National Aeronautics and Space Administration



The Search for Life

NRC Framework Middle School Alignment Document

The Search for Life

Middle School NRC Framework for Science Education Alignment Document



WHAT STUDENTS DO: Explore the key moments in Earth's biogeological history.

Students travel back in geologic time to explore some of the major historical events of Earth in an attempt to understand the search for life on other planets in the universe.

NRC FRAMEWORK/NGSS CORE & COMPONENT QUESTIONS

WHAT IS THE UNIVERSE AND WHAT IS EARTH'S PLACE IN IT?
NGSS Core Question: ESS1: Earth's Place in the universe

How do people reconstruct and date events in Earth's planetary history?
NGSS ESS1.C: The History of Planet Earth

HOW CAN THERE BE SO MANY SIMILARITIES AMONG ORGANISMS YET SO MANY DIFFERENT KINDS OF PLANTS, ANIMALS, AND MICROORGANISMS?
NGSS Core Question: LS4: Biological Evolution: Unity and Diversity

What evidence shows different species are related?
NGSS LS4.A: Evidence of Common Ancestry and Diversity

INSTRUCTIONAL OBJECTIVES (IO)

Students will be able to

IO1: Construct an argument about the constraints and limitations regarding the search for life in the universe using evidence from Earth's rock record.

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1.0 About This Activity

How Students Learn: Science in the Classroom (Donovan & Bransford, 2005) advocates the use of a research-based instructional model for improving students' grasp of central science concepts. Based on conceptual-change theory in science education, the 5E Instructional Model (BSCS, 2006) includes five steps for teaching and learning: Engage, Explore, Explain, Elaborate, and Evaluate. The Engage stage is used like a traditional warm-up to pique student curiosity, interest, and other motivation-related behaviors and to assess students' prior knowledge. The Explore step allows students to deepen their understanding and challenges existing preconceptions and misconceptions, offering alternative explanations that help them form new schemata. In Explain, students communicate what they have learned, illustrating initial conceptual change. The Elaborate phase gives students the opportunity to apply their newfound knowledge to novel situations and supports the reinforcement of new schemata or its transfer. Finally, the Evaluate stage serves as a time for students' own formative assessment, as well as for educators' diagnosis of areas of confusion and differentiation of further instruction. The 5E stages can be cyclical and iterative.

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2.0 Instructional Objectives, Learning Outcomes, Standards, & Rubrics

Visit https://infiniscope.org/lesson/stories-in-rock/ for access to the digital learning experience, lesson plans, standards alignment documents, and additional resources.

Instructional objectives and learning outcomes are aligned with

- National Research Council's, *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*
- National Governors Association Center for Best Practices (NGA Center) and Council of Chief State School Officers (CCSSO)'s, *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*

The following chart provides details on alignment among the core and component NRC questions, instructional objectives, learning outcomes, and educational standards.

- Your **instructional objectives (IO)** for this lesson align with the NRC Framework.
- You will know that you have achieved these instructional objectives if students demonstrate the related **learning outcomes (LO),** also aligned with the NRC Framework.
- You will know the level to which your students have achieved the learning outcomes by using the suggested **rubrics**.

Important Note: This lesson is color-coded to help teachers identify each of the three dimensions of the NRC Framework. The following identifying colors are used: Practices are blue, Cross-Cutting Concepts are green, and Disciplinary Core Ideas are orange.

This color-coding is consistent with the NRC Framework for K-12 Science Education.

Quick View of Standards Alignment:

This alignment document provides full details of the way in which instructional objectives, learning outcomes, 5E activity procedures, and rubric assessments were derived through and align with the NRC Framework for K-12 Education. For convenience, a quick view follows:

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WHAT IS THE UNIVERSE AND WHAT IS EARTH'S PLACE IN IT?

NGSS Core Question: ESS1: Earth's Place in the Universe

How do people reconstruct and date events in Earth's planetary history?

NGSS ESS1.C: The History of Planet Earth

HOW CAN THERE BE SO MANY SIMILARITIES AMONG ORGANISMS YET SO MANY DIFFERENT KINDS OF PLANTS, ANIMALS, AND MICROORGANISMS?

NGSS Core Question: LS4: Biological Evolution: Unity and Diversity

What evidence shows different species are related?

NGSS LS4.A: Evidence of Common Ancestry and Diversity

Instructional Objective *Students will be able to*	**Learning Outcomes** *Students will demonstrate the measurable abilities*	**Standards** *Students will address*
IO1: Construct an argument about the constraints and limitations regarding the search for life in the universe using evidence from Earth's rock record.	**LO1a: Explain how scientists piece together the story of life from the fossil record.** **LO1b: Construct an argument that explains the significance of the K-Pg boundary and the evidence contained in Hell Creek that demonstrates the significance of this boundary.** **LO1c: Construct an explanation for what evidence points to the existence of stromatolites in North Pole Dome, Australia and how they are significant in the story of life on Earth.**	**PRACTICES:** 1. Engaging in Argument from Evidence 2. Constructing Explanations and Designing Solutions **DISCIPLINARY CORE IDEAS:** ESS1.C: The History of Planet Earth LS4.A: Evidence of Common Ancestry and Diversity ETS1.A: Defining and Delimiting Engineering Problems **CROSSCUTTING CONCEPTS:** 1. Patterns 2. Stability and Change Interdependence of Science, Engineering, and Technology Influence of Science, Engineering, and Technology on Society and the Natural World

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3.0 Evaluation/Assessment

Use the *(N) The Search for Life Alignment Rubric* as a formative assessment, allowing students to improve their work and learn from mistakes during class. The rubric evaluates the activities using the NRC Framework.

4.0 References

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Miller, Linn, & Gronlund. (2009). *Measurement and assessment in teaching*. Upper Saddle River, NJ: Pearson.

National Academies Press. (1996, January 1). *National science education standards*. Retrieved February 7, 2011 from http://www.nap.edu/catalog.php?record_id=4962

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(M) Teacher Resource. The Search for Life NRC Framework for Science Education Alignment (1 of 3)

You will know the level to which your students have achieved the **Learning Outcomes**, and thus the **Instructional Objective(s)**, by using the suggested **Rubrics** below.

NRC Framework for K-12 Science Education			
Instructional Objective	**Science and Engineering Practices Benchmark by Grade 8**	**Disciplinary Core Idea Grade Band Endpoints**	**Crosscutting Concepts**
IO1: **Construct an argument about the constraints and limitations regarding the search for life in the universe using evidence from Earth's rock record.**	**Engaging in Argument from Evidence** Students can draw on a wider range of reasons or evidence, so that their arguments become more sophisticated. In addition, they should be expected to discern what aspects of the evidence are potentially significant for supporting or refuting a particular argument.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity,	**Interdependence of Science, Engineering, and Technology** Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations. **Influence of Science, Engineering, and Technology on Society and the Natural**

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		extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. **ETS1.A: Defining and Delimiting Engineering Problems** The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions (e.g., familiarity with the local climate may rule out certain plants for the school garden).	**World** The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.

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(M) Teacher Resource. The Search for Life NRC Framework for Science Education Alignment (2 of 3)

NRC Framework for K-12 Science Education

Learning Outcomes	Science and Engineering Practices Benchmark by Grade 8	Disciplinary Core Idea Grade Band Endpoints	Crosscutting Concepts
LO1a: Explain how scientists piece together the story of life from the fossil record.	**Constructing Explanations and Designing Solutions** Construct their own explanations of phenomena using their knowledge of accepted scientific theory and linking it to models and evidence. Offer causal explanations appropriate to their level of scientific knowledge.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the	**Stability and Change** Recognize that much of science deals with constructing historical explanations of how things evolved to be the way they are today, which involves modeling rates of change and conditions under which the system is stable or changes gradually, as well as explanations of any sudden change. *(Crosscutting High School Progression)*

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		sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully formed anatomy.	
LO1b: **Construct an argument that explains the significance of the K-Pg boundary and the evidence contained in Hell Creek that demonstrates the significance of this boundary.**	**Engaging in Argument from Evidence** Students can draw on a wider range of reasons or evidence, so that their arguments become more sophisticated. In addition, they should be expected to discern what aspects of the evidence are potentially significant for supporting or refuting a particular argument.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in	**Stability and Change** Explain subtle or conditional situations and the need for feedback to maintain stability.

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		the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself, but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent.	
LO1c: **Construct an explanation for what evidence points to the existence of stromatolites in North Pole Dome, Australia and how they are significant in the story of life on Earth.**	**Constructing Explanations and Designing Solutions** Construct their own explanations of phenomena using their knowledge of accepted scientific theory and linking it to models and evidence. Offer causal explanations appropriate to their level of scientific knowledge.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.	**Patterns** Relate patterns to the nature of microscopic and atomic-level structure.

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		Radioactive decay lifetimes and isotopic content in rocks provide a way of dating rock formations and thereby fixing the scale of geological time. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully formed anatomy.	

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(M) Teacher Resource. The Search for Life NRC Framework for Science Education Individual Activity Alignment (3 of 3)

NRC Framework for Science Education				
Activity	**Phases of 5E Instructional Model**	**Science and Engineering Practices Benchmark by Grade 8**	**Disciplinary Core Idea Grade Band Endpoints**	**Crosscutting Concepts**
(A) Complex Life in the Universe	**Engage**			
Earth Explorations: **Stories in Rock** **Extinction Story in Hell Creek** **Story of Complex Animals in Nilpena** **Earliest Stories of Life in Australia**	**Explore**	**Constructing Explanations and Designing Solutions** Construct their own explanations of phenomena using their knowledge of accepted scientific theory and linking it to models and evidence. Offer causal explanations appropriate to their level of scientific knowledge.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in	**Patterns** Relate patterns to the nature of microscopic and atomic-level structure. **Stability and Change** Explain subtle or conditional situations and the need for feedback to maintain stability.

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			organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully formed anatomy.	
(B) Stories in Rock **(C) Visiting Deep Time** **(D) Extinction Story in Hell Creek** **(E) Classifying Organisms by Phylogeny**	**Explain**	**Constructing Explanations and Designing Solutions** Construct their own explanations of phenomena using their knowledge of accepted scientific theory and linking it to models and evidence. Offer causal explanations appropriate to their level of scientific knowledge.	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.	**Patterns** Relate patterns to the nature of microscopic and atomic-level structure. **Stability and Change** Explain subtle or conditional situations and the need for feedback to maintain stability.

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(F) Stromatolites			**LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully formed anatomy.	
Constraints discussion	**Elaborate**	**Communicate scientific and/or technical information** Students should have opportunities to engage in discussion about	**ETS1.A: Defining and Delimiting Engineering Problems** The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints	**Interdependence of Science, Engineering, and Technology** Engineering advances have led to important discoveries in virtually every field of science,

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		observations and explanations and to make oral presentations of their results and conclusions as well as to engage in appropriate discourse with other students by asking questions and discussing issues raised in such presentations. Because the spoken language of such discussions and presentations is as far from their everyday language as scientific text is from a novel, the development both of written and spoken scientific explanation/argumentation needs to proceed in parallel.	includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions (e.g., familiarity with the local climate may rule out certain plants for the school garden).	and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations. **Influence of Science, Engineering, and Technology on Society and the Natural World** The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.
(G) Searching for Life in the Universe	**Evaluate**	**Engaging in Argument from Evidence** Students can draw on a wider range of reasons or evidence, so that their arguments	**ESS1.C: The History of Planet Earth** The geological time scale interpreted from rock strata provides a way to organize Earth's history. Major historical events include the formation of mountain chains and	**Interdependence of Science, Engineering, and Technology** Engineering advances have led to important discoveries in

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		become more sophisticated. In addition, they should be expected to discern what aspects of the evidence are potentially significant for supporting or refuting a particular argument.	ocean basins, the evolution and extinction of particular living organisms, volcanic eruptions, periods of massive glaciation, and development of watersheds and rivers through glaciation and water erosion. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. **LS4.A: Evidence of Common Ancestry and Diversity** Fossils are mineral replacements, preserved remains, or traces of organisms that lived in the past. Thousands of layers of sedimentary rock not only provide evidence of the history of Earth itself but also of changes in organisms whose fossil remains have been found in those layers. The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. Because of the conditions necessary for their preservation, not all types of organisms that existed in the past have left fossils that can be retrieved. Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully formed anatomy.	virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations. **Influence of Science, Engineering, and Technology on Society and the Natural World** The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions.

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			ETS1.A: Defining and Delimiting Engineering Problems The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions (e.g., familiarity with the local climate may rule out certain plants for the school garden).	

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(N) Teacher Resource. The Search for Life NRC Alignment Rubric (1 of 2)

Related Rubrics for the Assessment of Learning Outcomes Associated with the Above Standard(s):

NRC Framework for Science Education Alignment

Learning Outcome	Expert	Proficient	Intermediate	Beginner
LO1a: Explain how scientists piece together the story of life from the fossil record.	Accurately describes the process of radiometric dating ***and*** superposition to establish age ranges for rock layers ***and*** the fossils they contain.	Describes the process of radiometric dating ***and*** superposition to establish age ranges for rock layers ***or*** the fossils they contain.	Describes the process of radiometric dating ***or*** superposition to establish age ranges for rock layers ***or*** the fossils they contain.	Discusses personal beliefs regarding the search for life.
LO1b: Construct an argument that explains the significance of the K-Pg boundary and the evidence contained in Hell Creek that demonstrates the significance of this boundary.	Accurately explains the major extinction event from 66 million years ago that marks the end of dinosaurs and the rise of mammals. Cites ***all evidence*** presented, including the layer of clay containing iridium, which supports the asteroid impact hypothesis, a triceratops below the iridium layer, and small mammals and reptiles below and above the boundary.	Accurately explains the major extinction event from 66 million years ago that marks the end of dinosaurs and the rise of mammals. Cites ***some evidence*** such as the layer of clay containing iridium, which supports the asteroid impact hypothesis, a triceratops below the iridium layer, and small mammals and reptiles below and above the boundary.	Explains the major extinction event from 66 million years ago that marks the end of dinosaurs and the rise of mammals. Cites ***one piece of evidence*** such as the layer of clay containing iridium, which supports the asteroid impact hypothesis, a triceratops below the iridium layer, and small mammals and reptiles below and above the boundary.	Explains the major extinction event from 66 million years ago that marks the end of dinosaurs and the rise of mammals.
LO1c: Construct an explanation for what evidence points to the existence of stromatolites in North Pole Dome, Australia and how they are significant in the story of life on Earth.	Accurately describes the process involved in fossilizing cyanobacteria communities into stromatolites and the observation of these laminated structures in North Pole Dome. The description includes the significance of their photosynthetic abilities and their connection to oxygen in the early atmosphere.	Describes the observation of laminated structures in North Pole Dome known as stromatolites. The description includes the significance of their photosynthetic abilities and their connection to oxygen in the early atmosphere.	Describes the observation of laminated structures in North Pole Dome known as stromatolites. The description includes that they are photosynthetic communities.	Describes the observation of laminated structures in North Pole Dome known as stromatolites.

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(N) Teacher Resource. The Search for Life NRC Alignment Rubric (2 of 2)

Related Rubrics for the Assessment of Instructional Objective Associated with the Above Standard(s):

NRC Framework for Science Education Alignment

Instructional Objective	Expert	Proficient	Intermediate	Beginner
IO1: Construct an argument about the constraints and limitations regarding the search for life in the universe using evidence from Earth's rock record.	Constructs an argument which supports the claim that we are more likely to find organisms like those forming stromatolites in our search for life because a larger portion of the bullseye representing geologic time is that type of life. ***Many limitations/constraints*** are discussed in depth regarding the search for intelligent life.	Constructs an argument which supports the claim that we are more likely to find organisms like those forming stromatolites in our search for life because a larger portion of the bullseye representing geologic time is that type of life. ***One limitation/constraint*** is discussed in depth regarding the search for intelligent life.	Constructs an argument which supports the claim that we are more likely to find organisms like those forming stromatolites in our search for life because a larger portion of the bullseye representing geologic time is that type of life.	Constructs an argument which supports the claim that we are likely to find ***any form of life other than*** organisms such as those forming stromatolites in our search for life.

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