**INTEGRATION AND TRANSACTION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN THE CURRICULUM**

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**Abstract**

*Sustainability is an over-arching paradigm that encompasses environmental, social, economic, and political problems and issues that face communities around the world. Education for Sustainable Developmen (ESD) has become an inevitable aspect for different nations and world as a whole to nurture a sustainable society. Education can act as a base to foster sustainability. The venturous movement from Environmental Education, to Sustainable development, then to Education for Sustainable development (ESD) with its aim of a sustainable future needs to foresee how learning should take place. It is in this pursuit, Education for sustainable Learning takes a pivotal position in the modern world.*

*In this paper an attempt has been made to provide a view into the concept of ESD with emphasis on its Emergence, Aims and Objectives. The paper encompasses a discussion on whether ESD should be infused in the curriculum as a ‘separate discipline’ or as an ‘integrated’ one. One example of how to integrate ESD components is also mentioned by taking a portion of a Science chapter of VII standard NCERT textbook. The constructivist paradigm which is based on the assumption that knowledge is subjective and learners construct knowledge in the social and cultural environment in which they are embedded should be adopted for the transaction of ESD in classrooms. Hence, one can assume that there is a need to educate teachers and teacher educators regarding the importance of ESD in order to foster sustainable development, which finally leads to a sustainable future.*

**Introduction:**

Education includes teaching, imparting and learning of specific skills, and also something less tangible but more profound; the imparting of knowledge, positive judgment and well developed wisdom. Education has its fundamental aspect of imparting culture from generation to generation. It is an application of pedagogy, a body of theoretical and applied research related to teaching and learning. The basic aim of the education system for sustainable development is ‘education of a new man', ‘the man of a sustainable type of thinking’, a man of Cosmo-planetary consciousness with a holistic world outlook, who has a methodological culture and a culture of sustainability, who is ready to a socially significant labor, to self organizing and self perfection, a man with high socio-cultural needs and deep moral ethical values, a man who is capable to solve global tasks faced by the mankind and to promote the forming of sustainable society.

Education in its contemporary development should aim at the future, should “foresee” and form in a certain way and satisfy needs of future generations of people. That means that education should be anticipatory to social, economic and cultural life, it should form a desirable sustainable future. A new educational paradigm will be a micro model of sustainable society. But such ideas could not be realized in old organizational forms of education system. We need new organizational forms and educational institutions- mobile, synergetic, creative, future-oriented, which could provide the implementation of new objectives and new historical functions of education. For that it is necessary that all spheres of life of society be incorporated whenever possible upon the principles of sustainable development**.**

**Emergence of ESD**

Sustainability is a well-articulated goal for managementbased on the explicit abandonment of the assumption that Natural resources are limitless (World Commission on Environment and Development, 1987). According to *Brundtland Commission (1987),* Sustainable Development is “development which meets the needs of the present without compromising the ability of future generations to meet their own needs”.

A core principle behind sustainable development is the idea that economic, social and environmental conditions play a major role. Without a proper ecosystem, it is impossible to maintain a better society and economic development for our own and future generation. Thus environmental dimension can be regarded as the ultimate boundary for Sustainable development. The Social dimension is to meet the basic needs of all people without exceeding the boundaries of the ecosystem. The economic dimension is a means to realize the goal within the limits of a socially and environmentally sustainable manner. So Education for Sustainable Development (ESD) cannot be considered as having link only with environment. It is a development of social and economic aspect also.

Some of the conferences, committees and commissions that led to the emergence of ESD are; The United Nations Conference on the Human environment in Stockholm (1972), UNESCO sponsored conference in Belgrade (1975), which came out with Belgrade Charter, outlining the basic structure of Environmental Education, Tbilisi Conference (1977), which laid down the goals, objectives and guiding principles of Environmental Education. In 1987, the World Commission on Environment and Development published the Brundtland Report which is also known as Our Common Future, which introduced the idea of sustainable development in which environmental protection and economic growth are reviewed as independent concepts. The Johannesburg World Summit on Sustainable Development (WSSD, 2002)**,** proposed the Decade of Education for Sustainable Development (DESD), signaling that education and learning lie at the heart of approaches to sustainable development. It considers the year 2005-2014 as the ‘United Nations Decade for Education for Sustainable Development’ (UNDESD). It is a powerful concept that could ignite the interests of people around the world to use education as a tool to shape a more sustainable future. In December 2002, resolution 57/ 254 on the United Nations Decade for Education for Sustainable Development (2005-2014) was adopted by the United Nations General Assembly and UNESCO was designated as lead agency for the promotion of the decade. The basic vision of the DESD is a world where everyone has the opportunity to benefit from education and learn the values, behavior and life styles required for a sustainable future and for positive societal transformation.

**Aims and Objectives of ESD**

 ESD has five components - knowledge, skills, perspectives, values and teaching issues which are to be addressed in a formal curriculum for sustainable development.

 Sustainable development encompasses environment, economics, and society. Therefore, people need basic knowledge from the natural sciences, social sciences, and humanities to understand the principles of sustainable development, how they can be implemented, the values involved, and ramifications of their implementation. ESD focuses largely on the major social, economic, and environmental *issues* that threaten the sustainability of the planet.

To be successful, ESD must go beyond teaching about these global issues. ESD must give people practical skills that will enable them to continue learning after they leave school. These skills will differ with community conditions, which fall into one or more of the three realms of sustainable development - environmental, economic, and social. ESD carries with it perspectives that are important for understanding global issues as well as local issues in a global context. Every issue has a history and a future. Looking at the roots of an issue and forecasting possible futures based on different scenarios are part of ESD, as is to understand that many global issues are linked. ‘Values’ are also an integral part of ESD. Understanding one’s own values, the values of the society one lives in, and the values of others around the world is a central part of educating for a sustainable future.

Solving existing environmental problems and preventing new ones from arising will require an understanding and appreciation of the linkages between environmental well being and human well being. However, many of these linkages are not apparent at the first instance. This is where education is crucial. To bring environment and development concerns to people’s notice, to enable them to understand the linkages between the two, to encourage them to take appropriate action, and to equip them with the skills necessary for taking the required action, education is necessary for all this.

**ESD - as a separate discipline or an integrated one**

Education for a sustainable future involves a comprehensive approach to educational reform. It extends beyond the boundaries of individual school subjects and requires the attention of teachers, educational administrators, planners and curriculum agencies.

Integrating the objectives, concepts and learning experiences of education for a sustainable future into syllabuses and teaching programmes is an important part of such reform. A basic premise of education for sustainability is that just as there is a wholeness and interdependence to life in all its forms, so must there be a unity and wholeness to efforts to understand it and ensure its continuation. This calls for both interdisciplinary inquiry and action. It does not, of course, imply an end to work within traditional disciplines. A disciplinary focus is often helpful, even necessary, in allowing the depth of inquiry needed for major breakthroughs and discoveries but increasingly, important discoveries are being made not within disciplines, but on the borders between them. This is particularly true in fields such as environmental studies which are not easily confined to a single discipline. Despite this realization and a broadening support for interdisciplinary inquiries, the frontiers between academic disciplines remain stoutly defended by professional bodies, career structures and criteria for promotion and advancement. It is no accident that environmental education and, more recently, education for sustainable development, has progressed more rapidly at the secondary and primary levels than within the realm of higher education”. (Source: UNESCO (1997) *Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*, paragraph 89). *UNESCO (Earth Charter,1992)* have identified that ‘knowledge is required for Sustainable Development (SD) for which people need education with basic knowledge from Science, social science and humanities in order to understand the principle of SD, how they can be implemented, the values involved and ramifications of their implementation. We need few more activities related to the development of skills, perspectives, values and teaching methods to become skilled at useful implementation of ESD’.

ESD must must give people practical skills that will enable them to continue learning after they leave school. UNESCO has listed out the skills to be incorporated, which will fall in the three realms of SD i.e. Environmental, Social and Economic. Some of them are ability to think critically about value issues, the capacity to move from awareness to knowledge to action, to work cooperatively with other people, capacity to use processes like knowing, inquiring, acting, judging, imagining, connecting, valuing and choosing, the ability to think in time- to forecast, think ahead and to plan. Pupil will also need to learn skills that will help them manage and interact with the local environment which include prepare materials for recycling etc.

**Integrated in science:**

Following is an example of integrating components of ESD. A small portion of the first chapter in Science textbook of VII standard of NCERT has been analyzed for the purpose.

**ENVIRONMENTAL STUDIES**

**CLASS V**

**CHAPTER 19-** **Abdul in the Garden**

|  |  |  |
| --- | --- | --- |
| **CONCEPTS** | **SUB CONCEPTS** | **ESD TO BE INTEGRATED** |
| Mode of nutrition in plants | Plants prepare food by themselves using water, carbon dioxide and sunlightNutrition is the mode of taking food by an organism and its utilization by body.The mode of nutrition in which organisms make food themselves is called Autotropic organisms. Eg. PlantsWhere are food factories of plants located?How plants obtain raw materials?How do they transport them? | Importance of water not only to plants, but also for other organismsDegradation of minerals in soilFood prepared by plants are being used by human and food scarcityNutrient deficiency leading to various diseasesProper nutrients to be needed in appropriate quantity |
| Photosynthesis- food making process in plants. | Leaves are food factoriesWater and mineral in soil are absorbed by rootsCarbon dioxide is taken from air through stomata.Chlorophyll helps leaves to capture energy of sunlight.Sun is the ultimate source of energy for all living organisms.Photosynthesis (photo= light and synthesis= to combine) is a process in which the chlorophyll containing leaves in the presence of sunlight use carbon dioxide and water to synthesize carbohydrates (food- starch)Oxygen, which is essential for survival of all living organisms, is produced during photosynthesis.Leaves other than green also perform photosynthesis | Replenishing the soil nutrients by various ways.Usable water getting reduced.Amount of various gases in atmosphere and its impact on earth.Use of solar energy as a major source of energy (solar cooker, solar heater etc.)Amount of oxygen reducing and how it influences life.Climatic changeImportance of protecting plants and treesReforestation and human settlementsAgriculture- Crop rotationPlant protein as a source of food for animals including humans. |

**How to transact ESD in the classroom:**

Children should explore the learning situations and learn the meanings on their own by connecting their knowledge with their background experiences and the local knowledge. In the process of learning they attempt to negotiate and share ideas and participate effectively in the group task and develop the inquiry and critical thinking abilities. The scope is to develop the mental processes, which will strengthen the capacity to transfer the knowledge to new situations, the creative approach to solving and the methods of discovery and inventiveness. Thus knowledge would be discovered from their surroundings and not through textbooks.

Knowledge becomes significant to the extent that its pursuit conveys the spirit and method of inquiry. Therefore, the learning should involve a constructive approach that will help the child to think critically and develop various skills like inquiry, problem solving skills, participatory decision making ability etc. Various studies say that classroom teaching take place through conventional method without hands on experience. Such an instruction does not develop cognitive abilities but focuses only on the information of facts and preparing students for examination. Inclusion of materials and experiences to develop a conceptual understanding of the phenomenon of change and the problems related to Sustainable Development and to develop minds that cope with change and reasonable techniques for doing so is required. Content and outcomes needs to be in tune with the social and cultural realities of the times. Orientation to cultural and social realities also involves value bearing concepts and experiences, which encourage examination of value and value conflicts.

Since ESD is a subject for creating awareness, necessary skills and values, so that the child can take his/her place responsibly in the society for sustainable development of the future, the pedagogical methods to be followed should be different. The pedagogical situations should be created in such a manner in order to make the child sensitive to the world around him and create meanings from the surroundings and from his own experiences. In this context, constructivism as a pedagogical approach plays a vital role.

There is an urgent need on an overall review of the existing approach in the education system with a sharper focus on attaining ESD, which can sensitize the knowledge, skills, critical thinking and value issues towards attaining a sustainable future. ESD should be incorporated in the entire curriculum starting from pre-schooling to higher education, which should be transacted in a meaningful manner using constructivist approach.

**Evaluation: Need of participatory behaviour rather than mere awareness and knowledge:**

Continuous assessment of student’s performance on various activities, projects and group work should be assessed. Certain action-oriented situations should be evolved to develop and assess students skills related to sustainable future. Besides this the students participatory skill, decision making skill, inquiry skill should be assessed when they are working in groups. Assessment should be conducted at regular intervals.

**ESD in Teacher Education**

 Integrating ESD in the existing school curriculum need an ample effort from the part of curriculum reformers. In order to acquaint with the modified curriculum, the teachers should be prepared for it, for which there is a need for incorporating ESD into the curriculum of Teacher Education. Since teachers are the torch- bearers of the future generation, we should train teachers in such a manner that it develops not only knowledge and awareness, but should also helps in the acquisition of the needed attitudes, skills and values that will help in fostering the development of a sustainable society.

**Conclusion**

In the changing world with a tremendous demand on the natural resources, which is getting depleted day by day due to the uncontrolled human interference, the concept of Education for Sustainable Development (ESD) is gaining priority. ESD, which has its aim of a sustainable future, looks forward for a society which can meet its present needs without compromising the ability of future generation to meet their own needs. In order to attain a sustainable society, one should include those concepts in the curriculum such that it doesn’t become overburdened as a separate discipline. Hence the best way to incorporate the concepts of ESD is through an integrated one whereby the concepts can be integrated in all the school subjects wherever possible. We should also use a constructivist approach of transaction. In this endeavour, it is also very essential to incorporate the ideas and concepts of ESD in the curriculum of Teacher Education also. Hence one can presume that in order to have a sustainable future, it is high time to integrate these components of ESD into the existing curriculum.

**Bibliography:**

**Arvind Kumar (2003),** *Environmental challenges of the 21st century,* APH Publishing corporation, New Delhi.

**Brundtland Commission (1987),** Retrieved on 05.09.2007, <http://en.wikipedia.org/wiki/Brundtland_Commission>

**Davis Thomas**, *What is Sustainable Development,* Retrieved on 21.05.2008, <http://www.menominee.edu/sdi/whatis.htm>

**Declaration of the United Nations Conference on the Human Environment (1972),** Retrieved on 05.09.2007, <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=97&ArticleID=1503>

**Driver, R. and Oldham, V. (1986).** *A Constructivist approach to curriculum Development.Studies in Science Education,* 13, 10-22

**Fosnot, C.T. (1996).** *Constructivism: Theory, Perspectives and Practice.* New York: Teacher’s College, Columbia University.

**The Johannesburg World Summit on Sustainable Development (WSSD, 2002),** Retrieved on21.05.2008, <http://www.iisd.ca/wssd/background.html> and <http://www.fao.org/wssd/>

**National Council of Educational Research and Training (2000).** *National Curriculum Framework For School Education.* New Delhi, NCERT.

**National Council of Educational Research and Training (2005).** *National Curriculum Framework 2005,* New Delhi, NCERT.

**Rio Declaration (1992),** *Agenda 21-Chapter 36: Promoting Education, Public Awareness And Training*, Retrieved on 05.09.2007, <http://habitat.igc.org/agenda21/a21-36.htm>

**Sustainable Development**, Retrieved on 05.09.2007, http://en.wikipedia.org/wiki/Sustainable\_development

**UNESCO (1997)** *Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action*, paragraph 89. Retrieved on 05.02.2008,

<http://www.unesco.org/education/tlsf/TLSF/theme_a/mod01/uncom01t05s01.htm>

**United Nations Decade for Education for Sustainable Development (UNDESD), (2002**), Retrieved on 21.05.2008 <http://209.85.175.104/search?q=cache:71IoxHM4Vm0J:www.unece.org/env/esd/events.reg/UNESCO.JAN06.doc+UNDESD&hl=en&ct=clnk&cd=2&gl=in>

**UNESCO (Earth Charter, 1992),** Retrieved on 03.04.2008, <http://www.earthcharterinaction.org/2000/10/the_earth_charter.html>

**World Commission on Environment and Development, (1987),** retrieved on 05.09.2007, <http://en.wikipedia.org/wiki/Brundtland_Commission>