Traditional and Innovative Approaches: In Perspective of Biodiversity Conservation

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Biodiversity, or biological diversity, is the variety of all species on earth. It is the different plants, animals and micro-organisms, their genes, and the terrestrial, marine and freshwater ecosystems of which they are a part. The main threats to our biodiversity are loss, fragmentation and degradation of habitat. Biodiversity boosts ecosystem productivity where each species, no matter how small, all have an important role to play. For example, a larger number of plant species means a greater variety of crops. Greater species diversity ensures natural sustainability for all life forms. The present paper is an attempt to analyze traditional & innovative approaches in perspective of biodiversity conservation. It has been shown that the need of the hour to expand and evolve approaches to twenty-first century to phytobiodiversity conservation and to strictly follow the global-environmental ecosystem approach Implementation.

[Keywords: Information and communication technology, The Internet, World wide web, Global Internet System, Mobile Phone Technology, WAP Browsers, Environmental ethics, Sustainable development, Phyto-biodiversity conservation]

1. Introduction

It is widely accepted that biodiversity loss is happening globally. Its nature and causes need far better public understanding and learning in order for it to be stopped. This study revealed the plenty of educational uses of traditional approach and modern Information and Communication Technology in biodiversity conservation.

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Biodiversity is the vast array of all the species of plants, animals, insects and the micro-organism inhabiting the earth either in the aquatic, aerial and the terrestrial habitats. The human civilization depends directly or indirectly upon this biodiversity for their very basic needs of survival i.e., food, fodder, fuel, fiber, fertilizer, timber, liquor, rubber, leather, medicines and several other raw materials. Biodiversity is also essential for the maintenance of Global Ecosystem i.e. for the maintenance of Hydrological Cycles, Bio-geochemical cycles and Oxygen-Carbon di oxide cycle. This biodiversity is the condition for the long term sustainability of the environment, continuity of life on earth and the maintenance of its integrity. 'Biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. (Convention on Biological Diversity 1992). Biodiversity is a compound word derived from 'biological diversity' and therefore is considered to have the same meaning. The variety of life at every hierarchical level and spatial scale of biological organizations: genes within populations, populations within species, species within communities, communities within landscapes, landscapes within biomes, and biomes within the biosphere. (Wilson, 1988). This study is essential in view of accelerating biological and cultural landscape degradation, a better understanding of interactions between landscapes and the cultural forces driving them is essential for their sustainable management. The Environmental Ethics are the links of Traditional knowledge form our fore-fathers/ancestors to the present generation. The term ethics is derived from Greek word ethos which means character. It refers to one’s ability to distinguish the right from the wrong, the values, beliefs and actions, which shape the character of a person and the society. The discipline concerned is also referred to as moral philosophy. The notion of ‘right’ and ‘wrong’ has varied from time to time, so have the “believes” and “values” of people. However, there are certain ethical principles, which have been universally acceptance and have remained unchanged throughout the entire course of human history. Some of the widely accepted Environmental Ethical principles are honesty, integrity, righteousness, being caring and compassionate with nature, having respect for trees and a fair and open mind, which is willing to admit mistakes etc. It is these universally accepted ethical believes which help us to formulate a relatively new discipline of philosophy, which has been referred to environmental ethics. The Environmental Ethics refers to the issues, principles and guidelines relating to the human interactions with their environment. Environment has to be set right by the people and has to be for the people (Garg, 2017).
2. **Review of Literature**

Conservation Principles are the Main Source of traditional Knowledge in Ancient Texts. Ancient texts make explicit references as to how forests and other natural resources are to be treated. Sustainability in different forms has been an issue of development of thought since ancient times. For example, environmental principles were designed in order to comprehend whether or not the intricate web of nature is sustaining itself. These principles roughly correspond with modern understanding of conservation, utilization, and regeneration of environmental elements. “The tree is a peculiar organism of unlimited kindness and benevolence and makes no demand for it sustenance, and extends generously the product of its life activity. It affords protection to all human beings, offering shade even to the axmen who destroy it”. (Gautama Buddha, 487 B.C.). “Thousands and hundreds of years if you want to enjoy the fruits and happiness of life, then take up systematic planting more trees” (Rigveda, 2000 B.C.). “The God who exist in the Universe, lives in air, water, in fire, and also in tress and herbs, men should have reverence for them” (Upanishads, 1500-600 B.C.); “So long as this earth is full of nature (wild animals and plants, human race is going to flourish” (Charak Samhita, 4th-5th Cent. A.D.); “There is not an animal that moves about on the earth, nor a bird flies on its wings, but are communities like you, so have reverence for them” (Quran, 6 : 39 QZ); “even as the green herb have I given you all things” (Holy Bible, genesis 9 : 3); “The universe along with its creature belong to the Lord. No creature is superior to any other. Human beings should not to above the nature. Let no species encroach over the rights and privileges of other species” (Iso-Upanishads,1500-600 B.C.). “Man does not has the right to destroy what he cannot created. The humans race is not an alien species to exploit it”. Environmental ethics of Bisnoi community suggest compassion to wildlife, and forbid felling of Prosopis cineraria trees found in the region. Bisnoi teachings proclaim : “If one has to lose head (life) for saving a tree, know that the bargain is inexpensive”). Humanity faces exceptional challenge of eroding natural resources and declining ecosystems services due to a multitude of threats created by unprecedented growth and consumerism. Also imperiled is the biodiversity and sustainability of the essential ecological processes and life support systems (Chapin et al., 2000) in human dominated ecosystems across scales (Vitousek et al., 1997). Indeed, human-domination of earth is evident in global change (Ayensu et al., 1999; Lawton et al., 2001; Phillips et al., 1998; Forest et al., 2002), biodiversity extinctions (Bawa and Dayanandan 1997; Sala et al., 2000; Singh, 2002) and disruption of ecosystem functions (Loreau et al., 2001). Ecological problems coupled with unequal access to resources results in human ill-being and threats to the livelihood security of the world’s poorest (Balvanera et al., 2001).

Balance exists between ecological processes and human activities such that human activities reinforce ecological health and vice-versa. The people who are
dependent on the ecosystem have a key role in setting priorities and in project implementation.

About half of the world’s tropical reserve forests are experiencing an alarming erosion of biodiversity, including some in the Indian terrain. In India, researchers from four Bangalore-based bodies Ashoka Trust for Research in Ecology and the Environment (ATREE), Wildlife Conservation Society, Institute of Science and Indian Institute of Science participated in the analysis. Besides Nature Conservation Foundation, Mysore; Wildlife Institute of India, Dehradun; World Wide Fund for Nature (WWF), New Delhi; Pondicherry University, Pondicherry; Centre for Cellular and Molecular Biology, Hyderabad and Vesta B in Thane, Maharashtra also contributed to the global study. According to the global analysis, “The strongest predictors of declining reserve health, as outlined by the analysis, were habitat disruption, hunting and forest-product exploitation. Environmental changes immediately outside reserves also seemed to determine their ecological fate. Changes inside the reserve forests were a reflection of those occurring around them. These findings suggest that tropical protected areas are often intimately linked ecologically to their surrounding habitats, and that a failure to stem broad-scale loss and degradation of such habitats could sharply increase the likelihood of serious biodiversity declines” (Laurance, 2012). But these are traditional, old-fashioned approaches and an ordinary person should get the knowledge from the source with which he or she is familiar or used to. Currently, most educational interventions regarding biodiversity aim at enhancing ecological knowledge and fostering appreciation of biodiversity e.g. by means of nature experience, however (e.g. Lindemann-Matthies, 2002; Bögeholz et al., 2006).

3. Results

This paper is mainly focusing on the two main issues i.e. first one is Traditional knowledge and second issue is Innovative knowledge in biodiversity conservation. Educational uses of Information and Communication Technology (ICT) has its own importance and can not be neglected as it is the part and parcel of the lives of human beings. Modern economy is dependent on innovations, and schools colleges as part of societies ought to use and promote innovations, whenever it is also educationally valuable. The Internet, World Wide Web (WWW) and Global Internet System (GIS) are examples of such innovations, and have plenty to offer to Biodiversity Education to conserve, monitor and promote biodiversity. If we include Internet, World Wide Web (WWW) along with other media such as Television, radio, periodicals and newspapers, will have practically connected the whole of humankind. The whole of humankind can learn to conserve and promote biodiversity. A more presently -oriented innovative approach is use of the WAP Browser technology as part of Mobile phones. Technology has improved so rapidly that mobile phones today facilitate the integration of small WAP Browsers. In 2-5 years this will be much more efficient and applicable anywhere.
This could become an interesting area for future “public biodiversity monitoring” (for instance: monitoring of biodiversity). Modern mobile technology can be used also in nature to give young and adult people an understanding of biodiversity and we should make the use of technology to save the biodiversity to circulate the traditional knowledge among the people i.e. environmental ethics and simple maps where observations can be charted via Mobile computing. It is appreciable to implement GIS and modern mobile phones with digital cameras in promoting biodiversity education. Many educational networks or nature-oriented networks exist (as part of the formal or informal education sector for youth and adults) which relate their activities to “biodiversity” in one way or the other. These networks should become more aware about “Biodiversity” as a topic. Some networks are linked to biodiversity and nature and impart clearly scientifically driven knowledge. Some examples include: NatureGate and Jouko Rikkinen’s Virtual Flora, both at University of Helsinki; Young Reporters for the Environment www.youngreporters.org/; ENO www.joensuu.fi/eno; The GLOBE Network www.globe.gov; The regional event-observations presented by Natur detektive; www.naturdetektive.de/2006/dyn/1876. php; The EuropeanSchool Network www.eun. org. http://www.pwrc.usgs.gov/blitz/; Global environmental Unit A WAP Browser. Global Internet System (GIS) is a practical tool, and is becoming very important also in Biodiversity Education and we cannot ignore the potential importance for biodiversity education. With respect to WAP technology, I can mention the interesting development of Artportalén in Sweden http:// artportalén. se/default.asp on mapping, and the work of ETI biodiversity centre http://www.eti.uva.nl/ on species identification with WAP technology in mobile phones. From this perspective, environmental knowledge as well as offering opportunities for value building by traditional and innovative methods and nature experience need to be integrated into a wider framework of development of eco-friendly orientation of a human beings and decision-making in real world situations.

4. Discussion

The topic is fairly broad and has many facets. This is a difficult task in real life. Undoubtedly young and adult people should have a vision and mission for biodiversity conservation. Biodiversity “needs a face” and “biodiversity conservation is a national mission”. The most unique feature of Earth is the existence of life, and the most extraordinary feature of life is its diversity. Approximately 9 million types of plants, animals, protists and fungi inhabit the Earth. So, too, do 7 billion people. Two decades ago, at the first Earth Summit, the vast majority of the world’s nations declared that human actions were dismantling the Earth’s ecosystems, eliminating genes, species and biological traits at an alarming rate. This observation led to the question of how such loss of biological diversity will alter the functioning of ecosystems and their ability to provide society
with the goods and services needed to prosper. Environmental crisis is in reality the crisis of ethics. We are over-exploiting our rights and failing in fulfilling or performing our duties towards the environment. Nature has provided us with all the resources for leading a beautiful life. She nourishes us like a mother, we should respect and nurture her. All the above issues are subject matter of state policy of any country where are ethics in pure subject is matter of individual level of understanding. However with social compulsions unethical acts can be minimized. We can start measuring the status of a society by the percentage the people of ethical values and courage in order to mount social compulsion for checking unethical acts. We can enlist possible hide outs of unethical acts. The distribution of the resources of the world should be egalitarian as far as possible. All men are equal. For all there should be equal opportunities to complete for the comforts and riches of the world. The ‘rights’ of the environment and natural resources should take precedence over the right of individuals as they are linked to the welfare of the entire biosphere. The conservation of genetic diversity, both as a matter of insurance and as an investment necessary to sustain and improve agriculture, forestry and fisheries production; to keep future option open, as a buffer against harmful environmental changes, and as the new materials for scientific and industrial innovation and a matter of moral principle. Many of the world’s ecosystems have undergone significant degradation with negative impacts on biological diversity and peoples’ livelihoods. ‘Ecological restoration’ can provide enhanced biodiversity outcomes as well as improve human well-being in degraded landscapes. In this way ecological restoration becomes a fundamental element of ecosystem management that many people now depend on what have become degraded ecosystems to sustain their livelihoods, ecological restoration needs to address four elements i.e., Improve biodiversity conservation; Improve human livelihoods; Empower local people and Improve ecosystem productivity. These elements are critical to successful ecosystem management. This means ecological restoration can be a primary component of conservation and sustainable development programmers throughout the world. What makes ecological restoration uniquely valuable is its inherent capacity to provide people with the opportunity not only to repair ecological damage, but also to improve the human condition. The conservation benefits of restoration are obvious. What is less apparent, but which is at least as important, is that in many instances, ecological restoration has also been able to renew economic opportunities, rejuvenate traditional cultural practices and refocus the aspirations of local communities (Gann, and Lamb, 2006). Millions of years of evolution have created a wealth of structures and mechanisms at the molecular, cellular and macro-structure level, all of which function economically and interact, to perfection. Nature provides solutions to most of life’s technical problems. ‘Natural selection’ has imposed on living organisms the ‘Min-Max Principle’ i.e., a minimum of material and energy accomplishes a maximum of efficiency and stability. This makes biological
prototypes particularly important for our future given the world's resources and a solution to increasing environmental problems. Protection and preservation of the air, soil, water, Biodiversity i.e., human beings flora & fauna and other important constituents of ecosystem has become essential for the existence of human-kind. Two key characteristics of these systems are that the unit of nature is often defined in terms of a local ecosystem. In a ecosystem abiotic components, plants, animals, and humans are considered to be interlinked, interdependent and interrelated. Many local knowledge systems are similar in temperament to the emerging scientific view of ecosystems as unpredictable and uncontrollable, and of ecosystem processes as nonlinear, multi-equilibrium. Exploitation of the natural resources by humankind at a greater rate does not allow normal regeneration under natural environmental conditions; this leads to the rate of degenerative process greater than the degenerative capacity of the earth global ecosystem (Garg and Garg, 2015). To avert the threats, natural and social sciences have helped by acquiring and applying knowledge about ecosystem conservation and restoration and by strengthening the policy and practice of sustainable development. Scientific research on human-environmental interactions is now a budding sustainability science (Kates et al., 2001). The concept recognizes that the well-being of human society is closely related to the well-being of natural ecosystems. The intellectual resources on which the sustainability science is building on need to take into account the knowledge of local people as well. We need, therefore, to foster a sustainability science that draws on the collective intellectual resources of both formal sciences, and local knowledge systems of knowledge i.e., ethno science. Driven by the situation scientific research on human-environmental interactions has developed into the new branch of knowledge known as the Sustainability Science (Kates et al., 2001). The concept has developed on the basis of the recognition that the well-being of human society is closely related to the well-being of natural ecosystems. Sustainability science seeks to comprehend the fundamental character of interactions between nature and society, specifically the interaction of global processes with the ecological and social characteristics of particular places and sectors (Kates, 2002; 2005).

There are numerous examples of medicinal plant cultivation by local people in India. Socio-culturally valued species find place in home gardens and courtyards. For example Similarly, in spite of the modernization, traditional ecological ethos continue to survive in many other local societies, although often in reduced forms. We need environmental and cultural revolution, aiming at the reconciliation of human society with nature (Naveh, 1995). There are many possibilities of integration of science and ethno science. Traditional knowledge in the form of values may indeed complement scientific knowledge by providing practical experience in living within ecosystems and responding to ecosystem change. The language of traditional ecological is different from the scientific and generally includes metaphorical imagery and spiritual expression, signifying
differences in context, motive, and conceptual underpinnings. In the Twenty First century humankind is claiming for Environmental Biotechnology and the Ecogenomics. Ecogenomics is the application of molecular techniques to ecological and environmental science. It defines the biodiversity at the D.N.A. level (genetical) and uses this knowledge to quantify the functions and interactions of organisms at an ecosystem level and relate these to ecological and evolutionary processes. Biotechnology also has a role to play in environmental management and aims at improved production technology with minimum wastes; waste recycling; development of bio-resources; conservation of biodiversity; micro-organismic manipulation of pollutants; reclaim action of contaminated habitats; development of environmental friendly techniques; discovery of non-conventional alternative sources of energy; maximum use of alternative non-conventional sources of energy i.e., wind power, solar energy etc. Research reveals that there are several areas which require the attention of planners and programme implementers. policy decisions based on research findings are rooted in ground reality and therefore have the capacity to bring about tangible improvement in the situation.

5. **Conclusion**

The Biosphere of the living Earth is composed of the Lithosphere, the hydrosphere and the atmosphere. To maintain the sustainability of biodiversity on the planet earth, we ought to concern the holistic approach towards the environment conservation and sustainable development. Collective wisdom of humanity for conservation of biodiversity, embodied both in formal science as well as local systems of knowledge, therefore, is the key to pursue our progress towards sustainability. It is not very tough to make the people aware of the Environmental knowledge that we have gathered so far but real challenge is to develop ethics. It is very clear that we lack more in ethics then in knowledge environmental education, thus must consist of both knowledge and ethic. Ethics are necessary in order to ensure desired practice in all human being of all ranks. For this an equilibrium is to be established among Formal education, inspirational education, Fear less education, penology. The overall purpose of environmental education is to develop a person in order to follow, inspire others to follow, influence other to follow and prevent others from violating the law designed for protection of our environment. At all environmental literacy should be ensured to all human beings for their active participation in day to day happening, scientific developments and its consequences, formation of environmental law etc. In order to make each of us accountable for present growth of human beings. Development at the cost of environment can take place only up to a point. Beyond that it would be like foolish man in the story who was cutting the very branch on which he sat. There is a need of holistic understanding of the relationship between the environment and the development processes taking place in the world. It has become the need of the hour to expand and evolve approaches to twenty-first century to phytobiodiversity.
conservation and to strictly follow the “global-environmental ecosystem approach Implementation” (Garg, 2015; Garg, 2017; Garg and Garg, 2015; Gupta and Garg, 2017). In the future, it may be that biodiversity can be also be maintained and even promoted if the public learns the best theories and practices (Traditional and Innovatives Practices) of what to do and what not to do. Information and Communication (ICT) system along with its components is able to creates knowledge for protecting, monitoring and promoting biodiversity.

References


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