

4th Grade Sample Lesson



Strand 5: Physical Science

**Science
Content
Standard**

Concept 3: Energy and Magnetism

Investigate different forms of energy.

PO 2. Construct series and parallel electric circuits

PO 3. Explain the purpose of conductors and insulators in various practical applications.

**Science &
Engineering
Practices**

Practice 6: Constructing Explanations and Designing Solutions
Performance Expectation: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

- Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound. Examples of constraints could include the materials, cost, or time to design the device.

**AZCCR Literacy
Standards**

4.W.8 Recall relevant information from experiences or gather relevant information from print and digital resources; take notes and categorize information, and provide a list of sources.

4.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

- b. Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").

**ELP Writing
Standards**

III – W-1: HI-3: taking notes using self-selected formats based upon knowledge of oral or written text structures with instructional support. (e.g., Student selects Venn Diagram for comparing and contrasting text). (math, science, social studies)

III– W-1:HI-1: generating and organizing ideas to create a prewriting plan using multiple self-selected methods (brainstorming, webbing, writer's notebook, journal, etc.). (math, science, social studies)

ELL Strategies

- Model note taking and summarization
- Provide sentence starters to support note taking
- Use of graphic organizers and illustrations for prewriting

7th Grade Sample Lesson

Science Content Standard	Strand 4: Life Science Concept 3: Populations of Organisms in an Ecosystem <i>Analyze the relationships among various organisms and their environment.</i> PO 2. Explain how organisms obtain and use resources to develop and thrive in: <ul style="list-style-type: none">• niches• predator/prey relationships
Science & Engineering Practices	Practice 6: Constructing Explanations and Designing Solutions Performance Expectation: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. <ul style="list-style-type: none">• Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.
AZCCR Literacy Standards	6-8.WHST.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. 6-8.WHST.9. Draw evidence from informational texts to support analysis, reflection, and research.
ELP Writing Standards	IV – W-1: HI-3 taking notes using self-selected formats based upon knowledge of oral or written text structures. (math, science, social studies) IV – W-1: HI-6 writing a variety of functional text (e.g., directions, procedures, graphs/tables, brochures) that addresses audience, stated purpose and context. (math, science, social studies)
ELL Strategies	<ul style="list-style-type: none">• Model note taking and summarization• Provide sentence starters to support note taking• Use of graphic organizers and illustrations for prewriting

8th Grade Sample Lesson



Strand 5: Physical Science

Concept 2: Motion and Forces

Understand the relationship between force and motion.

**Science
Content
Standard**

PO 4. Describe forces as interactions between bodies (Newton's 3rd Law of Motion).

Practice 6: Constructing Explanations and Designing Solutions

Performance Expectation: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.

- Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.
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**Science &
Engineering
Practices**

6-8.WHST.7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

**AZCCR Literacy
Standards**

**ELP Writing
Standards**

IV-W-5: HI-2: recording hypotheses, reflections, questions, speculations, decisions, and conclusions structured around a scientific investigation. (science, social studies)

ELL Strategies

- Provide sentence starters to support note taking
- Use of graphic organizers and illustrations for prewriting – Window notes to help organize and summarize (vocabulary, illustrations with labels, key concepts, questions)
- Science Notebook writing

High School Biology Sample Lesson



Strand 4: Life Science

Concept 3: Interdependence of Organisms

Analyze the relationships among various organisms and their environment.

PO 1. Identify the relationships among organisms within populations, communities, ecosystems, and biomes.

Science Content Standard

Practice 5: Using Mathematics and Computational Thinking

Performance Expectation: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

Science & Engineering Practices

- Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets.

AZCCR Literacy Standards

9-10.WHST.1. Write arguments focused on discipline-specific content.

9-10.WHST.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

ELP Writing Standards

V – W-1: HI-7: writing a persuasive text that states a position/claim, supports arguments with evidence, and acknowledges and refutes opposing arguments.

V – W-5: HI-4 summarizing information, from more than one source, in a written report which includes an introduction, supporting information, examples, and a conclusion. (science, social studies)

V – W-4: HI-12 using precise vocabulary and descriptive phrases that convey the intended message. (math, science, social studies)

ELL Strategies

- Word Walls with sample sentences and synonyms/antonyms supported with pictures/illustrations
- Provide sentence starters to support note taking
- Concept organizer for eliciting, organizing, and developing background knowledge (cause and effect)

High School Chemistry Sample Lesson

Strand 5: Physical Science

Concept 4: Chemical Reactions

Science Content Standard

Investigate relationships between reactants and products in chemical reactions.

PO 11. Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.

Science & Engineering Practices

Practice 2: Developing and Using Models

Performance Expectation: Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

- Emphasis is on the idea that a chemical reaction is a system that affects the energy change. Examples of models could include molecular-level drawings and diagrams of reactions, graphs showing the relative energies of reactants and products,
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AZCCR Literacy Standards

9-10.WHST.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

9-10.WHST.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

ELP Writing Standards

V – W-5: HI-4 summarizing information, from more than one source, in a written report which includes an introduction, supporting information, examples, and a conclusion. (science, social studies)

V – W-4: HI-12 using precise vocabulary and descriptive phrases that convey the intended message. (math, science, social studies)

ELL Strategies

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