Sewage, nutrients and eutrophication

Teacher / technician

YEAR 11 / LESSON 111 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Original learning tasks; no supplied numerical example represents class measurements.

Coverage and delivery

Shared Biology / Double Award: 4.16–4.17. Water pollution and eutrophication.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Student booklets	1 per learner	30
Nutrient-pollution sequence cards and river diagram	1 set per pair	15 sets
Rulers	1 per pair	15

Immediate safety

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Preparation and delivery

Read alongside the student method

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1. Provide 30 booklets, 15 rulers and 15 sets of nutrient-pollution sequence cards and river diagram.

2. Keep answers separate until learners have attempted the tasks; discuss the reasons for corrections.

3. Use the stated fictional survey and a river diagram with upstream/downstream positions and the suspected input. No field collection, sewage handling or incubation is part of this lesson.

Close of lesson

• Return models and keep the corrected work.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- Algal and plant growth.
- It reduces light for photosynthesis.
- Aerobic respiration.
- Yes, through respiration.
- Organic matter can directly support decomposer oxygen demand and may introduce pathogens.
- No; timing, flow, baseline and other inputs must be considered.

References and provenance

Pearson Biology specification

EPA: nutrient pollution and oxygen

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.