



# Education for Sustainability: Needs and Challenges at Different Level of Learning

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## Abstract

Education Sustainable (ES) undertakes environmental, social, and economic disciplines into learning to shape a viable future. At school level, initiatives have been taken to create green campuses, sustainable experiential learning, and eco-clubs to shape the students as responsible citizens from their childhood. At college level, it combines transdisciplinary curricula, sustainable operations, living labs, and research to produce ethical leaders and innovators. At societal level, lifelong learning, public campaigns, NGOs, and policy frameworks make sustainability competencies accessible to all. Moreover, these levels foster critical thinking and cohesive action needed for equitable, resilient, and regenerative societies.

**Key words:** education for sustainability (ES), economic system, ecological system, societal system

## • Introduction

Production and consumption pattern of human being is a bad indicator for long run sustainability of natural resources. To inculcate the objectives of sustainable development, education for sustainability (ES) has been emerged as a new field of education at all level and promotion should be done to enhance the awareness about sustainability. Degradation of natural resources compels the educationists and sociologists to emphasize on the importance of education for sustainability that will lead to ensure the sustainable use of natural resources and can be transferred to the next generation successfully.

Education for Sustainability (ES) has been emerged as a new trend in the education system and its critical role gets recognition (Antonio et.al, 2006). As the time changes from generation to generation, it affects not only the culture of the society but also the life style of the people and their society as well. Twenty first century has been the witness of new inventions and technologies in the scientific world that could provide the base of modern trade and commerce (Arundhati et. al, 2016). Past decades of ways of life in developed countries clearly indicate the requirement of sustainability in changing way of life. People live in developing countries get inspire from current production and consumption pattern of developed countries that leads to the recognition of un-sustainability (Antonio et.al, 2006). Business environment has been transformed drastically due to information and technology (IT) and globalization that accelerated stiff competition which reduces profit margins on various goods and services. It produced result in increasing number of customers who demand more products and services regardless of environmental performance (Lucas et. al, 2018).

The concept of sustainable development came into existence when the Brundtland Report “Our common future” was published (WCED, 1987), since then it has been gaining high attention at every level in the world and research and development has been going on by several organizations for measuring and making strategies for the long term survival ability for human and nature together and providing guidance for planning and policy making in transition to sustainable development (Antonio et.al, 2006).

There are three dimensions of sustainability incorporated by an organization into its management structure viz; economic, environmental and social, out of an awareness that products will be purchased and services will be hired by people and companies only from those organizations and firms who care about future generation and emphasize on sustainability (Lucas et. al, 2018).

To change the world and also for self enlighten, education can be used as powerful means. (Arundhati et. al, 2016). Education can play a critical role in achieving the sustainability objectives (Leal Filho et.al, 2018). From the geographical point of view, the establishment of sustainability education is unequal around the world and to reduce these differences more efforts are required to be done on the various parts (Samuelsson & Park, 2017; Nagendra et.al, 2018). Period from 2005-14, was declared as UN decade of education for sustainable development in December, 2002 and the purpose was to emphasize the significance of education to increase the world sustainability (Wals et. al, 2014).

In growing literature and policy debate, the concepts of sustainable development and sustainability have been used differently with its meanings and interpretations (Pepper, 1998; Sathiendrakumar, 1996). Although the term used redefined and closely contested at operational and conceptual level with all its definitions have to do with a set of core ideas such as 'understanding the interconnection among environment, economy and society' living within the limits' and equitable distribution of resources and opportunities (Mebratu, 1998; Mitchel, 2000; Ferreira et.al, 2003). However, all the aspects of human life are in touch of sustainable development but this article discuss only for the objectives of education for sustainable (ES).

Sustainability was adopted as the fundamental principle in the Rio conference, 1992 to support the development of mankind at all levels. Chapter 36, of agenda 21 (UN-CED 1992) restated the significance of education for sustainability and the necessities for considering all the aspects of sustainable development viz; environmental, economical and political.

There was a shift found from environmental education to education for sustainability. It includes not only for the protection of natural environment but also the interrelationship between social and economic sphere. The below figure shows that through a broad understanding of environmental, economical and social dimensions, sustainable development objectives can be achieved. The integration of these three dimensions is the key concept of sustainability.

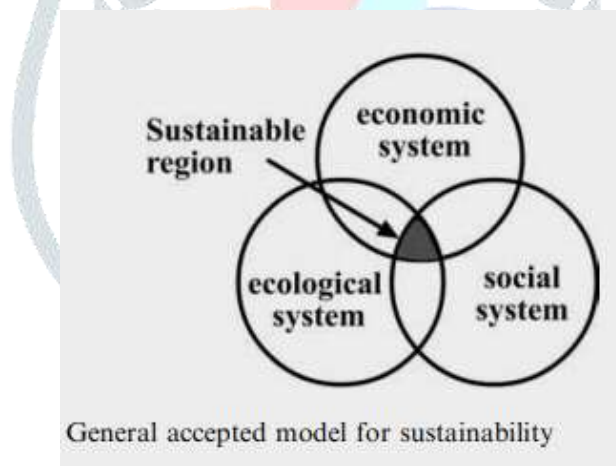


Fig.1

- **Necessities of Education for Sustainability :** Innovation and technology upgradation could become the reason for changing life style of human being and accelerated consumerism in the human society. People consume products and services regardless of environmental issues. Global warming is the threat of their consumption pattern that to be taken into consideration. Some of the natural resources are scares in the nature and if we do not take initiative, it will not be so long remained for our future generation. Hence, the need of education for sustainability have been proved that society must be aware about the scarcity of natural resources and their equal and sustainable distribution in the present scenario.

In the sphere of human development responsibility, education can play the role of key player which influence positively and become a generator of changes in the course of sustainable development (Baptista, 2009). This view gets the corroboration by Da Silva, Czkiel, Figuero, Dos Santos and Galvao (2013) and they opined that education as an agent or middleman who stimulate and aware the individuals to impart their role of consumer-citizens. Skill development should also be the main aim of education for sustainability which facilitates to contribute in more sustainable future (Barth and Rieckmann, 2012).

On the basis of age, objective and subject, people learn and get education from their surroundings and from various societal institutions and broadly it can be categorized into basic education, university and organization level learning. In current scenario basic education is necessary that include lower/upper, high schools and vocational schools. After completion the basic education people can join either university level education or they can join any organization for their employment purpose. The graduation and post graduation courses are included in the university level education whereas at organization level people can join any institutions or company. Life experience or non-formal learning which people learn through self-learning is the part of life-long learning. Needs and challenges of education for sustainability at all level of learning are discussed below:

- **Accessing the Needs and Challenges at Basic Level**

At this fundamental level, importance is given on developing behavior and comprehensive views of the learners to their surrounding environment. Even though young generations at this stage are more aware about the fundamental facts regarding the sustainability yet education for sustainability need to be included into their mandatory subjects. i.e. they are aware about degradable and non-degradable wastage and their recycling and also the impact of their consumption on environment (Antonio et.al, 2006). Through the study and observation of surrounding environment there are so many activities by which students should get knowledge, skills, attitude and values concerned with sustainability. The significance of the basic studies for the students is to gain profits from experiencing school environment that respect sustainability.

The complexity is to integrate education for sustainability with their subjects of specialization. Students should learn the basics of ecology at this level of education system with a view to understand interrelationship between human being and nature considering their future role in the society. Sense of responsibility towards the environment should be developed in the students. They must understand the ideas or concepts supporting the subjects they learn along with developing the correct attitude and behaviour. To change the mindset of students and their attitude towards the sustainability can be greatly affected by the strategy 'behaviour needs behaviour'.

Teacher must be capable to balance tradeoffs between theory or observation ability and analysis of facts and reach on decision activities imparted to the students while considering the environment. Teachers should emphasis on various facts that influence the development of understanding about sustainable development (SD) and facilitate the strategy to integrate their subject into school curriculum. Teachers should be trained and gain specific knowledge concerned with sustainable development (SD) as it is the essential part of this process. However, teaching materials and modules are the fundamental task to be developed that will lead to the situations of dealing with sustainability in cross cultural environment.

Progress and effectiveness of environmental science in the school program must be evaluated and its consequences and benefits should also be evaluated to improve the performance. Ideas and experiences regarding the fields of environmental science must be shared and exchanged between students and professors in order to obtain the objectives of environmental science. Though, teacher face problems to approach the sustainability concepts due to cultural diversity, in teaching material various perspectives and aspects of culture should be considered.(Ferreira et. al 2003).

- **Accessing the Needs and Challenges at University Level**

A university consist a range of disciplines in undergraduate and postgraduate courses as well as large number of students are enrolled in these programs having different socio-economic background. University should emphasis on different approaches to include main aspects of sustainability in its curriculum in a comprehensible way. Due to involvement of various technical and scientific areas in sustainability, there is a need of a multi-disciplinary and interdisciplinary (Crofton 2000; Vargas 2000; Painter 2003).

Sustainability and environment related issue get least consideration in higher education unless these subjects could become their part of course and curriculum. Many mandatory subjects are included at UG and PG level in the universities and new subjects like sustainability gets little consideration. However, these possibilities remains that subjects can directly be embedded into the university curricula (Filho 1997; Crofton 2000; Van Berkel 2000; Springett and Kearins 2001). While adopting any process design among various options, there is the need to evaluate their environment impact and socio-economic aspects. Instead of focusing the profit maximum in designing of a new product, analysis must be done on all life cycle stages of the product and accounted for environment impact (Gutierrez-Martin and Huttenhaim 2003).

Sustainable development should be a part of the university curricula, so that the objectives of sustainable development can be achieved at every aspects. However, a significant work has been accessed that depicts the influence of higher education in sustainability (e.g. Littledyke et. al 2013; Fehlner 2019; Leal Filho et al 2018; Findler et al 2019a) and sometimes higher education institutions are assumed as 'catalyst' or 'changing agent' that raises the issues concerned

sustainable development (Shield, 2019). Therefore, it can be inferred that educational contents, its allied process and outcomes are greatly affected by the sustainability based education (Gatti et. al 2019).

Though multidisciplinary and interdisciplinary approaches get high consideration on the part of sustainability, students can foresee the graduate courses consisting basic training in a range of disciplines irrespective to their specific contents of course. Educationists and academicians must be capable enough to deal with different background people. Different academic department of colleagues and universities may interact with one another; on the other hand collaboration can be done with other universities and corporate world (Crafton 2000; Jansen 2003). This will help in making open-minded experts who are capable to face their opponent in other discipline. While learning the various aspects of sustainability, practical training should be a significant part that must be imparted through research and development (R&D).

Use of information communication and technology (ICT) applications can also be helpful in imparting the sustainability through education. With the help of internet connectivity, students get the core studies of various disciplines as well as the supporting materials. ICT helps in enhancing the interaction with other disciplines and assist in getting purposeful information. Research and development works are also affected by ICT.

#### • Accessing the Needs and Challenges at Organization Level

In the rapid changing scenario of knowledge and technology, learning process must be continued by an organization and its workers that will lead them to be remain effective and competitive. To pace with latest and updated development, dynamic and continuous training is required to gain the sustainability objectives (Antonio et. al 2006).

The culture and business style of the organization is greatly affected by education and learning process, whenever change occurs. Usually it happens due to pressure of society and changing perception and understanding of the society towards environmental issue (Antonio et al. 2006). The interrelationship between society and organization is an inevitable fact as both interact with each other in different ways. Instead of forecasting the environmental issues by the companies and organization in their operation and practices through the implementation of cleaner production and sustainability principles, they emphasize more on the compliance of environmental legislation. Societal pressure is the main cause of improvement in their environmental behaviour. Companies and organization have to imply the regulation, laws, judiciary decisions, consumer pressure and competition which are greatly concerned with the society and also influence by the society. Corporate culture and business style are also affected by the society.

Trained professionals are required to persuade the behaviour and culture towards sustainability. For young and skilled people, sustainability has a golden opportunity as it is the new and dynamic field to pursue a career (Hale, 1995). However, companies early adopt slow process of taking admission of novice people.

Though, the incremental and sound innovation can be achieved by organization through sustainability. On the other hand, it become the cause of losing competitiveness as many organizations become vulnerable to the risk because they could not find their potentials early enough. Innovation may be a crucial factor and gets unfavourable framework in these companies and organizations who don't have strong culture pertaining to environmental issues and sustainability. The fact reveals that most of the people associated with business and industry have never learnt about sustainability (Boyle, 1999).

Proactive approach is required in today's rigorous competition and the environmental regulations. Companies and organizations should opt possible remedies for the purpose of cooperation with others in terms of collaborative training for workers and transfer of technology. More effective consequences can be generated, if the organization is decided to change the way of its operation. To be remaining in the competition, there is the need of continuous research and development required, so that through innovation new product development can be found and the process of operations can become more efficient (Beard and Hartman, 1997). Companies corporate culture should reflects sustainability as its core value and sustainability development must be taken as long term commitment between their stakeholders viz; shareholders, customers, suppliers and society in general.

Organization's values and culture reflect in the behaviour of employees at home and in the society as well. What he learns about the environmental challenges and sustainability, tries to follow in the society also. As the sustainability aims at securing the natural resources for upcoming generation, one can easily be motivated to learn and follow the various aspects of sustainability.

#### • Conclusion

This article contains the information regarding education for sustainability (ES) and discussion go through formal and informal education including basic or elementary education, university level and organization level education and training. It

has been observed that informal education system is more useful and easy that it is capable of imparting new methods, approaches and information for teaching and learning. However, to secure a sustainable future, education for sustainability is necessary to be a part of both formal and informal education system.

The main issue recognized is that education system doesn't have an adequate and coherent approach and lacking of an integrated education system. Essentials of a reoriented education system have been recognized. However, it can be the optimal approach to the education for sustainability and this couldn't be claimed by any private or public education system. A new course or specific subject should be formulated and implemented in this field including in academic curricula and professional training.

Professional trainer and teacher must be trained and gain the specific knowledge to handle every types of issues regarding the sustainability. Teaching materials and modules should be developed that contains each aspect of sustainability and enable to the learners to deal in intellectual context. Due to having interrelationship of sustainability with different disciplines, technical and scientific areas, the introduction of multi-disciplinary approach is required in teaching and research.

In a futuristic sustainable society, education for sustainability and environmental education would be a basic skill irrespective of their educational and professional background. Sustainability must be at the centre of academic curricula. At all social and economic perspective, a commitment must be done for sustainability at worldwide.

This article helps in recognizing the significance of education for sustainability at each level of education system that would lead to have a future oriented sustainable society. This article can be base or make a background for future research in this field.

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