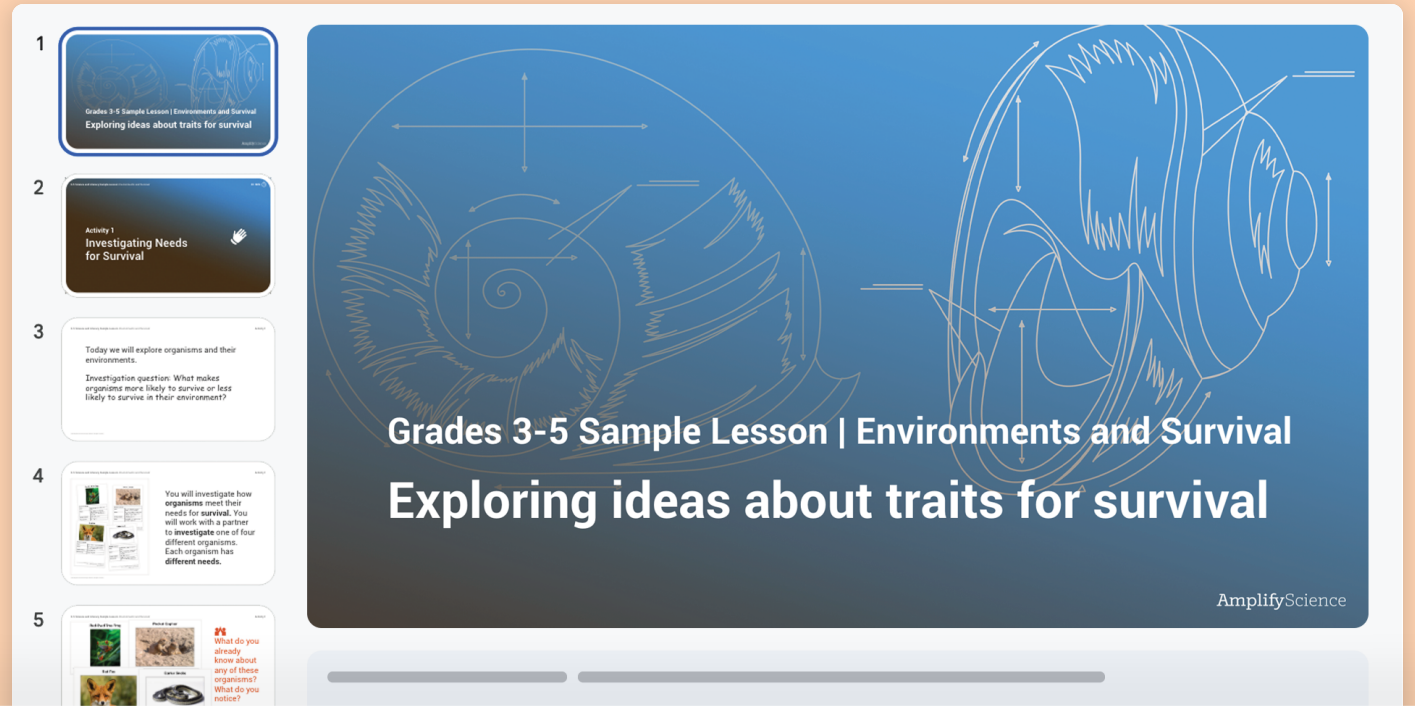

Sample science-literacy lesson

Grades 3–5

Welcome to Amplify Science! This sample lesson is an excerpt from the grade 3 Amplify Science unit, *Environments and Survival: Snails, Robots, and Biomimicry*.

The sample lesson contains:

- **Classroom Slides** with lesson notes
- **Needs for Survival Cards** student copymaster
- A digital copy of the Amplify Science student book, ***Mystery Mouths***
- Teacher reference: ***Environments and Survival*** **Coherence Flowchart**

In this lesson, students are learning about animals and their needs for survival in different environments. By engaging in observations, reading and discussions, students work to answer the question, *What makes organisms more likely to survive or less likely to survive in their environment?*

Specific instructions for teaching this lesson are on the following pages and detailed in the Classroom Slide notes.

Unit Background and Overview

The full Amplify Science *Environments and Survival* unit is 22 lessons long and is designed to meet NGSS life science standards in Grade 3 as well as a number of CCSS-ELA standards for listening, speaking, reading, and writing. In this unit, students take on the role of biomimicry engineers to figure out how the traits of grove snails affect their survival in different environments. They apply that understanding as they explore other organisms, their traits, and the likelihood of survival in different environments. Students then design effective solutions to the problem of invasive plant removal using the structural traits of giraffes as inspiration.

Amplify Science units are broken into chapters, with each chapter building on the one before it. This sample lesson comes from a sequence in Chapters 1 and 2 where students are figuring out the answer to: *Why are snails with yellow shells not surviving well, and why are the snails with banded shells more likely to survive than the snails with yellow shells?* To answer these questions, students gather and make sense of evidence by making observations of different organisms. They also read, discuss and use physical and digital models, and engage in concept mapping to figure out ideas related to how animals' traits can help them meet their needs for survival in different environments, which they can apply back to the anchor phenomenon. This chapter-by-chapter storyline is represented in the *Environments and Survival* **Coherence Flowchart**.

The Amplify Science Approach

In each Amplify Science unit, students figure out an anchor phenomenon by asking questions, gathering evidence, and coming up with an explanation of how the phenomenon works. Amplify Science is rooted in the research-based Do, Talk, Read, Write, Visualize model of learning, where students engage with science and engineering practices, figure out disciplinary core ideas, and utilize and apply crosscutting concepts in multiple modalities across thoughtful, structured lessons. As they progress through each unit, students work to figure out increasingly complex ideas and construct arguments and explanations about the anchor phenomenon.

Reading in Amplify Science is approached from an inquiry stance—students ask questions, make connections, evaluate information, search for evidence, and clarify difficult concepts as they read. Amplify Science provides students with well-written, grade-level appropriate informational texts alongside explicit, embedded instruction on reading in science. Throughout the program, students are apprenticed into reading like scientists—that is, reading actively, curiously, and critically, with a focus on making meaning and using the text as a source of evidence. As students read science texts in conjunction with other multimodal experiences around a topic (doing, talking, visualizing, writing), they increase their skill in accessing these complex texts, as well as their understanding of the importance of text for finding information.

For more information about the full Amplify Science Approach and unit components see the **Amplify Science Program Guide**.

Getting ready to teach the sample lesson

This sample lesson is designed to take approximately 40 minutes in the classroom, with minimal preparation. Note that these activities are meant to be taught sequentially but do not need to be taught the same day.

Lesson Overview

- Activity 1: Investigating Needs for Survival (20 minutes)
  - Students use information on cards to investigate an organism with specific needs for survival and consider whether or not it will be able to meet its needs in four different environments.
- Activity 2: Reading *Mystery Mouths* (20 minutes)
  - Students listen to a read-aloud of the book *Mystery Mouths* and practice making inferences when reading.

Materials & Preparation

Materials

- *Mystery Mouths* digital book (optional)
- Needs for Survival Copymasters
- Chart paper or space on the board to write

Preparation

- Review the slides and slide notes.
- Prepare the Needs for Survival Cards from the provided Copymasters.
  - Print, cut and compile a set of eight cards for each group of four. These can be copied or printed one-sided either in color or grayscale, on cardstock or paper.
  - Each set should contain:
    - 4 Needs for Survival Organism Cards
    - 4 Needs for Survival Environment Cards
- Make a plan for how you will project the slides and digital book for students.
  - Note: The full book, *Mystery Mouths*, and associated lesson notes are in the Classroom Slides. You have the option to either read the book aloud directly from the slides or project the stand-alone digital book.
- Prepare a poster with language frames. Alternatively, you could write these language frames on the board.
  - Discussing Inferences
    - I read/observed that _____.
    - I already know that _____.
    - So my inference is _____.

Standards addressed

3–5 Grade Band Standards

The activities in this sample lesson are appropriate for grades 3–5 classrooms, and support students in working toward facility with the following standards:

NGSS SCIENCE AND ENGINEERING PRACTICES

- Practice 1: Asking Questions and Defining Problems
- Practice 3: Planning and Carrying Out Investigations
- Practice 4: Analyzing and Interpreting Data
- Practice 8: Obtaining, Evaluating, and Communicating Information

NGSS DISCIPLINARY CORE IDEAS

- LS4.B Natural selection (3–5): Differences in characteristics between individuals of the same species provide advantages in surviving and reproducing.
- LS4.C Adaptation (3–5): Particular organisms can only survive in particular environments.
- LS4.D Biodiversity and humans (3–5): Populations of organisms live in a variety of habitats. Change in those habitats affects the organisms living there.

NGSS CROSSCUTTING CONCEPTS

- Systems and System Models
- Structure and Function

CCSS-ELA ANCHOR STANDARDS

- CCSS.ELA-LITERACY.CCRA.R.1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- CCSS.ELA-LITERACY.CCRA.R.4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- CCSS.ELA-LITERACY.CCRA.R.7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- CCSS.ELA-LITERACY.CCRA.W.8: Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- CCSS.ELA-LITERACY.CCRA.SL.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- CCSS.ELA-LITERACY.CCRA.SL.2: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- CCSS.ELA-LITERACY.CCRA.L.4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- CCSS.ELA-LITERACY.CCRA.L.6: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Grade 3 Standards

The unit *Environments and Survival* was designed to meet the three-dimensional goals of NGSS in grade 3. The activities in this sample lesson were derived from lessons that address the following NGSS Disciplinary Core Ideas (DCIs) and grade 3 Common Core State Standards for English Language Arts (CCSS-ELA):

NGSS DISCIPLINARY CORE IDEAS

- LS4.C: Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)
- LS4.B: Natural Selection: Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)
- LS4.D: Biodiversity and Humans: Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

CCSS-ELA

- CCSS.ELA-LITERACY.RI.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- CCSS.ELA-LITERACY.RI.3.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
- CCSS.ELA-LITERACY.RI.3.7: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
- CCSS.ELA-LITERACY.W.3.8: Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
- CCSS.ELA-LITERACY.SL.3.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
- CCSS.ELA-LITERACY.SL.3.2: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- CCSS.ELA-LITERACY.L.3.4: Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.
- CCSS.ELA-LITERACY.L.3.6: Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., After dinner that night we went looking for them).

Amplify.

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