A pond after a nutrient pulse

Ecosystem stability | constructed time series

Instructional alignment HS-LS2-6

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Construct an evidence-based explanation; identify a testable alternative
Crosscutting concept Stability and change; cause and effect

1. Algae rise from 10 to 80 units by day 4 while dawn oxygen falls from 8 to 3 mg/L. This is evidence of a changed ecosystem state.

2. A bloom can increase organic material available for decomposition. Respiration and decomposition consume dissolved oxygen, contributing to the decline.

3. Repeated measurements of decomposition, temperature, respiration or daytime and dawn oxygen could distinguish pathways. Association alone does not identify every cause.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Treating greater algal abundance as proof that oxygen must increase at every time of day. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Draw and label the system after nutrients are reduced. Predict one measurement and justify the time scale.

Related public evidence

BIO_2026_08_37 | public question

Official mapping for that example

BIO_2026_08_40 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

The resistant survivors

Natural selection | constructed population model

Instructional alignment HS-LS4-4

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Build an explanation from population evidence
Crosscutting concept Cause and effect

1. Before, 10/100=10%; after, 8/17 is about 47%.

2. Resistant survivors can contribute a greater share of inherited variants to offspring, increasing resistance frequency over generations.

3. The population composition changes through differential survival and reproduction of existing variation. The model does not describe need-driven transformation.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Explaining an inherited population change as an intentional change by individual organisms. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Add a survival cost for resistance when treatment is absent. Explain why the long-run prediction now requires more evidence.

Related public evidence

BIO_2026_08_18 | public question

Official mapping for that example

BIO_2026_08_28 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

Where does the dry mass come from?

Matter and energy | constructed growth investigation

Instructional alignment HS-LS1-5

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Develop a model and evaluate an investigation
Crosscutting concept Energy and matter

1. Carbon dioxide supplies carbon incorporated into sugars and other organic matter, contributing to dry mass.

2. Light supplies energy for the process. Carbon dioxide supplies matter. Energy is not converted into carbon atoms.

3. Control starting biomass, species and temperature, and measure carbon dioxide exchange or repeated dry mass with replicates.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Saying plants obtain most of their added dry mass directly from soil or from light. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Use a labeled carbon atom to trace a possible path from air to a consumer.

Related public evidence

BIO_2026_08_31 | public question

Official mapping for that example

BIO_2026_01_7 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A response that reverses a change

Homeostasis | constructed feedback data

Instructional alignment HS-LS1-3

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Plan a comparison and interpret evidence
Crosscutting concept Stability and change

1. The response counteracts the disturbance and returns the variable toward the target.

2. Use matched disturbances with and without blocking, repeat trials, control conditions, and measure the variable over time.

3. A real system may involve multiple interacting responses, delays and measurement variation not represented.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Calling any increasing response positive feedback without considering its effect on the regulated variable. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Reverse the response so the variable moves from 8 to 9 to 10. Explain the changed feedback relationship.

Related public evidence

BIO_2026_08_34 | public question

Official mapping for that example

BIO_2026_08_32 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

A mutation and a chain of effects

Information and protein | constructed molecular model

Instructional alignment HS-LS1-1

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Construct a mechanistic explanation
Crosscutting concept Structure and function

1. A DNA change can alter protein structure, changing nutrient transport and therefore cell function or growth.

2. The model connects the shape change with reduced binding and slower growth under controlled conditions.

3. The exact changed amino acid or folding pathway requires sequence and structural evidence.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Jumping directly from a gene change to an outcome without a protein-level mechanism. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Add a second mutation that changes DNA but leaves the protein unchanged. Revise any claim that every mutation changes function.

Related public evidence

BIO_2026_08_11 | public question

Official mapping for that example

BIO_2026_08_16 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed

Restoring a migration route

Human impacts and solutions | constructed design decision

Instructional alignment HS-LS2-7

Targets selected reasoning within the named code. Review the full standard and any assessment boundary before making a mastery or PLD claim.

Practice Evaluate and refine a solution
Crosscutting concept Systems; stability and change

1. A meets the budget at $40,000 and projects 55% passage. B projects 80% passage but exceeds budget at $75,000.

2. A is feasible under the supplied ceiling; B requires funding or redesign. A defensible recommendation must recognize passage and cost trade-offs.

3. Measure upstream passage, population reproduction or survival before and after with comparable monitoring and a reference site if feasible.

One local criterion per numbered answer. Accept equivalent valid reasoning. Award the criterion only when the response supplies its requested evidence.

Interpret an error

Choosing the highest biological estimate while ignoring the explicit design constraint. Check the actual response and ask a diagnostic question before assigning this interpretation.

Independent transfer

Add long-term maintenance costs and compare whole-project feasibility.

Related public evidence

BIO_2026_08_25 | public question

Official mapping for that example

BIO_2026_08_4 | public question

Official mapping for that example

Original AI-assisted teaching stimulus; all numerical observations and named classroom settings are constructed