

Creating Eco-Friendly College Campuses in Trivandrum City, Kerala

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As aptly said by our ancestors 'Nature is the best teacher'. No wonder why our predecessors looked up on to the Nature to understand life in its fullest. Becoming aware of our surroundings and living in harmony with nature is the best lesson one can ever learn, for a healthy living. Protecting environment is the responsibility of each one of us, so that environmental education may not be confined to any group or society. Every individual is bound to save the environment by eco friendly lifestyle. The necessity of environmental education for students has thus become the need of the hour. The Nevada Conference of the International Union for Conservation of Nature and National Resources of 1970, defined that, "Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings". Environmental education is therefore a lifelong process to seek significant solutions to environmental and its related social issues. For this positive attitude towards environment has to be cultivated among the people including children for making them aware to the need to save the nature. They should be encouraged to understand their surroundings. Conserving nature in its environment will be much easier if children are taught about depleting resources, environmental hazards being caused due by unscientific approach of the mankind towards nature. Hence raising an environmentally educated generation has become a high necessity for the conservation of natural resources and for a greener future. Environmental education is therefore a sort of investment for future that turns into a valuable asset over a period of time.

Environmental education deals with man's inter-relationship with nature and his surroundings. Environmental education is a study of factors influencing eco-systems, mental and physical growth, living and working condition, decaying cities and population pressures. The goal of environmental education is Environmental Literacy. One of the main aims of the educational institutions like Colleges is to empower students with a deep understanding of environmental education and also to give an in depth knowledge to solve the environmental issues. Environmental education is thus a process which helps students to explore environmental issues, involve in problem solving, and take action to improve the environment. Students should be taught to explore the theoretical foundations of learning along with positive environmental behavior by shaping their environmental education. They should acquire skills for applying evaluation strategies on environmental issues in real-world contexts. For this they should be provided with positive informal experiences outdoors to enhance their 'environmental sensitivity'. According to R.A Sharma (1996) "Environmental education refers to the awareness of physical and cultural environment and perceives its relevance of real life situation. Students should be empowered to conserve the Nature. Several instruments on environmental learning may be used for measuring attitudes and knowledge of children like the Children's Environmental Attitudes and Knowledge Scale (CHEAKS) (Leeming, Dwyer, and Bracken 1995) or Children's Attitudes Towards the Environment Scale (CATES) (Musser and Diamond 1994), etc. Through validation the researchers have recognized four environmental learning components with various sub-dimensions: knowledge, affect, skills, and environmentally responsible behavior (e.g. Goldman et al. 2017; Hollweg et.al. 2011; Negev et. al. 2008). These have to be developed in students.

Education should be made a holistic process. This is how environment education can pave the way to a sustainable future. It should be integrated within the college and school system. As knowledge creates awareness, and the right attitude is the prerequisite for sustainable social action, it should be developed from even very young age. Students should be made aware on how to gain knowledge and make use of it in the long run. The acquired knowledge should help them to connect with the learned knowledge to the prior ones which they gain from their experience with nature so as to link it with their own personal lives for practicing it. Education for sustainable development should therefore be included in the academic curriculum as it is difficult to be tackled separately. The environmental issues faced by the colleges should be included as examples and the students should be encouraged to think critically on problem solving techniques to find amicable solutions to the problem. Environmental movements have to be brought into

force for generating awareness on the various environmental problems faced by society, to the public including the student community.

Constant efforts are to be made for protecting environment or else a catastrophic break down in the earth's biosphere will occur due to the gross environmental destruction. To minimize the issues of solid waste management, cleanliness and the urge to save the environment has to be cultivated from younger age itself. Students have to be taught on how to take care of the Mother Nature by saving the environment, in its natural form. They should be made aware that a thing which is thrown out after use or which is not kept in its proper place is treated as waste. So the first thing to be taught to students, preferably from the very young age itself, is to minimize the use to what is required and to make use of the available resources in its minimum to its fullest, so that the child will become a part of saving the environment, by reducing the waste production. The unwanted things of his can be hand over to another person who might be greatly in need of it. If a thing is fully worn and cannot be used further, it can be given to agencies which collect such items for recycling. Thus every individual has to be taught the three key principle of reduce, reuse and recycle. As the children grow older it is easier to make them understand the necessity of being eco-friendly for saving the environment, for future generations to come.

College is one of the best places where students can be taught preserve nature. Organized efforts can be made to teach about the natural environment & its functions and about how human beings can manage their behavior so as to suit the ecosystem to live sustainably and in harmony with nature. Knowledge, awareness and sensitivity to the environment have to be developed among students. Efforts to create attitudes of concern for the environment, motivation to improve & maintain the environmental quality and skills to identify & solve environmental issues have to be developed from very young age itself. Students can be made to participation in activities that lead to the resolution of environmental challenges so that they get the feeling that they are also responsible for conservation of nature. This could help them to turn their back to plastic and other non-degradable wastes. Students should be made aware of the environmental hazards of these non-degradable wastes so that they would not prefer the use and throw items. As part of this, Colleges and Universities under Higher Education Department of Government of Kerala have come forth with numerous initiatives to minimize the use of non-degradable materials like plastics and other non-degradable items inside the campus so as to develop a garbage free green belt zone in and around the college campuses. The motto "**My waste, my responsibility**" put forth by the Trivandrum Corporation has been taken up by the student community of colleges & schools in the city. Disposal of waste at its origin called "*Uravida malinya samskaram*" has been given due importance in Colleges and other educational institutions as well. Aerobic bins and compost pits has been introduced in the colleges to collect and dispose the degradable wastes. Students have also been urged to do so at there home, with the help of '*Suchitwa mission*', an initiative under the State government. Likewise '*Malinya mukta keralam*' (Waste free Kerala) is another initiative taken up at Government level which has been implemented to make it one of the major goal of the State for keeping the surroundings clean and eco-friendly. For this, the issues in solid waste management are being analyzed and permanent solutions to it are being sought out. Campaigns are being conducted for the students and to the public on illegal garbage dumping and the hazards of doing so. Reusable wastes and recyclable waste are separately collected and handled from its origin itself. '*Haritha Keralam mission*' (Green Kerala mission) a State government initiative aims in conversion of water, proper waste management and organic farming.

Some of the major environmental problems are waste management, pollution of air, water & soil, health issues due to unhygienic surroundings, biodiversity conservation, conservation of natural resources, environmental management issues, and sustainable development programme. Green solutions have to be found out for the environmental issues that the world is facing today. Forest eco system and environment has to be protected by planting maximum number of trees to increase the forest cover of the earth. This could help in reducing global warming. For this conservation of trees and planting new saplings has been given due importance in educational institutions by the State government. On June 5th - the World Environment day and on many other occasions Kerala Forest Department in collaboration with educational institutions like schools and colleges conducts awareness programmes on conservation of forests. Through the project "Ente Maram" (My tree), tree saplings are distributed to students of schools and colleges to plant them in their immediate surroundings so that they can water & manure them and can cater to its needs, thereby enhancing the forest cover.

Water is a limited resource which has to be used very carefully. Access to safe potable water is one of the foundation stones for the development of a healthy community. Lack of clean water has serious effects on the society including the student community which can be seen even in the students' academic

performance and attendance rates. In some places even in Kerala, it is the responsibility of the children to collect water for the household which prohibits them from having even primary education. Therefore necessary steps have to be taken for getting fresh potable water available for all. For this scientific and strategic methods to replenish the ground water resources has to be implemented for which the co-operation of the society as a whole is needed. Awareness should be provided to the society on preservation of water resources and the ways to safeguard it from being contaminated. It should also be included in the curriculum of students so that they scientifically understand the ways and means to conserve the water resources. They have to be taught the necessity of water conservation and also not to waste water. It should be made aware that every drop of water is valuable and so has to be used very carefully. They should be made to ensure that the water once used for washing bathing and cleaning should be reused for purposes like watering plants. Availability of fresh potable water is to be ensured in all educational campuses in the district. The need for not contaminating the water sources and the proper & minimal usage of water are also being made aware for the students. Programmes focusing on imparting awareness on water resources, its harvesting techniques have to be provided to students so that it should enable the learners to act as trainers and organizers for efficient water harvesting, in future. The student community thus needs to be educated about the significance of storing, recycling and reusing of water for conserving it.

Conservation of soil has also to be taught to students. The importance and advantages of scientific methods like stone pitched contour bund system, staggered trench and strip terrace should be taught to children for conserving the soil. They should be made aware that unsustainable subsistence farming and the slash & burn methods practiced even now in some areas could cause deforestation, loss of soil nutrients, massive soil erosion and sometimes even desertification. By soil conservation we can protect the soil from being washed away. Chemical fertilizers and pesticides used widely for farming can also in turn cause malnutrition of the soil. It should be ensured that earthworm still exists in soil for which moisture content of the soil is to be retained. Scientific techniques for improved soil conservation like crop rotation should be practiced for retaining the fertility of the soil. For this proper knowledge should be imparted to students, who are the future citizens, to entertain only proper cultivation methods, as healthy soil is vital for plant growth and for natural vegetation. Sustainable ways of agriculture for sustainable development should be practiced for maintaining proper relationships between organisms and their environment. Therefore necessary steps have to be taken to conserve the soil as it is an essential part of environmentally friendly lifestyle.

Health education is being made compulsory for the young minds of the colleges. Personal and environmental hygiene is being cultivated in students of all ages including college goers. Practice of hygiene is made compulsory in schools and colleges. For this, awareness programmes, trainings and workshops are being conducted at grass root level. Awareness on proper sanitation is also being given to students. Responsibility of cleanliness of the surroundings including their class rooms, toilets and the institution as a whole is made to vest on the students which in turn help in developing a leadership quality in them. Committees are to be formed with representatives of teachers, students and non-teaching staffs, to monitor and scrutinize the maintenance of the green protocol in the institution, though out the year, without fail. Nature clubs and environmental clubs has also been made compulsory as part of the curriculum system. Students should be taught to respect and care for their surroundings.

College students and the school goers are encouraged to collect plastic and other non-degradable waste from their immediate surroundings and provisions are made to collect these cleaned non degradable garbage in colleges and schools so as to hand it over to the agencies that in turn would process it for future use. This process of collection of waste by the children is being done outside the scheduled working hours without hindering the college hours. For this grace marks can also be given so that it could encourage the students in doing so and can also create a positive energy in them for keeping their environment clean.

Trials are being done to implement the following to make a disciplined life style in the college campus avoiding waste production and for embracing an eco-friendly standard of living. Instructions are given not to use plastic carry bags & plastic covers inside the educational campuses, instead cloth bags, jute bags, coir bags and paper covers are encouraged. It has been advised to use ink pens instead of the use and throw ball point pens. Students are being encouraged to use steel or brass water bottles instead of plastic ones. And also not to use plastic plates, plastic cups & plastic spoons which are carcinogens in nature. Steel Tiffin boxes, steel plates, cups & glass made of porcelain, glass or steel should only be used inside the college campus. College canteens are allowed to use only steel plates & glasses. It has been strictly instructed to avoid plastic materials during celebrations and programmes. No banners, posters, flags, flux or decorations made of plastic are entertained in the college campus. Instead cloth banners and chart papers are being used to make posters. E-campaigns are also conducted during college elections for beating plastic pollution.

Students are engaged in cleaning drives which motivates them to stop littering. Other projects like replacing plastic water filters with clay ones, formation of a Green Protocol Appraisal Committee should also be implemented. Students can be taught to make paper bags out of newspaper and also to create carry bags from old clothes and to convert useless materials to crafts which can be sold in the campus store itself.

Ample clean and potable water is one of the major necessities of educational institutions. Many times lack of water supply causes many problems in colleges and schools. So it is better to find alternative solution making the institution self sufficient in its water production. For this the rainwater falling on the roof of the institution can be collected into underground covered pits and trenches near the well so that the wells get replenished though out the year based on the availability of rain. As there is no shortage of rain in the district of Trivandrum, by this method the wells get recharged though out the year creating self sufficiency. Disease free fresh drinking water should be made available in the campus so that there won't be any need for the children to carry water to the institution. Proper awareness should also be given to students to avoid wastage of water at household and in public places so as to conserve our water resources. Hazards of polluting the water should also be made aware of to the students. It should also be ensured that polluted or contaminated water are not being collected anywhere in the campus which could cause breeding of harmful mosquitoes which can cause dangerous diseases like dengue, chicken guinea, cholera, etc. Awareness programmes to safeguard the water resources and to protect the environment should be given to the students and they should be made a part of the conservation programme by adopting behaviors and practices that protects the environment. This will generate the necessity to care for the nature in them.

Educational institutions of Trivandrum city are being made self sustainable. Solar panels are installed in the educational institutions at Government subsidized rates so as to become self-sufficient in energy conservation. Self sufficient degradable waste disposal methods like bio-gas plant & compost pits for degradable waste. The gas produced in the bio-gas plant being used in the college canteen and the food waste from there being used to produce bio-fuel. Rain water harvesting are done using covered trenches & pits for replenishing & recharging the college wells. Growing vegetables, fruits and other ornamental plants from the waste water collected from wash basins in the campus. Students can be given turns in gardening. Incinerators have been fixed in campuses for disposing sanitary napkins. Necessary arrangements have also been made in the campuses to collect the degradable, non-degradable and hazardous electronic wastes separately and to dispose them accordingly. Degradable wastes are converted to manure and bio-gas and non degradable waste are handed over to the scarp merchants for recycling. Wastes are never burned nor buried in the campuses which pollute the air and the soil. Toilets are provided with ample water supply by implementing rain water harvest methods. Taps which help in not to waste water are used inside the campuses. It is ensured that waste water does not accumulate anywhere causing the growth of mosquitoes. So the grey water is recycled and reused.

Students have a major role in rebuilding the nation. They are the future generation. So they have to make aware that the limited resource available on earth should be used judiciously. Scientific and strategic methods have to be followed in the use of these resources so that they can be stored for coming generations. The overall goal of environmental education is to create environmental action so as to improve all ecological relationships including the relationship of humanity with nature and people with one another (Beigrade Charter, 1975). For this Green Protocol has been implemented. It takes initiatives to reduce the use of non-degradable materials and urges the community as a whole including the students to avoid non-degradable materials so that the earth won't be harmed. Reducing the use of natural resources to its minimum is taught to students in Trivandrum city as in other parts of the country. For this awareness programmes are being conducted to make them aware of the need to store the natural resources for the coming generations. The student community is thus made aware that man is not an independent entity but a part of the environment.

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