never cleaned
		4	2	0
5.	Cleaning of drinking water coolers	Cleaned regularly	Cleaned Once in a week	Never cleaned
		4	2	0
6.	Maintenance of infrastructure like Sports room/activity rooms/labs/canteens (wherever applicable)	Maintained regularly		No regular maintenance
		4		0
7.	Collecting waste from dustbins	Daily	Fortnightly	Not collected
		4	2	0
8.	Bio-degradable waste processing	Processed at compost pit/ compost equipment inside the school	Sent for composting outside park	Not composted
		3	2	0
		SUB-TOTAL (MAINTENANCE SCORE)-B		

FEEDBACK FROM MEMBERS (MAX. SCORE- 20)

1.	Availability of toilet facilities for students/staff/faculty members/visitors/parents	Adequate number available for use	Inadequate number available for use
		4	0
2.	Availability of sufficient number of dustbins for disposing waste	Adequate number available	Inadequate number available for use
		4	0
3.	Waste collection done daily	Yes	No
		4	0
4.	Cleaning of drinking water coolers and surroundings	Sources of drinking water and surroundings are kept clean	Sources of drinking water and surroundings are not kept clean
		4	0
5.	School premises (Activity rooms/labs/swimming pool/canteen) overall cleanliness and maintenance	Well-maintained and clean	Poorly-maintained and not clean
		4	0



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SUB-TOTAL(FEEDBACK SCORE)-C

TOTAL SCORE (A+B+C)

Gap Assessment

Apart from self-evaluation as described above, a periodic assessment of infrastructure gaps is also essential in order to maintain the standards of sanitation and cleanliness in the school premises. The format given below is used for the same:

S.No.	Parameter	Standard	Actual
1.	User-specific toilets	As per need (Must consider age, gender and specifications such as child-friendly for younger age groups)	
2.	Ablution taps	1 water tap with every toilet seat	
3.	Water taps	With adequate drainage arrangement	
4.	Light bulbs and switch	One for each toilet seat (fused bulbs to be changed immediately)	
5.	Doors and latches in toilets	One door with functional latch for every toilet seat	
6.	Wash basin with mirror	At least one in each toilet block	
7.	Dustbins	<ul style="list-style-type: none"> • Ground- Every 250 meters • Toilets-1 per toilet • Canteen-As per need but should have color segregation • Main school reception • Classrooms- 1 per classroom • Labs & Activity rooms-as per need • Playground & Auditorium as per need 	
8.	Vacuum Cleaners	As per need	
9.	Storage Closet	As per need	
10.	Brooms, Mops, Duster and other equipment	1 set per cleaning staff + Backup sets	
11.	Specialized cleaning infrastructure (for labs/activity rooms/swimming pool/canteen)	As per need	



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12.	Parking spaces	As per need	
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3.1.4 Periodic Inspection

Daily inspection

To be conducted by: Direct supervisor of the Maintenance Staff	
S.No.	Area and Activity
1.	Check if the school premises have been swept/cleaned and waste removed appropriately.
2.	Check if the playground/basketball courts have been adequately swept and cleaned.
3.	Check if corridors inside the school have been regularly cleaned.
4.	Check if the canteen is maintaining adequate standards of cleanliness and hygiene.
5.	Check if all the dustbins have been emptied and cleaned.
6.	Check if activity rooms, swimming pool are cleaned every day.
7.	Check if towels, swimming costumes etc. are being cleaned after one use. (If applicable)
6.	Check that the garbage is being collected and disposed regularly.
7.	Check that all stairs/ Lifts have been properly cleaned.
8.	Ensure that there are no open sewers, gutters, damaged drain pipes, sewage blockages; and if there are, address them immediately.
9.	Check if cleaning and scrubbing of toilets along with their wash basins, sanitary fittings, glasses and mirrors and toilet floors has been done.
10.	Check if toilets are clean and dry, and all fixtures (light bulbs, wash basin, exhaust fans) are functional.
11.	Check if cleaning and disinfecting of all vitreous fixtures including toilet bowls, urinals, sinks, toilet seats, containers etc. has been done properly. Check below water level and under rims including areas at hinges and cistern handles. Check if restock of toiletries, including liquid hand soap, toilet paper, air freshener, and sanitary cubes and naphthalene balls in toilets has been done.
12.	Check if one maintenance staff is present in front of every common toilet.
13.	Check whether mowing, hedge clipping has been done and waste from the ground has been adequately removed.
14.	Check if construction, renovation waste has been adequately disposed.



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15.	Check if any kind of water logging is present at hand washing, utensil washing areas in canteen, lab sinks and toilets.
16.	Check whether dusting of general storage, desks and benches and toy/book storage for has been done.

All corridors, open spaces, parks, other common spaces like activity rooms, science labs of the school (both external and internal) should be cleaned at any given time. The following cleaning routine should be adhered to:

Sweeping and Mopping of floor

- Sweeping of corridors with disinfectant at least once a day
- Frequent brooming of the corridor through the course of the day
- Vacuum cleaning of carpets at least daily using appropriate vacuum cleaning equipment

Garbage Bins

- Remove garbage from dustbins and clean them if required
- Provide separate dustbins for biodegradable and non-biodegradable materials
- Replace cleared dustbins to original spot
- If any trash is found anywhere in the complex, pick up immediately

Doors, Windows and Walls

- Spray windows and glass surfaces with water or appropriate cleaning solution
- Removal of all cobwebs and stains
- Extensive cleaning of outer-surface of windows to be carried out by contracted agency at least once a month
- If any fingerprints, smudges or stains found on the corridor wall then the same to be cleaned immediately

Vents and Fixtures

- Dusting of light fittings, wall decorations, other fixtures using feather brush and duster
- Air conditioning vents and sprinklers should also be dusted and checked for proper functioning

Toilets:

- a) Fixtures including toilets and sinks should be free of streaks, soil, stains and soap scum
- b) Should have good quality basic fittings like ablution taps and wash basins, etc.
- c) Mirrors and windows should be free of dust and streaks
- d) Dispensers should be free of dust, soiling and residue and replaced/replenished when empty
- e) Waste should be disposed of appropriately on a daily basis
- f) Provisioning of soap, toilet paper, hand towel/dryer, sanitary pads dispenser, dustbins, and other necessary items
- g) Toilet bowls, urinals and adjoining areas should be cleaned with disinfectant on a daily basis, and the use of acid-based disinfectants should be avoided
- h) Toilet floors should be kept dry to the extent possible/feasible
- i) There should be a well functioning drainage system

Common spaces:

- a) Sweeping of corridors, pavements, other external areas at least twice a day
- b) Cleaning internal common spaces like lift, stairs area, indoor parking area, etc. regularly
- c) Composting leaves, biodegradable waste (if feasible)

Playground:

- a) Sweeping of park/garden area regularly
- b) Removing grass and hedge trimmings on the same day
- c) Cleaning park benches and other outdoor equipment every day
- d) Sweeping basketball court/volleyball court area
- e) Ensure that no water trenches stay in the playground

Lab and Other Activity Rooms' Equipment

- a) Lab equipment should be regularly cleaned and well maintained
- b) A list of all chemicals and salts present must be regularly updated and safe disposal of chemicals to be ensured
- c) Sports room equipment should be checked at regular intervals to see if

- there is need of repair or replacement with new equipment
- d) Other activity rooms' equipment like music instruments should be checked at regular intervals to see if there is need of repair or replacement with new equipment
 - e) School infrastructure like swimming pools requiring specialized cleaning services should be catered to adequately

School Cafeteria/Canteen:

- a) School canteen should be regularly cleaned
- b) Dustbins should be placed at easily accessible spots to prevent littering
- c) There should be hand washing facility in the canteen (Utensil washing sinks in case of attached kitchen)
- d) Segregation and composting of food waste (if feasible)

An Intensive cleaning of the school premises to be carried out at least once in two months which should also involve participation all teaching faculty and staff for disposal of redundant/unused hardware, furniture which can be added to inventory and re-allocated as per demand.

Weeding and recording of files should be resorted to at least once in 6 months. The old student records, examination papers, etc. in the record room should be reviewed once a year and destroyed as per guidelines. This would ensure that constant space is created for keeping more recorded files.

If necessary extra manpower for this purpose should be resorted to.

3.1.5 Do's and Don'ts

DO	DON'T
Collect waste, rubbish and debris within the school and dispose as per set frequency.	DO NOT let waste and trash accumulate within the premises.
Dispose all waste as per guidelines.	DO NOT dispose waste outside or near parking lots, playground, drainage, swimming pool, ditches or any other location where they can damage the Environment.

Keep all equipment clean; do not allow a build-up of wastes.	DO NOT let equipment get damaged or rusted; replace if unsuitable for further use.
Oversee contractors to ensure that correct procedures are followed and SOP guidelines are complied with.	DO NOT let contractors conduct maintenance in conflict with proper procedures and guidelines; monitor closely.
Impose Penalty on defaulters for littering/spitting/open urinating within the school premises or near the boundary walls	DO NOT allow littering, spitting, open urination or any other practices that affect the cleanliness and aesthetics of the premises.
Conduct surprise inspections of the schoolsto ensure a clean, hygienic and healthy environment for members and staff.	DO NOT allow accumulation of unnecessary wastes anywhere.
Involve students and staff in such a manner that they voluntarily contribute towards cleanliness.	DO NOT overcharge students in the name providing cleaner and hygienic surroundings.

3.1.6 Waste Management

A strategy needs to be in place to ensure proper management of waste generated and reduction of waste through recycling and reusing.

Types of waste generated

- A. a) Bio-degradable (dry) waste{green waste, food waste, paper waste, biodegradable plastics
- B. Hazardous waste,
- C. Construction and demolition waste,
- D. Bulk garden and horticulture waste including recyclable tree trimmings,
- E. All other non-biodegradable (dry) waste {recyclable and non-recyclable}

Management of Waste

- a. Bio-degradable Solid Waste if not composted by the generator, shall be stored by generators of such waste within their premises and its delivery shall be ensured by every such generator to the Municipal Vehicle or to the bio-degradable waste collection vehicle provided for specified commercial

generators of bulk bio-degradable waste. Local composting of waste shall be promoted to minimize transportation of waste. The Municipal body shall collect the bio degradable waste from inside the school building keeping with their duties of door to door collection.

- b. Hazardous Waste, especially waste from chemistry lab and sick room shall be scientifically disposed as per Municipal Solid Waste Management norms. Good management practice should ensure that hazardous wastes are stored, collected, transported and disposed of separately, preferably after suitable treatment to render them innocuous.
 - c. Construction and Demolition Waste shall be stored only within the premises of buildings, or in containers where such facility of renting out containers is available, till finally removed from the premises. No person shall dispose of construction waste or debris on the streets, public spaces, footpaths or pavements. If contractors have the obligation to collect the C&D waste, it should be done immediately after all work is finished. Failure to do so will attract penalty (for example CPWD does not pick up the waste on time and leaves the unused cement bags etc. lying for months).
- II. As a result the C&D waste gets spread around. While, in normal course, all the waste is picked up together, but it should also be done in piecemeal manner)
- a. Bulk garden and horticultural waste shall be kept un-mixed and composted at source. The Director (Horticulture) or the concerned officer shall notify Instructions/ guidelines with regard to pruning of trees and storage and delivery of tree trimmings including collection schedules.
 - b. All other Non-biodegradable ("Dry") waste – both recyclable and non-recyclable – shall be stored and delivered by every generator of waste to the dry waste collection vehicle.
 - c. Burning of waste: Disposal by burning of any type of solid waste is prohibited.
 - d. The School Administration/Contracted Agency must ensure that officials do not throw any waste on the streets, footpaths, open spaces, drains or water bodies and instead store the waste at source of waste generation in two bins/bags, one for food waste/bio-degradable waste and another for recyclable waste such as papers, plastic, metal, glass, rags etc.(as under):-
- Types of Wastes to be put in the Bin Meant for Food Wastes & Bio-degradable Wastes:
 - a) Food wastes of all kinds, cooked and uncooked, including eggshells.
 - b) Flower and fruit wastes including juice peels and house-plant wastes.

c) Classroom sweepings.

- Types of recyclable and other non-bio-degradable wastes to be kept separately:
 - a. Paper and plastic, all kinds
 - b. Cardboard and cartons
 - c. Containers of all kinds excluding those containing hazardous material
 - d. Packaging of all kinds
 - e. Glass, all kinds
 - f. Metals, all kinds
 - g. Rags, rubber, wood
 - h. Foils, wrappings, pouches, sachets and tetra pack (rinsed)
 - i. Cassettes, computer diskettes, printer cartridges and electronic parts
 - j. Discarded clothing, furniture and equipment

Wastes such as used batteries, containers for chemicals and pesticides, discarded medicines and other toxic or hazardous waste if and when produced, should be kept separately from the above two streams of waste.

3.2 Setting up Recycle Bins

Schools accumulate tons of waste, from paper and computers to food and books. By learning how to handle these wastes as a resource, school officials have an opportunity to save on costs and positively influence the future of their school, district, and students, while preserving the environment.

3.2.1 Why Recycle and reduce waste

To protect the environment: Reducing waste, reusing materials, recycling, and buying recycled products lessons a school or school district's impact on the environment by:

- saving energy
- Cutting greenhouse gas emissions
- Diminishing the need for raw products to make new materials
- Decreasing the amount of materials put into landfills

To reduce costs and make money: Like other businesses, schools pay for waste disposal. In many cases, recycling services cost less than trash disposal. Schools and districts that make an effort to recycle can see significant savings in trash disposal costs. In some cases, recycling may even allow your school to raise revenue through the sale of recyclables. Decreasing the use of materials such as office paper also reduces purchasing, handling, and storage costs.

To educate tomorrow's citizens:

Opportunities for Environmental Education

By implementing recycling programs in schools or districts, teachers and administrators demonstrate environmental responsibility and good decision making. School recycling programs also offer hands-on, real-life project-based learning opportunities to teach students about sustainability. Environmental education provides an integrating base to learn about economics, current events, and environmental policy and laws.

Opportunities for Service Learning

School recycling programs also allow for service-learning by offering hands-on experiences that go beyond classroom learning. For example, students might participate in community waste collection days or share recycling tips with neighbours. Service learning provides students with valuable experience volunteering in the community and teaches new skills such as communications, team-building, critical thinking, and decision-making.

3.2.2 What Should Be Recycled?

Aluminum, glass, steel and bi-metal containers (tin)	Major appliances including air conditioners, clothes washers and dryers, dishwashers, refrigerators, freezers, stoves, ovens, dehumidifiers, furnaces, boilers, and water heaters
Plastic containers #1 and #2, including milk jugs and detergent, soda and water bottles	Yard trimmings, including grass clippings, leaves, yard, and garden debris
Magazines, catalogs and other materials printed on similar paper	Lead acid vehicle batteries, automotive waste oils, and waste tires
Newspaper and office paper	Oil absorbents and used oil filters
Corrugated cardboard	
Computers, televisions, desktop printers, computer peripherals, DVD players, VCRs, digital video recorders, fax machines, and phones with video displays	

Recycling is enforced by banning a material from disposal at all Schools. Some communities go above and beyond what is required by law.

3.2.3 Five Steps for Creating a Successful Recycling Program

Organize a SAVTHEARTH Chapter:

Identify team members —

Organize a team to help plan, design, implement, and maintain your recycling program. Your team should meet as needed to keep the program moving forward.

Include individuals from the school or district and community including:

- Administrators
- Teachers
- Custodians
- Parents
- Students
- Other volunteers

Your team should include at least one person who is familiar with the school or district's overall operations, such as a custodian or an administrator. One team member should act as a liaison with local community recycling staff or a Department of Natural Resources regional recycling specialist for assistance, and to ensure compliance with all local and state ordinances. The size of your team will depend upon the size of the school or district and its individual departments/operations. Schools or districts can ask for volunteers or appoint members.

Members might be responsible for activities such as:

- Gaining support from school or district officials to initiate a recycling program
- Working with school or district officials to set the preliminary and long-term goals of the recycling program
- Gathering and analyzing information relevant to the design and implementation of the program
- Promoting the program to other employees and students and educating them on ways to participate
- Monitoring program progress
- Reporting to school or district officials about the status of the program

Know your Trash

Conduct a waste assessment to identify the types and amount of waste your school or district is producing. This activity can be as simple as asking your maintenance staff (janitorial and cafeteria) to calculate or estimate the amount of waste your school or district throws away. This assessment will help identify current methods of handling waste and start you thinking about how these methods can be modified to make your school or school district more environmental friendly and sustainable.

During a waste assessment, schools and districts typically find:

- Paper (office and other mixed paper, magazines, catalogs, and newspaper)
- Corrugated cardboard
- Aluminum and steel cans
- Plastic bottles
- Toner and ink cartridges
- CDs and DVDs
- Food scraps
- Computers, TVs, printers, and other electronics
- Fluorescent light bulbs
- Food waste from the cafeteria

Specifically, a waste assessment will:

- Identify waste generated at the school or district, as well as current purchasing and management practices
- Examine current waste reduction practices and assess their effectiveness
- Identify waste that could easily be reduced, reused, or recycled
- Identify which materials would be most effective and efficient to recycle
- Establish a baseline for measuring progress of recycling efforts

Create a green game plan

Identify materials to target

Using the waste assessment results, determine which materials your program will focus on. Remember to take into consideration any local programs that will make it easier to find options for reusable and recyclable materials.

Consider options for collecting and storing materials

You will need to gather or purchase bins to collect recyclables in classrooms, cafeterias, and other areas. You may also need large containers to store recyclables before they are picked up by a hauler or sent to a recycling center.

- Decide if you will need different bins for different materials.
- Determine which type of bins will be used to collect materials in classrooms, offices, halls, the library, and the cafeteria.
- Label your bins. Signs should be used to identify which materials are collected in which bins.
- Place your bins appropriately. Recycling bins should always be placed next to a trash can never alone.

Depending upon the program, materials may need to be collected from bins throughout the school and moved to an onsite storage facility. To make sure this type of collection is possible, determine:

- If storage space is available for the collected materials.

- If the school or district has indoor space to use as a collection and storage center.
- And, alternately, if there is room for a large container outside with truck access.

Establish a tracking system

Data on the recycling program will be important to track effectiveness, identify successes, and show its strengths and weaknesses. Before starting, develop a way to track progress. Simple spreadsheets detailing collection efforts work well for individual schools.

Set goals

Goals can be numerical (e.g., collecting X tons of paper annually), activity-based (e.g., collecting a new material or undertaking a new effort), or monetary (e.g., saving a certain amount of money on disposal costs). The entire program focus can be on one material generated in large quantities, such as paper or plastic bottles, or perhaps a once-a-year issue, such as old textbooks. Whatever they may be, make sure goals can be tracked and measured.

District-wide considerations

If the program is district-wide, a few additional decisions will need to be made. Will participation in the program be mandated at all schools or voluntary? Will the schools be able to select the activities that work best for their location (recommended) or will all schools have to perform the same activities?

Develop a budget and get the (other) green —

As you develop the budget, evaluate the availability of material resources and services at the school or district. Ask yourself:

- Does the school or district already have recycling bins or will you need to purchase new ones?
- Can you apply for a grant to purchase recycling bins?
- Can you adjust your current waste management contract to cover recycling collection?
- Do you need to hire a hauler or can you drop the materials off at the local recycling center?
- Can the schools or districts team up with other schools or districts to share transportation and/or storage costs?

Setting Goals

Waste Prevention Goals

- Print and copy all documents in the duplex setting
- Use the Internet for research assignments to reduce paper use
- Make memo pads out of scrap paper
- View information electronically instead of printing hard copies
- Reduce handouts distributed or consider sending these electronically
- Have a waste-free lunch day

- Use email for parent correspondence

Reuse/ Donation Goals

- Designate an area in the school for a “student supply exchange.” Students can be encouraged to leave (or take) items, such as pens, notebooks, etc.
- At the end of the school year collect unwanted supplies for use in the upcoming school year
- Donate furniture or electronics to a local charity
- Collect unclaimed items from lockers at the end of the year to donate or reuse
- Use reusable trays, utensils, and dishware in the cafeteria
- Use old magazines for art projects

Other Goals

- Hold a recycling competition among classes or grades
- Start an environmental club
- Join the SAVTHEARTH Green & Healthy Schools Program
- Complete the loop by buying products with recycled content; discuss purchasing options with school officials to purchase recycled materials when possible

Involve Students

Encourage students to participate through classroom lessons and/or extracurricular activities. By actively contributing to the school program, students will gain a sense of ownership and will likely enlist their peers. Students can become involved in many ways, including the following activities which are examples from Wisconsin school recycling programs:

- Start or encourage other students to join an environmental club.
- Collect and sort materials by type.
- Monitor recycling bins to reduce contamination.
- Participate in school-wide assemblies to increase enthusiasm for the recycling program.
- Enter school-wide or district-wide contests to name the program or design a poster or other educational materials.
- Write articles for the school, school district, or community newspaper about the program or the importance of waste reduction and recycling.
- Manage parts of the school’s recycling program. Don’t forget to ask for volunteers and reward students for their participation, if not already part of a classroom lesson.

Review, recheck, regroup, and start again

Ask for feedback from students, faculty, and staff to determine which activities work. Expand on successful activities. Be flexible and make changes as the program grows or circumstances change. Asking students, faculty, and staff some of these questions will help determine the success of the program:

- What is successful about the program? What isn’t successful?
- Are there an adequate number of recycling bins? Are they easily accessible? Are they clearly labeled and identifiable?
- Did you notice any contamination problems? If so, what kind of contamination?

- Is the educational aspect of the program helpful?
- Do the incentives help motivate participants?
- Do you have any suggestions for improving the program?
- What questions or concerns do you have about the program?

School Composting

Every school day each student generates about two pounds or more of compostable materials, such as food scraps and soiled paper. Composting these materials can help schools significantly reduce their waste. It is an activity that can be integrated into school

curriculum, providing hands-on learning opportunities in science, math, and other disciplines. Composting is a natural recycling process that uses decomposition to break down organic waste—like food scraps, soiled paper, leaves, and grass. With the help of beneficial organisms, such as insects, worms, and bacteria, organic debris is decomposed to form a nutrient-rich soil enhancer.

4. Level 3: Best out of waste, Stationery setup & Collage making competition + Olympiad

4.1 “REGARD BEFORE YOU DISCARD”- BEST OUT OF WASTE COMPETITION

With the growing increase in wastes in our society from households to industrial wastes, we now require a very innovative approach to get rid of them. Recycling and reusing the valuable waste material can result in development of fantastic and usable products. Rather than putting these waste materials into the landfills, various innovative and creative ideas can be put together to being something new and useful. Everyday Wastes such as plastic, glasses, newspapers or electronic are not only waste of limited resources but also are harmful to the environment. This event is to bring such ideas to students and to help them think themselves on such ways of reusing everyday materials that will not only reduce the waste but provide them with useful household products. The idea will not only be of economic and material value for students, but will be helpful in creating environmental consciousness among them that is the need of the hour.

4.1.1 ELIGIBILITY CRITERIA: All under graduate or post graduate students from any discipline shall be allowed to participate in the event.

4.1.2 RULES AND REGULATIONS:

- Team shall consist of two members only.
- Participants will be given 1 hour and 30 min. to show their creativity and 2 minutes to talk about the same.
- The required waste material and stationery like scissor, thread, etc. should be brought by the participants.
- Waste material could be anything like tetra packs, bottles, newspapers, old utensils, jute material or any second hand items that otherwise would be thrown away.
- The material would be rejected if not found to be a waste product or second hand item.
- No ready or semi-finished model or matter would be accepted from participant in competition.
- Participants will be judged on Creativity, Utilization of Resources, Artistic composition & design, Eco-friendly rating, Utility of the Product and Overall Presentation
- No mobile or Internet means would be allowed to use at the time of Competition.
- The decision of the judges will be considered final and abiding
- Participants will show their creativity and talk about it in a two minute video.
- Waste material could be anything like tetra packs, bottles, newspapers, old utensils, jute material or any second hand items that otherwise would be thrown away.
- The item would be rejected if not found to be a waste product or second hand item.
- No ready or semi-finished model or matter would be accepted from participant in competition.

- Participants will be judged on creativity, utilization of resources, artistic composition & design, eco-friendly rating, utility of the product and overall Presentation.
- The decision of the judges will be considered final and abiding.

4.1.3 Scoring Criteria

Eco-Friendly: Minimum harm in the atmosphere.

4.1.4 Theme/ Design: Ability to develop & present in form of an object.

4.1.5 Off waste material used: Optimum use of waste material.

4.1.6 Presentation: Detail of the materials used and proper functional explanation of the design.

4.1.7 Utility: For a sustainable co existing eco-system.

4.2 Introduction

Biodegradable stationery is a broad category that encompasses recycled and sustainable stationery, along with zero-waste gifts like eco-friendly notebooks that can be fully recycled once they have been used.

The term applies to all kinds of green stationery, from eco-friendly pens and pencils, to recycled notebooks and ethical stationery gifts – and different products might have different ethical and environmental credentials.

For example, some biodegradable stationery may be made from ethically produced materials like sustainably managed timber, while others might use more recycled raw materials or be designed in such a way to avoid ending up in a landfill site.

In this, we'll look in more detail at what makes green stationery 'green' and why it makes sense to buy biodegradable stationery for yourself and others.

4.2.1 What is biodegradable stationery?

There's no strict definition of biodegradable stationery. It could be recycled or recyclable (or both), it might use raw materials that would otherwise go to landfill, or it might be ethical in some other way.

Because it's such a broad definition, there's plenty of choice, allowing you to choose a sustainable pen that fits your lifestyle and your own eco priorities.

4.2.2 Why should I try sustainable stationery?

There's really nothing to lose. Biodegradable stationery often does not cost any more than its traditional equivalents, and there are some really stunning designs of eco pens, pencils and notebooks to choose from.

4.2.3 You Can Make a Conscious Effort To Be Environmentally Friendly

If you want to take action for sustainable living, without making major changes to your lifestyle, biodegradable stationery is a simple first step to take.

Biodegradable stationery products function exactly as normal and there's usually no visible difference either, so you get peace of mind without compromise.

4.2.4 It Sets a Good Example

As well as improving your personal biodegradable profile, you can encourage others to take their own action for sustainable living too.

Zero-waste gifts are a great way to do this, by giving friends, family and co-workers an eco-friendly notebook, pen or pencil and putting them on their own path towards eco-friendly living.

4.2.5 You Will Reduce Waste

Sustainable stationery is typically designed to last longer. In fact, any refillable pen will generate less waste than a disposable pen, so opt for a cartridge pen, traditional fountain pen or refillable ball pen if you want to do your bit.

If you are in business, you could consider giving a customised pen as a corporate gift, to encourage your customers to cut down on their use of disposable stationery too.

4.2.6 How does eco-friendly stationery help the environment?

Biodegradable stationery (depending on the product) can divert materials away from landfill during its manufacture, and reduce landfill waste due to disposable plastic pens being thrown away.

Sustainable stationery is also more likely to use renewable raw materials such as wood and eco plastics, rather than single-use plastics made from fossil fuels.

5. Level 4: E-waste drive, Plant setup and chapter setup + Olympiad

5. Host a Drive to Collect E-waste

5.1 What is E-waste?

Electronic waste, or e-waste, is a term for electronic products that have become unwanted, non-working or obsolete, and have essentially reached the end of their useful life. Because technology advances at such a high rate, many electronic devices become “trash” after a few short years of use. In fact, whole categories of old electronic items contribute to e-waste such as VCRs being replaced by DVD players, and DVD players being replaced by blu-ray players. E-waste is created from anything electronic: computers, servers, telephones, TVs, monitors, cell phones, PDAs, VCRs, CD players, fax machines, printers, etc.

5.1.1 Introduction:

E-Waste (Management & Handling) Rules, 2011, were notified in the year 2011 and have come into force since 1st May, 2012. In order to ensure effective implementation of E-Waste Rules and to clearly delineate the role of producers in EPR, MoEF & CC, Government of India in supersession of E-Waste (Management and Handling) Rules, 2011, has notified the E-Waste (Management) Rules, 2016 vide G.S.R. 338(E) dated 23 March 2016 which came into effect from 01 October 2016. These rules are applicable to every producer, consumer or bulk consumer, collection centre, dismantler and recycler of e-waste involved in the manufacture, sale, purchase and processing of electrical and electronic equipment.

5.1.2 Benefit of recycling of E-waste:

E-waste contains many valuable, recoverable materials such as aluminium, copper, gold, silver, plastics, and ferrous metals. In order to conserve natural resources and the energy needed to produce new electronic equipment from virgin resources, electronic equipment can be refurbished, reused, and recycled instead of being land filled.

E-waste also contains toxic and hazardous materials including mercury, lead, cadmium, beryllium, chromium, and chemical flame retardants, which have the potential to leach into our soil and water.

Protects your surroundings- Safe recycling of outdated electronics promotes sound management of toxic chemicals such as lead and mercury.

Conserves natural resources- Recycling recovers valuable materials from old electronics that can be used to make new products. As a result, we save energy, reduce pollution, reduce greenhouse gas emissions, and save resources by extracting fewer raw materials from the earth.

Helps others -Donating your used electronics, benefits your community by passing on ready-to-use or refurbished equipment to those who need it.

Saves landfill space -E-waste is a growing waste stream. By recycling these items, landfill space can be conserved.

5.1.3 How to solve the E-waste problem?

Solving the e-waste problem starts with education, and habit changes as a result of knowledge. Most people are trained to recycle a newspaper, bottles, and cans. Almost anything electronic in nature can be recycled properly with effort. It is important that any e-waste processor is fully certified in safe destruction and follow certified documented procedures to safely dispose of electronic waste. Ask questions before you recycle! Some unscrupulous recyclers ship e-waste overseas where it is disposed of improperly, posing a threat to the environment and its' people.

5.1.4 Do's & Don'ts of End of life Products/E-waste

Do's:

- Always look for information on the catalogue with your product for end-of-life equipment handling.
- Ensure that only Authorized Recyclers/Dismantler handle your electronic products.
- Always call at our toll-free No's to dispose of our products that have reached end-of life
- Always drop your used electronic products, batteries or any accessories when they reach the end of their life at your nearest Authorized E-Waste Collection Points.
- Always disconnect the battery from product, and ensure any glass surface is protected against breakage.

Don'ts:

- Do not dismantle your electronic Products on your own
- Do not throw electronics in bins having "Do not Dispose" sign.
- Do not give e-waste to informal and unorganized sectors like Local Scrap Dealer/ Rag Pickers.
- Do not dispose your product in garbage bins along with municipal waste that ultimately reaches landfills.

5.1.5 What should we do with our electronic discards?

The mantra of "Reduce, Reuse, and Recycle" applies here.

- Reduce your generation of e-waste through smart handling and good maintenance.
- Reuse still functioning electronic equipment by donating to us.
- Recycle those products that cannot be repaired. Customer may handover their end of life products to our nearest drop points for proper Recycling.

Every year an estimated 2 million tonnes of Waste Electrical & Electronic Equipment's items are discarded by householders and companies in the India. WEEE includes most products

that have a plug or need a battery. There are ten broad categories of WEEE currently outlined within the Regulations, namely:

- Large household appliances – e.g. fridges, cookers, microwaves, washing machines and dishwashers
- Small household appliances – e.g. vacuum cleaners, irons, toasters and clocks
- IT and telecommunications equipment – e.g. personal computers, copying equipment, telephones and pocket calculators
- Consumer equipment – e.g. radios, televisions, hi-fi equipment, camcorders and musical instruments
- Lighting equipment – e.g. straight and compact fluorescent tubes and high intensity discharge lamps
- Electrical and electronic tools – e.g. drills, saws and sewing machines, electric lawnmowers
- Toys, leisure and sports equipment – e.g. electric trains, games consoles and running machines
- Medical devices – e.g. (non infected) dialysis machines, analysers, medical freezers and cardiology equipment
- Monitoring and control equipment – e.g. smoke detectors, thermostats and heating regulators
- Automatic dispensers – e.g. hot drinks dispensers and money dispensers

5.1.6 Student awareness

Student awareness was cited as a key factor limiting the collection of small electronic waste—such as toasters or hairdryers. Research indicates that large quantities of these small items are being disposed of incorrectly in household bins. A 2019 report by the Material Change Fund found that a significant proportion of householders were unaware of how they could recycle electrical items. Eunomia's report stated that high performing countries place significant emphasis on the role of communication campaigns and activities to support WEEE collection efforts. For example, improvements in small WEEE collection across France have been largely attributed to targeted communication campaign efforts and investment—with small WEEE collection increasing 18.4% between 2013 and 2014, and by 23.7% between 2010 and 2014. French PCSs must allocate at least 0.3% of their income to national information campaigns. Viridor has stated that public understanding of the issues with electronic waste are poor due to a lack of consistency of collection throughout the country. It stated that:

As with other parts of the recycling system, the lack of a national consistent system of household collections make communicating challenging. Recycling services, on the whole, have seen cuts, particularly in communications, but also with HWRCs opening for fewer hours.

The lack of consistency is exacerbated by the inconvenience citizens face if they try to dispose of E-waste in the right way. Though the UK collects most of its electronic waste at Household Waste Recycling Centres (HWRCs) it is also the European country with the least

HWRCs per inhabitant and one of lowest per 1000 km². Eunomia report that while the UK has at least one HWRC in most sizeable towns these are mostly out of town and only accessible by car. Research found that drop-off of waste by residents at local authority collection centres (including HWRCs and Civic Amenity sites) is the E-waste collection method that causes the highest carbon emissions and has the highest operation costs.

Waste management infrastructure is expanding as we wrestle with how best to gather, sort, and recycle the 50 million tons of e-waste we are generating annually worldwide.

Awareness and education are the first steps, followed by programs and industries to address the issue. Schools, districts, and colleges of education contribute their share of e-waste and need to be concerned with its disposal, but they can also put into place their own refurbishing programs and partnerships and use the e-waste challenge as the basis for some real-life problem solving and project-based learning. Being a responsible organization regarding e-waste requires looking into recycling via donating, refurbishing, or repurposing parts. Each solution has its challenges. Here is a five-step process and several resources to help you learn about the challenges and possible solutions to minimizing what technology ends up in landfills.

Step 1. Educate yourself about local, national, and international legislation.

While recycling standards and certifications are still in the developmental stages, many cities and states are leading the way with ambitious and comprehensive programs addressing the situation. California's landmark Electronic Waste Recycling Act of 2003, for example, requires retailers to collect a fee from consumers on covered electronic devices.

Step 2. Investigate recycling options from the companies that sell you equipment.

Many manufacturers offer consumers a percentage off the purchase price of a new piece of equipment upon returning the old one to a retailer such as Best Buy.

Step 3. Learn about shredding and sorting and how to certify that recycling is happening.

Environmentalists and waste management equipment experts have begun to join forces to determine how best to collect then dismantle or shred e-waste into a secondary stream of what will be a recovered resource for use elsewhere. Many agree that the elements within the devices are too valuable to languish in landfills. Already technology has been developed that can electronically scan conveyor belts of assorted, shredded e-waste. Once the economics are right, the widespread use of shredding and sorting equipment has the potential to virtually eliminate e-waste. Ultimately, certification programs are needed to verify environmentally responsible collection, shipment, and processing. Already initial steps have been taken.

5.2 Switch to Energy-saving Light Bulbs: Importance and Guidelines

Initiatives to use LED lighting in schools can help increase efficiency. Eco-schools analyses the ways that schools can reduce their energy consumption and become more eco-minded.

According to the Carbon Trust: “Schools could reduce energy costs by around £44 million per year which would prevent 625,000 tonnes of CO₂ from entering the atmosphere. Improving energy efficiency in schools does not mean compromising the comfort of staff and students. In many cases, implementing some simple energy saving measures actually improves conditions, as well as saving money.”

Energy consumption in schools is wide and varied and depends on the age and state of repair of buildings, occupancy hours and the amount and type of electrical equipment installed. So, generally, secondary schools will have higher energy costs than primary schools due to opening for longer, they have more pupils, and have a greater use of electrical equipment for school activities.

The challenges that schools face and encourages greater energy efficiency by adopting simple but effective changes that staff and pupils can adhere to. Of course it shouldn't just stop at the school gates. These energy saving measures can be taken back home to encourage family, friends and communities to do the same. This way the energy-saving message can be spread far and wide.

The electricity used over the lifetime of a single incandescent bulb costs 5 to 10 times the original purchase price of the bulb itself.

Light Emitting Diode (LED) and Compact Fluorescent Lights (CFL) bulbs have revolutionized energy-efficient lighting.

CFLs are simply miniature versions of full-sized fluorescents. They screw into standard lamp sockets, and give off light that looks similar to the common incandescent bulbs— not like the fluorescent lighting we associate with factories and schools.

LEDs are small, very efficient solid bulbs. New LED bulbs are grouped in clusters with diffuser lenses, which have broadened the applications for LED use in the home. LED technology is advancing rapidly, with many new bulb styles available. Initially more expensive than CFLs, LEDs now bring more value since they last longer.

LED Light Bulbs

LEDs (Light Emitting Diodes) are solid light bulbs that are extremely energy-efficient. When first developed, LEDs were limited to single-bulb use in applications such as instrument panels, electronics, pen lights and, more recently, strings of indoor and outdoor Christmas lights.

Manufacturers have expanded the application of LEDs by “clustering” the small bulbs. The first clustered bulbs were used for battery-powered items such as flashlights and headlamps. Today, LED bulbs are made using as many as 180 bulbs per cluster, and encased in diffuser lenses, which spread the light in wider beams. Now available with standard bases that fit common household light fixtures, LEDs are the next generation in home lighting.

A significant feature of LEDs is that the light is directional, as opposed to incandescent bulbs, which spread the light more spherically. This is an advantage with recessed lighting or under-cabinet lighting, but it is a disadvantage for table lamps. New LED bulb designs address this directional limitation by using diffuser lenses and reflectors to disperse the light more like an incandescent bulb.

The high cost of producing LEDs has been a roadblock to widespread use. However, researchers at Purdue University have developed a process for using inexpensive silicon wafers to replace the expensive sapphire-based technology. This has rapidly brought LEDs into competitive pricing with CFLs and incandescent bulbs. LED bulbs are now the standard for most lighting needs.

5.2.1 Benefits of LED Light bulbs

Long-Lasting

LED bulbs last up to 10 times longer than compact fluorescents, and 40 times longer than typical incandescent bulbs.

Durable

Since LEDs do not have a filament, they are not damaged under circumstances when a regular incandescent bulb would be broken. Because they are solid, LED bulbs hold up well to jarring and bumping.

Cool

These bulbs do not cause heat build-up; LEDs produce 3.4 btu's/hour, compared to 85 for incandescent bulbs. Common incandescent bulbs get hot and contribute to heat build-up in a room. LEDs prevent this heat build-up, thereby helping to reduce air conditioning costs in the home.

Mercury-Free

No mercury is used in the manufacturing of LEDs.

More Efficient

LED light bulbs use only 2-17 watts of electricity (1/3rd to 1/30th of Incandescent or CFL). LED bulbs used in fixtures inside the home save electricity, remain cool, and save money on replacement costs since LED bulbs last so long. Small LED flashlight bulbs will extend battery life 10 to 15 times longer than incandescent bulbs.

Cost-Effective

The cost of new LED bulbs has gone down considerably in the last few years and is continuing to go down. To see a cost comparison between the different types of energy saving light bulbs, see our Light Bulb Comparison Charts.

Light for Remote Areas and Portable Generators

Because of the low power requirement for LEDs, using solar panels becomes more practical and less expensive than running an electric line or using a generator for lighting in remote or off-grid areas. LED light bulbs are also ideal for use with small portable generators which homeowners use for backup power in emergencies.

Improved Student Concentration and Performance

One of the most important benefits of installing LED lights in classrooms is the improved academic performance of students. Several studies have found that LED lights can be tuned to imitate natural light, which is known to improve concentration and boost a student's learning ability.

LED lights can be switched on to emphasize white and blue light, which boost productivity and concentration. Younger students, in particular, tend to have difficulty concentrating in the early morning. LED lighting can help shift their natural biological rhythms to overcome the tiredness they experience early in the morning and jump start their day! Other researchers have found that LED lights can boost cognitive skills and lower students' rates of error.

Normal: This setting was suitable for regular activities in the classroom.

Energy: This setting could be used to invigorate the students when they were required to be more active, such as at the beginning of the school day or after lunch.

Focus: The focus setting was designed to help students concentrate during challenging assignments.

Calm: This fourth setting was designed to relax the students during individual assignments or quiet time.

Unlike the majority of lighting systems, which come with a fixed light output and color temperature, each of these lighting schemes had a different light output and color temperature. LED lighting is a great choice for settings that require this level of flexibility.

Improved Reading Speed: The students increased their reading speed by 35%.

Improved Concentration: The students reduced their errors by 45%.

Reduced Hyperactivity: When teachers gave students mathematical problems to solve, they used the Calm lighting scheme, which reduced the students' hyperactivity by an astonishing 76%.

Researchers have also conducted numerous lighting-related studies in the healthcare field. Research on the effects of lighting has led to the development of practices in healthcare that are now widely used to enhance the performance of staff and the well-being of patients. For instance, hospitals are now using LED lighting that has high color temperatures to keep employees alert and support the mood, healing, and well-being of patients. At

night, hospitals are also dimming the lights in patient areas and adjusting the lights to warmer-color temperatures, indicated periods of rest for staff, patients, and family. Researchers have found that these practices promote improved sleep quality for patients.

2. Energy Savings

Schools that choose to install LEDs won't just see increased academic performance — they'll also enjoy decreased energy bills. Unlike fluorescent lights, LEDs are free of mercury and completely recyclable, which make them the most environmentally friendly lighting option. LEDs consume less energy than any other type of lighting available on the market, meaning that your energy and maintenance costs will be substantially reduced.

According to the U.S. Department of Energy, switching to LEDs can reduce your energy consumption by 75 to 80 percent. By adding reflectors, sensors, lenses, timers, and other options, your school can increase its savings even more.

Education facilities in the United States that continue to operate with fluorescent or incandescent bulbs spend more money trying to compensate for the heat produced by these outdated lights than they do on the lights themselves. By upgrading to LED lights, the savings generated by these avoided expenses can be relegated toward other parts of your facility that require more attention.

For schools interested in upgrading to LED lights, follow these steps to make sure your upgrade is as successful and cost-efficient as possible:

5.2.2 LED energy savings

Conduct an audit: Gather data about your school's energy consumption and present the information to your school's decision-makers to get their support.

Mockup an area of your school: Once you have the approval of your administration, mockup an area of your school with the LED lights that you proposed.

Look for utility rebates: Speak with your local representative or distributor to find out if you qualify for utility rebates.

Seek funding: In some situations, this could be the most difficult step. Your school may not have the money to upgrade all of its lighting at once. It may have to be installed in phases over a longer period of time.

3. Enhanced Lighting Controls and Flexibility

Classrooms that are equipped with lighting controls can match their color temperature to certain times of the day/specific activities. These tunable presets can be adjusted for activities that require a sense of calm or attention, as needed. However, even more basic features, such as dimming, are being implemented in less than two percent of classrooms, which can have significant impact on students' learning experience.

LED lighting controls

LED lighting can also improve the educational experience of students outside of the classroom. Online education is now the main educational pathway and source of revenue source for schools. However, a lot of the digital content is recorded under fluorescent lighting, which other causes a distracting flicker on video recordings and digital presentations. When lights are dimmed, this flicker effect is further exacerbated. However, thanks to the recent advancements made in LED lighting, you can now choose flicker-free LED lights with dimming and color-tuning features across a large range of illumination without noticeable interference or banding.

The United States Department of Energy has described the next-generation integrated lighting system for classrooms as an exceptionally energy-efficient, tunable, and fully dimmable white lighting system. The report emphasizes that lighting in the classroom should offer flexibility to accommodate different methods of teaching.

LED lighting is considered one of the key components of “smart buildings.” Today’s advancements in LED lighting include embedded sensors and networking capabilities that enable optimization across lecture classrooms, auditoriums, lecture halls, and other areas.

4. Health Benefits

Fluorescent bulbs aren’t just wasteful — they can also harm your health and wellbeing. Replacing fluorescent lights with LED lighting in educational environments is associated with the following health benefits:

REDUCTION OF HARMFUL CONTAMINANTS ASSOCIATED WITH FLUORESCENT BULBS

Reduction in contamination

Installing LED light fixtures can lower the risk of exposure to harmful contaminants like Polychlorinated Biphenyls (PCBs). The U.S. Environmental Protection Agency defines PCBs as carcinogens that can harm the nervous, immune, and endocrine systems and are often found in the T12 fluorescent ballasts. While all of these ballasts have the potential to leak or rupture, some of them are also known to emit small amounts of PCBs during their normal use. The EPA also released an announcement that schools in the U.S. built before 1979 may still have some T12s that contain PCB. You can be exposed to the contaminants if you breathe contaminated air or touch contaminated materials following a rupture or leak. People exposed to high levels of PCBs may show signs of rashes or acne and, in some cases, even lung and liver problems. Researchers are continuing to conduct studies to better determine the adverse health effects of PCBs.

Outdated lighting technology contains another, more familiar contaminant — mercury. Fluorescent lighting contains a combination of inert gases and mercury when the current passes through the glass containment tube. Depending on how you’re exposed to the contaminant, it can enter your body through the skin or lungs. If a fluorescent tube shatters, anyone nearby is at risk of mercury contamination, which makes fluorescent tubes a serious safety hazard in schools. Mercury is also hazardous because it produces UV light. UV radiation can damage tissues in our skin and eyes, and if exposed to it for too long, cataracts

can form and macular degeneration — the most common cause of blindness — can also occur.

5.2.3 IMPROVEMENT OF LIGHT QUALITY

Some other ways that LED lighting can make the school environment healthier and more comfortable for students include:

Improvement in Visual Performance and Comfort: Glare and flicker are two issues associated with outdated lights and can affect the teachers as well as the students. Glare often causes you to blink, squint or look away and can be caused by one of two things — excessively high luminance or excessively high luminance ratios. In both scenarios, the students' visual performance will decline as their comfort levels decrease. Two types of glare exist — disability and discomfort glare. Discomfort glare refers to the pain associated with viewing glare, whereas disability glare reduces visibility. Disability glare occurs when light is scattered throughout the eye, which then reduces the retinal image's luminance contrast.

Less Irritation for Autistic Students: Autistic students are especially susceptible to the harmful effects of fluorescent lighting, including an increased sensitivity to direct fluorescent lighting's sub-visible flicker. This can lead to eyestrain, headaches, and an increase in repetitive/compulsive behavior. LEDs, on the other hand, are resistant to the flicker-effect when they are completely dimmed, which makes them an excellent choice for special education student bodies.

Reduction in Hyperactivity: Color temperature has also been shown to play an important role in students' health/performance. Studies show that cool color temperatures can improve the behavior of students with learning disadvantages or hyperactivity disorder. This cool light color allows them to concentrate on projects and tasks more effectively. Hyperactivity is related to stress conditions, which can be aggravated by the radiation produced by the fluorescent lights. When exposure to this radiation is decreased, performance and behavior improve.

Improvement in Circadian Rhythms: The optimal function of the body's circadian rhythm depends on the right kind of light. This vital process helps your body determine when you should wake up, go to bed, and even focus and relax. If students are regularly exposed to lighting that doesn't match their circadian rhythm, it can disrupt their sleep-wake cycle. And students who aren't getting enough sleep are at increased risk of focus and performance related issues.

Improvement in Mental Cognition: Exposure to cooler color temperatures during the morning hours is known to help with morning wakefulness, contributing to improved concentration and performance in school.

Improvement in Mood: Light levels are also important in the classroom, and bright lights are used to treat several types of depression, including Season Affective Disorder (SAD). SAD affects people during the coldest months of the year when people don't get enough sunlight

exposure during the day and is a common problem in schools and offices. If you spend too long in a room that's dimly lit, it can affect your mood and lead to depression.

5. Reduced Maintenance Costs

Every classroom, hallway, bathroom, and office needs sufficient lighting, and the number of bulbs maintenance workers must replace can number in the thousands. If a school uses fluorescent bulbs, maintenance crews may spend a significant portion of their working hours replacing lights, especially when those lights are not easily accessible, like those found in gyms, auditoriums and other spaces with high ceilings. However, since LED lights have a significantly longer lifespan, your crew can spend less time maintaining/replacing bulbs when you switch to LED.

6. Other Economic Benefits

Shorter Payback Period: An educational facility's payback period is usually one to three years. Over the course of an LED bulb's lifespan, savings can reach millions of dollars, which help educational facilities and school districts better adapt to their budgetary constraints.

The Ability to Replace Any Type of Light: LED lighting can replace many different types of lights, including fluorescent lights, fluorescent tubes, high hats, and can lights. LED lights can be suspended, recessed, or flush-mounted on walls or ceilings. Regardless of the type of lighting you have in your school, LEDs can replace them.

5.2.4 The guide to LED lighting

LED stands for 'light emitting diode'. A diode is an electrical component with two terminals which conduct the electricity only in one direction. With an electrical current, the diode emits a bright light around the small bulb. Typically, diodes have been used in many technologies such as radios, televisions and computers as an electrical component for conduction.

Connecting a diode to an electrical current excites the electrons within the diode, making them release photons, which we see as light. The colour of the light is a direct result of the energy gap in the semiconductor of the diode. This means that LEDs produce a spectrum of colours easily and brightly while using very little electricity to do so.

In any environment it is essential that people can see 'well' and do their particular tasks. There are many benefits that result from upgrading current lighting with new, efficient, and brighter LED lighting and many schools and institutions of higher learning are exploring the possibilities and rewards of making the change to LED.

By now, the majority of people know that LED lighting is greener and less expensive to use than traditional lighting, but those aren't the only reasons to use LED lighting. Other, less obvious but often more beneficial reasons are hiding right under our noses. Schools, colleges and universities around the country have been exploring these hidden perks and have seen just how helpful LED lighting can be.

One of the easiest benefits to see is cost savings. As in any location, upgrading school lighting from incandescent, fluorescent and other traditional lighting to LED can save schools up to 80 per cent of the operating costs associated with lighting. Because schools are working with a set and limited budget, any money saved in one department can be used elsewhere in the school. By lessening the load of electricity costs, these funds can be allocated to more important and vital services such as classroom resources, teaching staff and other educational tools. Imagine just how much money that currently goes to electricity bills could be freed up to use for teaching instead.

5.2.5 Educational value

The educational value of LED lighting upgrades is stunning too. The opportunity to see first-hand the changes taking place and the difference the new lights make in their daily lives is sure to impress heavily on the students and spur forward thinking, innovation and curiosity. The economic benefits alone open the opportunity to teach about money concepts and even statistics and the scientific process. Projects could span months or years as the students track and evaluate the true cost saving of the new lighting system. While it is also the perfect time for teachers to integrate ecology, electrical concepts, solid state technology and more into their lesson plans.

LED lighting is also safer than traditional lighting because of its low heat output. Lower heat output means less chance of a fire being started by lighting equipment, always a good thing, especially when children are involved. The additional light output of LED also helps to better illuminate dim spaces which in turn makes the chance of trips, falls and other minor accidents far less likely.

Another safety feature of LED lighting is the lack of glass in many fixtures. Both incandescent and fluorescent light bulbs are glass and they can break. Many LED fixtures on the market, however, do not include any glass or other materials that are overtly dangerous when broken.

The brightness of LED lighting can also help to stop or reduce vandalism on school grounds. Studies show that adolescents and children are more respectful of their environment in a brighter and higher quality light making a space seem more modern and up to date.

Finally, students will be able to work more productively than with incandescent and fluorescent lighting, which are known to flicker, causing a condition called 'flicker vertigo'. This condition affects some people exposed to flickering light sources, causing headaches and nausea and a reduced motivation to work. The same loss of motivation, in addition to drowsiness and lethargy, is a side effect of working in an environment that is poorly lit. The high quality, exceptionally bright LED lights can reduce or completely eliminate these problems and get students back on task. Awake and alert, the students are more apt to learn about the materials they are exposed to and the teacher will have the energy and stamina to teach with vigour and connect with their class more effectively.

Eco-Schools England works with an established LED lighting partner to give all Eco-Schools the opportunity to benefit by changing to LED.

Trust LED CEO Kym Jones says: “By changing your existing lighting to LEDs your school will be addressing environmental issues and reducing your carbon footprint. Also the energy saving from LED lighting will pay for the cost of the equipment releasing money that can be reinvested elsewhere in the school.”

Although it is quite easy to see the cost and environmental benefits of using LED lighting rather than traditional lighting, there are many other good reasons to move to LED that are not so obvious but equally important when considering switching. Added safety, productivity and pride in our schools – are they good enough reasons for you to make the switch to LED?

5.3 “Setting up Recycling Plant: Importance and Guidelines”

5.3.1 Introduction

If you are interested in setting up recycling plant at your school and you have this toolkit in your hands, you are in luck! This guide will provide you with the basic framework for starting a successful recycling plant at your school, from planning, identifying, and implementing a program that fits your needs, to monitoring and promoting your hard work.

There are many benefits associated with setting up recycling plant at your school. Recycling is a great educational opportunity, engaging students in a sustainable behavior that they can take with them outside of the classroom. Recycling saves natural resources and energy by reducing the need to use raw materials to make new products. Recycling extends the life of landfills by sending material to different processing facilities. And recycling is usually less expensive than disposal and can sometimes even bring revenue to your school.

To start a setting up recycling plant at Your School:

1. Build support for the recycling program
2. Evaluate current waste operations and options for the recycling program
3. Plan the recycling program
4. Implement the recycling program
5. Analyze and maintain the recycling program
6. Promote the recycling program

1. Build Support for the Recycling Program

Identify a Recycling Coordinator for the School Program

To make your school recycling program most successful, a “Recycling Coordinator” should be identified. This person will oversee and facilitate the recycling program, from planning and implementation to monitoring and promotion. It is important to note that this person does not have to be the one to carry out all of the actions outlined in this guide, but should serve as the point of contact and organizer in charge of arranging that all action steps are taken. The Recycling Coordinator will be the driver of the recycling initiative, championing its benefits and ensuring the program is developed effectively. Suggestions for a Recycling Coordinator include: a school administrator; a school staff

member, like a teacher, facilities/custodial staff or librarian; an active PTA member; or a local municipal recycling coordinator. It is worth mentioning that successful programs have been implemented where a student took on the role of the Recycling Coordinator. If a student is identified as the Recycling Coordinator for your school's recycling program, then it is essential to take appropriate steps to ensure the program remains sustainable after the student has moved on from your school.

Build Administrative and Staff Support

Before a recycling program can be developed and implemented at your school, buy-in must occur at the top level of administrators and staff. Depending on who the person is at your school that is driving the effort to establish a recycling program, it may be the responsibility of the Recycling Coordinator to obtain approval and support from stakeholders. At this point, it is a good idea to know if the recycling program will be implemented district-wide, or just at your school. This decision will likely depend on the resources available for your recycling program, but some advantages to implementing the recycling program district-wide include:

- Recycling plant will be the same at every school, making it easier for students
- Implementing the program district-wide makes it difficult for a single school to choose not to participate
- Your recycling hauler may offer a better service fee if the program is implemented at every school in the district, especially if your trash hauler is also your recycling hauler

Stakeholders that should be in support of the recycling program include: School administrators (when implementing the program district wide, this may include the Superintendent or representatives of the School Board; when implementing the program at one school, this may just be the School Principal); the manager of the custodial or facilities staff; and representatives of the teaching staff.

It is important to mention that for your school to be eligible for grant assistance from the sponsor to implement school recycling, your school district **MUST** adopt a district-wide school recyclable materials policy that explicitly states your school district's plans to recycle paper, cardboard, bottles and cans. If you plan on applying for grant assistance, your recyclable materials policy should be drafted, agreed upon, and adopted during the process of seeking approval for your recycling program.

Form a Recycling Team

Once a Recycling Coordinator has been identified and the recycling program has received support from necessary stakeholders, the next step is to form a Recycling Team. Suggested stakeholders for the team include: a representative from school administration; a representative from the custodial/facilities department; school faculty member (preferably a teacher); cafeteria monitor, a representative from your school's SAVTHEARTH; and an active PTA member. In addition, it is a good idea to include a student representative(s) on the Recycling Team. It is important to be

inclusive when forming the Recycling Team both to prevent conflict, and build ownership through shared responsibility. The responsibility of forming the Recycling Team will likely fall to the Recycling Coordinator. That being said, by forming a comprehensive Recycling Team at the beginning of the process, the Recycling Coordinator will be reducing the amount of work that falls on them further down the line.

2. Evaluate Current Waste Operations and Options for the Recycling Program

Assess Current Waste Operations

It is essential to understand your school's existing waste operations and the quantity and type of waste your school generates in order to implement a recycling program. The custodial/facilities manager and members of their staff can provide key information of how waste moves through your school, and what materials make up that waste. Another source of this information is your school's existing waste hauler. It is important to identify if the hauler is contracted through the municipality, school district, or individual school and work with the contract manager to determine some information before calling.

- Does the school's current trash hauler charge a volume-based fee for service, a per ton fee, or a service frequency charge? Cost savings can be seen by reducing tonnage, volume, and service frequency.
- What is the current amount of trash that is collected on a weekly basis from your school?
- Ask for authorization to contact the hauler and then the waste hauler account representative's contact information.

When talking with your school's hauler about establishing a recycling program, be sure to ask the following questions:

- Does the hauler have an estimate for how much of the trash is recyclable?
- If not, does the hauler offer a service to conduct onsite waste audits to identify quantity and type of waste generated at your school?
- Does the hauler offer collection of recyclable material? If so, inquire:
 - What materials does the hauler collect?
 - Is the recycling service a single stream or a dual stream collection?
 - How must materials be prepared for collection?
 - What is the process for adding recycling service to your school's existing waste hauling contract?
- If the hauler does not offer collection of recyclables, is the hauler aware of any services in your region that do offer collection of recyclables?
- The Recycling Coordinator will likely be the point person in charge of reaching out to your school's existing waste hauler. Depending on how successful that correspondence is, the Recycling Coordinator can work with the Recycling Team to ensure the following tasks get accomplished:

- A waste audit is conducted to identify quantity and type of recyclable material generated at your school
- A list of recyclables that can be locally and reliably processed in your school's region is created
- A recycling service provider is identified that accepts recyclables that can be locally and reliably processed in your school's region
- The type of collection system (i.e. single stream or dual stream) available in your region is identified

Based on the results of this process, the Recycling Coordinator and Recycling Team should identify what materials the school's recycling program will target, whether the school's program will be single stream or dual stream, and who the school's recycling service provider will be. At this point, the Recycling Coordinator and Recycling Team should assess and take care of any needs associated with hauling arrangements and contracts.

It is important to note that some recycling service providers also provide collection equipment as part of the service. When speaking with your recycling service provider, ask if they provide collection equipment. This information will help when determining the type of collection points inside and outside of the school, as well as identifying what additional equipment your school will need to acquire for its recycling program.

3. Plan the Recycling Program

Design Program Operations

Now that you have decided on the basics for your recycling program, it is time to determine how your program will operate. A major factor that needs to be determined is where recyclable material will be stored prior to collection by your service provider. The Recycling Coordinator should work with the Recycling Team to conduct school site visits, and identify location(s) that have adequate storage space for recyclables. Because these areas may accumulate large amounts of combustible material like paper, it is necessary to contact your local Fire Chief and Board of Health to approve of the areas where recyclables are to be stored.

After appropriate storage areas have been identified, the Recycling Coordinator should meet with the Recycling Team to determine collection logistics for your recycling program. Decisions that must be made during this meeting include:

- Determine collection points inside and outside of schools
 - For maximum diversion and minimal contamination, place recycling containers right next to existing trash containers.
 - Consider the cafeteria, kitchen, student gathering areas, teacher's lounge, copy room, concession areas, the gymnasium and auditorium.
- Plan what materials your program will collect.
 - Cardboard
 - Paper-copy paper, newspaper, magazines

- Bottles, aluminum cans and milk cartons
- Steel cans and plastic jugs
- Choose collection containers (type and quantity) that are appropriate for program being established (single stream or dual stream)
 - Containers include: Classroom bins, Rolling carts, Outside dumpsters
- Plan how materials must be prepared for collection
 - This will likely be determined by recycling service provider
 - Will you provide a pour-off station for cafeteria liquids?
- Decide HOW recyclable material will be transported from one collection point to another
- Decide WHO will be transporting recyclable material from one collection point to another
- Decide FREQUENCY for how often recyclable material will be transported from one collection point to another
- Establish any goals for recycling program to be evaluated post-implementation

Develop Program Budget and Identify Potential Funding Sources

There are three main costs associated with school recycling programs: collection equipment; collection services; and training/educational resources, including signage and stickers. The Recycling Coordinator and Recycling Team can use information obtained through the waste audit, as well as factors such as the collection points inside and outside determined in the previous step, to identify how many collection containers your school's recycling program will need. SAVTHEARTH member schools may apply for free recycling equipment. To request equipment, register with THE SAVTHEARTH, complete the equipment request form, have it signed by the principal, and submit it. You will be contacted to coordinate picking up the equipment. It is a good idea for the Recycling Coordinator and the Recycling Team to discuss and research other potential grant opportunities to cover costs of recycling programs, such as municipal, state or federal grants.

Obtain Collection Equipment and Educational/Training Materials

After all program operations have been determined and agreed upon, and any outside funding sources have been identified and secured, the Recycling Coordinator and Recycling Team should arrange the purchase and distribution of collection equipment. At this point, all hauling arrangements and contracts organized in Step 2 should be finalized. In addition, all educational and training outreach materials on the recycling program and proper source separation should also be obtained or created. Educational material should be specific to your school's program and the recyclable materials the program will target, and identify whether your program is single stream or dual stream. This is a great opportunity to involve students in the process, especially classrooms that are participating in MassDEP's [SAVTHEARTH](#) program. Educational materials (posters) should be posted at the collection areas, but also can be posted around the school as a reminder to recycle.

4. Implement the Recycling Program

Train Faculty, Staff, and Students

Now comes the exciting part of training everyone how to effectively participate in the program that you have established! It is essential to first train all staff, faculty and students that will be responsible in collecting and transporting recyclables from indoor collection sites to outdoor collection sites. These responsibilities do not necessarily have to fall to maintenance staff, although some schools may find it efficient to have maintenance staff service recycling containers if they are already servicing trash containers. If this is the case, some important suggestions when training maintenance staff include:

- Emphasize that the recycling program is not generating any new waste, simply handling recyclable items from that waste in a different container.
- Assuming you were successful at obtaining buy-in from the managers of maintenance staff, have this stakeholder present at the training to exhibit the fact these directions are new operating policies
- Allow ingenuity, suggesting that as long as staff adhere to the system the Recycling Coordinator and Recycling Team have set up, whatever they view as most efficient for them is fine
- Empower staff by emphasizing the environmental and community good they are helping to achieve

Next comes time to train faculty, staff and students on effective participation in the recycling program at your school. The Recycling Coordinator should work with the Recycling Team to identify the best strategy for educating each group, depending on the size of your school. At a minimum, everyone must be shown exactly how to separate waste so that only acceptable recyclable materials end up in the recycling collection containers. For faculty and staff, a training strategy might be a presentation during weekly or monthly meetings. For students, training might occur at a school-wide presentation, classroom presentation, student made videos, morning announcements or use of the school digital message boards.

Identify and work with “lead” classrooms that can help with outreach and education on the recycling program

- Classrooms participating in SAVTHEARTH program are great Candidates!
- Educate everyone as close to the time of program implementation as possible, especially younger students, so this information is fresh in their minds when they actually start participating

Implement Recycling Program

When all collection equipment and educational signage is in place, and faculty, staff and students have been trained on program operations and source separation, the recycling program should be implemented. Even after the program is implemented, the Recycling Coordinator and Recycling Team should plan for multiple, consistent educational campaigns on the new program.

5. Analyze and Maintain the Recycling Program

Program Monitoring and Maintenance

Congratulations! You have successfully started a recycling program at your school. But the process is not complete. To ensure that the recycling program remains sustainable, the Recycling Coordinator and Recycling Team should develop a system for consistent monitoring of the program for the duration of the school year post implementation. The program should be monitored for efficiency and contamination. Monitoring should also be reinstated for the first 2-3 months of school in subsequent years. Strategies for monitoring the recycling program include:

- Outreach to faculty, staff and/or students responsible for collecting and transporting recyclables within school
- Outreach to the school's contracted recycling service provider
- Outreach to the recycling processing facility accepting the school's recyclables

If contamination in the recycling stream is evident, consider campaigns to re-educate faculty, staff and students. Also, consider creating a recycling competition, where classrooms are challenged to eliminate contamination in their recycling bins. Involving students in these campaigns is a great idea!

Track Volume of Recyclables Collected for "Impact" Assessments

To encourage continuous buy-in to the recycling program, as well as effective participation, the Recycling Coordinator should work with the Recycling Team and the recycling service provider to track the volume of recyclables diverted from the school. This information is essential for promoting the program both within the school and to the community through local media outreach.

Because recyclables are now being diverted out of the trash, the school should be able to reduce the frequency of trash service or dumpster volume. Work with your hauler to optimize service levels.

Identify Responsibility for Making the Program Sustainable

It is unlikely that the Recycling Coordinator and Recycling Team that did such an excellent job at getting your recycling program started will assume those responsibilities year after year. But before they pass on the reins, it is important to develop a plan for ensuring the program is implemented in following years. This plan should include:

- Strategies for identifying roles and responsibilities associated with program
- Strategies for re-education of students, teachers and staff year after year
- Written instructions that include lessons learned and helpful resources (like this guide!) for the team that takes over recycling program responsibility

6. Promote the Recycling Program

You have done such an amazing job, now it is time to promote your hard work! The Recycling Coordinator should work with the Recycling Team to conduct outreach to local media outlets focused on letting the community know about the recycling program at

your school. Use data collected for the “Impact” assessments to identify the impact the program has had on diverting recyclable material from the waste stream. This positive media will reinforce enthusiasm regarding the program and encourage participation and buy-in from all stakeholders. Suggestions for promoting your program include:

- Promote through the SAVTHEARTH program
- Promote through the school/district newsletters and website
- Present program results at School Board meeting
- Contact local politicians and inform them about program success

Within the school community, consider celebrations or awards ceremonies to build and maintain enthusiasm for the recycling program.

GOOD WORK! If you have further questions about starting a school recycling program, contact The SAVTHEARTH .

5.4 Formation of SAVTHEARTH Chapter

The overarching aim of education is the holistic development of children. The changes in the society like urbanization, technological advancement and effects of mass media has led to the need that schools should not only be for nurturing the cognitive development of its students but also for fostering their affective and psycho- motor abilities which would equip them for life.

SAVTHEARTH envisages that education imparted in schools should be such that the learners will be able to develop their talents to the fullest potential. By placing equal importance to both scholastic and co scholastic abilities, children and young people will acquire life skills that will help them to, know their rights, articulate their concerns, build self-esteem, develop self-confidence and resilience and counter negative emotions of stress shame and fear. It would also enhance their ability to take on responsibility for self, build relationships with others in the society and contribute in nation building. These skills can be enhanced through an experiential rather than theoretical approach.

SAVTHEARTH Chapter in schools will empower students to participate and take up meaningful environmental activities and projects. It is a forum through which students can reach out to influence, engage their parents and neighbourhood communities to promote sound environmental behaviour. It will empower students to explore environmental concepts and actions beyond the confines of a syllabus or curriculum. While everyone, everywhere, asserts the importance of ‘learning to live sustainably,’ environment remains a peripheral issue in the formal schooling system. It is not just an extracurricular activity but will be made a priority subject in the national curriculum.

5.4.1 Objectives

- Motivate the students to keep their surroundings green and clean by undertaking plantation of trees.

- Promote ethos of conservation of water by optimizing the use of water.
- Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage point.
- To develop skills of observation, experimentation, survey, recording, analysis, reasoning needed for conserving environment through activities
- Organise seminars, debates, lectures and popular talks on environmental issues in the school to motivate the students to keep their surroundings green and clean.
- Promote ethos of conservation of water by optimizing the use of water and cleaning of water body in the adjacent area.
- Motivate students to imbibe habits and life style for minimum waste generation, source separation of waste and disposing the waste to the nearest storage point.
- Educate students to create awareness amongst public and sanitary workers, so as to stop the indiscriminate burning of waste which causes respiratory diseases.
- Sensitize the students to minimize the use of plastic bags, not to throw them in public places as they choke drains and sewers, cause water logging and provide breeding ground for mosquitoes.
- Organize tree plantation programmes, awareness programmes such as quiz, essay, painting competitions, rallies, nukkad natak etc. regarding various environmental issues and educate children about re-use of waste material & preparation of products out of waste
- Campaign against use of loud speakers, motivate students not to use crackers and fireworks, recycling of glass and metals, use of unnecessary horns.
- Field visit to environmentally important sites including polluted and degraded sites, wildlife parks, etc.
- Organise rallies, marches, human chains and street theatre at public places with a view to spread environmental awareness.
- Action based activities like tree plantation, cleanliness drives both within and outside the school campus.
- Grow kitchen gardens, maintain vermin-composting pits, construct water harvesting structures in school, practice paper recycling etc.
- Prepare inventories of polluting sources and forward it to enforcement agencies.

- Maintenance of public places like parks, gardens both within and outside the school campus.
- Mobilise action against environmentally unsound practices like garbage disposal in unauthorised places, unsafe disposal of hospital wastes etc.
- Beautify selected road side area with plants and flowers and put campaign boards to generate awareness.
- Any other innovative programme on environmental issues

5.4.2 Implementation

The **SAVTHEARTH Chapter** in each school will be made up of teachers and a group of motivated students to learn about the environment and to take action to improve their immediate environment. They will also provide a wonderful opportunity to help generate awareness, build attitudes and enable students to take up activities in the real world, in a way that the constraints of the classroom and curriculum won't allow. Any motivated teacher from the school could become the coordinator for the **SAVTHEARTH Chapter**. Training Sessions will be carried out in school for teachers and students on how to set the **SAVTHEARTH Chapter** up. A written guide to setting up and running the clubs will be provided for the interested schools. The guide will illustrate clearly how a **SAVTHEARTH Chapter** can be initiated in the school, how many students should ideally be in the club and what kind of activities and projects can be undertaken by the club. This guide will help the **SAVTHEARTH Chapter** coordinator in the schools to systematically and successfully run the club and reach out to the community. Schools will also regularly attend the training conducted by the National **SAVTHEARTH Chapter** Board. Reporting Schools committed to the initiative are expected to come up with an annual plan for their Club. Teachers who attend **SAVTHEARTH Chapter** training are given a **SAVTHEARTH Chapter** club evaluation check list sheet, this will be filled in by schools and used for monitoring and evaluation. Awards will be given to encourage the club members.

5.4.3 Arrangements for Capacity-Building and Technology Transfer

Capacity Building by training teachers and students. Create awareness and sensitivity among students towards environmental issues and their connected problems. Impart knowledge to help individuals and social groups gain a variety of experiences in and acquire a basic understanding of the environment and its associated problems. Build attitudes to help individuals and social groups acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection. Teach skills to help individuals and social groups to identify and solve environmental problems and lead students towards action to participate in appropriate action to help solve these problems and avoid future problems.

DECEMBER: Training of Teachers and Students in schools and setting up of club in schools - Batch A - Minimum 5 states

JUNE: Evaluation of all Batch A Clubs and Awards to best performing Schools

JUNE: Conferences for all Interested Members. Training of Teachers and Students in schools and setting up of club in schools - Batch B - Minimum 10 states

JUNE: Evaluation of all Clubs and Awards to best performing Schools

On one side, the chapter will provide a platform for individual student to translate knowledge, attitude and values into action/ behaviors and develop healthy life styles and emerge as confident and responsible citizens. The Eco Clubs in schools will play an important role in creating environmental awareness amongst the future generation. Together these two activities will fulfill students desire to have joyful learning and be productive while meeting with friends and to make a positive impact on their local environment and the country.

5.4.4 Hierarchy of the Chap

