



## EDUCATION FOR SUSTAINABLE DEVELOPMENT IN SECONDARY SCHOOL CURRICULUM UNDER WEST BENGAL BOARD OF SECONDARY EDUCATION

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### RESEARCH ARTICLE



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### Abstract

According to UNESCO-UIS (2024), “Education for Sustainable Development empowers learners to make informed decisions and take responsible action for environmental integrity, economic viability, and a just society for present and future generations while respecting cultural diversity”. Here in this paper, the researcher wants to analyse the concept of sustainable development, its needs in the present world and the role of education for sustainable development. The researcher also wants to analyse the place of sustainable development in the existing curriculum of secondary school level (WBBSE) and identify the different pedagogical approaches to transact ESD according to UNESCO guidelines. The Content Analysis method was used to analyse the syllabi and textbooks of grades IX and X under the West Bengal Board of Secondary Education. The concept of sustainable development, as well as sustainable practices, was emphasised in the contents of various subject areas such as Life Science, Physical Science, Geography, etc. UNESCO has recommended various pedagogical approaches like Collaborative Learning, Action-Oriented Learning, Practical Experience, Project-Oriented Work, etc. to transact ESD.

**Keywords:** Sustainable Development, Pedagogical Approaches, Curriculum

### Introduction

We are continuously exploiting the environment from the beginning when we came to the earth. The exploitation of nature started in the ancient period when we became consumers of the environment. We are not only satisfying our needs; we are exploiting the environment by our greed. We have started to cut trees, destroy forests, construct buildings & roads, exhaust natural resources to enhance the transport system, develop technology, etc., in the name of modernisation.

India has become the most populous country in the world, which is a serious tricky for modern India. India has the largest share of the world’s population. It puts enormous pressure on the land and resources. We must control the population growth rate to protect our environment. The pressure of development may be greater than the pressure on resources for population growth. Development is also needed to adjust to the changing world, which is crucial for us as a social animal. We do not need such a kind of development which damages our natural resources. We want an environmentally, culturally, socially, and economically balanced society that integrates towards sustainability. Education should be an instrument for this purpose. It will give the concept and understanding to the students about sustainable development and prepare them to act accordingly. We can say childhood is the best time for this.

### Concept of Sustainable Development

Sustainable Development means that people use resources without wasting them. The ‘World Commission on Environment and Development’, chaired by Gro Harlem Brundtland, used the term “sustainable development” in 1987 for the first time in its report, “Our Common Future”. The Brundtland Commission defined it as development with sustainability that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987, p. 15). The concept has evolved constantly ever since. At first, emphasising the environment only in advance policies, the idea has involved socioeconomic fields since the Johannesburg Summit in 2002. Sustainable development serves as the accepted guideline for fulfilling human development objectives while simultaneously preserving the ability of natural systems to provide natural resources, economic stability, and social well-being. The desired result is a societal condition where living conditions and resource management adapt to meet human needs without undermining the integrity and permanence of the natural system. Sustainable development can be described as an advancement that does not jeopardise the potential of future generations.

Sustaining people is a key aspect of sustainable development. This concept emphasises ways of living and working that enable individuals around the world to lead fulfilling, economically secure lives without compromising the environment or jeopardising the future welfare of both people and the planet. One framework for understanding this coexistence is the 'egg of sustainability' model developed by IUCN, the World Conservation Union. The 'egg of sustainability' illustrates the interconnectedness of human communities and economies with ecological systems, highlighting their relationships and interactions.

These interactions involve flows from ecosystems to people, which include both benefits, such as life support and economic resources, and stresses, like natural disasters. Conversely, flows from people to ecosystems encompass stresses such as resource depletion and pollution, alongside benefits like conservation efforts. People rely on their surrounding environment, much like the white of an egg encases and nurtures the yolk. However, a thriving ecosystem cannot compensate for situations where individuals suffer from poverty, sadness, violence, or oppression. A truly sustainable society can only flourish when both human well-being and ecosystem health are prioritised, akin to how an egg can only be good when both the yolk and the white are of high quality (IUCN, 1996).

Human well-being is essential for sustainability, as no one wishes to live a life marked by deprivation. Conversely, ecosystem well-being is vital since it is the environment that sustains life and enables any standard of living. Therefore, the well-being of individuals and the health of ecosystems are equally important, and establishing a sustainable society requires achieving both simultaneously (Chhokar, 2010).

Sustainable development is not a fixed concept; instead, it represents a socially-oriented pursuit of a dynamic equilibrium among social, economic, and environmental systems, a balance that seeks to encourage fairness among countries, races, social classes, and genders. The interdependence of individuals and the environment requires that no single progress or environmental objective be followed to the disadvantage of others. (UNESCO-UNEVOC, 2004).

### **Need of Education for Sustainable Development**

The environment has often been regarded as a remarkably stable, self-correcting system, seemingly attentive to human misfortunes and the degradation of its delicate biosphere. However, this perception of nature as inherently resilient should not be mistaken for endorsement. Modern technologies in industry, agriculture, and various developmental endeavours are significantly exploitative of the natural world, exacerbating pollution and inflicting considerable harm on the environment. Emissions of smoke and gases from industrial activities and automobiles have led to an increase in atmospheric carbon dioxide levels. Industrial and mining waste contaminates water bodies and degrades land quality, while excessive use of fertilisers pollutes lakes and pesticide residues permeate the soil, affecting freshwater ecosystems. Developmental pursuits, including agriculture, contribute to desertification and a decline in genetic diversity. The pollution of air and water is a grave challenge intricately linked to both public health and ecological stability. Inland water bodies and coastal regions have historically been treated as dumping grounds for waste, adversely impacting aquatic and marine life. Environmental degradation refers to the deterioration of local ecosystems or the broader biosphere as a result of human activity. The long-term consequences of such ecological ruin may threaten the sustainability of human populations.

### **Objectives of the Study**

1. To analyse the place of sustainable development in the existing curriculum at the secondary school level.
2. To identify different pedagogical approaches to transact education for sustainable development.

### **Research Questions**

1. What are the places of sustainable development in the existing curriculum at the secondary school level under WBBSE?
2. What are the pedagogical approaches to transact education for sustainable development?

### **Delimitations of the Study**

1. The present study was delimited only to the curricula of grades IX & X under West Bengal Board of Secondary Education (WBBSE) schools.
2. The pedagogical approaches to transact education for sustainable development will be identified according to UNESCO guidelines.

**Methodology:** The content Analysis method was used to analyse the curriculum. The researcher reviewed the curriculum and textbooks of grades IX & X under the West Bengal Board of Secondary Education to collect the required data regarding the places of sustainable development. The researcher also reviewed the UNESCO guidelines about pedagogical approaches to transact education for sustainable development. After collecting the required data, the researcher pointed out some key points related to the theme of Sustainable development and discussed them category-wise.

## **Place of Sustainable Development in the Secondary Education Curriculum**

Over the past decade, the secondary school curriculum in West Bengal has become a focal point for active policymaking concerning education for sustainable development (ESD). While this approach may seem to reflect positive and reasonable responses from the education system to societal and environmental challenges, it is not without its complexities. Furthermore, ESD is not a neutral concept; it encompasses a specific policy commitment that, despite appearing uncontroversial at first glance, carries inherent ethical and political implications (Winter, 2007).

The school curriculum ought to enhance students' awareness and understanding of their local environments while fostering respect for these surroundings. It is essential for the curriculum to encourage a commitment to sustainable development that spans personal, local, national, and global perspectives. Learning across the national curriculum, in which "four areas are identified-

1. Promoting Social, Cultural, Environmental and Economic Development.
2. Promoting personal, social and health education.
3. Promoting skills.
4. Promoting other aspects of the school curriculum."

**Integration of Sustainable Development into different subjects:** The secondary education curriculum of the West Bengal board comprises life science, geography, physical science, environmental education, and sustainable development, which positively promotes the concept of sustainability among the students.

### **1. Life Science:**

Sustainable Development emphasizes natural resources. Preservation of different natural resources like water, soil, forests, several types of animals and various types of minerals, coal, petroleum (non-renewable natural resources), etc., is also discussed in Sustainable Development. The forest is said to be preserved. Control of water, control of atmospheres and control of decay help in the development of sustainability.

According to the Brundtland Commission, "Sustainable Development is a process in which exploitation of resources is done to meet the needs of the present generation without compromising the ability of future generations to meet their needs." Sustainable development is essential for the conservation of the environment. The primary aim of development initiatives should be the well-being of individuals. The goals of development efforts are seldom successfully met if the negative impacts are overlooked. The following points are highlighted for sustainable development in the subject of Life Science-

- Environment conservation and proper utilisation of natural resources.
- Increase funding for environmental development
- Conservation of biodiversity
- Population control
- Conservation for future generations
- Ecological diversification and its conservation

### **2. Geography:**

Due to the use of natural resources, tolerance levels of the ecosystem exceed the result of environmental imbalance and destroy the environmental chain. This development, on one side, leads to meeting the people's demand and increases the amenities and advantages of civic, and on the other side, leads to conserving natural resources. So, this development helps to maintain the continuous lifestyle of future generations. The first step towards Sustainable Development is to make a pollution-free environment by reducing the level of non-renewable energy. Renewable energy can be obtained from some sustainable form of power, such as solar power, tidal power, geothermal power, etc and some traditional energy sources, such as biomass, wind power, etc. Due to the fossil fuel consumption, the store is running out of order and will be exhausted shortly. Reducing the use of fossil fuels, carbon dioxide, and other greenhouse gases produced by their burning will reduce global warming. Thus, we need to store some fossil fuels for future generations, so that they can get enough time to use advanced technology to find out the sources of renewable energy, so that Sustainable Development will occur.

### **3. Physical Science:**

Due to the increase in population and machine dependency, the energy demand also increases. Thus, we must opt for some Sustainable practices related to physical science, like-

- i. Stop the unnecessary use of fans, lights, TV, and computers before leaving the empty room. We need a habit of switching off all the electronics.
- ii. Instead of AC, we can use natural materials for coding the wall and roof.
- iii. Appropriate use of AC, Refrigerators, Geysers, Pumps, and other types of machinery.

By this correlation between physical science and sustainable development, we can lead a sustainable future.

#### **4. History:**

A few topics that are indirectly related to sustainable development have been found in the curriculum and history textbooks under WBBSE, which were highlighted. Such as-

- Industrial Revolutions and their bad effects on the environment,
- The Second World War and its dangerous effects on human civilisation and society,
- The works of the United Nations Organisations for global peace and happiness,
- Various Movements for equality and justice.

#### **Different Pedagogical Approaches to Transact Education for Sustainable Development According to UNESCO**

UNESCO serves as the principal United Nations agency for Education for Sustainable Development (ESD) and is tasked with the overall management, coordination, and execution of the Global Action Programme (GAP) on ESD. UNESCO collaborates with key partners, increases awareness and visibility, advocates for ESD on a global scale, and assists member states in incorporating ESD within their educational plans and programs. UNESCO aids nations in designing and enhancing educational initiatives that concentrate on sustainability topics like climate change, biodiversity, disaster preparedness, sustainable urbanization, and sustainable lifestyles through Education for Sustainable Development. It provides guidance to policymakers on incorporating ESD into educational policies, curricula, and teacher training programs. Enabling learners to live responsibly and to confront complex global issues signifies that education must foster critical thinking, envision future scenarios, and promote collaborative decision-making.

UNESCO aims to improve access to quality education regarding sustainable development (SD) at all levels and in various societal contexts, with the objective of transforming society by reorienting educational strategies. The emphasis is on integrating SD themes, including climate change and biodiversity, into educational curricula. Individuals are encouraged to become responsible citizens who address challenges, respect cultural diversity, and contribute to the creation of a more sustainable future. According to UNESCO, the pedagogical approaches to inculcate the concept of Sustainable Development are –

**1. Learner-Centred Pedagogy:** A learner-centred approach views students as independent learners and highlights the active development of knowledge instead of simply transferring information and providing passive learning experiences. The starting points for the learning process are the learners' existing knowledge and their experiences within social contexts, which help stimulate their learning. Learner-centred methods require students to reflect on their own understanding and learning processes to effectively manage and oversee them. Educators should encourage and assist in these reflections (UNESCO, 2017).

**2. Action-Oriented Learning:** In action-oriented learning, individuals participate in activities and subsequently reflect on their experiences concerning both their intended learning objectives and personal growth. These experiences may arise from various sources, such as a service learning project, an internship, leading a workshop, or executing a campaign, among others. Action learning refers to Kolb's theory of the experiential learning cycle with the following stages: "1. Having a concrete experience, 2. Observing and reflecting, 3. Forming abstract concepts for generalisation and 4. Applying them in new situations" (Kolb & Joy, 2008). Action learning enhances the acquisition of knowledge, develops competencies, and clarifies values by connecting abstract ideas to personal experiences and the individual's life. The educator's responsibility is to foster a learning atmosphere that encourages learners to reflect on their experiences and engage in reflexive thinking.

**3. Transformative Learning:** Transformative learning is best characterised by its goals and principles, rather than by specific teaching or learning methods. Its objective is to enable learners to reconsider and modify their perceptions and thoughts about the world, enhancing their comprehension of it (Slavich & Zimbardo, 2012). The role of the educator is to facilitate, empower and challenge learners to change their perspectives. Transformative learning is more collaborative and learner-centred than traditional methods of learning. It engages students in the teaching-learning process actively. Its emphasis is on emerging modern skills such as interpersonal skills, creativity, collaboration, and critical thinking. Students are taking an active role in decision-making in the teaching-learning process. It enhances the capability to apply prior knowledge and skills in real-life situations. Students get a broad learning environment outside the classroom.

**4. Collaborative Learning:** Collaborative learning is an umbrella term. Several educational strategies are included with a combined intellectual effort by the students or students and teachers together. Generally, two or more students are engaged in learning to understand something, problem-solving and innovative work. Collaborative learning transformed the traditional teacher-centred classroom into a learner-centred classroom. Traditional teaching-learning activities may not vanish completely, but student participation is supplemented in teaching-learning processes such as group discussion and collaborative work. The teachers have taken the role of mentor, guide, or coach in this Collaborative learning process. Joint real-world initiatives, including service-learning projects and campaigns targeting various SDGs.

**5. Project-Oriented Work:** Project-oriented work is a learner-centred teaching method that encourages learning through real-life experience. Flexibility was given to the students, and they could learn at their own pace. They spent a lot of time together on group work and enriched their knowledge and skills. They get a scope to present their product or the results of their group work in front of the audience. Students get feedback on their work and get the opportunity for revisions. Project-oriented work facilitates the students to enhance their content knowledge as well as various skills like critical thinking, collaboration, communication, etc. Collaborative projects addressing particular issues of local, national, and international significance in partnership with educational institutions and various other stakeholders.

**6. Research-based analysis:** Research-based analysis is a process where the data from research is used to analyse the phenomenon. It improves the insights of the collected data. It helps to maximise the effectiveness and minimise the errors of the input efforts. At first, we must set clear goals and methods for the analysis. After organizing the collected data, we must report the findings using appropriate tools. In the final stage, we must review the results as well as the analysis of the collected data. A few common methods of analysis are descriptive and inferential statistics, content and discourse analysis, etc. It emphasizes the variety of the collected data, the research questions, and the available resources. Research-based analysis has a remarkable influence on Education for Sustainable Development processes in different learning settings, such as schools and educational institutions.

**7. Practical Experience:** Practical experience is the process of real-life knowledge that is acquired through engaging in various activities. It is useful to solve our day-to-day problems by applying our prior knowledge. Practical experience allows the use of learned behaviour or knowledge from the classroom in a real environment. It helps to learn the nuances and protocol of the expected career. Practical experience develops the relationship among the people and encourages the interaction power of the students. It helps the students to understand and develop the values among them. Practical experience benefits the students by providing feedback, which helps to identify weaknesses and improve their performance. It helps for professional advancement as well as career exploration. Internships, Field experiences, etc., allow getting Practical experience. Practical experiences promote Education for Sustainable Development by interacting with the environment and developing environmental values.

## Conclusion

Sustainable development is very crucial in the present materialistic world. We are harming ourselves indirectly to meet our selfish needs or greed. Education is only one way to eliminate such a kind of selfish activity. In the curriculum of secondary schools under WBBSE, the concept of Sustainable development was not only included, but also its application process was clearly described. So, the place of sustainable development in the curriculum of WBBSE schools is in a good position. UNESCO also declared the guidelines for teaching education for sustainable development through pedagogical approaches. Those seven types of pedagogical approaches are important to inculcate the concept of Sustainable Development. We must use these pedagogical approaches in the teaching-learning process to impart knowledge of sustainable development among the students because only education can change people's destructive behaviour towards the environment. We must target the young age group, especially school students, for the modification of behaviour which leads them to be responsible world citizens. In the words of renowned Bengali poet Sukanta Bhattacharya, he will make the world a place of living for future generations by cleaning the garbage. It should be everyone's strong determination.

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