

**Delhi Public School Ghaziabad**  
**Class XI**  
**Biology Lesson plan based on DOL**  
**Chapter 15 – Plant growth and development**

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| Unit                                                                                                                       | Plant Physiology (Chapter 15 Plant growth and development )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Class Transaction                                                                                                          | Total: 3 periods                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Pre-requisite for the course                                                                                               | <b>This lesson requires</b> <ul style="list-style-type: none"> <li>• Basic knowledge of growth and development</li> <li>• Knowledge of differentiation and dedifferentiation</li> <li>• Knowledge of mechanism of plant growth regulators</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Assessment of qualifying knowledge                                                                                         | <ul style="list-style-type: none"> <li>• Written test</li> <li>• Lab activity</li> <li>• Oral questioning</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Objective                                                                                                                  | <b>Students would be able to understand</b> <ul style="list-style-type: none"> <li>• Process of growth</li> <li>• Differentiation, dedifferentiation and redifferentiation</li> <li>• Development</li> <li>• Plant growth regulators</li> <li>• Photoperiodism</li> <li>• Vernalization</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Learning Outcomes                                                                                                          | <p><b><u>KNOWLEDGE</u></b>- <i>Students will know and understand</i></p> <ul style="list-style-type: none"> <li>• Extrinsic and intrinsic growth</li> <li>• Indeterminate and determinate growth</li> <li>• Phases of growth</li> <li>• Growth rate</li> <li>• Conditions of growth</li> </ul> <p><b><u>SKILLS</u></b>- <i>Students would be able to</i></p> <ul style="list-style-type: none"> <li>• Differentiate between Indeterminate and determinate growth</li> <li>• Differentiate between absolute and relative growth rate</li> <li>• Methods of measuring growth</li> <li>• Understand physiological effects of plant growth regulators</li> </ul> <p><b>Competencies developed in students:</b> collaborative learning, critical thinking and problem solving, character building, communication, citizenship</p> |
| Transaction Methodology<br>(The teacher can use the mentioned techniques, wherever applicable, and can use any other too.) | <p>Transaction would proceed in the following manner-</p> <p><i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying.</p> <p><i>Introduction of the topic</i>- ppt and Digital Content would be shared</p> <p><i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom.</p> <p><b>Techniques to be used:</b><br/> Quiz, MCQ, Peer Assessment, Case Studies, Lab Activities, Any Other</p>                                                                                                                                                                          |
| Resources                                                                                                                  | NCERT text book, Reference Book, CBSE Exemplar, DPSG Spiral<br><a href="http://www.learncbse.in/cbse-notes/">www.learncbse.in/cbse-notes/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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|                                    | <a href="https://mycbseguide.com">https://mycbseguide.com</a><br><a href="http://www.examfear.com">www.examfear.com</a>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Self Study, Home Work, Assignments | <b>Independent Practice:</b> Students would do the given questions in their spirals. It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.                                                                                                                                                                                                                                                                                         |
| Assessments                        | <b>UNIT TESTS , HALF YEARLY EXAMINATION, ANNUAL EXAMINATION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Addressing Classroom Diversity     | Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups:<br><i>For high scoring students:</i><br>High order thinking questions to be done<br>Encouragement for referring other resources<br><i>For low scoring students:</i><br>Spiral questions<br>Peer education<br>PCC classes<br><i>For differently abled students:</i><br>Call parents at regular intervals<br>Provide grade-up classes<br>Encourage and motivate them at every level. |
| Marks                              | The weightage of whole unit is 18 marks and is given by CBSE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

#### Day 1:

- Students will be shown a ppt and will be made aware of the growth in plants and animals.
- Students will be told about the phases of growth in plants.
- Students will be told about the growth rates

#### Guided practice: DOL 1

- Students will be made to list all phases of growth in plants.
- Students will be made to describe and discuss in groups absolute and relative growth rates.

**Communication and brainstorming:** Students develop effective communication skills and learn to put across their views.

**Collaboration:** Students learn to work in collaboration to achieve a common goal. They learn to manage time and divide and delegate work and responsibilities.

#### Summarize and check for understanding: DOL 2

- Oral questioning based on the day's teaching.

#### Independent practice: DOL 3

- Students will be asked to revise the work done in class.
- Students will be asked to make a graph to show an idealized sigmoid growth curve typical of cells in culture, many higher plants and plant organs.

#### Day 2:

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| a. Students will be shown a ppt and will be made aware of conditions of growth.                                                                   |
| b. Students will be told about the differentiation, dedifferentiation and redifferentiation.                                                      |
| c. Students will be made aware of the sequence of the developmental process in a plant cell.                                                      |
| d. Students will be told about plasticity in plants.                                                                                              |
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| <b>Guided practice: DOL 1</b>                                                                                                                     |
| a. Students will be made to recall heterophylly in plants like larkspur and buttercup.                                                            |
| b. Students will be asked to describe and discuss in groups about the importance of totipotency in plants.                                        |
| c. Students will be asked to make a list of all the conditions for growth.                                                                        |
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| <b>Critical thinking and problem solving:</b> Helps students to think critically and solve the given problem                                      |
| <b>Communication and brainstorming:</b> Students develop effective communication skills and learn to put across their views.                      |
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| <b>Summarize and check for understanding: DOL 2</b>                                                                                               |
| a. Oral questioning based on the day's teaching                                                                                                   |
| b. Discussion on the topic in groups – The final structure at maturity of a cell/tissue is also determined by the location of cell/tissue within. |
| <b>Character and citizenship:</b> Group discussion helps to develop interpersonal skills, respecting and valuing views of others                  |
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| <b>Independent practice: DOL 3</b>                                                                                                                |
| a. Students will be asked to revise the work done in class.                                                                                       |
| b. Students will be asked to describe sequence of developmental process in a plant cell.                                                          |
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| <b>Day 3:</b>                                                                                          |
| a. Students will be shown a ppt and will be made aware of discovery of plant growth regulators.        |
| b. Students will be told about physiological effects of plant growth regulators.                       |
| c. Students will be made aware of photoperiodism.                                                      |
| d. Students will be made aware of vernalisation.                                                       |
| <b>Guided practice: DOL 1</b>                                                                          |
| a. Students will be made to differentiate in long day plants, short day plants and day neutral plants. |
| c. Students will be asked to list all the phytohormones and their physiological effects.               |
| d. Students will be asked to describe and discuss in groups about vernalization in biennial plants.    |

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| <b>Collaboration:</b> Students learn to work in collaboration to achieve a common goal. They learn to manage time and divide and delegate work and responsibilities. |
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| <b>Communication and brainstorming:</b> Students develop effective communication skills and learn to put across their views. |
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| <b>Summarize and check for understanding: DOL 2</b> |
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| a. Oral questioning based on the day's teaching |
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| e. Discussion on the topic in groups – role of phytohormones in flowering. |
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| <b>Communication:</b> Involves sharing of ideas and information to advance scientific understanding, processes, theories and discoveries |
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| <b>Independent practice: DOL 3</b> |
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| a. Students will be asked to revise the work done in class. |
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| b. Students will be asked to research on vernalization. |
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| <b>Closure of the lesson</b> |
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| Summarizing the lesson by mind mapping |
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| Giving them revision worksheets |
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