



Key Stage 3/4 Lesson 1 – Super Seagrass

Lesson Plan

Introduction

Seagrass is a very special flowering plant that lives in the sea. In the UK, we have two species of seagrass. Seagrasses can form lush underwater meadows, some of which are large enough to be seen from Space! Seagrass is crucial in the fight against the climate crisis as it absorbs carbon dioxide faster than rainforests and produced 10 times more oxygen than trees.

In this lesson, we explore what seagrass is, the roles of the different organs of the plant, how seagrass photosynthesises, the ecosystem benefits that seagrass meadows provide, and the cutting-edge work that Yorkshire Wildlife Trust's expert marine team are carrying out to restore this vital habitat in the Humber estuary.

Teaching and Learning

Task 1: Super seagrass PowerPoint presentation

- Start the lesson by presenting the PowerPoint to learn all about seagrass – a fascinating flowering plant that lives in the sea. Students will learn about what seagrass is, how seagrass photosynthesises, the amazing ecosystem benefits seagrass meadows provides and the work Yorkshire Wildlife Trust is doing to restore the seagrass meadow at Spurn National Nature Reserve.

Task 2: Nearpod quiz

- Use the Nearpod link on the 'Marine Learning Pack' webpage and complete the quiz to test students' understanding of the PowerPoint presentation. Use the teacher's link to add the quiz to your resources and to be able to edit the quiz (you will need to create a free Nearpod account to do this) or use the student-paced link to allow students to complete the quiz in their own time (no Nearpod account needed).

Task 3: Practical activity – investigate the rate of photosynthesis

- Students will investigate the effect of light intensity on the rate of photosynthesis in pondweed, another aquatic plant, by moving a lamp closer or further away from the plant. Students will record the rate of photosynthesis by counting the number of bubbles that the pondweed produces.

Learning Outcomes

- 1) Describe what seagrass is
- 2) Describe the process of photosynthesis
- 3) Explain the function of the organs of seagrass
- 4) Discuss why seagrass is special and why it is important that we protect it

Key Vocabulary

Flowering plant, habitat, fruit, flower, stem, frond, roots, rhizome, seed, nutrients, photosynthesis, coastal erosion, restoration.

Links to the National Curriculum

KS3 Biology

Structure and function of living things:

- Nutrition and digestion
 - Plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots.
- Reproduction
 - Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.

Material cycles and energy:

- Reproduction
 - The reactants in, and products of, photosynthesis, and a word summary for photosynthesis
 - The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere.

Interactions and independencies:

- Relationships in an ecosystem
 - The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops
 - How organisms affect, and are affected by, their environment, including the accumulation of toxic materials.

KS4 Biology

Transport systems:

- The need for transport systems in multicellular organisms, including plants.

Photosynthesis:

- Photosynthesis as the key process for food production and therefore biomass for life
- The process of photosynthesis
- Factors affecting the rate of photosynthesis.

Ecosystems:

- Levels of organisation within an ecosystem
- Organisms are interdependent and are adapted to their environment
- The importance of biodiversity
- Positive and negative human interactions with ecosystems.

