

NGSS- Lesson Evaluation Form

Biology- Life Science

Use the following as an evaluation of your lesson to see if it is NGSS ready. Your lesson plan can be for a chapter or a section of a chapter.

Check all boxes that apply to your lesson.

Teacher: _____

Title of Lesson: _____

Subject Taught: Biology

NGSS Topic:

Structure and Function

Matter and Energy in Organisms and Ecosystems

Interdependent Relationships in Ecosystems

Inheritance and Variation

Natural Selection and Evolution

Essential Question(s): _____

NGSS Dimension 1: Science and Engineering Practices

Asking Questions and Defining Problems

Developing and Using Models

Planning and Carrying Out Investigations

Analyzing and Interpreting Data

Using Mathematical and Computational Thinking

Constructing Explanations and Designing Solutions

Engaging in Argument From Evidence

Obtaining, Evaluating, and Communicating Information

NGSS Dimension 2: Disciplinary Core Ideas

LS1: From Molecules to Organisms: Structures and Processes

Structure and Function

HS-LS1-1- Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.

HS-LS1-2- Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-3- Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

HS-LS3-1- Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

Growth and Development of Organisms

HS-LS1-4- Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Organization for Matter and Energy Flow in Organisms

HS-LS1-5- Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

HS-LS1-6- Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

HS-LS1-7- Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Information Processing

LS2: Ecosystems: Interactions, Energy, and Dynamics

Interdependent Relationships in Ecosystems

HS-LS2-1- Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS2-2- Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

Cycles of Matter and Energy Transfer in Ecosystems

HS-LS2-3- Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-4- Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

HS-LS2-5- Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

Ecosystem Dynamics, Functioning, and Resilience

HS-LS2-2- Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-6- Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7- Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*

Social Interactions and Group Behavior

HS-LS2-8- Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

LS3: Heredity: Inheritance and Variation of Traits

Inheritance of Traits

HS-LS3-1- Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

Variation of Traits

HS-LS3-2- Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.

HS-LS3-3- Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

LS4: Biological Evolution: Unity and Diversity

Evidence of Common Ancestry and Diversity

HS-LS4-1- Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

Natural Selection

HS-LS4-2- Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

HS-LS4-3- Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

Adaptation

HS-LS4-2- Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

HS-LS4-3- Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

HS-LS4-4- Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

HS-LS4-5- Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

HS-LS4-6- Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*

Biodiversity and Humans

HS-LS4-6- Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.*

HS-LS2-7- Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.*

NGSS Dimension 3:

Cross-

Cutting

Concepts

Patterns

Cause and Effect

Scale, Proportion, and Quantity

System and System Models

Energy and Matter: Flows, Cycles, and Conservation

Structure and Function

Stability and Change

Connection to Common Core:

Reading Standards

[RST.11-12.1](#)

Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

[RST.11-12.2](#)

Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

[RST.11-12.3](#)

Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

[RST.11-12.4](#)

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics

[RST.11-12.5](#)

Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

[RST.11-12.6](#)

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

[RST.11-12.7](#)

Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

[RST.11-12.8](#)

Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

[RST.11-12.9](#)

Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

[RST.11-12.10](#)

By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.

Writing Standards

[WHST.11-12.1](#)

Write arguments focused on discipline-specific content.

[WHST.11-12.1.A](#)

Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.

[WHST.11-12.1.B](#)

Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

[WHST.11-12.1.C](#)

Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

[WHST.11-12.1.D](#)

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

[WHST.11-12.1.E](#)

Provide a concluding statement or section that follows from or supports the argument presented.

[WHST.11-12.2](#)

Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

[WHST.11-12.2.A](#)

Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

[WHST.11-12.2.B](#)

Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

[WHST.11-12.2.C](#)

Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

[WHST.11-12.2.D](#)

Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.

[WHST.11-12.2.E](#)

Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).

[WHST.11-12.4](#)

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

[WHST.11-12.5](#)

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.

[WHST.11-12.6](#)

Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

[WHST.11-12.7](#)

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.

[WHST.11-12.8](#)

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

[WHST.11-12.9](#)

Draw evidence from informational texts to support analysis, reflection, and research.

[WHST.11-12.10](#)

Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Speaking/Listening Standards

[SL.11-12.1](#)

Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

[SL.11-12.1.A](#)

Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

[SL.11-12.1.B](#)

Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

[SL.11-12.1.C](#)

Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

[SL.11-12.1.D](#)

Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

[SL.11-12.2](#)

Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

[SL.11-12.3](#)

Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

[SL.11-12.4](#)

Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

[SL.11-12.5](#)

Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

[SL.11-12.6](#)

Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

Instructional Resources:

<input type="checkbox"/>	Primary Text
<input type="checkbox"/>	Secondary Text
<input type="checkbox"/>	Videos
<input type="checkbox"/>	Media

<input type="checkbox"/>	Charts
<input type="checkbox"/>	Graphs
<input type="checkbox"/>	Other:

Activities:

<input type="checkbox"/>	Activities (Non-Labs)
<input type="checkbox"/>	Constructing/Creating
<input type="checkbox"/>	Drawing
<input type="checkbox"/>	Inquiry or Research

<input type="checkbox"/>	Labs
<input type="checkbox"/>	Presentations
<input type="checkbox"/>	Reading
<input type="checkbox"/>	Speaking/Listening

<input type="checkbox"/>	Study Guides
<input type="checkbox"/>	Technology
<input type="checkbox"/>	Writing
<input type="checkbox"/>	Other:

Formative Assessments:

<input type="checkbox"/>	Have Created is attached/ uploaded
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<input type="checkbox"/>	In Progress
<input type="checkbox"/>	Having Trouble Creating

Performance Tasks:

<input type="checkbox"/>	Have Created is attached/ uploaded
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<input type="checkbox"/>	In Progress
<input type="checkbox"/>	Having Trouble Creating

<input type="checkbox"/>	None needed for this unit
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