

As per the new syllabus of Diploma in Elementary Education (DEEd)  
recommended by West Bengal Board of Primary Education and NCTE

# ENVIRONMENTAL SCIENCE

(DEEd Part-I • CPS-04)

## Prof. (Dr.) Subir Nag

MSc, BEd. MA (Edu.), Gold Medalist, PhD  
Diploma in Psychological Counselling  
Principal, Satyapriya Roy College of Education  
Ex-WBES, Govt. of West Bengal & Ex-Reader, St. Xavier's College  
Ex-Visiting Faculty, Calcutta University & Presidency College and University  
Academic Counsellor—IGNOU, NSOU & IASE

## Dr. Shinjini Nag

MSc, BEd, MEd, MA (Education), PhD (Education)  
Assistant Professor, Dept. of Education, Fakir Chand College, Diamond Harbour  
Ex-Asst. Prof. Syamaprasad Institute of Education and Training  
Ex-Guest Lecturer, Asutosh College and South Calcutta Girls' College

## Dr. Kamalika Banerjee

MA (Geography), MEd (Gold Medalist), PhD (Education)  
Principal, Wali Institute of Teachers' Education, Barasat



*Rita Publication*

(Publisher and Book-seller)

25B, Beniatola Lane, Kolkata-700 009  
[www.ritapublication.com](http://www.ritapublication.com) / [www.ritapublication.in](http://www.ritapublication.in)

## SYLLABUS

### CPS-04: ENVIRONMENTAL SCIENCE

Maximum Marks = 100 (Internal = 30 + External = 70)

Pass Marks = 40% of Full Marks in each of the External & Internal Evaluation

Student Contact = 90 hours

#### Unit-1: Basic Concept of EVS

Class-6 Hours

- Meaning, Nature and Characteristics of EVS.
- Process in EVS—representations, relations, reasoning, problem-solving in day-to-day activities and communication in life skills.
- Goals of EVS Educations—Cognitive, affective and psychomotor domain.

#### Unit-2: Aims and objectives of EVS

Class-6 Hours

- Aims of Teaching EVS—Multi disciplinary, Utilitarian.
- Objectives of EVS in terms of Competencies/Learning outcomes in terms of contextualization, development of interest and appreciation.

#### Unit-3: Curriculum Construction of EVS Learning

Class-8 Hours

- Principles of Curriculum Construction.
- Organization of Curriculum Construction.

#### Unit-4: Approaches and Methods for Teaching-Learning of EVS

Class-10 Hours

- Approaches—Transmission, Child—Centric, Discovery, Constructivism.
- Methods—Story telling, Observation, Discussion, Dramatization, Discovery, Local Field Study, Demonstration, Problem-solving, Project, Experimentation.

#### Unit-5: Resource and Materials for Teaching-Learning EVS

Class-10 Hours

- Preparation and use of Teaching-Learning—Materials (LTM) in EVS.
- Use of Local Resources in EVS Learning.
- Organizing Resource Rooms in Schools for preserving Audio-Visual Teaching Aids (ET Lab).
- Organizing Library for preserving Text Books, Teachers—Hand Books, Reference Books and some periodicals.
- Organizing Laboratory as Science resource room.

#### Unit-6: (Knowledge) Critical analysis of the Contents of EVS meant for class I to V.

Class-9 Hours

#### Unit-7: (Knowledge) Critical analysis of the contents of EVS meant for class VI to VII

Class-9 Hours

#### Unit-8: Lesson Planning of EVS Learning.

Class-10 Hours

- Unit and Sub-Unit based Lesson Planning (Micro and Macro), preparation of lesson notes on the basis of competencies (Micro).
- Maintaining Note Books (Micro and Macro) for evaluation of lesson plan along with Work-Sheet with each and every Lesson Plan.

#### Unit-9: Action Research and Project

Class-11 Hours

- Action Research for improvement of Teaching-Learning of EVS.
- Preparation of Project.

#### Unit-10: Learning Assessment in EVS

Class-11 Hours

- Tools and Techniques of Evaluation.
- Construction of Achievement Test.
- Knowledge of CCE in EVS.

## CONTENTS

<b>1. BASIC CONCEPT OF EVS ... 1-26</b>	
<b>1.1. Environment 1</b> 1.1.1. Meaning and Definition of Environment 1 1.1.2. Components of Environment 2 <ul style="list-style-type: none"> <li>• Atmosphere 2</li> <li>• Lithosphere 5</li> <li>• Hydrosphere 6</li> <li>• Biosphere 7</li> </ul> <b>1.2. Concept of Environmental Science 8</b> 1.2.1. Meaning and Definition of Environmental Science 8 1.2.2. Nature of Environmental Science 12	1.2.3. Scope of Environmental Science 13 1.2.4. Characteristics of Environmental Science 13 1.2.5. Environmental Science as an Integrated Area of Study 15 1.2.6. Importance of Environmental Science 15 <b>1.3. Process in Environmental Science 16</b> <b>1.4. Goals of Environmental Science 17</b> 1.4.1. Cognitive Domain 18 1.4.2. Affective Domain 18 1.4.3. Psychomotor Domain 19 <ul style="list-style-type: none"> <li>• <b>Exercise 20</b></li> </ul>
<b>2. AIMS AND OBJECTIVES OF EVS ... 27-34</b>	
<b>2.1. Introduction 27</b> <b>2.2. Aims of Environmental Science 28</b> 2.2.1. Multidisciplinary Aims 29	2.2.2. Utilitarian Aims 30 <b>2.3. Objectives of Environmental Science 30</b> <ul style="list-style-type: none"> <li>• <b>Exercise 32</b></li> </ul>
<b>3. CURRICULUM CONSTRUCTION OF EVS LEARNING ... 35-49</b>	
<b>3.1. Concept of Curriculum 35</b> 3.1.1. Meaning and Concept of Curriculum 35 <ul style="list-style-type: none"> <li>• Traditional Concept of Curriculum 35</li> <li>• Modern Concept of Curriculum 36</li> </ul> 3.1.2. Definition of Curriculum 36 3.1.3. Characteristics of Curriculum 37 <b>3.2. Principles of Curriculum Construction 38</b> <ul style="list-style-type: none"> <li>• Principles related to Learners and Community 38</li> </ul>	<ul style="list-style-type: none"> <li>• Principles related to Curriculum Organization 39</li> </ul> <b>3.3. Organization of Curriculum Content 41</b> 3.3.1. Meaning and Definition of Curriculum Content 41 3.3.2. Procedure of Content Selection 41 3.3.3. Criteria for Content Selection 42 3.3.4. Principles of Selecting Curriculum Content 43 <ul style="list-style-type: none"> <li>• <b>Exercise 44</b></li> </ul>
<b>4. APPROACHES AND METHODS FOR TEACHING-LEARNING OF EVS ... 50-115</b>	
<b>4.1. Approaches for Teaching-Learning of EVS 51</b> 4.1.1. Meaning and Definition of Approaches for Teaching-Learning of EVS 51 4.1.2. Characteristics of Approaches for Teaching-Learning of EVS 52 4.1.3. Transmission Approach 53 <ul style="list-style-type: none"> <li>• Concept and Nature of the Transmission Approach 53</li> <li>• Characteristics of the Transmission Approach 53</li> <li>• Advantages of the Transmission Approach 54</li> <li>• Limitations of the Transmission Approach 54</li> <li>• Application of the Transmission Approach in EVS 54</li> </ul>	<ul style="list-style-type: none"> <li>• Example of Transmission Approach for Teaching-Learning of EVS for Primary Level 55</li> </ul> 4.1.4. Child-centric Approach 56 <ul style="list-style-type: none"> <li>• Concept and Nature of the Child-centric Approach 56</li> <li>• Characteristics of the Child-centric Approach 56</li> <li>• Advantages of the Child-centric Approach 57</li> <li>• Limitations of the Child-centric Approach 58</li> <li>• Implementation Strategies for the Child-centric Approach 58</li> <li>• Example of Child-centric Approach for Primary Level 59</li> </ul>

- 4.1.5. Constructivist Approach 60
  - Concept and Nature of the Constructivist Approach 60
  - Characteristics of the Constructivist Approach 61
  - Advantages of the Constructivist Approach 62
  - Limitations of the Constructivist Approach 62
  - Implementation Strategies for the Constructivist Approach 63
  - Example of Constructivist Approach for Teaching-Learning of EVS 64
- 4.2. Methods for Teaching-Learning of EVS 65**
  - 4.2.1. Meaning and Definition of Methods for Teaching-Learning of EVS 65
  - 4.2.2. Characteristics of Methods for Teaching-Learning of EVS 66
  - 4.2.3. Storytelling Method 66
    - Meaning and Concept of Storytelling Method 66
    - Characteristics of Storytelling Method 67
    - Advantages of Storytelling Method 67
    - Disadvantages of Storytelling Method 68
    - Example of Storytelling Method 68
  - 4.2.4. Observation Method 69
    - Meaning and Concept of Observation Method 69
    - Characteristics of Observation Method 70
    - Advantages of Observation Method 70
    - Disadvantages of Observation Method 70
    - Example of Observation Method 71
  - 4.2.5. Discussion Method 72
    - Meaning and Concept of Discussion Method 72
    - Characteristics of Discussion Method 73
    - Advantages of Discussion Method 73
    - Disadvantages of Discussion Method 74
    - Example of Discussion Method 74
  - 4.2.6. Dramatization Method 75
    - Meaning and Concept of Dramatization Method 76
    - Characteristics of Dramatization Method 76
    - Advantages of Dramatization Method 76
    - Disadvantages of Dramatization Method 77
    - Example of Dramatization Method 77
  - 4.2.7. Discovery Method 79
    - Meaning and Concept of Discovery Method 79
    - Characteristics of Discovery Method 79
    - Advantages of Discovery Method 79
    - Disadvantages of Discovery Method 80
    - Example of Discovery Method 80
  - 4.2.8. Local Field Study 82
    - Meaning and Concept of Local Field Study 82
    - Characteristics of Local Field Study 82
    - Advantages of Local Field Study 83
    - Disadvantages of Local Field Study 83
    - Example of Local Field Study 84
  - 4.2.9. Demonstration Method 85
    - Meaning and Concept of Demonstration Method 85
    - Characteristics of Demonstration Method 86
    - Advantages of Demonstration Method 86
    - Disadvantages of Demonstration Method 86
    - Example of Demonstration Method 87
  - 4.2.10. Problem-Solving Method 88
    - Meaning and Concept of Problem-Solving Method 88
    - Characteristics of Problem-Solving Method 89
    - Advantages of Problem-Solving Method 89
    - Disadvantages of Problem-Solving Method 90
    - Example of Problem-Solving Method 90
  - 4.2.11. Project Method 92
    - Meaning and Concept of Project Method 92
    - Characteristics of Project Method 92
    - Advantages of Project Method 92
    - Disadvantages of Project Method 93
    - Example of Project Method 93
  - 4.2.12. Experimental Method 95
    - Meaning and Concept of Experimental Method 95
    - Characteristics of Experimental Method 95
    - Advantages of Experimental Method 95
    - Disadvantages of Experimental Method 96
    - Example of Experimental Method 96
    - **Exercise 98**

## 5. RESOURCE AND MATERIALS FOR TEACHING-LEARNING EVS 116-148

- 5.1. Concept of Teaching Learning Materials (TLM) 117**
  - 5.1.1. Meaning and Definition of TLM 117
  - 5.1.2. Characteristics of TLM 118
    - 5.1.3. Importance of Teaching Learning Materials 119
    - 5.1.4. Types of Teaching Learning Materials 121
      - Audio & Visual Teaching Aids 121
      - Audio-Visual Teaching Aids 123

<b>5.2. Preparation and Use of Teaching Learning Materials (TLM) in EVS 123</b> 5.2.1. Preparation of TLM in EVS 123 5.2.2. Use of TLM in EVS 125 <b>5.3. Use of Local Resources in EVS Learning 127</b> 5.3.1. Concept of Local Resources 127 5.3.2. Sources of Local Resources 128 5.3.3. Uses of Local Resources 129 <b>5.4. Organizing Resource Rooms in Schools for preserving Audio-Visual Teaching Aids 130</b> 5.4.1. Design and Layout of the Resource Room 130 5.4.2. Inventory Management and Cataloging 131 5.4.3. Maintenance and Upkeep 131 5.4.4. Access and Security 131 5.4.5. Training and Support 131 5.4.6. Updating and Upgrading Technology 132	5.4.7. Sustainability & Environmental Considerations 132 5.4.8. Evaluating and Improving Practices 132 <b>5.5. Organizing Library for preserving Text-books, Teachers Handbooks, Reference Books and Some Periodicals 133</b> 5.5.1. Library 133 5.5.2. Class Library 133 5.5.3. Textbooks 134 5.5.4. Reference Books 134 5.5.5. Teacher Handbooks 134 <b>5.6. Organizing Laboratory as Science Resource Room 135</b> 5.6.1. Concept and Meaning of Science Resource Room 135 5.6.2. Importance of Science Resource Room 136 5.6.3. Uses of Science Resource Room 136 • <b>Exercise 138</b>
--	---

## 6. CRITICAL ANALYSIS OF THE CONTENTS OF EVS MEANT FOR CLASS I TO V ... 149-165

<b>6.1. Critical Analysis of the Contents of EVS 149</b> • NCF 2005 and Objectives of Environmental Studies 149 <b>6.2. Interpretation and Analysis of Curriculum of Class III 150</b>	<b>6.3. Interpretation and Analysis of Curriculum of Class IV 152</b> <b>6.4. Interpretation and Analysis of Curriculum of Class V 154</b> • <b>Exercise 157</b>
--	--

## 7. CRITICAL ANALYSIS OF THE CONTENTS OF EVS MEANT FOR CLASS VI TO VIII ... 166-186

<b>7.1. Contents of EVS in Primary Stage 166</b> • Objectives of Environmental Studies in India and NCF-2005 166 <b>7.2. Analysis and Interpretation of Curriculum of Class VI 168</b>	<b>7.3. Interpretation and Analysis of Curriculum of Class VII 171</b> <b>7.4. Interpretation and Analysis of Curriculum of Class VIII 174</b> • <b>Exercise 178</b>
--	--

## 8. LESSON PLANNING OF EVS LEARNING 187-255

<b>8.1. Micro Teaching 187</b> 8.1.1. Introduction to Micro Teaching 187 8.1.2. Meaning of Micro Teaching 187 8.1.3. Definition of Micro Teaching 187 8.1.4. Objectives of Micro Teaching 188 8.1.5. Characteristics of Micro Teaching 189 8.1.6. Difference Between Macro & Micro Teaching 189 8.1.7. Micro Teaching Cycle 189 8.1.8. Summary of the Micro Teaching Cycle 191 8.1.9. Steps in Micro Teaching Lesson Planning 191 8.1.10. Role of the Supervisor in Micro Teaching 193 8.1.11. Applications of Micro Teaching 193 8.1.12. Advantages of Micro Teaching 194 8.1.13. Disadvantages of Micro Teaching 194	8.1.14. Components of Micro Teaching 194 8.1.15. Observation and Evaluation Method of a Micro-Teaching Session 198 <b>8.2. Macro Lesson Planning 220</b> 8.2.1. Meaning of Macro Lesson Planning 220 8.2.2. Definition of Macro Lesson Planning 220 8.2.3. Importance of Unit-Based Lesson Planning 221 8.2.4. Need for Lesson Planning 221 8.2.5. Advantages Lesson Planning 222 8.2.6. Disadvantages Lesson Planning 222 8.2.7. Necessary Content Required for Lesson Planning 223 8.2.8. NCF—2005 and Lesson Planning 223 8.2.9. NCF-2005 Constructivism 224
---	--

8.2.10. RTE Act, 2009 and Lesson Planning 225	8.2.13. Purpose of Lesson Planning 227
8.2.11. Description of Different Methods of Lesson Planning 226	8.2.14. Classification of Lesson Objectives 227
8.2.12. Expected Learning Outcomes 226	8.2.15. Stages of Lesson Planning 228
	• <b>Exercise 253</b>

<b>9. ACTION RESEARCH AND PROJECT</b>	<b>...</b>	<b>256-291</b>
---------------------------------------	------------	----------------

**9.1. Action Research for Improvement of Teaching-Learning of EVS 257**

9.1.1. Meaning and Definition of Action Research 258
9.1.2. Objectives of Action Research 260
9.1.3. Characteristics of Action Research 261
9.1.4. Nature of Action Research 263
9.1.5. Scope of Action Research 264
9.1.6. Advantages of Action Research 266
9.1.7. Limitations of Action Research 267

9.1.8. Necessity of Action Research in Education 269
9.1.9. Steps to conduct Action Research 270

**9.2. Preparation of Project 274**

9.2.1. Concept and Meaning of Project Method 275
9.2.2. Characteristics of Project Method 276
9.2.3. Advantages of Project Method 277
9.2.4. Disadvantages of Project Method 279
9.2.5. Steps of Project Method 280
• <b>Exercise 283</b>

<b>10. LEARNING ASSESSMENT IN EVS</b>	<b>...</b>	<b>292-332</b>
---------------------------------------	------------	----------------

**10.1. Concept of Assessment and Evaluation 293**

10.1.1. Concept of Assessment 293
• Meaning and Definition of Assessment 293
• Objectives of Assessment 293
• Functions of Assessment 294
• Types of Assessment 294
10.1.2. Concept of Evaluation 297
• Meaning of Evaluation 297
• Definition of Evaluation 297
• Objectives of Evaluation 298
• Characteristics of Evaluation 298
• Steps of Evaluation 298
• Functions of Evaluation 299
• Needs and Importance of Evaluation 299
• Principles of Evaluation 300
• Types of Evaluation 300
10.1.3. Difference between Assessment and Evaluation 305

**10.2. Tools and Techniques of Evaluation in EVS 306**

10.2.1. Tools of Evaluation in EVS 306
10.2.2. Techniques of Evaluation in EVS 308
• Oral Technique 308
• Written Techniques 309
• Practical Technique 311

**10.3. Construction of Achievement Test 311**

10.3.1. Meaning of Achievement Test 311
10.3.2. Definition of Achievement Test 311
10.3.3. Objectives of Achievement Test 312

10.3.4. Characteristics of Achievement Test 312
10.3.5. Functions of Achievement Test 312
10.3.6. Uses of Achievement Test 313
10.3.7. Limitation of Achievement Test 313
10.3.8. Types of Achievement Test 313
• Standardized Achievement Test 313
• Teacher Made Achievement Test 314

**10.3.9. Construction of Achievement Test 315**

**10.4. Knowledge of CCE in EVS 316**

10.4.1. Meaning of Continuous and Comprehensive Evaluation 316
10.4.2. Definition of Continuous and Comprehensive Evaluation 317
10.4.3. Objectives of Continuous and Comprehensive Evaluation 317
10.4.4. Characteristics of Continuous and Comprehensive Evaluation 318
10.4.5. Functions of Continuous and Comprehensive Evaluation 318
10.4.6. Aspects of Continuous and Comprehensive Evaluation 319
• Continuous Evaluation 319
• Comprehensive Evaluation 319
10.4.7. Benefits of Continuous and Comprehensive Evaluation to Teachers and Students 320
• Benefits for Teachers 320
• Benefits for Students 320
• <b>Exercise 321</b>

<b>DElEd Examination (Part I) Question Papers</b>	<b>333-348</b>
---	----------------