



PROJECT OCEANOLOGY



Ancient Animals

Overview

Life on Earth likely began in the ancient oceans. Millions of years ago, there were marine organisms who died and, in certain circumstances, left a record of their lives as fossils. Scientists are able to study prehistoric ocean life by finding fossils... sometimes they can even be found inland! Some of these prehistoric sea creatures went extinct when they couldn't adapt to changes in their environment, and some were successful and have modern day relatives. Depending on the fossils, we can see evidence of the environment the animal experienced all those years ago.

In this activity, students will gather evidence to support an explanation of which past organisms have evolved into which modern day organisms by identifying anatomical similarities and differences allowing them to consider their evolutionary history and infer evolutionary relationships.

Alignment with NGSS

Performance Expectations

MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. **[Clarification Statement: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures.]**

Science and Engineering Practices

Analyzing and Interpreting Data

Analyze and interpret data to make sense of phenomena using logical reasoning. *Students will examine different sources of data (photos, fossils, models) to make sense of the marine environment millions of years ago.*

Construction Explanations/Designing Solutions

Use evidence (e.g., observations, patterns) to construct an explanation *Students will use specific adaptations in fossilized organisms, as well as the type of fossil provided, as evidence to support their ideas about what the ocean looked like millions of years ago and how these species are related.*

Crosscutting Concepts

Patterns

Patterns can be used to identify cause and effect relationships.

Students will identify organisms that have gone extinct, as their modern extant relatives. They will also discuss which anatomical structures they observed indicated such an evolutionary relationship.

Connections to Nature of Science:

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation.

Disciplinary Core Ideas

LS4.A: Evidence of Common Ancestry and Diversity

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.

Students will be actively comparing fossils and modern day species in order to determine anatomical similarities and evolutionary history.