

**‘Campus Eco-Tour’
by
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Introduction

During the past year, our school campus has started to put into place an environmental infrastructure to help lessen the impact of our daily lifestyle on our surroundings. These include the following: Solar water heaters to provide hot water for use in the dorms, guest house and some residential quarters, waste separation in the dorms and residences to be collected for recycling, vermi-culture bins and a compost shed for composting food peelings, a bio-gas unit to produce methane gas from leftover food for cooking, a ceramic ‘jhirpee’ system for plant irrigation, a greywater collector for reusing some of the greywater for use on surrounding plants and trees and the construction of bunds on the sloping hillsides around our campus to retain groundwater and stop erosion. Although most of the students, teachers and staff are aware of these structures and a few actively participate in their operation, most of the school body including parents do not clearly understand from a holistic viewpoint the actual workings or purpose of the system and thus their existence remains on the periphery of our daily life here and completely outside the school curriculum itself.

A. Learning Objectives

1. To increase the general awareness amongst students, teachers, staff and parents about the purpose, daily operation, benefits, difficulties and specific processes of the various structures on our campus that have been set up to lessen our impact on our surrounding environment.
2. To hopefully increase their active participation in helping to make these structures operate more smoothly and efficiently as a result of their understanding of why these structures have been put in place.
3. To integrate the observation and use of these structures into our daily life as well as into the curriculum of our school.
4. To encourage the students themselves to become the teachers, anchors and engaged participants in the development and further growth of such

environmentally sound practices and thus empower them to become active agents of change.

B. Explanation of Activity

I decided that the best way to achieve the aims stated above was to organize a series of student-led 'Campus Eco-tours' that would initially take place at: **a)** Various designated times during the day of our school 'Mela' (Festival) in late-December when the parents all come to our school to enjoy a day of dance, drama, and student events. **b)** A weeklong series of eco-tours for the entire school body in early-January.



C. i. Preceding and Follow-up Lessons

Groups of four students from Grades 7, 8 & 9 were asked to volunteer to train to become 'Eco-Tour Guides' by: **a)** Making a list of all the environmental structures on our campus that exist to save energy and water, to recycle dry and food waste and to lessen our impact on the environment in general. **b)** These students were then asked to divide

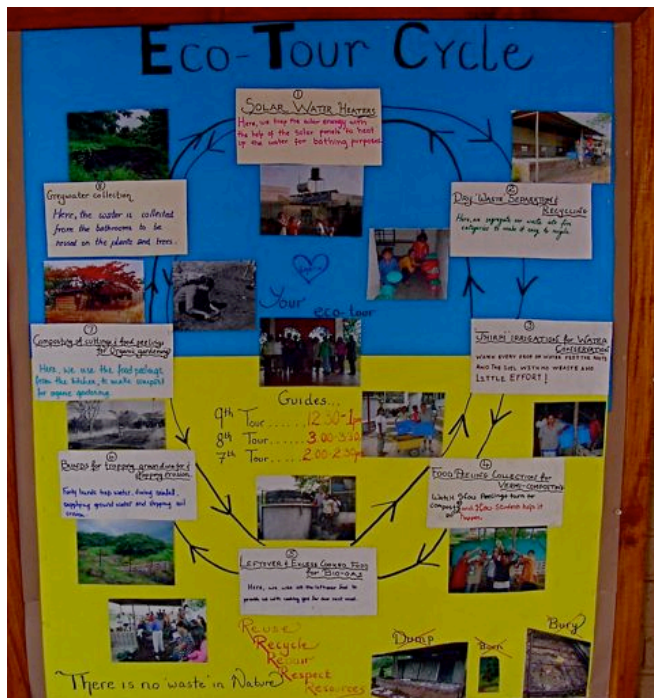


these structures among each other according to interest and to prepare questions to ask staff members and teachers so as to gain a overall knowledge about the history, costs, benefits, drawbacks and functions of these structures along with the necessary maintenance and staffing of each. **c)** Four preparatory 90-minute meetings were held during which students shared their findings, discussed differences of understanding and information, decided on the best route for the tour, decided on the order in which they would lead the group and anticipated questions from tour participants. Our administrative officer was invited to the second meeting to confirm, clarify and add to any of the details they had already collected. In the third meeting, the entire group followed the route that had been decided on and discussed where each of the guides would stand as the tour proceeded and at each stopping point, the best language to use to keep people moving and together and where certain directions might be necessary due to space or obstacles. In the final meeting, each grade led the other members on the tour to practice all of the above as well as to discover the timings and to fine-tune their various presentations and responses to questions. **d)** It was decided to make an

‘Eco-Tour Map’ that would be

placed at the tour’s starting point outside the Principal’s office.

Students from Grade 7 volunteered to pose for photographs at the various locations and to approach one of the teachers on campus and select some of the photographs from his collection. Since the students were extremely busy preparing were extremely busy preparing for other Mela events, I volunteered to design and prepare the map.



D. i. Outcomes Achieved

- a) On the day of the School Mela over 100 participants took part in the three tours. This was far beyond the expected numbers and reflects a growing interest amongst parents in the environmental infrastructure of our school. The participants listened carefully to the students' explanations and asked a number of both rudimentary and insightful questions reflecting the diversity of awareness that exists amongst the older generations regarding such fundamental environmental activities as composting and garbage separation.



C. ii. Preceding and Follow-up Lessons

Following the success of their Mela Eco-Tours, the guides were eager to continue to educate their fellow students and teachers about our environmental facilities. A follow-up meeting was held for all participants to share some of the difficulties and possible gaps of information which had come to light during the earlier tours and to discuss how the student & teacher tours could best be conducted. Since I wanted this to be an opportunity for students and teachers to consider ways of using our surroundings more in their subject curriculums, I created a worksheet for students that could be filled out during the tour and a separate one for teachers to fill in after they had completed the tour.

Eco-Tour Worksheet

Name: _____

1. Solar Water Heaters

- A. Heating water using solar heaters is more expensive than using electricity. **T F**
- B. Solar heaters cannot keep the water hot overnight since there is no sun. **T F**
- C. Solar needs batteries to store electricity but not to heat water. **T F**

2. Dorm Waste Separation

- A. Dorms are separating waste into two categories: food waste and dry waste. **T F**
- B. Biodegradable waste can't be recycled so we don't need to separate it. **T F**
- C. If we all separate our waste properly we can recycle most of our garbage. **T F**

3. Jhirpee:

- A. Are made out of plastic and spray water over the plants. **T F**
- B. Save water as there is no evaporation and water feeds the roots directly. **T F**
- C. Takes more time and labour than just spraying plants with a hose. **T F**

4. Bio-gas

- A. Uses chemicals to turn leftover food into gas. **T F**
- B. Produces methane and therefore contributes to climate change. **T F**
- C. Turns 'waste' into a fuel for cooking and thus saves energy and money. **T F**

5. Food Peelings (Collection)

- A. Is something that the volunteer students generally enjoy doing. **T F**
- B. In most places are thrown out with the garbage and dumped in landfills. **T F**
- C. Are collected every week and taken away to Pune. **T F**

6. Food Waste pits

- A. Is the same as composting since the food biodegrades anyway. **T F**
- B. Is the same as wasting the food twice since we are not making use of it. **T F**
- C. Is unhygienic and can cause disease and upset nature. **T F**

7. Incinerator

in sharing and discussing the results and voicing their opinions and ideas about what they had seen and learnt during the tour.

Scenes from Sahyadri School Student-Led Eco Tours

Class 7 Leading Class 6



The old way: Incineration



Bio-gas from leftover food



Greywater collection for irrigation



Encouraging dorm-waste separation

Class 8 Leading Class 8



Why jirpee irrigation saves water



6 Category separation of school waste

Scenes from the Teacher's tour (led by 9th)



Explaining the solar water heaters



Sharing the simplicities of jhirpee



Hidden workings of greywater collection



Riveted by bio-gas explanation



How the waste separation works



The wonders of vermi-culture!

D. ii. Obstacles Faced and Overcome

1. Scheduling nine eco-tours for which all of the leaders would be available was overcome by holding as many of the tours as possible during the students' regular Environmental Education blocks. Three were held over the weekend and on a school holiday after consultation with students and teachers. Permission had to be sought from about ten teachers for individual tour leaders to be absent from class but since it was for a learning/teaching activity teachers were generally agreeable.
2. The cooperation of our director of administration in providing details regarding costs, volumes and maintenance procedures for the student tour leaders and in accompanying us on the practice tours was invaluable.
3. In the first tour, students were given the True/False worksheet to fill-out as the tour proceeded. It soon became clear that the students were focusing mainly on getting the answers to the printed questions rather than to listening to the entire explanation about the respective locations. It was thus decided to only hand out the worksheet at the conclusion of the tour and to require students to complete it during prep.
4. Despite daily invitations by the tour leaders during morning assembly for teachers to attend any one of the tours, only a few teachers had joined in by the end of the week. This clearly was due to a mixture of academic commitments and a possible lack of interest. It was thus decided to conduct a special 'Teacher Tour' at the end of the tour series during the time usually designated for the weekly teacher's meeting. By scheduling it at this time, teachers' attendance for the tour became compulsory!

Excerpts from Student's and Teacher's Comments

I realized that our school and all of us have taken a big step towards saving the environment. Though we are just at the start of the green revolution we are breathing new life into our mother earth. (Vinit, Grade 7).

In Sahyadri we are trying to recycle and reuse everything and to become as eco-friendly as possible. I never realized that our school is trying so hard to reduce global warming and make the earth a better place to stay. The Eco-tour made me realize that if we don't think and act more for the environment we will be in deep trouble. So we should start thinking Global and acting Local! (Nishval, Grade 8).

the operation of these facilities. I could visit these facilities with my students and ask them to write about them in Marathi (Marathi teacher)

*I was already aware of all or most of the facilities we toured today but did not really know much about how they operated. Today's tour has increased my level of interest in the operation of these facilities. The **solar water heaters and waste separation /recycling facilities** would be useful for the Medical Unit and for each house and with regards to all the other systems, I can discuss them with the children while walking around the campus and ask them about their importance and thus learn more about them. Can we grow at least 50% of our food organically? The school may need to cultivate some land and have domestic animals. Children should carry these ideas to their homes and also cut down on their use of cars and electricity during their holidays. (School doctor)*

I was already aware of most or all of the facilities we toured today and knew how they operated. Today's tour has increased my level of interest in the operation of these facilities. I have started thinking about how I can utilize some of these facilities in my classroom teaching and will let you know as soon as I find something really connected. (English teacher)

E. ii. Outcomes Achieved

1. As a result of this week-long series of eco-tours, led by just **twelve** student volunteers, our entire student body of over 220 Grade 4 – 9 students as well as over 35 teachers and staff are now aware of the processes that have been put into place during the last year to alter our policy of 'Dump, Bury and Burn' to one of 'Reduce, Recycle and Return'. The structures that either were invisible and ignored, (garbage pits, incinerator, recycling bins, vermi-culture), or visible but not really understood have now been acknowledged and their problems and benefits explained. Time will tell, but as a teacher and environmentalist, my hope is that this awareness will lead to a greater empathy amongst the school body as a whole to facing up to our responsibilities toward these processes that (ironically) often may seem dirty and smelly to urban dwellers, and in some cases to actively support their maintenance and growth. In the long run this may lead to a more positive attitude toward what each of us can do to lessen the impact of our daily lifestyle

on our environment and, rather than seeing these processes that deal with ‘waste’ as something to be taken care of by others, view them as a collective challenge that can be undertaken for the benefit of our school and our surroundings.

2. This activity has also hopefully led to a sense of empowerment amongst the students that they can be the leaders and teachers regarding the various changes that must occur if we wish to move toward a more sustainable and less polluting way of life. Some of them may even use their ingenuity to suggest ways this can happen rather than waiting to be led by a generation which has already become used to a paradigm that rarely considers the long-term impact of our increasingly wasteful lifestyles on our environment.

3. Finally, it is hoped that this activity will lead various subject teachers to consider ways to include the eco-structures on our campus into their curriculums and thus use them as subjects of ongoing study and observation from an academic perspective rather than purely functional objects separate from our classroom studies.

Afterword

The hidden member who supplied much of the factual data to the student eco-tour leaders and whose cooperation and assistance was a fundamental ingredient for the success of these tours was our patient and visionary Administrative Director, Sharad Patil.

Following is a summary of some of the key details about the eco-structures in place at Sahyadri School provided by Mr. Patil in response to a list of questions I asked him to complete. A deep bow of thanks for his kind cooperation and insights!

Waste Management and Resource Conservation at Sahyadri School **Creating an ‘Eco-Friendly’ Campus**

A. Solar Water Heaters

1. How many solar water heaters are there on our campus?

Twenty-one with varying capacities from 125 lpd to 1125 lpd.

2. When were they installed?

September 2000 & June 2001

3. How much did each unit cost?

In 2000, the cost per litre of capacity/day was Rs. 171

4. What are the environmental benefits of such a system?

a) Saves electricity b) No need to use fossil fuels hence no global warming emissions c) Most economical and effective use of solar radiation