

# Environmental Education for Sustainability: A Major Aspect in Higher Education

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## Abstract:

*According to the size and diversity, India has the third largest higher education system in the world, next to China and the United States. India possesses a highly developed higher education system and it offers facility of education and training in almost all aspects. Enrolment in higher education has been rising steadily. The constitution of India explicitly makes environmental conservation a duty. So, Education Departments recognize "Environmental Education" as an essential part of education. The major objectives of "Environmental Education" are- Awareness, Knowledge, Attitude, Skill, Participation and Evaluation Ability.*

*Sustainability is becoming increasingly pertinent to higher education. The academic institutions are linking learning, innovation and competitiveness to sustainable development. The environmental education is a tool for the development of sustainability. Environmental education may be associated with formal, non-formal and informal medium of instruction. The course material should be intended so that it is practical by nature and endorses a holistic understanding of the environment of the particular area. As a whole, the sustainability of the program depends on the recognition by the teachers and their capability to provide the course efficiently. In the present paper authors have tried to state the present status of environmental education and its pivotal role in the field of higher education for sustainable development.*

**Key words-** Environmental Education, Sustainability, Higher education

## 1. Introduction:

Republic of India is a country in South Asia and it is the seventh-largest country by geographical area, the second-most populous country, and the most populous democracy in the world. A large number of students come to India from countries like Afghanistan, Bangladesh, Bhutan, Eritrea, Ethiopia, Fiji, France, Germany, Indonesia, Iran, Iraq, Japan, Jordan, Kenya, Lebanon, Madagascar, Malaysia, Mauritius, Myanmar, Nepal, Somalia, Sri Lanka, Surinam, Syria, Thailand, UK, US, Vietnam and Zimbabwe etc for their higher studies. They look at the Indian education system with thrust and belief. The present education system in India mainly comprises of primary education, secondary education, senior secondary education and higher education. Elementary education consists of eight years of education. Each of secondary and senior secondary education consists of two years of education. Higher education in India starts after passing the higher secondary education or the 12<sup>th</sup> standard. Depending on the stream, doing graduation in India can take three to five years.

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Postgraduate courses are generally of two to three years of duration. After completing post-graduation, scope for doing research in various educational institutes also remains open. As of 2020, India has over 1000 universities, with a break up of 54 central universities, 416 state universities, 125 deemed universities, 361 private universities, 7 Institute under State Legislature Act, and 159 Institutes of National Importance which include IIMs, AIIMS, IITs, IIITs, IISERs and NITs among others.<sup>[1][2][3][4][5][6][7]</sup> Other institutions include 52,627 colleges as government degree colleges, private colleges, standalone institutes and post-graduate research institutions, functioning under these universities as reported by the MHRD in 2020<sup>8</sup>.

## 2. Aims and Objectives:

- i) To get an idea about the status of higher education in India.
- ii) To get a knowledge about the curriculum of Environmental Education.
- iii) To observe the drawbacks of implementing Environmental Education.
- iv) To provide a recommendation regarding the proper implementation of Environmental Education.

## 3. Higher Education in India:

In its size and diversity, India has the third largest higher education system in the world, next only to China and the United States. Before Independence, access to higher education was very limited and elitist, with enrolment of less than a million students in 500 colleges and 20 universities. Since independence, the growth has been very impressive; the number of universities (as on 31st March 2006) has increased by 18-times, the number of colleges by 35 times and enrolment more than 10 times (Annual Report, MHRD 2006-07)<sup>9</sup>.

The extent of higher education is generally measured by enrolment ratio in higher education. Three alternative methods are used to estimate the extent of access to higher education namely Gross Enrolment ratio (GER), Net enrolment ratio (NER) and Enrolment of Eligible ratio (EER).

- i) **Gross Enrolment Ratio (GER):** The GER measure the access level by taking the ratio of persons in all age group enrolled in various programs to total population in age group of 18 to 23.
- ii) **Net Enrolment Ratio (NER):** - The NER measures the level of enrolment for age specific groups namely those in age group of 18 to 23.

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<sup>1</sup> [http://mhrd.gov.in/sites/upload\\_files/mhrd/files/statistics/AISHE2015-16.pdf](http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/AISHE2015-16.pdf)

<sup>2</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-I09RA-237-2](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-I09RA-237-2)

<sup>3</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-Central-7](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-Central-7)

<sup>4</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-State-8](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-State-8)

<sup>5</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-Deemed-9](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-Deemed-9)

<sup>6</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-Private-10](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-Private-10)

<sup>7</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-nic-11](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-nic-11)

<sup>8</sup> [https://en.wikipedia.org/wiki/Higher\\_education\\_in\\_India#cite\\_note-12](https://en.wikipedia.org/wiki/Higher_education_in_India#cite_note-12)

<sup>9</sup> <https://www.scribd.com/document/94028645/India-Country-Summary>

- iii) **Enrolment of Eligible Ratio (EER):** The EER measures the level of enrolment of those who completed higher secondary level education.

These three concepts thus look at the access to higher education from three different angles. Three alternative sources namely Selected Education Statistics, (SES) National sample Survey (NSS) and Population Census (PC) provides data on number of student enrolment.

#### 4. Status of Higher Education Enrolment:

- As of 2007, only around 11% of the 18 – 23year-old population of India is enrolled in higher education.
- On the whole, India has an enrolment rate of 9% which is similar to that of other lower middle-income countries.
- The population that is enrolled in higher education consists largely of urban metropolitan dwellers.
- Rural enrolment in higher education is very low. Moreover, a majority of the recorded enrolment is at the undergraduate level.
- Over the last 4 years, Indian higher education has maintained a steady female enrolment rate of around 45%.
- Although the gender gap in enrolment has decreased significantly post-independence, there still exists a disparity amongst different departments.
- Technology, medicine and commerce are some of the areas of study that are heavily male-dominated while humanities departments show the opposite trend.
- As per the latest Census 2011<sup>10</sup>, about 8.15% (68 million) of Indians are graduates, with Union Territories of Chandigarh and Delhi topping the list with 24.65% and 22.56% of their population being graduates respectively.
- The University Grants Commission estimated that in 2013–14, 22,849 PhDs and 20,425 MPhil degrees were awarded. Over half of these were in the fields of Science, Engineering/Technology, Medicine and Agriculture.
- As of 2014–15, over 178,000 students were enrolled in research programs.

#### 5. Initiatives of Government:

The “Access and Equity” in the education sector is the significant aspect in this socio-economically diversified country. The Central Government is conscious of the need to raise both the enrolment rate and access to higher education to all who deserve irrespective of class, caste, religion, gender or economic status. In the last plan period enrolment rate has gone up from some 6% to 10% and the 11th Plan it is proposed to raise it 15 percent.

A number of innovative schemes have also been in operation in the Higher Education sector, some promoted by the University Grants Commission, others by the Technical education division

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<sup>10</sup> Rukmini S. (4 August 2015). ["Only 8.15% of Indians are graduates, Census data show". \*The Hindu\*. Retrieved 1 April 2016.](#)

of the Ministry of Human Resource development and All India Council of Technical Education, and yet others by Indian Council of Agricultural research and several other Departments of the Central Government dealing with Science and Technology and their applications.

### 5.1 Some Current Government Initiatives:

- **Rashtriya Uchchar Shiksha Abhiyan**<sup>11</sup>: A total of 316 state public universities and 13,024 colleges will be covered under the Rashtriya Uchchar Shiksha Abhiyan, a plan to manage funding for higher education. This is a scheme to develop state university by central govt funding (60% for general category states, 90% for special category states, 100% for union territories).
- **Scheme of Integrating Persons with Disabilities in the Mainstream of Technical and Vocational Education**: Caters to around 50 polytechnics in the country and provides them with grants-in-aid aimed at facilitating greater integration of disabled individuals into higher education.
- **Scheme of Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT)**<sup>12</sup>: The purpose of this scheme is to raise the quantity and quality of teaching staff across schools and colleges. It also aims to create better institutional frameworks in order to cultivate change in the positive direction.

### 6. Evolution of Environmental Education:

- The concept of environmental education emerged only in the seventies which were called as the decade of environmental education. During that period the world realized that environmental concerns and awareness could be spread only through a mass environment education program.
- The concept of Environmental education (EE) was first formalized by the International Union for the Conservation of Nature (IUCN), in 1970 at a meeting in Nevada, USA, as a process of recognizing values and classifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental Education also entails practice in decision-making and self-formulating of a code of behaviour about the issues concerning environmental quality (IUCN, 1970)<sup>13</sup>.
- Subsequently, Environmental Education was recognized and its development was recommended by the World Community as a measure for the understanding, protection and

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<sup>11</sup> [Govt launches Rashtriya Uchchar Shiksha Abhiyan for bouldering Higher Education](#)". Retrieved 7 October 2013.

<sup>12</sup> "Department of Higher Education | Government of India, Ministry of Human Resource Development". [www.mhrd.gov.in](http://www.mhrd.gov.in) Retrieved 27 April 2018.

<sup>13</sup> <https://ugcnetpaper1.com/value-education-and-environmental-education/#:~:text=The%20concept%20of%20Environmental%20education,understand%20and%20appreciate%20the%20inter%20>

improvement of the environment and its quality (United Nations, 1972<sup>14</sup>; UNESCO-UNEP, 1976<sup>15</sup>).

- The concept of environment education emerged from the Stockholm Conference organized by the United Nation in 1972. Recommendations of the conference emphasized organization of 'formal' and 'mass' environmental education programs. Educating the people at large about environment and its components would develop critical thinking analytical and problem-solving skills in them. It would develop knowledge and insights to improve quality of human life on earth.

### 6.1 Belgrade Charter 1975<sup>16</sup>:

The Belgrade Charter was developed in 1975 at the United Nations Educational, Scientific, and Cultural Organization Conference in Yugoslavia, and it provides a widely accepted goal statement for environmental education: The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively towards obtaining solutions for current problems and the prevention of new ones (UNESCO, 1976)<sup>17</sup>.

### 6.2 Tbilisi Declaration 1977<sup>18</sup>:

Following Belgrade, the world's first Intergovernmental Conference on Environmental Education was held in Tbilisi, Georgia. The representatives at the Tbilisi Conference adopted the Tbilisi Declaration, which challenged environmental education to create awareness and values amongst humankind in order to improve the qualities of life and the environment. A major outcome of Tbilisi, gave detailed description on the objectives of environmental education viz: awareness, knowledge, attitudes, skills and participation. Most environmental educators have since then universally adopted these objectives. A brief explanation is provided against these objectives-

- i) **Awareness**- to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.
- ii) **Knowledge**– to help social groups and individuals gain a variety of experience in, and to acquire a basic understanding of, the environment and its associated problems.

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<sup>14</sup> <https://ugcnetpaper1.com/value-education-and-environmental-education/#:~:text=The%20concept%20of%20Environmental%20education,understand%20and%20appreciate%20the%20inter%2D>

<sup>15</sup> <https://ugcnetpaper1.com/value-education-and-environmental-education/#:~:text=The%20concept%20of%20Environmental%20education,understand%20and%20appreciate%20the%20inter%2D>

<sup>16</sup> <http://wildheartnature.weebly.com/what-is-environmental-education.html>

<sup>17</sup> <http://wildheartnature.weebly.com/what-is-environmental-education.html>

<sup>18</sup> <http://wildheartnature.weebly.com/what-is-environmental-education.html>

- iii) **Attitudes-** to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.
- iv) **Skills-** to help social groups and individuals acquire the skills for identifying and solving environmental problems.
- v) **Participation-** to provide social groups and individuals with an opportunity to actively involve at all levels in working toward resolution of environmental problems.

## 7. Importance of Environmental Education in Indian Perspective:

- The **Honourable Supreme Court of India in 1991**<sup>19</sup> made environment education compulsory at all levels of education.
- A Curriculum Framework prepared by the NCERT has been accepted by the Court as the guideline for State Education Departments to develop textbooks for schools from 2004-2005 onward. While efforts at integrating environmental concepts into curricula have been going on since over 15 years, the judicial interest in the issue has given it impetus. NGO networks, including Centre for Environment Education (CEE), in partnership with the Departments of Education and academic institutions, carry out teacher training in EE.
- In-service and pre-service opportunities for incorporating EE are offered through EE courses and project work. However, rigid and overloaded curricula, time constraints and a conventional approach to teaching still pose a challenge to the integration of EE in formal education. Systemic changes and ongoing capacity-building will be required to address the issue. Distance education may be explored as an option for ESD (Education for Sustainable Development).

## 8. Constitutional Provision Regarding to the Environment:

- The State's responsibility with regard to environmental protection has been laid down under **Article 48-A** of our Constitution, which reads as follows: "The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country".
- Environmental protection is a fundamental duty of every citizen of this country under **Article 51-A (g)** of our Constitution which reads as follows: "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures."
- **Article 21** of the Constitution is a fundamental right which reads as follows: "No person shall be deprived of his life or personal liberty except according to procedure established by law."
- The State's responsibility with regard to raising the level of nutrition and the standard of

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<sup>19</sup><http://www.ecology.edu/environmentaleducation.html>

living and to improve public health has been laid down under **Article 47** of the Constitution which reads as follows: "The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health."

- **The 42nd amendment** to the Constitution was brought about in the year 1974 makes it the responsibility of the State Government to protect and improve the environment and to safeguard the forests and wildlife of the country. The latter, under Fundamental Duties, makes it the fundamental duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.

## 9. Curriculum of Environmental Education:

The importance of extending Environmental Education to college students on the threshold of becoming active participants in society as citizens, teachers, decision-makers and leaders, has steered Centre for Environment Education (CEE) over the years to evolve its Higher Education Programme. This initiative is significant in light of the Supreme Court ruling on introducing courses on Environment at all levels of higher education, and the University Grants Commission's subsequent recommendation to all universities to introduce a compulsory foundation course at the undergraduate level.

As part of its Higher Education Programme, CEE develops programmes and instructional material for college students and teachers. In collaboration with institutions of higher and professional education, CEE designs and delivers tailor-made courses to the students. A pioneering project in the development and institutionalization of a curriculum in EE for pre-service teachers has also been undertaken.

### 9.1 Areas covered in the educational institution while imparting environmental education are-

- i) General environmental education
- ii) Forestry
- iii) Solid Waste management
- iv) Pollution control
- v) Natural resource management
- vi) Marine or fisheries
- vii) Water management
- viii) Agriculture
- ix) Biodiversity/ wildlife preservation
- x) Community development
- xi) Urban management
- xii) Carbon cycle
- xiii) Alternate energy

- xiv) Sustainability
- xv) Population control
- xvi) Climate change
- xvii) Environmental health
- xviii) Environmental laws

#### 9.2 Some major programmes are--

- i) Samvardhan – building the capacity of Rural Higher Education Institutes in Gujarat for sustainable Natural Resource Management.
- ii) EnviroScope – a series of manuals for college teachers.

#### 9.3 Environment and development courses:

- i) Understanding Environment – Textbook on Environment
- ii) EEPT- Environmental Education for Pre-Service Teachers Collaborations with Universities and Colleges.

#### 9.4 The National Policy on Education 1986 (renewed in 1992)<sup>20</sup> :

The National Policy on Education 1986 stated: There is a paramount need to create a consciousness of the environment. It must permeate all ages and all sections of society, beginning with the child.

#### 9.5 The National Curriculum Framework 2005<sup>21</sup>:

- The NCF-2005 envisages that Environmental Education to be imparted in an infusion model in the Upper Primary and Secondary stages of school education with an aim to bring about sensitivity towards the environment.
- The policy documents had been emphasizing on the subject since 1968. The result is highly aware generation. But the action towards it was still lacking.
- The NCF-2005 focuses on bringing about a generation which is sensitive and ready to work for it. National Focus Groups-Position Paper on Habitat and Learning which forms the basis of Environmental Education as discussed in NCF-2005, emphasizes that EE with its holistic approach will form the new paradigm and replace sectoral thinking by multimilitary thinking.
- It states that the very nature of EE will help in building capacity for critical thinking and problem solving instead of rote memorization. The position paper also provides a flowchart and a road-map for the implementation of EE.

#### 10. Status of Environmental Education in India:

According to Tauseef Z. Siddiqui and Anna Khan (2015)<sup>22</sup>, Green Activities adapted in some educational campus

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<sup>20</sup><https://ncert.nic.in/division/der/pdf/RAlexandar.pdf>

<sup>21</sup><https://ugcnetpaper1.com/value-education-and-environmental-education/>



- Recycling program
- Waste reduction program
- Pest management within premise
- Reduction of carbon emission
- Food waste management
- Policies to ensure hygiene of premise
- Pollution control activities
- Garden within campus
- Plantation of trees
- Policies against using toxic substances

Nearly 44.4% respondents feel that the present environmental education in India contributes towards sustainability (Chi –Square test statistic = 34.468, p – value = 0.000 < 0.05). This means that the education institutions in India shows high importance over the environmental education with specific emphasis to sustainability and various environmental education patterns

#### 11. The Problems Facing Regarding Environmental Education in India:

The problems facing regarding Environmental Education in India can be summarized as follows:

- i) **Curriculum load:** There is a tremendous pressure from parents and community regarding how heavy the school curriculum has become, which in turn is responsible for development of stress among students and thereby affecting their normal developments. This problem of curriculum load seems to be complex and has its roots in many related issues.
- ii) **Preparation of teachers:** Pre-services preparation and In-service training of teachers are major problems in implementation of environmental curriculum. Given the huge number of teachers and geographical character of the country, management of in-service programmes is indeed a challenge.

#### 12. Environmental Education for Sustainability:

The environmental education is the mechanism and a tool for the development of sustainability. The environmental education helps environment in a number of ways. Added to that, it helps the society by providing a critical likeness of the world. This is specifically its failings and awful injustices, and by the way of endorsing greater consciousness and awareness, analysing new terms and vision and discovering fresh techniques and tools. It is that the environmental education is the superior expectation of humanity and the most efficient means to accomplish sustainable development. It is that the environmental education might not be associated with the schooling education or formal environmental education alone. This includes the non–formal

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<sup>22</sup>Khan.A and Siddiqui..Z.T (2015), Environment Education: An Indian Perspective, *Research Journal of Chemical Sciences*, Vol. 5(1), 1-6

and informal medium of instruction and learning and also comprises of the conventional knowledge that are obtained in the home and community.

### 13. Recommendation for Improvement of Environmental Education in India:

The following are some of the suggestions that are recommended to improve the environmental education in India--

- 1) **Content of environmental education should be modified:** At present, the content of the Indian environmental education is not much attractive and informative for the students. It should be enhanced in such a way that it expresses a clear association to the environment and the environmental concerns. The content must help highlight an incorporated thematic or an interdisciplinary approach in which the ideas are uttered through big ideas and unifying themes rather than the isolated segments. The content should associate the learning with the actual world. Personally, it has to be applicable to the learners and include issues that are significant to the society and also it should equip the learners with the adequate skills in order to continue learning all through the life.
- 2) **Design of the course material:** The course material should be intended so that it is practical by nature, specific to the locale and endorses a holistic understanding of the particular area's environment. Also, the material should establish an association among the day – to – day life and actions of the students and that of their environment.
- 3) **Development of sustainability:** The sustainability of the program depends on the recognition by the teachers and their capability to provide the course efficiently. The training of the teachers should be considered as a main concern within the proposal. Camps should be arranged in order to train the teachers from time to time. Also, a manual should be offered to teachers in order to enable them to guide the students in their practical work and also the self - contained and self–explanatory workbooks should be provided.
- 4) **Preparation of text book-** The text books on environmental science should not only provide space for physical and natural environment, but also for the social environment as family, school, neighborhood, and community are domains of a child's life.
- 5) **Improving educational outlook-** Improving the educational outlook for environmental learning is the goal of all environmental educators, and they need to take an active role in making teachers aware of the complexities of environment and its problems to the society. Environmental educators can also support student learning about environment by providing teachers and publishers with additional local environmental issues as an example relevant to science topics, and engaging problem solving and service-learning opportunities.

The above recommendations when followed will help in improving the environmental education in India.

#### 14. Conclusion:

Some studies demonstrated that students learn more quickly in outdoor settings compared to classrooms, retain skills longer and appreciate the experience to a greater extent. This is similar to the findings of several workers (Tanner, 1980<sup>23</sup>; Tsevreni, 2011<sup>24</sup>; Cuthbertson, et.al, 2003<sup>25</sup>). The present study has indicated that field-based education positively impacts ecological attitudes and behaviour. This is in agreement with findings of several earlier workers (Cobb, 1977<sup>26</sup>; Dresner & Gill, 1994<sup>27</sup>; Moore & Wong, 1997<sup>28</sup>; Dettmann-Easler and Pease, 1999 Crane, 2001<sup>29</sup>).

Students should be encouraged to be involved by expressing and communicating their experiences, ideas and emotions about their immediate environment and their everyday life (Barratt Hacking, Barratt, and Scott, 2007<sup>30</sup>). Cooperation among local governmental organizations, nongovernmental organizations (NGOs) and schools is essential in order to develop sustainable environmental projects (water conservation, biodiversity conservation, air pollution, waste management, recycling, re-using) in which all stakeholders will have to take active roles to protect and conserve the natural environment. Introduction and implementation of environmental education as an independent subject would require to formulation of strategies, logistics and comprehensive support systems at different levels- both within the school systems as well as outside; Pedagogy need to be based on the needs of children belonging to different age groups, local context, and indigenous perception of environment, cultural tradition and multi-disciplinary approaches.

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