

Focal theme



**Science for
Sustainable Living**

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“No one will protect what they don’t care about, and no one will care about what they have never experienced.”

– David Attenborough

Human life is plagued by environmental issues related to pollution, climatic calamities, degradation of natural resources (land, soil, water, flora and fauna etc.). These drastically affect ecological balance and ultimately lead to problems like climate change (both at micro and macro levels) which, in turn, influence the overall quality of life (QoL) for most of the life-forms on Earth. One of the main reasons for such deleterious effect is due to human activities driven by unjustified value systems based on the spirit of *‘more you consume or use, more you will develop’*, and *‘faster is smarter’*. In this context, there is a global consensus for rethinking and redesigning of our thought processes, values and activities that aim for ‘Sustainable Living’.

Sustainable living is the practice of reducing demand of the human being on natural resources both at personal and community levels, with suitable replacement(s)/alternative(s). It pleads for a lifestyle which reduces the impact of human way of life on planet Earth, through judicious use of natural resources preventing pollution, rational decision-making in the use of materials, judicious consumption of energy, alternative method(s) of transportation and recreation, etc.

In fact, "sustainable lifestyle" is a cluster of habits and patterns of behaviour embedded in a society and facilitated by institutions, norms and infrastructures that frame individual choice, in order to minimize the use of natural resources and generation of wastes, while supporting fairness and prosperity for all (UNEP, 2016).

It is essential to keep in mind that the accumulated environment and climate related challenges exert long-term impacts on our life; and sustainable living basically encourages reducing such problems, strengthens environmental safety and ecological security along with reducing our stress on the way of living, as depicted below (Table-1).

Table-1. Emotional reflection of ways of life - from troubled situation to sustainable state

Basic Aspects	Emotion, if threatened, when environment is in trouble	Emotion, if satisfied, when environment is sustainable
Existence	Fear (even fear of death)	Joy of life
Subsistence	Hunger, thirst, pain, etc.	Satisfaction, feeling well
Effectiveness	Irritation, frustration, etc.	Feeling of accomplishment
Security	Anxiety and fear	Feeling sheltered, safe
Adaptability	Impatience, uncertainty, boredom, curiosity	Joy of learning, awakening
Coexistence	Jealousy, hate, envy, powerlessness	Love, solidarity, friendship
Reproduction	Loss of continuity	Joy and pride of parenthood
Psychological needs	Self-doubt, inferiority complex, humiliation	Confidence
Ethical orientation	Futility (uselessness), unreliability, irresponsibility	Meaning, order, reliability, responsibility

Source : Bossel Hartmut (1998) Earth at a crossroads – paths to a sustainable future, Cambridge University Press , p. 82

In the above-mentioned perspective, approach of sustainable living emphasizes on five basic principles viz. (i) Respect for all, (ii) Leading a community life, (iii) Inculcate the habit of saving, (iv) Adopting minimalism and (v) Responsible decision-making. Against each of these principles, there are targeted focuses (Table-2) which lead to environmental safety and ecological, economic and social security besides harmony as well as both societal and personal wellbeing.

Table-2. Required principle to develop a sustainable living

Targeted principle needs to adopt	Focuses
Respect and care for all	To understand how our daily activities are linked to ecosystem where we live in; accordingly, we are required to design our activities so that every living being in our environment gets what they need for their own survival and growth. Therefore, there is a need to inculcate a practice to respect for all living being.
Leading a community life	To shift from individualism to collectivism, and to consider as a member of society. We are required to establish collective initiatives to fulfill our needs, facilitate our aspirations and growth; remove the disparity between 'haves' and 'have-nots'.
Inculcate the habit of saving	To cultivate the habit of judicious use removing the practice of misuse, wastage, exploitation; practice to save Earth's resources; material, energy; and means of welfare and recreation
Adopt minimalism	Inculcate the approach of minimum input to get maximum output through increasing the efficiency of processes involved in production, distribution and consumption systems.
Responsible decision making	To remember that everyone is responsible for their own decision. If any negative impact occurs to environment, life form or fellow human beings, they have to rectify their decisions and take corrective action(s) to reduce and stop the negative impact(s).

However, for more than two and half centuries, since the dawn of industrial revolution, our thoughts and value systems have been leaning mostly towards maximization, speed and expansion. Such attitudes of the civilized people demand more resources and energy resulting ecological insecurity, which ultimately lead to widening the gaps between 'haves' and 'have-nots'. Under such circumstances there is a need for a new scientific study, exploration and experimentation in all aspects of life and society to establish the effectiveness of sustainable living principles. This calls for inculcating/practicing new thoughts and value-systems in the line- '*bigger is not always better*', '*small is beautiful and sustainable*', '*slower can be smarter*', '*less can give more in future*' along with empirical evidences. The individual and collective efforts of systematic scientific study/ experimentation can help one to establish sustainable living.

Scientific understanding and application of methods of science help us in analysis and rational decision making. Process of scientific inquiry further equips us to find out solutions for problems that we come across in our daily walks of life. Therefore, science education should be directed at '*inquiry-based learning*' embedded with '*learning through doing*' to develop the learning outcomes one of the key tools for human endeavour for future security. In fact, the increasing rate of extraction and exploitation of natural resources for industry, urbanization and various developmental activities severely affected degradation, destruction and depletion of natural resources leading the Earth to become inhabitable for most of the organisms. Hence, from nineties onwards concern increased to a large extent on environmental challenges and rate of extraction and exploitation of natural resources. In other words, the question of sustainability of mankind has become a concern to one and all across the globe. Hence, the concept of sustainable development came up in 1992 embedding education as "*Education for Sustainable Development (ESD)*" with major focus on "*Education for Sustainable Development Goal (ESDG)*" to achieve the 17 SDGs by 2030. In this contemporary perspective, the education was focused on (i) *learning to know*, (ii) *learning to do*, (iii) *learning to live together* and (iv) *learning to be* which has the basic concern for inculcating the broader perspectives of sustainable living. The ESDG also focuses for inbuilt processes of cognitive learning, social and emotional learning as well as behavioural learning for understanding the living environment and ecosystem along with people and society.

It is expected that this holistic approach would create self-awareness, self-management, social awareness, relationship skills and responsible decision-making by our children for a beautiful future. Therefore, the proposed focal theme of National Children's Science Congress for the years of 2020 and 2021, "**Science for Sustainable Living**", is considered to be the most appropriate and useful. The broader perspectives of it are to foster the method of science among the young minds of the country. The children will, thereby, be able to adopt the principles of sustainable living and leverage science and technology to create the path for sustainable development through their project-based endeavours.

Considering the core aspects of the focal theme and easy understanding of the stakeholders, following five sub-themes have been identified and proposed –

- I. Eco System for Sustainable Living
- II. Appropriate Technology for Sustainable Living
- III. Social Innovation for Sustainable Living
- IV. Design, Development and Modelling for Sustainable Living
- V. Traditional Knowledge System (TKS) for Sustainable Living

Goal

An approach to introduce methods of science for personal and community level decision-making to lead the daily walks of life and leveraging the outcome of science and technology for establishing the sustainable way of life ('genre *de vie*') towards improving/upgrading quality of life (QoL), through conservation of nature and ecosystem vis-à-vis to achieve equity, equality, happiness, peace and harmony.

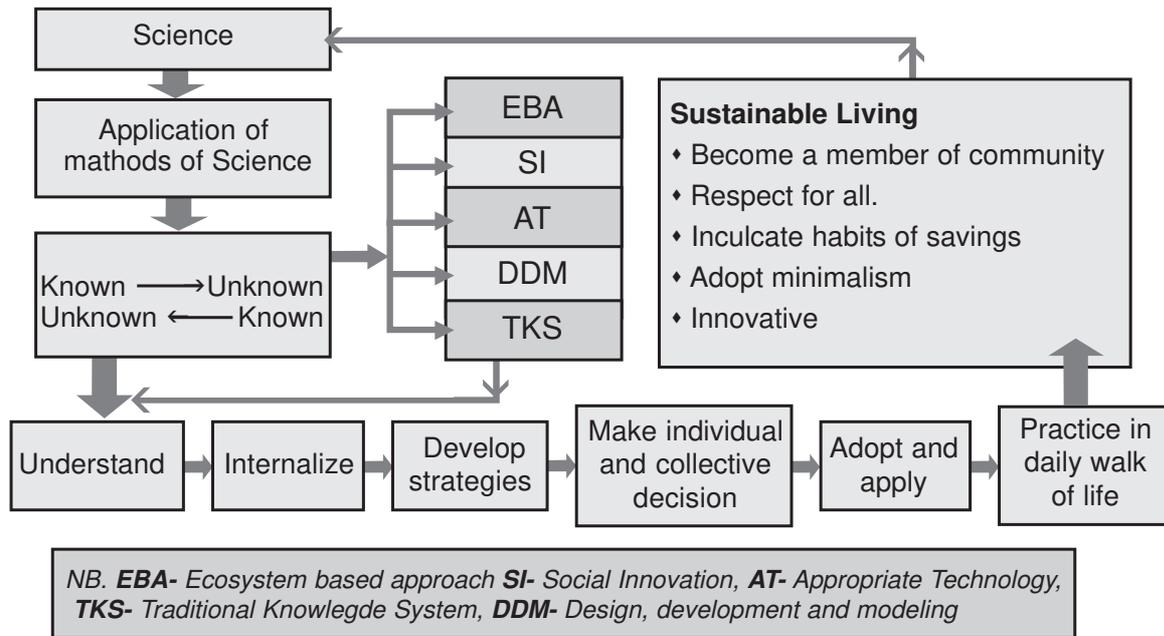
Objectives

Motivating and engaging the children for inquiry-based learning:

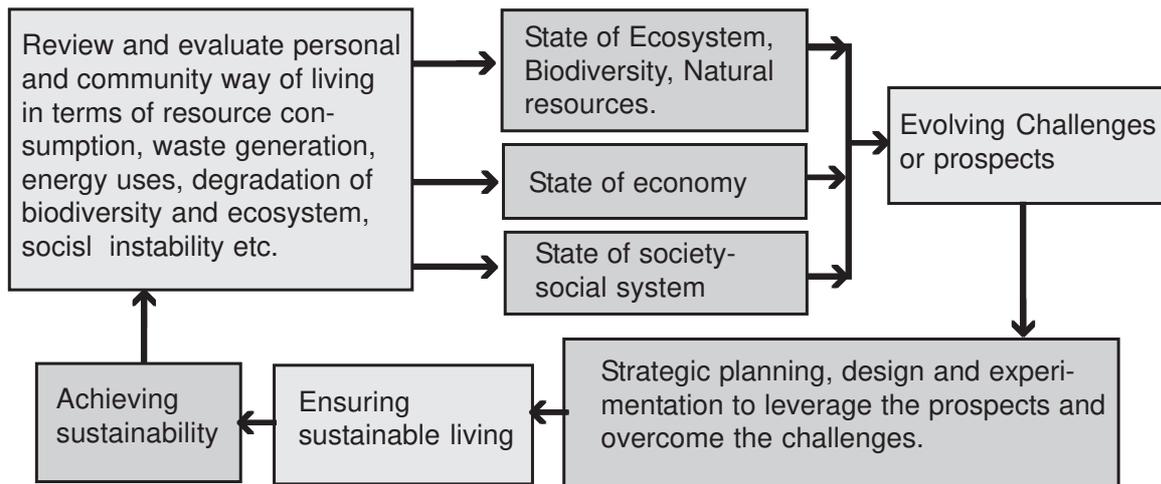
1. To learn and understand about ecology, economy and society
2. To apply scientific understanding in day-to-day decision-making
3. To design and develop approach and / or solution for tapping potentials and overcoming the challenges

- To take transformative initiatives to community and society and for personal reflection, which means an opportunity to reconsider events, thoughts and feelings from a fresh perspective.

Core approach



Proposed Framework for Inquiry



Expectation

Start with own, understand method of science, validate through experiment, interpret result, set example, communicate, and make an effort for promotion.