

EXPLORATION OF SUSTAINABLE PRACTICES: ENGAGING STUDENTS IN ECO-FRIENDLY INITIATIVES AT SNEHA SCHOOL SULLIA, KARNATAKA



Aligned with India's commitment in the Paris Accord, the next step in this endeavor seeks to transcend waste and pollution management, turning these challenges into opportunities for resource conservation and environmental sustainability.

Education trend towards sustainable practice

Education exerts a transformative influence, shaping individuals into informed and conscientious members of society. It possesses the capability to cultivate critical thinking, foster inclusivity, and ignite a lifelong pursuit of knowledge. Beyond the transmission of knowledge and skills, education delves into the domain of values, ethics, and social responsibility, serving as a guiding force that instills virtues, empathy, and a sense of civic duty. Whether within formal classrooms or informal settings, the lessons acquired extend beyond subject matter, impacting how individuals perceive and engage with the world. The empowerment of students with real-life skills through the education system is a revolutionary pursuit surpassing traditional academic knowledge. These skills enable individuals to adeptly navigate dynamic situations, make informed decisions, and contribute meaningfully to society and the broader environmental issues.

In the contemporary era, integrating life skills and environmental knowledge into school curricula holds paramount importance, primarily driven by the imperative of resource conservation. Initiating education with a focus on waste



management, encompassing practices like recycling, reducing, and reusing, serves as an initial step. This approach aids students in the earlier days discerning the inherent value of resources and underscores the necessity to curtail waste generation, thereby contributing to the broader objective of environmental preservation.

Urban India generates 62 million tones of waste (MSW) annually, and it has been predicted that this will reach 165 million tones in 2030. 43 million tones of municipal solid waste is collected annually, out of which 31 million is dumped in landfill sites and just 11.9 million is treated. In a country like India, effecting a rapid change in

people's behavior is often challenging, particularly with the urgent need for action amid the relentless population increase (India surpassed the 1.2 billion mark in 2013, and currently, the population has exceeded 1.4 billion). Addressing this situation requires immediate attention and strategic interventions to initiate behavioral shifts. Educational facilities serve as influential role models for children nationwide, playing a pivotal role in shaping waste habits among younger generations. The commitment of educational facilities to sustainable practices not only aligns with broader environmental goals but also ensures that the next generation is equipped with the awareness and habits

EDUCATION, AWARENESS, LIFE SKILL , AND ENVIRONMENT



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As educators, we bear a significant responsibility to actively lay the groundwork for future generations to be environmentally conscious and adopt sustainable habits. The students in your classroom are the potential decision-makers of tomorrow. How can you contribute? By providing them with knowledge and life skills that go beyond the conventional curriculum. Prioritizing waste reduction, promoting reuse, encouraging recycling, and advocating for composting constitute the initial steps. Additionally, exploring alternative technologies for waste disposal beyond incineration and landfilling is crucial. Fostering a shift in mindset toward resource conservation and waste reduction becomes imperative to bridge the gap between the perception of resource abundance and the importance of sustainable behaviors.

necessary for a more sustainable future. Things can change even faster if we all adopt the practice of segregating waste in our homes, and stop dumping mixed waste, and littering.

fostering entrepreneurial learning in a natural, open-air environment. The school's commitment empowers the next generation to emerge as sustainability and environmental consciousness leaders.

One story of such initiative towards waste management and environmental sustainability is prominently reflected at **Sneha High School in Sullia**, Karnataka; an educational institution consistently at the forefront of providing holistic, student-driven education with a mainstream course curriculum. The school campus dedicates over 60% of its landscape to lush vegetation and herbal plants, boasting a diverse array of plant species. Varieties from Fabaceae (Sesbania, Gliricidia, Tamarindus Indica, sickle bush, Indian coral tree, etc.), Moraceae (Peepal, Goolar, Banyan, wild jackfruit, etc.), Poaceae (Vetiver, bamboos, lemongrass, etc.), Liliaceae (aloe vera, onion, garlic, satavar, etc.), Apocynaceae (plumeria, nagkuda, etc.), Lamiaceae (patharchur, thyme, etc.), and numerous other botanical families flourish on the premises. This rich diversity creates an ideal environment on the school campus for immersing oneself in the study of nature amidst nature. This seamlessly integrates with the community,

“However small is your garden, you must provide the two of the serious Gardner's necessity, a tool shed and a compost heap”

My engagement in this school commenced with waste reduction projects aimed at generating interest in solid waste management and composting of available wet waste. This initiative specifically targeted the reduction, reuse, and recycling of material waste within the school premises. A successful waste reduction project not only emphasized preventing waste but also delved into understanding its ultimate destination and the broader impact on the local environment, including land, air, water, and other living entities. School gardens serve as educational hubs for such projects, facilitating comprehensive training, life-skill learning, and heightened awareness among students.

Considering this, one of our overall objectives for the school garden is "to learn how the composting process works and how to put it into practice. I, along with 10th-grade students and some teachers, focused on achieving this goal by witnessing the composting process first through a class presentation and later at the school garden. By creating nutrient-rich compost that nourishes the soil and fosters the growth of new life, we aim to educate people about the ecological life cycle and sustainable living. It's crucial to note that approximately 60% of the waste in our homes is organic matter, mainly of plant origin and prone to biodegradation. Teaching children simple techniques to manage and utilize these organic materials is important. Given the increasing cost of dumping, composting on both small and large scales offers a more sustainable waste management approach, leading to cost savings. Through composting, we commit to the organic matter cycle, actively involve and instill a sense of responsibility in children, and promote the development and assimilation of the circular economy concept. This concept strives to prolong the lifespan of products by leveraging generated waste, and reintroducing it into the system as new raw materials, making it a more sustainable model compared to the traditional "linear economy."

A notable initiative implemented in our school revolves around the establishment and application of composting for organic waste sourced from various outlets. This endeavor has been effectively executed under the guidance of our advisory board member, Mr. Arun Kashyap, an environmentalist, agroecologist, and sustainability expert. The school's composting program serves as an instructive practice, nurturing the development of waste management, environmental attitudes, and capacities among our students. Sensitizing them to environmental concerns and instilling sustainable habits is paramount. Therefore, it is essential to impart education on ecology, advocate for the use of natural and homemade fertilizers, promote compost creation, and encourage the recycling, reduction, and reuse of waste. Additionally, placing emphasis on respecting biodiversity and instilling the principles of a circular economy are crucial aspects of fostering awareness among both students and the entire educational community regarding responsible resource utilization.



At School Auditorium



Interaction with School students



DR. CHANDRASHEKHARA DAMLE
President
“Sneha Shikshana Samsthe”



ARUN KASHYAP
Environmentalist, Agroecologist
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Sneha High School in Sullia, Karnataka has taken the initiative to integrate waste management and composting into its curriculum, aligning with its focus on conservation and systems thinking in sustainability education. Through this, the school has significantly reduced the materials sent to incineration pits and landfills, along with minimizing unrecyclable waste on the premises. Transitioning from single-stream recycling to the introduction of new composting programs, and School is actively tackling its waste crisis. To raise awareness among students about their daily waste generation, they will observe and document the amount of trash produced in a day. This exercise will make students conscious of the types of materials they discard. Waste reduction projects not only educate students about recycling but also offer a broader platform for learning beyond the scope of recycling alone.

Start the Program activity

On-site Composting

The tasks for composting in on-site bins were organized by the 10th-grade student team and their chemistry and biology teachers. The schedule was based on the school lunch break, volunteer availability, and coordination with the kitchen and custodial staff. The initial step involved finding an adequate space for the compost bin within the school garden, ensuring easy access for insects, bacteria, and fungi. It was strategically placed under deciduous trees to receive the necessary sunlight in winter and shade in summer.



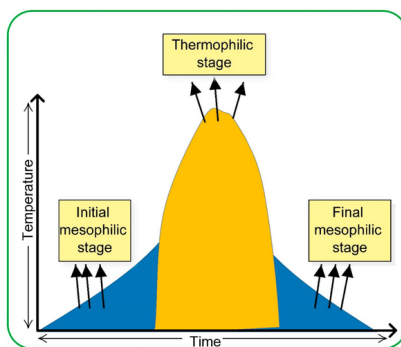
Teacher and students involved in composting practice

A cylindrical compost bin (composter) made of wire mesh, one meter in diameter and approximately one meter high, was constructed to facilitate oxygenation. The bottom part remained open to allow the entry of insects, while the top part had a wooden cover to prevent water from entering during rain. Once the compost bin was set up, organic waste generated during lunchtime was deposited. Two types of waste were managed: wet waste, rich in water and nitrogen (remains of fruits and vegetables), and dry waste, mainly carbon-based (dry branches, leaves, straw, cardboard). The ratio was maintained at one part wet material to one part dry material in winters and recommended two part wet material to one part dry material for proper humidity in summers. Critical activities involved mixing and aerating to oxygenate the upcoming compost.

Additionally, the pile turned with a long stick hoe and in every five days gap, after marking the completion of further filling once pile reached 70% of the composter's height. In the first filling, a bed with thick dry material was prepared at the bottom to facilitate air circulation. It was recommended to keep the compost bin at least half full whenever possible.

To comprehend the school's composting process, we divided it into two main phases: (a) Decomposition and degradation, where bacteria and fungi generate heat, reaching temperatures of up to 65°C, sterilizing pathogenic organisms and seeds; (b) Cooling and maturation, with bacteria working at temperatures below 30°C, fostering the appearance of small animals and contributing to mature compost formation.

Ideal composting conditions involve material particles measuring 1 to 2 inches in diameter, maximizing microbial activity and ensuring efficient composting. While smaller particles accelerate aerobic decomposition, excessively tiny ones can hinder oxygen movement, reducing the composting rate. Additionally, minuscule particles increase moisture retention and decrease airspace, impacting the composting process. Materials with hard textures or high lignin content generally decompose slowly, such as leaves with thorns or leathery consistency due to high lignin content.



Temperature changes in composting.

Maintaining moisture between 40% to 60% is crucial for supporting microbial metabolic activities during composting. The composting process initiates with moisture from initial water addition or metabolic water produced by microorganisms. Microbial cells depend on water for metabolic activities,

and the organic molecules' metabolism by microorganisms is only possible when dissolved in water. Moisture decreases as composting progresses. Co-composting combines materials to achieve an optimal Carbon:nitrogen (C:N) ratio, expediting the composting process and enhancing fertilizer quality. Highly nutritious substrates accelerate composting, while materials with low nutrients, high cellulose, or high lignin content decelerate it. High ratios hinder microbial utilization, necessitating activators like sewage or poultry droppings with a low C:N ratio. Separating longer composting materials prevents them from slowing the overall process, and the resulting composts can be assessed for nutrient release over an extended period.



The composting program has proven advantageous for the entire school community, fostering awareness about the environment, resource management, and collaborative efforts. It is widely acknowledged that having an organic garden in a school enhances one of the life-skill learning process. This program becomes even more beneficial when incorporating composting, directly contributing to reducing the volume of organic waste from the school canteen sent to landfills. It diminishes the reliance on inorganic fertilizers and conserves irrigation water, thanks to the compost's water retention capacity. Acting as a natural fertilizer, the compost supplies essential nutrients for plant development, promoting a sustainable and cost-effective way to fertilize without relying on external products. This knowledge has been disseminated throughout the educational community, fostering awareness among students, adults, and the broader community about the environmental impact of daily actions. It instills values of responsible consumption, promotes recycling, and nurtures profound respect for the environment.