**UNIT OVERVIEW:** Transport in Plants

**ENQUIRY:** How have multicellular organisms evolved an efficient transport system

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| **Unit intention:**  Students will explore the mass transport of substances in multicellular organisms and how organisms have evolved to have an efficient exchange surface.  In large multicellular organisms, the immediate environment of cells is some form of tissue fluid. Most cells are too far away from exchange surfaces, and from each other, for simple diffusion alone to maintain the composition of tissue fluid within a suitable metabolic range. Students will look at structural adaptations and how it links with function as well as carry out dissection and examinations of tissue. | | |
| **Success criteria:** | 🗸 | X |
| |  |  | | --- | --- | | (a) the need for transport systems in multicellular plants |  | | (b) (i) the structure and function of the vascular system in the roots, stems and leaves of herbaceous dicotyledonous plants  (ii) the examination and drawing of stained sections of plant tissue to show the distribution of xylem and phloem  (iii) the dissection of stems, both longitudinally and transversely, and their examination to demonstrate the position and structure of xylem vessels |  | | (c) the transport of water into the plant, through the plant and to the air surrounding the leaves |  | | (d) (i) the process of transpiration and the environmental factors that affect transpiration rate  (ii) practical investigations to estimate transpiration rates |  | | (e) adaptations of plants to the availability of water in their environment |  | | (f) the mechanism of translocation. |  | | PAG1 (Microscopes), PAG2 (Dissection), PAG5 (Potometer), PAG11 (Investigation into the measurement of plant or animal responses) |  | |  |  |
| **Unit summative and formative assessment details:**  Weekly Seneca  Recall quiz  Extended writing  End of unit test | | |

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| **Success criteria** – Have you met them? Show your evidence in the boxes below.  **End of Unit EVALUATION** |
| **1.** |
| **2.** |
| **3.** |
| **4.** |
| **5.** |
| **6.** |
| **How will you improve your work?** |

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| **Home Learning (What and how often):**  Homework once a week (flip learning and Seneca)  Revisit class content (make notes)  Research activities for practical | |
| **Topic Sequence**   1. Transport Systems 2. Water transport 3. Transpiration 4. Translocation 5. Plant adaptations | **Recommended reading:**  HPA-Private lives of plants  Transport systems in multicellular organisms  <https://rd.springer.com/chapter/10.1007/978-1-349-00021-0_4>  https://alevelnotes.com/notes/biology/  file:///M:/221983-transport-in-plants-delivery-guide%20(1).pdf  **Places to visit:**  Natural History Museum  Horniman Musuem  Centre of the cell |