



Cover Page



IMPORTANCE OF ENVIRONMENTAL EDUCATION IN PRESENT SECONDARY SCHOOL CURRICULUM IN WEST BENGAL - AN ANALYTICAL APPROACH

¹Dr. Madhumita Baidya, ²Ananya Baidya and ³Sathikona Rajwar

¹Assistant Professor, Sidho-Kanho-Birsha University, Purulia

²Research Scholar, Sidho-Kanho-Birsha University, Purulia

³MA Student, Sidho-Kanho-Birsha University, Purulia

Abstract

The study of environmental education is extremely vital for the students to understand the necessity of protecting and conserving nature from harmful human activities. Environmental education enables students to explore the complex issues of the environment, create adequate consciousness for solving those issues in a sustainable way. The present study aims to determine the major importance of environmental education for secondary school students by examining the existing secondary school curriculum of the state of West Bengal. The authors tried to qualitatively analyse the curriculum with respect to course content, teaching strategy and the learning activities to assess its present status for successful integration of the subject at secondary level. In the study, the authors through content analysis method attempted to point out the significant challenges in implementing the subject at the secondary school level. Finally, by shedding light on such aspects, the authors interpreted the educational implications of imparting environmental education to foster a deep sense of values and responsibilities among students towards achieving sustainability. However, the study findings may contribute to develop effective strategies for promoting environmental stewardship among the students for their healthy living.

Keywords: Environmental Education, Its importance and scope, Curriculum at Secondary School level, Content Analysis, Challenges, Educational Implications

Introduction

“Take care of earth and she will take care of you”

-Jerry Smith

The word ‘environment’ is derived from the French word ‘Environ’ means surrounding that consists of everything we see around us such as living things and non-living things. The most important things that are needed by us from the environment include the food, the air, and the water for sustaining our lives. However, due to various anthropogenic factors and man-made activities, environmental balance get largely disrupted. It aims to allow individual to explore environmental issues, engage in problem solving activities and take action to improve the environment. It then helps the students to improve awareness and responsibility towards environment. It is necessary to protect the environment from such harmful activities. Hence, awareness is to be spread among all individuals of the society regarding the different issues and concerns of environment. Therefore, Environmental Education may play a significant role in increasing awareness for safe guarding the environment from any loss and damage. Introduction of Environment Education into the secondary school level curriculum may help to bring revolutionary changes. It helps the students to acquire knowledge about the importance of environment, help them to solve the current environmental problems such as pollution problem, global warming, and deforestation, also gives them idea about judicious utilization of natural resources through minimal human action towards nature. On 5th June World Environmental Education Day is being celebrated to raise awareness among all and inculcate the attitude to protect the environment.

According to UNESCO, “Environmental education is a way of implementing the goals of environmental protection. It is not a separate branch of science but lifelong interdisciplinary field of study.” “Environmental Education is a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and foster attitude,



Cover Page



motivation and commitments to make informed decisions and take responsible action”. (Tbilisi Declaration, 1978).

In 1991, Indian lawyer MC Mehta filed a petition in the Supreme Court to include Environmental Education as a compulsory subject in the curriculum at all levels of India education. As a result, in the year 2003, Environmental Education was included in the formal education curriculum of all India states as per the court's order. Thereafter, Environmental Education was also included in the curriculum in schools, colleges, and universities, among other subjects, and in 1985 MC Mehta's efforts initiated a transformation in environment law in India, which resulted in the formation of Article 21 of the Indian constitution reflecting “right to health and environment”.

Rabindranath Tagore's philosophy emphasized that education was not just about moral knowledge but also understanding how to live healthily and harmoniously in this world. Environmental education is the understanding of the world around us; its complexities, problems and positive aspects and its knowledge should be imparted to students from childhood as it will make student responsible citizens in future and help them to effectively deal with environmental issue.

Environmental Education was introduced at the late of the 19th century. In the year 1899, Patrick Gaddes developed an institution for fostering the concepts of environmental education called the Outlook Tower. He believed that Environment and Education were interdependent. So, development of environment and education should be done simultaneously- improvement of one will improve the other. Philosophers of education at various times have spoken of teaching through nature. Rousseau gave the element the highest place in the education of children. Our country's Rabindranath Tagore, Mahatma Gandhi and others have given importance to the harmony of education with the natural environment.

George Perkin Marsh wrote a book (Man and Physical Geography) trying to prove that natural resources not infinite. In 1908, the president of the United States of America Theodore Roosevelt, called a meeting provincial governor at the white house. The main topic of the meeting was environmental protection. The Keele University was the first to introduce the term environmental education. Although some other such initiatives were taken in different countries of the world, but real international initiative was taken in 1972. The International Conference on Human Environment under the auspices of the United Nations held in Stockholm may be called birthplace of Environmental Education. The need of Environmental Education was seriously discussed in this conference. The United Nations Environmental Program (UNEP) adopted and International Environmental Education Program (IEEP) was launched in 1975, jointly with UNESCO.

The IEEP adopted an initiative in the year 1995 known as “Belgrade International Workshop” on Environmental Education. In preparation for this workshop, an international survey found that most countries felt a strong need for Environmental Education and identified importance for Environment Education at four levels. These levels are primary education, secondary education, regional education, and non- formal education. Along with this, most of the countries have given their opinion favor of connecting Environmental Education with formal and non- formal education. The Belgrade charter was scripted in four parts from the Belgrade Workshop. The contents of these four parts are Environmental situation, Environmental Goal, Environmental Education Goal and Environmental Education Objective.

Guiding principles of Environmental Education

- Environmental Education acts as a continuous and consistent process of lifesaving.
- The subject needs to adopt an interdisciplinary approach.
- Examine major environmental issues from local, national, and international point of view.
- Enable the position of learner in making decision concerning their environmental and accept responsibility.
- Enhance the learner's ability to develop critical thinking and problem-solving skills.
- Promote the values necessary at all levels of development such as of local, national, and international.
- Prevention and solution in making decision their environment and accept responsibility.



Cover Page



Statement of the problem

The problem of the present study has been stated as follows: “Importance of Environmental Education in Present Secondary School Curriculum in West Bengal- An Analytical Approach.”

Objectives of the study

The objectives of the study are as follows:

1. To study the importance of environmental education for secondary school students.
2. To examine the curriculum of environmental education at secondary school level with respect to course content, teaching strategy, learning activities.
3. To identify the challenges in implementing environment education at secondary school level in West Bengal.
4. To interpret the educational implications of imparting environmental education for the students at secondary level in West Bengal.

Research Questions

Based on the research objectives, the researcher has formulated the following research questions for the study:

1. What is the importance of environmental education for secondary school students?
2. What is the curriculum of environmental education at secondary school level with respect to course content, teaching strategy, and learning activities?
3. What are the challenges in implementing environmental education at secondary school level in West Bengal?
4. What are the educational implications of imparting environmental education for the students at secondary level in West Bengal?

Delimitation of the study

The study will be delimited in the following aspects:

1. The study was delimited only to the Environmental Education of West Bengal Board of Secondary Education (WBBSE).
2. The study was also delimited only to the Environmental Education curriculum of class VIII, IX and X under West Bengal Board of Secondary Education (WBBSE).

Rationale of the study

Education is the best process which may bring a change to human nature and attitude. Now-a-days, all the environmental problems such as water pollution, noise pollution, air pollution, overpopulation, deforestation, soil damage, garbage pollution are generally occurred by anthropogenic activities. Hence, it is high time to give attention to these major problems. Therefore, the present study may be helpful in increasing students' awareness of various environmental problems and enable them to develop diverse thinking about how to reduce the impact of human activities on environment. Environmental Education also fosters student's sense responsibility towards the environment. Therefore, study the importance of Environmental Education in the present school curriculum enables to improve awareness, knowledge, skills, and attitude towards environment among the students at the secondary level students. Moreover, it also helps the educational stakeholders to adapt necessary teaching learning strategies to inculcate the values to the students for conserving and protecting environment for healthy living.

Reviews of the study

- **Halder (2012)** conducted a study on “An appraisal of environmental education in higher school education system: a case study of North Bengal, India”. The main objective of the study was to evaluate the status



Cover Page



of Environmental Education in higher school education system in India, especially in North Bengal. The researcher followed random sampling survey for the study and the data was analyzed by using 'Z' - test. The finding of the study revealed that the status of Environmental Education in higher school education system was not satisfactory and there was a need to standardize and upgrade the education system.

- **Peter and Cheruto (2013)** conducted a study on "The Benefits of Mainstreaming Themes of Environmental Education in the School Curriculum". The main objective of the study was to determine the benefits of mainstreaming environmental education in the existing curriculum of school education. The researchers followed survey design for the study and the data obtained from interviewed and several government records and policy documentary were analyzed for the study. The data analyzed by document analyzed method. The findings of the study revealed that mainstreaming of environmental education in the existing curriculum at school level helped students to acquire the essential environment knowledge and skills required for conserving of environment. The study recommends that environmental education is integrated at all levels in the school curriculum and the information on environmental education should be disseminated through other educational programmers such as different types of non – formal activities and adult literacy.
- **Banerjee and Das (2014)** carried out a study on "A Study of Environmental Awareness among Higher Secondary School Students of Bankura District in West Bengali". The main objective of the study was to find out the environment awareness among the higher secondary school students. The researchers used descriptive survey method and collecting the necessary data for the study. The data was analyzed by using mean, standard deviation, and 'T' test. The findings of the study revealed that there was no significant difference in environment awareness of higher secondary school students among the basis of their gender, locality and academic stream.
- **Sindhu and Singh (2014)** conducted a study on "A Study of Awareness towards Environmental Education among the Students at Secondary Level in Gurgaon District". The main objectives of the study were to find out the difference in awareness towards environmental education based on their gender and locality among the students at secondary level. The researchers followed survey method and a questionnaire used as a tool for collecting the necessary data for the study. The data was analyzed by using mean, standard deviation, t-test and standard error. The study findings revealed that no significant difference was observed between girls and boys of both rural and urban areas but significant difference was noticed in the level of awareness among the secondary school students from rural and urban areas towards environmental education.
- **Behera and Samal (2015)** conducted a study on "Environmental Knowledge of Secondary School Students: A Topographical Analysis". The main objectives of the study were to measure the environmental knowledge among the secondary students in relation their gender and different to topographical regions. The researchers used descriptive and analytical approach as research methodology and descriptive statistics were applied ANOVA and 't' test for data analysis. The findings of the study revealed that there was no significant difference in environmental knowledge among secondary school students in respect to their gender. But there was significant difference based on localities in relation to their environmental knowledge.
- **Erhabor and Don (2016)** conducted a study on "Impact of Environmental Education on the Knowledge and Attitude of Students towards the Environment". The main objectives of the study were to evaluate the level of knowledge and attitudes among the students towards environment. The researchers used survey method and the data were analyzed by using correlation coefficient method for the study. The findings of the study revealed high level of knowledge and positive Attitude towards the environmental among the students.
- **Biswas (2017)** carried out a study on "A Study on Environmental Awareness of Secondary School Students in Relation to Gender, Local of Study and Medium of Instruction". The main objectives of the study were to assess the awareness of secondary school students towards the environment with respect to their gender, their locale of study and medium of instruction in Murshidabad district of West Bengal. The researcher used descriptive survey method for the study. The researcher followed random sampling technique for collecting the necessary data. The data were analyzed by using mean, standard deviation, and t – test. The findings of the study revealed that there was significant difference in environmental



Cover Page



awareness among secondary school students in respect to their gender, medium of school and locale of study.

- **Duari et al. (2018)** conducted a research work on “Environmental Education in higher school education system of Purba Medinipur District, West Bengali: An Educational appraisal”. The main objective of the study was to evaluate the present status of environment education in higher school education system. The researchers used survey method for collecting the necessary data for the study. The findings of the study revealed that environmental education’s condition was not satisfactory in the system of higher secondary education and hence, essential measures are needed to be amended.
- **Yalcinkaya and Cetin (2018)** conducted study on “An Investigation of Secondary School Students Environmental Attitudes and Opinions about Environmental Education (EE)”. The main objectives of the study were to assess the attitude towards environmental education among the students of the secondary schools. The researcher used quantitative research technique. The quantitative data obtained from the attitude scale were compared with the respect to their gender, class level and the school type. The findings of the study revealed that there was significant difference in the environmental attitude among secondary school students in respect to their gender and school type but no significant difference was observed among the secondary school students towards environmental education based on their class level.
- **Ablak and Yesiltes (2020)** conducted a study on “Secondary School Student’s Awareness of Environmental Education Concepts”. The main objectives of the study were to measure level of awareness towards environmental education concepts among the secondary school students with respect to their gender, level of class, status of both maternal and paternal education, monthly income of family. The researchers used a quantitative survey method and the IBM SPSS statistical 23 package program was used to analyze the data. The findings of the study revealed that there was no significant difference in secondary school student’s awareness of environmental education concepts with respect to their gender, and family education status on environmental issues.
- **Mandal (2022)** carried out a study on “Environmental Awareness among the Secondary Level Students: A Comparative Study between the Students of Urban and Rural at South 24 Parganas District in West Bengal.” The main objectives of the study were to find out the difference in environmental awareness of the higher secondary school students based on their gender and locality. The researcher used descriptive survey method and had taken the help of SPSS for analyzing the collected data. The findings of the study revealed that there was no significant difference in environmental awareness among Urban, Rural and Male, Female Students of South 24 Parganas District, West Bengal and there was moderate level of awareness about new and current environmental issues and concepts.
- **Husin et al. (2025)** conducted quantitative research to explore the expectations and sustainability of integrating environmental education in present school curriculum. The researchers selected 100 teachers teaching in schools of Palembang through purposive sampling technique for data collection and then analyzed their average scores. The findings of the study revealed that the teachers possessed high expectations for integrating the environmental education into other disciplines, curricular programmes, extracurricular activities and attempted to bring sustainability through conduction of workshops and training opportunities for improving knowledge and skills, sharing relevant practices related to environmental education.

Methodology

The researcher has used qualitative research design following an analytical approach for the present study.

Procedure of data collection

In this study, the researcher has collected relevant information from various secondary data source included articles, books, library sources, Web sites and journal etc.



Cover Page



The Importance of Environmental Education for the Students at the Secondary Level of Education

Environmental education helps people to understand deeply the existing ecological problems, to acquire information and skills to make responsible decision. It may be said that environmental education helps to increase the awareness and sensitivity among students. So, it is very important to include environmental education in the present school curriculum. The importance of environmental education for secondary school students has been discussed in detail below:

- I. **Increasing awareness about environmental issues:** As a result of industrialization and urbanization, many problems evolve in the world environmental such as climate change, various types of pollution and deforestation etc. Environmental education plays an important role in raising awareness of various environmental issues so that students may manage to cope with the problems effectively by adopting necessary measures.
- II. **Increasing awareness about different aspects of environment:** Through environmental education students gain knowledge about the various components of the environment such as biotic (living) and abiotic (nonliving) components. Environmental education helps students to develop a positive attitude towards its conservation.
- III. **Finding the ways of solving environmental problem:** As there are environmental problem, there are also different ways to solve them. Environmental education introduces student's creative thinking through which they can explore more diverse ways to solve environmental problems.
- IV. **Creating awareness about sustainability of environment:** Sustainability development is meeting all the needs of the present generations without compromising need of the future generation. Hence, it is regarded as essential aspects to protect the environment. Now a day's, people are recklessly misusing the natural resources, because of which after a while the natural resources of the environment get depleted. So, it is very necessary to increase the awareness of students in this regard.
- V. **Enabling individual to lead healthy life:** Environmental Education describes the interrelationship between man and his environment. Human activities in the environment not only bring benefits to people but also bring difficulties such as pollution, waste production and global warming etc as a result, various environmental problems. Environmental education helps students to identify those manmade environmental problems and provides necessary knowledge to minimize such practices.
- VI. **Developing various skills to save environment from degradation:** Environmental degradation refers to the deterioration of the environment through depletion of resources. The main causes of environment degradation is human activities such as modern urbanization, industrialization, over population growth, deforestation etc. Environmental education helps students to develop adequate awareness, proper solutions to the existing problems for sustainable living.
- VII. **Recognizing the varied sources of environmental problems:** Lack of policies, lack of awareness among people, weak media coverage and prevalence of poverty are some of the major factors responsible for the increase in environmental problems. Through, environmental education awareness about those factors which causes environmental problems among the students.
- VIII. **Gaining knowledge about bio-diversity and its protection:** Biodiversity is the relationship between these animals and their habitats. Earth's biodiversity is its most essential resource and it is the primary source of earth's biosphere. Currently, climate change, pollution, industrialization, population growth and deforestation resulting in urbanization are leading to biodiversity crisis and its imbalance. Thus, environmental education helps students to inculcate knowledge about biodiversity and awareness towards conservation and its protection.
- IX. **Finding alternatives to decrease environmental problems:** Due to use of technology, the environment is changing and problems are increasing along with this. Therefore, by identifying the factors that are damaging the environment to a greater extent, it is necessary to find alternative ways to protect the earth. In that case, environmental education helps students to increase their problems solving abilities with cognitive thinking.



Cover Page



- X. **Identifying the methods for conserving natural resources of environmental problems:** Natural resource is a resource that is obtained directly from nature and is used by humans. Modern lifestyle advancement in technology is having very bad effect on natural resources so ensuring conservation of natural resources is very important. So, improvement of Knowledge of students is very much important that there are many ways to conserve natural resources.

The Curriculum of Environmental Education at Secondary Level with the Respect to Course Content, Teaching Strategy, Learning Activities

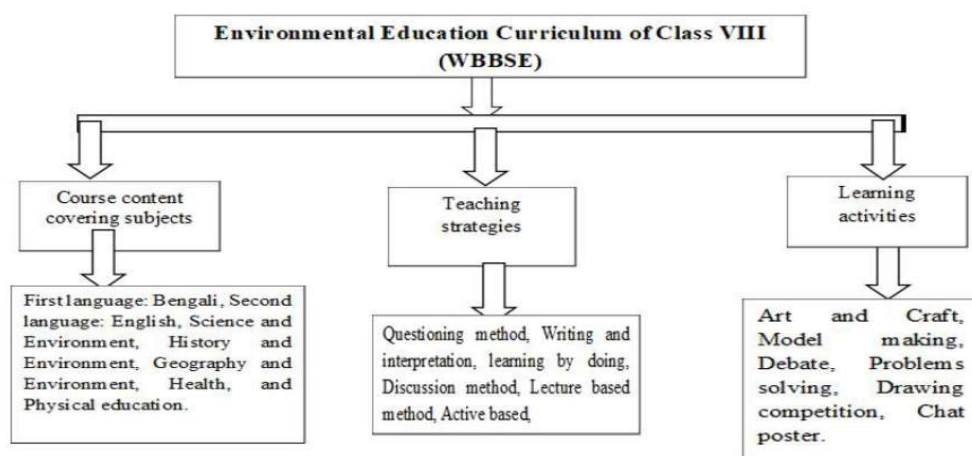


Figure 1: Flow-chart Showing the Curriculum of Environmental Education of Class VIII (WBBSE) with the Respect to Course Content, Teaching Strategy, Learning Activities.

Course Content:

The subjects that included environmental education in class VIII course content was First language: Bengali, Second language: English, Science and Environment, History and Environment, Geography and Environment, Health, and Physical education.

Some of the chapters in Bengali like-Parobasi, Sabuj Jama, Gacher kotha, Hawar Gan describe the beauty of the natural environmental and from here students will learn about the various components of the natural environment. Similarly, The cloud, An April day, someone sang, summers friend, the man who planted trees this chapters of English subjects include environment also describe about environment, friendly relationship with environment and message of planting trees. Environment and Science Introduction to some gas: Oxygen and Hydrogen, the location of carbon in various forms in nature and in the biosphere: location of carbon in nature and biosphere, fuel cost or caloric cost, carbon dioxide, greenhouse effect, carbon-based polymers, and their applications. Biodiversity environment crisis endangered species: forest, life under the sea, biosphere in desert regions, wild animals and their endangered wild animals and their conservation. Environmental and flora around us: some trees are important in the environment. Geography and Environment enable students to learn about period of unstable earth, nature of human activities and causes of environmental degradation and their proper ways for mitigation.



Cover Page



Teaching Strategies:

A brief explanation of the teaching strategies used for Environmental Education of class VIII students at secondary level –

1. **Questioning method:** By this method, teachers asked different environmental related questions. The students' answers show their knowledge regarding the environment. **For example:** How to solve environmental issues?
2. **Learning by doing:** In this method, Students are taught practical work. The students are doing various types of environmental awareness practical work. **For example:** Afforestation measures such as tree planting.
3. **Discussion method:** In this method, various environmental issues are discussed in detail. By this method, students are aware about environmental problems and find out the solution of the environmental issues. **For example:** Peer group discussion regarding the how human action affects the environment.
4. **Lecture method:** By Lecture method, teachers present environmental content to the students only through language. In this method, the teacher makes the students aware of the environment and its awareness through the lecture. **For example:** Teacher gives lecture in the classroom about the concept of various environmental issues such as pollution, deforestation, global warming to enhance the knowledge of students.
5. **Active learning:** In this method of education, students are actively involved in listening to the text, students engage in critical thinking and problem solving **For example:** Teach students about various hands-on activities by making few projects to solve environmental pollution.

• Learning Activities:

The following are the types of learning activities used in secondary school of class VIII students:

- A. **Art and craft:** The students are asked to create various types art and craft on which display various environmental pollution with problem solving method. Through this method, the attitude and skill of students on environmental awareness will be automatically awakened. **For Example:** Recycle environmental art and craft, eco- friendly art, and craft.
- B. **Model making:** Model making is a structure made up of different types of materials that conveys the message of awareness among the students and enhances their creativity. Model on recycling of plastic material. **For example:** eco- friendly environmental model, energy formation from garbage model.
- C. **Open- ended questioning:** Through this learning activity student's opinion regarding environmental problems are discussed in the class. **For example:** What are the reasons for climate change?
- D. **Debate:** In this learning activity students participated in various environmental related discussions and expands knowledge. **For example:** Debate on positive and negative impact of industrialization.
- E. **Creative writing:** Through, this learning activity allows students to used their imaginations and creativity, the ability to express thoughts and effectively towards environment. **For example:** Describing different ideas to conserve natural resources to save earth from pollution etc.
- F. **Chat poster:** Chat poster an effective way to grab the attention of students and help them focus on the topic. Chart poster will give better visualization on the topic of environmental pollution and how to solve it. **For example:** cleanness of environment.
- G. **Writing and interpretation:** Writing and interpretation is a learning activity where students write and explain any topic given in the classroom. Through this activity, increases students' thinking power and writing skills. **For example:** Writing essay on Importance of Biodiversity.

Drawing Competition: By this teaching activity, to help students develop a sense of respect and care for the natural environment, express their thoughts and ideas of the environment they live in, raise awareness about the importance of the natural environment. **For example:** World Earth Day, different types pollution drawing etc.

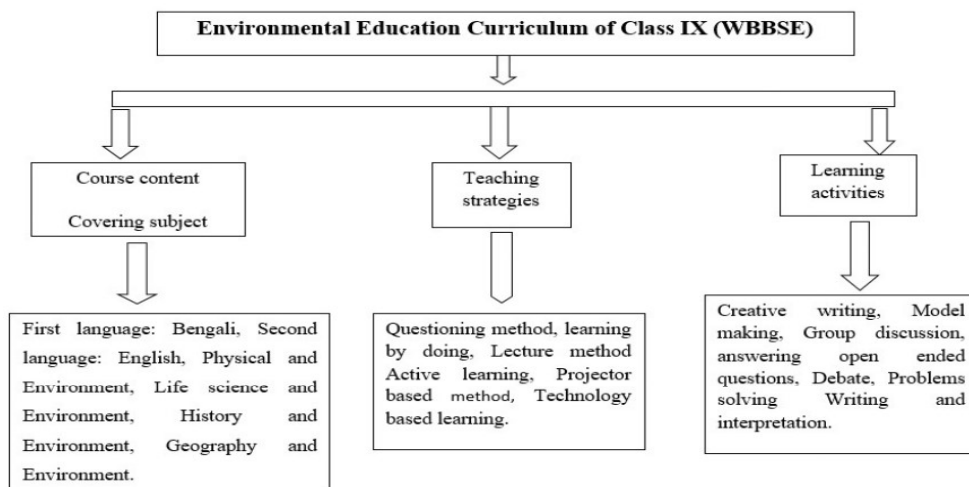


Figure -2: Flow-chart showing the curriculum of Environmental Education of class IX (WBBSE) with the Respect to Course Content, Teaching Strategy, and Learning Activities.

• Course Content:

Various subjects reflect the different aspects of natural environment besides discussing the important issues of environment to create adequate awareness among the students about the significance of conservation of environment from the harmful human activities.

From Bengali syllabus, the poem Kalingar Deshe Jhor discuss the dangerous forms of rainstorms and in Himalaya darshan describes the natural beauty of the Himalayas. In English Autumn, all summer in a Day, include environmental topics. Form physical science syllabus students learned about, water pollution and its harmful effects on the environment and human health, human activities cause of noise pollution and harmful effects of noise pollution on humans. From life science, students learned about (Life and its diversity, biology and human welfare, environment, and its resources. From Geography, role of men, plants and animal on biological weathering, concepts of hazards and disasters (such as flood, drought, earthquake, tsunami, land slide, avalanche, blizzard, volcanism, forest fire), nature and impact of hazards and disasters in West Bengali, role of students in disaster management, strategies of disaster management in West Bengal, conception, classification and conservation of resources, use and distribution of solar, wind, geo thermal energy as non – conventional energy source, merits and demerits of multiple use and overuse of water from river, canal, tank, well, ground water, impact of monsoon on climate of West Bengali, impact of change of season on human life.

• Teaching Strategies:

A brief explanation of the teaching strategies used for Environmental Education of XI class students at secondary level –

1. **Questioning method:** By this method, teachers asked different environmental related questions to enhance the knowledge of the students regarding the various issues of environment. **For example:** Do you believe human activities contribute to climate change?
2. **Learning by doing:** In this method, the students are encouraged to do various types of environmental awareness practical work. **For example:** reusing materials set up classroom recycling.



3. **Lecture method:** In this method, the teacher makes the students aware of the environment and its awareness through the lecture. **For example:** give lecture on resources depletion, sustainability, climate change, pollution, environmental degradation to enhance the knowledge of students.
- 3 **Active learning:** Along with listening to the text, students can engage in critical thinking and problem solving. Students will not only learn about environmental problems but also think about solving them. **For example:** Conservation Activities, and Recycling Activities etc.
- 4 **Technology based learning:** Technology based approach is a type of teaching strategy in which the teachers present content using technology in the classroom. **For example:** with use of projector by teachers
- 5 **Project based Learning:** Project - based learning involves students designing, developing, and constructing hands -on solutions to environmental problem. **For example:** Produce an inventory of different energy sources.

- **Learning Activities:**

The following are the types of learning activities used in secondary school of class XI students –

- A. **Model making:** **For example:** Global warming model, pollution making 3d model.
- B. **Open- ended questioning:** **For example:** How can we stop environmental issues?
- C. **Debate:** **For example:** debate on climate change.
- D. **Creative writing:** **For example:** different ideas to conserve natural resources save earth from pollution etc.
- E. **Problem solving:** **For example:** Recycle waste to conserve natural resources.
- F. **Writing and interpretation:** **For example:** Current environmental health issues.

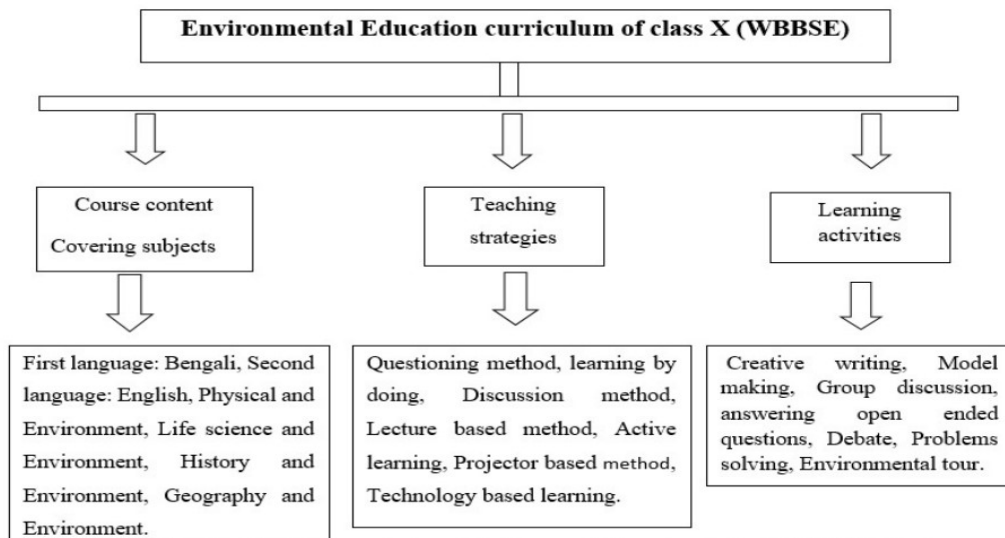


Figure -3: Flow-chat showing the curriculum of Environmental Education of class X (WBBSE) with the Respect to Course Content, Teaching Strategy, and Learning Activities.

- **Course Content:**

The subjects that included environmental education in class X course content was First language: Bengali, Second language: English, life science and Environment, physical science and environment, History and Environment, Geography and Environment.



Cover Page



Some of the chapters in Bengali like-Africa, Praoyollas, and Nadir bidroho describe environmental issues and condition. In English the snail covers some environmental area. From physical science students learned about the causes of formation and destruction of ozone layer, effects on health and environment due to destruction of ozone layer, greenhouse effect and global warming, effects of global warming on future environment, reduction of greenhouse gas emissions, importance of conservation of fossil fuel, concept of sustainable development, the use of solar energy, wind energy, biomass energy and bio gas for sustainable growth and development. From life science, students learn concepts of pollution, and their effects on environment and human health, problems of ever increasing population, over exploitation and depletion of natural resources, deforestation and loss of ecosystem, changes in atmospheric condition and global warming, biodiversity and its conservation, deforestation, global warming and climate change, environmental problems of the Sundarbans, role of JFM (Joint Forest Management) and PRB (People's biodiversity Register) in conserving biodiversity, knowledge of some endangered plant and animal species in India and their conservation. Students learn about these environmental issues from class X syllabus. From Geography students learn about concepts of different elements in atmosphere, the role of greenhouse gases in global warming, effects of global warming (such as melting of polar ice and melting of mountain glaciers, sea level rise etc) , ,causes of climate change, concept of waste management, types of waste and impact of waste on the environment, requirements of waste management, impact of effluent on Bhagirathi and Hooghly.

• Teaching Strategies:

A brief explanation of the teaching strategies used for Environmental Education of X class students at secondary level –

- Questioning method:** By this method, teachers asked different environmental related questions. **For example:** Why do we need to conserve the natural resources?
- Learning by doing:** The students are doing various types of environmental awareness practical work. **For example:** Create hanging garden, Natural scavenger Hunt, Recycling Relay Race.
- Discussion method:** In this method, various environmental issues are discussed in detail about environmental problems and solution of the environmental issues. **For example:** Discuss the suggestive measures of various environmental problems.
- Lecture method:** By Lecture method, teachers present environmental content to the students only through language. **For example:** teachers give lecture in the classroom about various environmental issues such as pollution, deforestation, global warming.
- Active learning:** Active learning is a method of education, where students are actively involved in the learning process in an experiential way. **For example:** making project on recycling of plastic.
- Technology based learning:** Technology based approach is a type of teaching strategy in which the teachers present content using technology in the classroom. **For example:** with use of projector teachers shows the student various picture of environmental pollution which helps in better understanding of students.

• Learning Activities:

The following are the types of learning activities used in secondary school class X students –

- Model making:** Model making is a structure made up of different types of materials that conveys the message of awareness among the students and enhances their creativity. **For example:** working model on environment, eco environmental model, energy from garbage model etc.
- Open- ended questioning:** Through, this learning activity student's opinion regarding environmental problems tends to come out. **For example:** Do you believe human activities contribute to climate change?
- Debate:** In this learning activity students gain environmental related new information and expands knowledge. **For example:** Debate on technological impact on environment.
- Creative writing:** This learning activity allows students to use their imaginations and creativity, the ability to express thoughts and effectively towards environment. **For example:** writing on behavior of mankind toward preservation of environment.



Cover Page



- e. **Problem solving:** This approach helps students to improve their cognitive thinking about environment and ecological system. **For example:** ideas regarding recycling of plastic.
- f. **Writing and interpretation:** Through this activity, increases students' thinking power and writing skills. **For example:** Sustainability, Renewable energy.
- g. **Educational tour:** Educational tours to various locations, natural settings, ecosystems for students help them to gain direct experience of the nature. **For example:** National Parks, nature spots.

The Challenges in Implementing Environmental Education at Secondary School Level in West Bengal.

It is very important to create awareness among the students in secondary school about the environment and its current situation. Therefore, efforts are made to increase the awareness of students through environmental education. But there are many problems in imparting environmental education in the current education system which are briefly discussed below.

1. Environmental education is as a separate subject is not including into the secondary school curriculum.
2. Lack of necessary training and experience among teachers for imparting Environmental Education
3. Inadequate teaching – learning materials for studying Environmental Education:
4. Low integration of Environmental Education with other subjects at the secondary school level
5. Lack of integrity and clarity within the syllabus for studying Environmental Education and Improper teaching strategies
6. Limited period allocates for Environmental Education within the context of the school time table.
7. Lack of expertise and efficiency to conduct educational activities on Environmental programme for the secondary level students
8. Lack of interest and motivations among students towards Environmental due to less emphasis on Environmental Education at secondary school level.

Though, Environment Education has been streamlined in the curriculum of all the education there is a need to sensitize people, especially school and college level students about the importance of the subject. If the problems mentioned above are properly reviewed and solved, then success can be achieved in imparting Environmental Education to secondary school students.

Educational Implications in Imparting Environmental Education for the Secondary School Students in West Bengal

Environmental Education aims to impart necessary knowledge about the existing principles required for the conservation and judicious utilization of natural resources for the sustenance of mankind. The educational implications of imparting Environmental Education to the secondary school students are discussed in below:

- I. **Inculcating a sense of awareness about environmental problems among the secondary school students:** Environmental Education helps to make students aware of environmental problems and provide knowledge about them, so that students can also find ways to solve environmental problems and protect the environment from various issues.
- II. **Imparting knowledge about the necessity of conservation of environment:** Environmental conservation is needed for a sustainable future for human being. Through environmental education it is possible to acquire ideas regarding conservation of environment among student.
- III. **Make students realize the value of conserving natural resources:** Now a day's peoples are often carelessly misusing natural resources. As a result, its crisis may arise in future, so it is very important to make students aware of the conservation of natural resources so that the society can also carry the message while creating awareness among them. For this, Environmental Education helps students inculcate values about conservation of natural resource.
- IV. **Help to enrich the secondary school curriculum with the essential ecological principle:** Ecology denotes the science of living organism which includes human and other physical environment. Environmental education helps to enrich curriculum of secondary school by



Cover Page



incorporating the essential ecological principals so that the students might get proper understanding about the necessity of maintaining ecological balance.

- V. **Provides knowledge about the importance of biodiversity and ecological balance:** Biodiversity mainly about species, genetic and ecosystem. Biodiversity helps to maintain and restore ecosystem. The knowledge of biodiversity and maintains of ecological balance is more important now and this we can initiate through launch Environmental Education in the curriculum.
- VI. **Imparting knowledge and skills among the secondary school students regarding proper resource management:** Resources of environment are destroyed by various mankind behaviors like deforestation, industrialization. Other recourses of environment like oil, coal, petrol etc. are limited in the environment. Environmental resources are important for a sustainable eco- system and future of earth. Environmental Education may enrich students with the knowledge of proper resource management and help to improve various skills to fight with this problem.
- VII. **Help secondary school students to follow sustainable practices:** By promoting sustainable practices such as recycling, reducing waste, and using renewable- energy sources, countries can reduce their carbon footprint and mitigate the effects of changing environmental condition. Environment Education helps students realize the importance of sustainable practices.
- VIII. **Encouraging secondary school students to actively participate in environmental protection programme:** Environmental protection starts with individual actions. So, Environmental Education encourages students to actively participate in environmental protection programme and providing them with more opportunities to engage in environmental activates.
- IX. **Instilling a sense of responsibility and positive attitude among the secondary school students:** Environment Education plays an important role in making students responsible towards the environment.
- X. **Develop understanding about the importance of sustainable living:** Sustainable living means to live in a way by meeting the needs of the present without making any compromise to the ability of future generation for meeting their own needs. Therefore, Environment Education helps to develop understanding about the importance of sustainable living among students.

Therefore, environmental education is very much essential to create consciousness about the various issues of environment among the secondary school students. It helps them in judicious utilization of natural resources, guides them to take necessary measures for minimizing the negative effects of environmental.

Findings

The findings of the study are as follows:

- i. The importance of Environmental Education in secondary schools is immense. Through the Environmental Education, it is possible to increase the knowledge as well as responsibility towards the environment among the students. Through this, students may understand the importance of environment protection, conservation of natural resources, conservation of bio diversity etc.
- ii. Review of the school curriculum shows that environmental related topics are included in other subjects such as history, geography Bengali, etc. and the learning strategies used to teach secondary school students are traditional, with little emphasis on modern learning methods.
- iii. By imparting Environmental Education, it may possible to increase the awareness among students and if all the learning activities that are included in secondary schools are practiced properly.
- iv. Presently, secondary schools face several obstacles in imparting Environmental Education of students. Such as appropriate learning techniques, teaching learning materials, appropriately trained teachers, appropriate environment modern learning methods etc.
- v. By imparting Environmental Education, the students might gain knowledge about the various elements of the environment and develop an awareness attitude about the various problems of the environment.



Cover Page



Limitations

The limitations of the study are as follows:

- Due to limited time, it was not possible for the research to carry out study on various aspects of the selected topic. Hence, the researcher has narrowed down the research objectives to highlights the major issues only.
- Non availability of necessary data uses due to lack of previous studies also minimized the scope of the present study to some extent. Inadequate literature review in another major reason that found to be an important limitation for the selected topic of study.
- The scope as well as depth of discussion at different stages of the present study has been compromised due to the limit of knowledge and experience of the researcher on this field.

Conclusion

Environmental education enables students to learn about their surroundings; the various problems associated with the environment and how human affected the natural balance of the environment through their activities. Environmental education not only makes students aware of the environment but also helps them acquire responsibility and skills, so that they can take various steps to solve environmental problems in the future. After reviewing the curriculum at the secondary level, it has been observed that environment education has not been taught as a separate subject but it has been linked with other subjects. Thus, the significance of environment education at secondary school as a separate subject has not received adequate recognition as given for the other school subjects. Due to inadequate educational facilities and resources, it becomes difficult to impart proper environment education knowledge among secondary school students. As a result, the importance of Environmental Education as a separate subject among secondary school has been neglected. By providing Environmental Education, it may be possible for making students aware of the environment so that they can solve various environmental problems and thereby save the natural resources of the environment for future generations through the preservation of natural resources. Moreover, students may able to build a responsible attitude towards the environment and acquire knowledge about how to live sustainably. Therefore, it may be concluded by saying that Environmental Education plays a significant role at secondary level for the school students. hence, the policy makers and educational stakeholders must adopt necessary initiatives to incorporate the subject at the secondary level.

References

- Ablak, S., & Yesiltas, E. (2020). Secondary school students' awareness of environmental education concepts. Review of *International Geographical Education Online*, 10(3), 445-466.
- Banerjee, N., & Das, A. (2014). A study of environmental awareness among higher secondary students of Bankura district in West Bengal. *Indian Journal of Applied Research*, 4(7), 134-136.
- Behera, J., & Samal, R.M. (2015). Environmental Education of Secondary School Students: A topographic analysis. *International Journal of Social and Humanities Research*, 3(2), 252-261.
- Biswas, M. (2017). A study on the environmental awareness of secondary school students in relation to gender, locale of study and medium of instruction. *International Journal & Research Journal [IERJ]*, 3(12), 86-88.
- Duari, B., Biswas, A.K., & Dey, S. (2018). Environmental education in higher school education system of Purba Medinipur district, West Bengal: An educational appraisal. *Journal of Emerging Technologies and Innovative Research*, 5(5), 559-564.
- Erhabor, N.I., & Don, J.U. (2016). Impact of environmental education on the knowledge and attitude of students toward the environment. *International Journal of Environmental & Science Education*, 11(12), 5367-5375.
- Ghosh, R., & Sarkar, B. (2018). Environmental education and central board of secondary education: A comparative study. *International Journal of Research*, 5 (12), 1750-1758.
- Gogoi, G., & Saikia, N. (2020). A study on the impact of environmental education at primary level students and environmental awareness programmers conducted by teacher in primary school with special reference. *Pal Arch's Journal of Archaeology of Egypt / Egyptology*, 17(11), 6543-6550.
- Halder, S. (2012). An appraisal of environmental education in higher school education system: A case study of North Bengal, India. *International Journal of Environmental Sciences*, 2(4), 2223-2233.



Cover Page



10. Husin, A., Helmi, H., Nengsih, Y. K., & Rendana, M. (2025). Environmental education in schools: Sustainability and hope. *Discover Sustainability*, 1-11.
11. Kumar, A. (2017). A study of attitude of secondary school students towards Environmental Education. *Themed Section: Science and Technology*, 3 (8), 952 -937.
12. Majumder, M.B. (2019). Attitude of UG students towards environmental studies as a compulsory paper at UG level. *American International Journal of Research in Humanities, Arts and Social Science*, 26 (1), 156-159
13. Mandal, B. (2022). Environmental awareness among the higher secondary level students: A comparative study between the students of urban and rural area at South 24 Parganas district in West Bengal. *International Research Journal of Modernization in Engineering Technology*, 4(1), 1498-1503.
14. Nair, G. (2010). Environmental education and curriculum at primary level. *Environmental and Pollution Technology an International Quarterly Scientific Journal*, 9(2), 409-426.
15. Peter, K. R., & Chcruto, K. L. (2013). The benefits of mainstreaming environment education in the school curriculum. *Research Journal in Organizational Psychology & Educational Studies*, (2)2, 54-59.
16. Sindhu, P., & Singh, S. (2014). A study of awareness towards environmental education among the students at secondary level in Gurgaon district. *International Journal of Scientific and Research Publications*, 4(1), 1-4.
17. Siswanto., K., Prasetyawati, P., & Nurhayati. (2019). Environmental cultured education and it's implication on the student's competencies in an Adiwiyata School. *Cakrawala Pendidikan*, 38(3), 552-564.
18. Sun, M., & Sun, W. (2022). A study to explore environmental education in the curriculum development in China. *International Journal for Cross-Disciplinary Subjects in Education (IJCSDE)*, 13(2), 4686-4691.
19. Verma, G., & Dhull, P. (2017). Environmental Education as a Subject in Schools. *International Journal of Advance Research [IJAR]*, 5(8), 1547-1552.
20. Yalcinkaya, E., & Cetin, O. (2018). An investigation of secondary school students' environmental attitudes and opinions about environmental education (EE). *Review of International Geographical Education Online*, 8 (1), 125-148.
21. Yeilyurt, M., & Balakoglu, M. O. (2020). The impact of environmental education activities on primary school students, environmental awareness and visual expressions. *Qualitative Research in Education*, 9 (2), 188 - 216.
22. Retrieved From-
<https://www.readymessages.com/inspiring-nature-conservation-quotes>
23. <https://ebooks.inflibnet.ac.in/geop08/chapter/environmental-education>
24. <https://naaee.org/about/ee>
25. https://en.wikipedia.org/wiki/Environmental_educationhttps://lotusarise.com/enviromental_education_in_india
26. <https://lawbhoomi.com/scope-and-importance-of-environmental-studies/>
27. <https://dspmuranchi.ac.in/pdf/Blog/ENV%202.pdf>
28. <https://books.google.co.in/books>
29. <https://sigmaearth.com/need-and-importance-of-environmental-education/>
30. <https://www.teachers.gov.bd/blog/details/771463>
31. <https://wbxpress.com/syllabus-bengali-medium-wbbpe>
32. <https://www.yourarticlelibrary.com/envirommnt/environmental-education>
33. <https://www.eenc.org/what-is-environmental-education>
34. https://www.brainyquote.com/quotes/rabindranath_tagore_389999