

Environmental Education –Indian Context

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Abstract

Proclivity concerning global warming and environmental catastrophe across the world has become big fuss. Cultivating awareness about the sobriety of the stratum, ameliorating of ubiquitous ethos and grooming the posterity to discern for planet incite copious ecologists and green litterateurs who will dream the character of environmental education. Proper media-assisted civility and awareness campaigns about the importance of environmental health are vital to boost the protection and prudent utilization of natural resources, and to attain a sustainable future. While scientists and politicians are deciphering for environmental issues, educators are aware of that a sustainable future needs productive education for newborn novices. However, how these novices should be educated on environmental issues and what they should be cardinal in this technology age is still a question. In India, a blustorous climax erstwhile is the judgment of the Honourable Supreme Court in 2003 which models environmental education mandatory at all levels. Ensuingly, various educational bodies at the national and state levels have taken measures respecting upgrading curriculum, resource material, training or any other ventures in this direction. This contextual paper provides an intensive study on environmental education and how different learning approaches can be exploited essentially in educational programs in India. While the innate upsurge on geniality in the textbooks is necessary and inspiring, a healthier interpolation of the burning impasse as to environmental crisis and how it could be mitigated is recommended. The result shows that decrepit idiosyncrasy of environmental education is basically responsible for its little importance and also recommends solid substrate from external agencies along with teachers training, etc.

Keywords: Environmental education; Technology integration; Educational technology; Government; Curriculum

Introduction

Diversity of India with over a billion people and as to culture and biological wealth is colossal. Despite agile changing lifeboats, traditional culture honoring nature and environmentally friendly practices embolden the lives of humanity. With a big stumbling on education for sustainable development during the last few decades, distinct policy briefs have illuminated the need to approach it sporadically through education. Widespread cognizance about environmental issues is luminous, but bare environmental knowledge rockets as a cramp aspiringly towards achieving sustainable future for humanity. Concurrently, man is fleecing nature apropos that nobody will avert from the harm springing from coveting fossicking. Human demand is elephantine. It is against this backdrop that the environmental education (or,EE) strategy of India has been sprung in India. The Constitution of India explicitly makes environmental conservation a duty. The Central

Government and all states inside India inly a Department of Environment which recognizes EE as essence of education.

Objectives

- **Awareness:** To acquire awareness of pollution and environmental degradation.
- **Knowledge:** To acquire knowledge about environment beyond the close proximity including distant habitat.
- **Attitudes:** To acquire rationale for environmental protection.
- **Skills and Capacity Building:** To develop skills required for making discriminations in shape, sound, touch, habits and habitats, and further, to draw cognitive cerebration.
- **Participation:** To provide opportunity for rapprochement in environmental decision making.

UNESCO(1971)suggested the objectives as:(a)creating awareness about environmental problems.(b)imparting basic knowledge about environment and its allied problems.(c)developing attitude

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for environment.(d)motivating for participation in environment protection and improvement.(e)acquiring skills in identifying and solving environmental problems.(f)attaining harmony with nature. Environmental educators develop etiquettes with variation of different cultures and ecosystems.

Basic Concept

EE is strongly associated with man's interface with his culture and bio-physical environment. EE also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. Education and public participation may change and improve environmental compatibility. EE is an inveterate interdisciplinary field of study and helps perpetrate the goals of environmental protection to improving the quality of human communities. Prosperity of a nation depends on rational use of human and physical resources through industrialization built on science and technology. Despite perennial controversy between development and environment, striking a balance between these two contradictory factors is immanent. Environment embodies both living and non-living component on which men explicitly or implicitly depend for their survival. Environmental Protection Act (1986) defines "Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, both living and non-living component and property". EE adopts environmental system scientifically and admits the study of physical and biological green characters as also social and cultural factors and the impact of man on environment.

Role

EE protects environment with proper awareness and adequate knowledge. It, therefore, highlights to develop education about environment, education for environment and education through environment. EE adopting a holistic perspective examines ecological, social, cultural and other aspects of specific issues. EE is inter-disciplinary. This makes it imperative to train specialists in EE for planning, development and adopting remedial measures for decision-making and development strategies for environment protection. Based on the report of the Education Commission, 1964-66, National Council of Educational Research and Training (NCERT) prepared resource materials for learning environment in primary education [1,2]. The National Policy on Education, 1986 has also emphasized on EE [3]. A thirst is, therefore, felt to disseminate for the protection of environment by refashioning its modality and curriculum within the domain of education. UNESCO hunts for showing EE economic, social, political and ecological interdependence of the modern world where different countries have international repercussions respecting decisions and actions. EE, thus, develops a sense of responsibility and solidarity

among countries and regions as the new international order guarantees environment conservation and improvement. At the grass root, EE makes individuals and communities understand the complex nature of the natural and the built environments. UNESCO directs the following guiding principles of EE: (a)compulsory right from primary stage to post graduate stage.(b)interdisciplinary approach involving every aspect of environment.(c)considering current and potential historical issues.(d)emphasis on sustainable development.(e)seeking national and international cooperation.(f)more emphasis on practical activities and first hand experiences.

Benefits of EE

- **Heightening imagination and enthusiasm:** EE is hands-on, interactive learning that sparks imagination and unlocks creativity. Integrated EE into curriculum makes students more enthusiastic in learning which raises students achievement in core academic areas.
- **Transcending learning in classroom:** EE offering opportunities for experiential learning outside classroom enables students to apply their learning in reality. EE helps learners study the reciprocity of social, ecological, economic, cultural and political issues.
- **Enhancing critical and creativity skills:** EE encourages students to investigate and make their own decisions about complex environmental issues. EE thus helps foster new generation of consumers, workers as well as policy or decision makers by developing fecundity.
- **Supporting tolerance and perception:** EE encourages students to investigate manifold hurdles to have broad view. It promotes tolerance of stance at diverse cultures.
- **Meeting learning standards for multiple subjects:** EE practices help teachers integrate different subjects into one lesson and satisfy national academic standards in all subject areas. Taking class outside or bringing nature indoors provides excellent backdrop for interdisciplinary learning.
- **Declining Biphobia and nature deficit disorder:** By exposing students to nature to learn and play outside, EE fosters sensitivity, appreciation and respect for environment.
- **Encouraging healthy lifestyles:** EE getting students outside and active helps address few health issues like obesity, attention deficit disorders and depression. Good nutrition is often emphasized through EE and stress is reduced for extra time spent in nature.
- **Strengthening Communities:** EE promotes connectivity with sense through community involvement. Students seeking to learn more or taking action to improve their environment outstretch to community experts, donors, volunteers and local

facilities to bring community together to address environmental issues impacting their neighbourhood.

- **Assuming responsibility for better environment:** EE helps students understand effect of their decisions and actions on environment, build knowledge and skills necessary to address complex environmental issues as well as to keep environment healthy and sustainable for the future.
- **Empowering students and teachers:** EE promotes learning, citizenship and students leadership. It empowers youth to share their voice and makes a difference at their school and communities. EE helps teachers build their own environmental knowledge and skills.

Literature Review

Literature review develops researchers awareness about research works effectuated in the past and feeds them methodology to contemplate the problem, and unveils the unexposed particulars and impression. Studied the role of EE in soil conservation among the farmers in Rakai District, Uganda and found majority (over 90%) of the farmers practicing soil conservation by learning environment [4]. Endeavored with robust approach for the fortification of academic and non-academic realms in EE and argued affirming inextricable relationship of formal education system with non-formal like conservation photographers [5]. Inferred positive impact of methodical contemplating and interpretation of EE programmes towards conservation of nature [6]. Examined the role of ecotourism in EE towards conservation of biodiversity at Selirong Island Forest Recreational Park in Brunei Darussalam and observed there incompetent EE mechanism in bringing etiquette of tourists. The author suggests for alternative EE programme by merging with the private sector and the tourism industry [7]. Tested infallibility of the New Environmental Paradigm (NEP) Scale among school children in Senegal. The authors conclude that the Scale seems capricious among children for passionate theism, little knowledge and their alternative approach towards society and nature [8]. Examined instant and sustained environmental knowledge of children in West Africa. The results reveal dramatic growth in their knowledge and stance towards nature conservation activities [9]. Discussed the role of media in conservation and EE. Most of the performances supported the philosophy of pragmatism. The author wishes to discern the humanistic view of environment and illuminates to reconcile the human and wildlife to execute sustainable environment [10]. Examined the knowledge of EE students from the Mahasarakham University, Thailand about the conservation of watershed forestry. The researcher finds growth in students' knowledge and disposition towards watershed forest conservation after the program is over [11]. Conducted extensive interviews with conservation practitioners to acknowledge the role of EE for

biodiversity conservation developed on Communication, Education and Public Awareness and Participation Strategies (CEPA). The results evidence that EE teachers and institutions make significant behaviorisms among the target population [12]. In their examination on community-based EE in conservation of environment towards educated fishermen in coastal villages of Tuticorin showed that EE help the fishermen understand the need for their environmental health and the importance of nature. EE should be ongoing to make the fisherfolks conscientious towards environmental protection [13]. In their study showed more pizzazz and receptivity of female undergraduate students towards environment than male students as to their gender and faculty types [14]. In their survey on environmental awareness of Shanghai College students showed that the students in general regard environmental issues with high spirits [15]. Investigated the liaison between local environmental knowledge and environmental concern among college students. Result indicates that local environmental knowledge is not palpably pertaining to an individual's level of environmental concern [16]. In their study on environmental awareness evidenced higher degree of awareness of professional courses undergraduate students than non-professional students of Aligarh Muslim University, Aligarh [17]. In the survey on responsible habitual activities for environmental sustainability among undergraduate students in Nagaon sub-division of state Assam indicated students mostly constructive attitude (about 92%) towards environment [18]. In the study on behaviour and perception of college students about EE in Nagaland showed majority of the students (about 92%) enthusiasm towards environment and deliberation in EE subject [19]. In their study observed students environmental awareness built on their current eventualities [20]. Found that at primary level, the Finland EVS curriculum is high-grade as regards making students aware and responsible towards environment whereas the Indian curriculum lacks clarity in aims, content, pedagogy and assessment [21]. Observed that folk music and folk songs help students acquaint with their own culture and familiarize for the environmental aspects [22]. Observed productive EE teachers community involvement in teaching sustainability helps grasp local environmental challenges and develop solutions [23]. Portrayed that germane teachers training boosts environmental knowledge; but knowledge sharing into positiveness and quintessence is an extensive procedure and postulates constant intrusion [24]. Revealed more environmental awareness of senior secondary students than high school students. Girls at high school demonstrate better environmental awareness than boys [25]. Observed compatibility about environmental awareness amongst the pre-service graduate teachers and have more environmental awareness of female teachers than the male [26]. Reported suppression of English medium over Urdu and Kannada for embellishing environmental awareness of students in Gulbarga,

Karnataka [27]. Observed that scientific concepts collaborating with environmental issues have not been approached congruously for the NCERT science textbooks of Class IX and Class X [28]. Found teachers use of only blackboard and chalk for teaching-learning EVS and no attempts to better textbooks. Classroom teaching-learning is cramped to reading out the text either by teachers or students. Teachers cannot unearth social susceptibilities encapsulated in NCERT EVS textbooks perceiving hefty modules missing pertinence. They also found treating environmental studies(EVS)as additional subject to science whereas social science as separate subject in Delhi State Government schools against the National Curriculum Framework,2005 [29]. Observed green practices in India reflecting doltishness of Education for Sustainable Development (ESD) among different parties in school education. Relevant courses at the planning and implementation levels improve synergism among lieutenancies [30]. Observed that NGOs help build a symbiotic relationship between environment and society through holistic approach [31]. Reported ramification of technology on student's attachment to environment [32]. Reported modest level of awareness among Ladakh school teachers about local biodiversity, wildlife and preservation [33]. Observed in their study that integrated approach can address the curriculum load and help children learn EE excelling at Kendriya Vidyalaya primary teachers [34]. Found that environmental studies at national level embraces more social science intensity but the state curriculum fails to provide contemplation towards this. He advocated for concerning social contact with environment in the Assam State curriculum [35]. Found positive impact of socio-economic factors on environmental management [36]. Found environmental awareness and participation of the students in Tamil Nadu in environmental programmes [37]. In their study in Bhopal demonstrated that domestic content and immediate context is absent in environment studies textbooks in India. They observed big gap between EE in Madhya Pradesh State curriculum and that of the NCERT at the national level across all grades respecting contextual linkages and interdisciplinary aspects. Students learn particulars and remedies without their real connection with social realism. Although a major environmental disaster i.e. the Bhopal gas tragedy eventuated, it does not value illustriously in the environment studies textbooks of the Bhopal schools. The article also elaborates how waste management prevails over problematical vital industries and their waste generation. Eco literacy insinuates a wider knowledge of how people and societies pertain to en masse and to innate structure, and how they might do so greenly [38]. In their study in Madhya Pradesh to examine the curriculum, textbooks and teaching of EE in India noted that social aspects of the environment crisis are fairly absent both from the textbooks as well as classroom teaching. Although there was a belief in the concept of 'balance of nature' both among teachers and in the textbooks, this belief is dubious and there is no scientific basis [39].

Methodology

The study is analytical and exploratory in nature and, in essence, rests on secondary data. The researcher, being an external analyst, has to depend substantially on current literature available in the form of books, journals, articles, research projects, official websites, conference reports. Government reports, etc. Editing, classification and tabulation of data assembled from these sources have been accomplished as per necessity of the study. This paper basically analyses the importance of EE in Indian context and also offers suggestions for improvement of EE study in India.

Objective of the study

The prime objective of the study is to discuss the importance of EE and the challenges that need to be considered in India. The paper also offers few recommendations for improvement of EE in the country.

Discussion and Results

Environmental education in India

In the Indian scenario, although consideration for the environment is consistently a part of the culture, EE in a frog view embodied part of the education system only in the 1980s with the National Curriculum for Elementary Education mellowed by the NCERT systematically incorporating environmental issues in national textbooks [40].The Government of India endeavored to expedite the causes of EE at the same time through a nationally sponsored Ministry of Human Resource and Development(MHRD)programme, Environmental Orientation to School Education (EOSE) in certain states to execute contextualized modules [38]. Although education commissions since independence have viewed the need for EE by anywise, it evolved obligatory only with the 2003 Supreme Court verdict which mandated all the states of India to teach 'green curricula'.

Major ways: (i) Formal Education and (ii) Non-formal Education

(i) Formal Education: Formal education has an explicit and meticulous syllabus. Formal EE starts at primary school level. At lower secondary level, children become cognizant of physical, social and elegant features of environment. At this stage and beyond, inter-disciplinary approach must be adopted and emphasis must be on increasing knowledge about environmental problems, conservation and economic resilience. National Council of Educational Research and Training (NCERT) has developed curriculum framework. At university level, University Grants Commission with a high-powered committee oversees and suggests areas of EE. Research institutes like Indian Institute of Technology (IIT), etc. provide EE. Environmental management accommodates subjects like land-use, waste management, wildlife management, conservation, forestry, biosphere reserves, etc.

following environmental policies and laws. Besides, there are topics to care the wholeness of humankind.

(ii)Non-formal Education: The realization that EE is a lifelong affair instead a matter of formal schooling produces growth in non-formal education. Flexibility of approach is hallmark of non-formal programmes. Non-formal education embraces extra-curricular activities like posters, essay-writing competitions, exhibitions, seminars, nature camps, audio visual slides, mobile exhibitions, etc. Eco-development camps foster awareness and solve environmental challenges. Vikram Sarabhai Community Centre, Ahmedabad invites students to succeed experiments and surveys. The centre has evolved a water monitoring kit for students under the Ganga Pollution Control Programme. Organizations like Bal Bhawan Society, Shantiniketan illuminate arts and crafts, folk dances, ballet and street plays.

Guiding principles of EE

i) Consider environment in its totality, natural and built technological and social structures. ii) Environmental education to be a continuous lifesaving process. iii) Environmental education to be interdisciplinary in its approach. iv) Examine major environmental issues from local, national and international point of view. v) Environmental education to focus on current and potential environmental situations.vi) Promote the values and necessity of local, national and international cooperation in the prevention and solution to environmental problems. vii) Explicitly consider environmental aspects of plan for development and growth. viii) Enhance the position of learners in making decision concerning their environment and accept responsibility. Ix) Enable learners to discover symptoms and real and potential causes of environmental problems. x) Enhance the learners ability to develop critical thinking and problem solving skills. xi) Utilize different learning environment and approaches to learning/teaching about and form of the environment with emphasis on first-hand information.

Rationale for EE in India

1. EE in India as rooted in National Policy on Education (NPE) has planned to utilize scientific knowledge towards the remedy of environmental crisis. EE imparts knowledge about the new landscape. Obviously, the commoners should be seasoned with all capacities to resolve the environmental challenges.
2. India's societal development is firmly rooted on the exploitation of environmental resources. Green resource utilization is the core attribute of husbandry, the impulsion. Rampant degradation implicates environment causing interruption in humane distress. Few indeterminate resources should be managed on firm footing to arrest the extermination of ingredients of environment such as plants and animals.

Thus, EE necessitates awareness of the causativeness of these issues.

3. EE boosts international co-operation and discernment. Developed countries depend on hi-tech for exploitation of natural resources while developing countries like India exclusively reckon on green resources thereby engendering intensive and overstretch of these resources having worrying consequences.
4. Environment being the heart of life deserves adequate attention. Multiple issues will endanger humankind existence if environment is hazarded constantly. Broad cognizance on the impression of statecraft on local environment should be productive to management.
5. Comprehension of global warming is an essential component of EE which public should realize. EE is crucial due to its laciness. It is implicitly a new look. There is need to enhance the sterility and enlightening quality of environment to bolster healthy.
6. EE for the overarching socioeconomic liberation forms a big share in the depletion of green resources especially at the interior. Environmental resources and ethnic origin require security for offspring as also for buddy gees. Environment being part of our cultural heritage should be left to well-being.

Importance of EE in India

A healthy environment is quintessential for the survival of human race. A vast country like India faces formidable challenges in the shape of exploding population, common penury, volatile disasters and dwindling natural resource. Ethnic majority depends exclusively on scarce natural resource. Rapid population growth causes untold sufferings and hazards. In this spirit, EE becomes indispensable in India and accepted its need [41].Much emphasis is placed on the new approaches of EE. Inhabitants of rural, tribal, slum and urban areas, students and teachers in educational institutes feel education about environment. EE with sound legislation and sustainable management is important for effective policy framework to safeguard environment. EE focuses afresh to help societies resolve key issues about world's resources and encourages social participation to attain sustainability. Environmental pollution in differentia escalates problem but EE abets to apprehend the precise objectives of human activity on environment. With this, people also learn physical science, biological science, social science and applied science.

India is one of the world's top most populated cities. 27 Indian cities are amongst the top 50 world's most populated cities [42]. Urbanization rate is fast. Such rapid urbanization eventuates social issues like poverty, unplanned urbanization, industrialization and others resulting environmental degradation. Key environmental issues are:



i) Air Pollution: Air pollution vindicates 12.5% of total deaths in India. It also kills around 1, 00,000 children less than five years old every year [42].

ii) Water Pollution: 86% of the water bodies in India account polluted and unsafe for drinking or any other domestic purposes. The Ganges River tops the list of the world's defile rivers with Yamuna River being the 10th. Groundwater is also exploited as over 94.5% of all farming, irrigation and other activities are dependent on it [42].

iii) Waste Management: Urban India produces 62 million tonnes of trash annually. In all, only 70% is collected; 20% is treated while half of the waste is dumped in landfills. India has also recorded a 56% increase in the number of hazardous-waste generating industries in the last decade. Approximately, waste generated annually may increase by 165 million tonnes around, 2030 [42].

India is a quite diverse country apropos climate, geography, geology, ethnicity, flora and fauna, society and economy. Therefore, EE in India has to be region unique. Ministry of Environment and Forests has launched EE, Awareness and Training Scheme to enhance skills to create awareness through seminars, workshops, symposia, and training programmes. National Museum of Natural History, New Delhi promotes education in various directions through exhibitions and educational programmes and activities for children and general people. Indian Council for Forestry Research and Education is heart of forestry education and extension development. Forest Survey of India, Wildlife Institute of India and others offer training on distinct perspectives of EE. Also, it should be explicated that EE brings many career opportunities and as an interdisciplinary subject, has tremendous scope in job creation. With growing awareness of environmental study, demands arise for environmental educators, professionals, economists, geographers, social scientists, etc. to meet hazardous waste problems, government and industry policy, technologies, environmental degradation, etc. Business too needs a pilgrim class of environmentally literate and responsible leaders to study impact of products and services on environment. EE needs trained people in India for: i) Nature and Conservation. ii) Community. iii) Sustainable Development and iv) Research and Project Development. EE in essence creates a sustainable solution amongst the social, environmental and economic aspects. Education for sustainability (ES) is often esteemed pedantically as an entier of EE where its ambient factor is potently supplemented with social and economic aspects [43]. Education plays a crucial role in environmental sustainability [44].

Bridging the gap

The Indian administration has accredited the hot-button issue and ordained directives to bolster environmental restoration as: Companies Act,2013; National Green Tribunal Act,2010; Air (Prevention and Control of Pollution) Act,1981; Water (Prevention

and Control of Pollution) Act,1974; Environment Protection Act,1986; Hazardous Waste Management Regulations, etc. But still, there is a gap between the thought and the implementation. There happened many ecological blunders in the past for absence of consciousness of environment and sustainability practices in various sectors like i) Faulty plantation drives at Delhi. ii) Promotion of monoculture plantation. iii) Disaster of converting Mangrove zones to Shrimp farms. iv) Frauds and loopholes under corporate social responsibility (CSR). In 2020, new rules have been implanted to curb the frauds but the system is bound to constrict CSR implementation in their activities for bearing responsibility of the consumers, workers, stakeholders and the community. India incipiently has mandated CSR for companies [42]. Infosys in collaboration with the United Nations creates awareness to make their campuses free of single-use and non-recyclable plastics, and also to reduce its per capita generation by 50%. ITC targets to ensure full packaging reusable, recyclable or compostable [45].

Suggestions for Improvement

Revision of EE: At present, Indian EE is not much enticing and edifying for the students. It should be meliorated to express a bright materiality with the reality. Content must highlight an incorporated thematic or an interdisciplinary approach where the ideas are reflected through big ideas and unifying themes over the isolated segments.

Design of course material: Course materials should be practical by nature and endorse a holistic understanding of the particular area's environment. Material should build propinquity in regular chores of the students and their environment.

Development of sustainability: Sustainability rests on acceptance by the teachers and their potentiality to feed the course dexterously. Camps should be organized for teachers training sporadically. Several educationists cogitate Education for Sustainability (ES) as crucial of EE where ecological dimension of EE is invincibly exacerbated with demographic concerns [43].

Present Scenario in India

The Indian Constitution has enshrined commitment to environmental protection and improvement. EE is mainstream of both the Ministry of Environment and Forests (MEF) and the Ministry of Human Resource Development (MHRD). MHRD works towards the environmentalization of the formal curriculum, while MEF discerns non-formal educational strategies to touch the larger community. Also, different voluntary organizations promote EE activities in both formal and non-formal settings with the assistance of governments, independent trusts, donors, agencies, etc. The National Policy on Education, 1986 posits "There is a paramount need to create an environmental consciousness permeating all ages and all sections of society which should inform

teaching in schools and colleges” [3]. The policy contemplates national curricular structure having direct bearing on natural and social environment of the students. These occupy legendary place in instructional materials as well as in classrooms and out-of-school activities. Today EE in the formal educational system in India is maneuvered at three levels e.g. at the primary school level as a composite subject called environment; at the middle and secondary school level as introduction into environment in regular school subjects and at the college level as a separate subject. For effectively shouldered EE in curricular, co-curricular and extra-curricular mode, resources have to be embellished over the school and college systems. Universities and colleges offer degree or diploma covering all facets of environmental science and engineering. Autonomous Research and Development institutions like CSIR, ICAR and ICMR also proffer doctoral degree. Formal education in environmental science is available stretching the top-echelon. Environmental study programme requires restructuring. Courses should have specific curricula having specialists such as forest ecology, limnology, marine ecology, environmental analysis, pollution studies, environmental toxicology, etc.

Distinct delineations

i)Continuous lifelong process beginning from pre-school level to all formal and non-formal stages; ii)Interdisciplinary approach in making holistic perspective; iii)Examining major environmental issues from local, national, regional and international aspects to help students receive insights in other geographical areas; iv) Deliberating current and potential environmental situations including historical perspective; v)Promoting national and international cooperation in the proscription of environmental problems; vi)Enabling learners in projecting their experiences for decisioning, implementing strategies and accepting consequences; vii)Helping learners discover the decent cause of environmental problems; viii)Emphasizing the complexity of green issues and the need to formulate critical thinking and methodical skills; ix)Devoting diverse learning environments and a broad array of educational approaches highlighting practicum and competencies.

Teacher education and EE

Teachers should be both demonstrator and governor of knowledge to teaching-learning situations to improve attitudes and awareness apropos environment in students. Classroom organizations need big swing. Teacher’s preparation assumes noteworthiness. Their optimism should season the offspring. EE is a transition in 'what' is being taught and more a new perspective on 'why' and 'how'. The key to transition in educational system is teacher; unless teacher is convinced and feels competent to handle this, very little will reciprocate. Teachers should internalize switch in role from 'giver'

of knowledge to 'facilitator' in learning process. Pre-service and in-service orientation is bee-line to succeed this.

Technology mediated EE for teachers

Teachers should be well-equipped with the education paradigm and teaching-learning materials to inculcate intellect towards environment. Distance education is non-formal, learner-centric and cost effective; alternative method of teaching-learning remains away from direct, immediate and social interaction. It bridges instructional gap. Open and distance learning can be applied to nurture EE [46]. Distance education employs multimedia approach to instruction involving judicious blend of print and non-print Medias. Technology has salutary repercussions on teaching-learning system bringing passionate rationale among learners. Teaching has become charismatic and both students and teachers have become equally enthused.

Teacher education for EE: concerns and issues

- i) There is poor pre-service training and apposition around the perimeter of EE in terraces of training programmes. A core issue is that EE should not be daydreamed as sheer prelude of environmental concepts and facts.
- ii) Teachers are poorly adapted to tackle the new subject. 'Environment' has been incorporated as subject by any means in most curricula but training in EE is yet to introduce in the teacher-training courses. .
- iii) Students do not fathom EE pragmatic like other subjects. EE has been incorporated as an optional or elective subject into teacher-training courses. 'Non-science' students feel incompetence to grasp it as they extrapolate EE contains heavy natural science materials.
- iv) One-time training module is inadequate in orienting teachers to initiate EE efforts over time. There must be some system whereby teachers can receive ongoing support through both formal training programmes and continued networking.
- v) There is urgency for relevant resource materials for teachers. Worth of locale-specific EE materials extends certainly to address concepts and issues.
- vi) Lack of support from institutional management and other crucial agencies may restrict the access of teachers to training opportunities, resource and ongoing support in implementing EE activities amid their work.

Impediments to pursuance of EE

- i) Stern specialism. ii) Intricacy of multidisciplinary efficacy of EE. iii) High student-teacher ratio for projecting students involvement. IV) Rarity of skilled green mentor. v) Inadequate resources concerning equipment and materials.vi) Inclination to oppose reformations.

Challenges

Educational institutions have not adequate time to teach sustainable environment as a subject to students. Administration finds it difficult to avail resources necessary for offering high quality EE. Most of the teachers lack sufficient knowledge to impart sustainable EE. Students also do not give importance in learning environment as a subject since they consider it drossy to them. The important one is, therefore, to develop awareness eco-friendly. Although India has taken much ingenuity in EE today, environmental educators face several challenges. Few challenges include: i) Unearthing proper blend between centralized and decentralized exertion and approaches; ii) Devising environmental challenges relevant to distinct classes. iii) Proffering EE on the list of academic policy-makers. iv) Proposing sustainable development issues top on the programs of policy-makers. v) Developing human and financial resources for EE.

Challenges: issues and ideas for the 21st century

EE being vital to decipher ecological concerns must be relevant to the needs of the community and still refashions to the constantly evolving social and technological landscape. At the threshold of a new century, environmental educators must emerge with fresh acquaintances and techniques to address the demands of constantly evolving social and technological vista. These challenges require research and trained environmental professionals and educators as well as communication of eco-friendly information to the common public. Great stride in strengthening EE for the common public is especially pertinent in terms of defining EE and its objectives [47]. Cogent EE is a challenge to welcome the benefits of India's natural heritage.

Suggestions

- i) Environmental cruelty needs to be swungen at all levels-local, national and international. It necessitates to straddle awareness in sustainable development and green mystery to clinch gratification on earth for all mortals.
- ii) Teachers can strengthen the citizens with their ability, attitude and values to protect environment and generate workforce of virtuoso enthusiastic learners. They should be trained and equipped with requisite skills and values to consummate the novelties.
- iii) Universities and schools have to play a momentous role to implement the recommendations of the various commissions and committees for achieving environmental literacy among learners.
- iv) Technological interventions and mass media are imperative to create environmental awareness among the teaching community. A convergence of the conventional and distance learning systems can meet this challenge.
- v) Teachers training modules should incorporate EE with diverse disciplines since environment embraces other fields of study. Open

line like TV, radio, press and satellite technology are effective for environment educators.

- vi) Online courses with a drive on skill and value betterment demeanor can be built in line with Green Teacher Programme of the Centre for Environmental Education, Ahmadabad, India for being informed about environmental issues.
- vii) Students should be taught the role of trees, wild life, etc. and to restore their milieu. Goal-oriented breeding yields to love plants and animals.
- viii) Students should have skills and susceptibility to explicate ambient factors.
- ix) Multi-media courseware on environmental problems and awareness can be prepared particularly for the agriculturism in India.
- x) Synergism can be initiated between teachers and community through educational institutions to interpolate campaigns on environmental awareness, tree plantations, waste management, etc. in building instructional materials.
- xi) Intelligent retrieval plays a big role in dissemination of knowledge, skills and values among teachers and thereby to future generations. Networks necessitate to connect globally for acquiring information and expertise on latest developments towards EE and training.
- xii) Social awareness campaign in the fields of health, family planning nutrition, rural women development, dissuasion of cross-contamination, etc. necessitates organizing from villages to towns.
- xiii) EE leads to meticulous usage of resources, retrieval of used substance by waste recycling to withstand growing exigencies of consumption on the scarce resources of the planet, rocketing degree of environmental pollution and the problems of landfill.
- xiv) EE originates solicitude for environment that sensitizes green in individual's mundane sustainable life to safeguard it. Hence, there is a need to stow our heart towards environment by applying pragmatic proposition rested on cognizance and self-study.

Conclusion

Population growth and industrial use pose big dilemma to the protection of basic aquatic resources. EE due to its delicate attribute receives less importance than other aspects of environmental protection. To generate growing enthusiasm in the environmental field over the new century and to foster general public's knowledge for the environment, EE should start responding to major challenges like changes in demographics and experience, integration of novel data feeds with exploratory bettering rooms, communication of environmental issues to public and avoidance of inner grief. Teachers should be EE facilitators for adopting pragmatic approach to teaching-learning for environment. Besides teachers training, ongoing support from outreach sites needs to reach EE programme in institutions for its tangency with the educational system.

Research Comment

A sagacity, certainly a fervid committal to EE can be created by attracting people intellect, dissecting deterrents and proffering approach to proceed. People will acknowledge the benefits of sustenance and become reformers when they fathom the profundity of environment, its close-knit with the ocean, and how human thriving is secured to environmental health. Our future and the future of our planet reckon on our sheltering environment.

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