NFPS K-12 Science Curriculum

A systems approach

New Fairfield Public Schools
Board of Education Presentation
November 6, 2025

NFPS Curriculum Design Model

What is Curriculum?

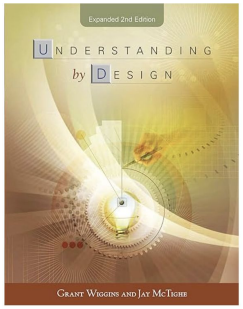
Curriculum is the way in which learning content standards and performance expectations are designed and organized at the district, grade, or course level to define what students should understand, know, and be able to do.

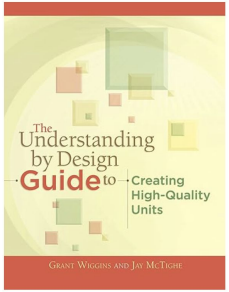
Standards serve as anchors for curriculum; but curriculum is designed to **frame meaning** for those standards, **deepen understanding,** and **ensure relevance and transfer of learning** for students.

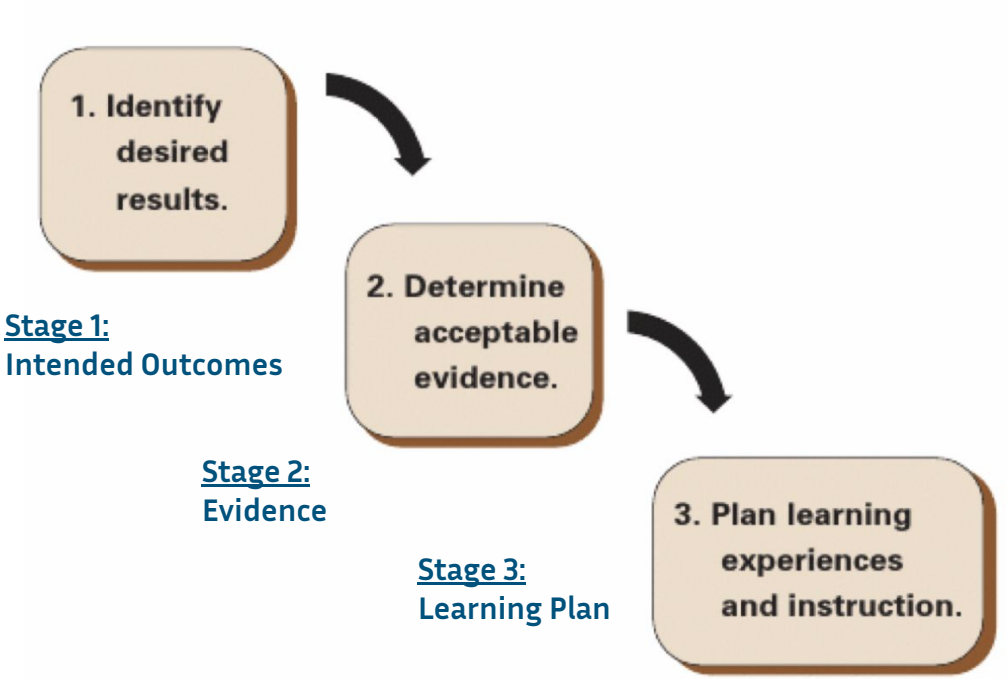
Guiding Principles

- Curriculum reflects and is grounded in a shared **vision** for teaching and learning.
- **Systems** and **structures** for curriculum foster coherence and consistency.
- A curriculum design process is strengthened through **collaboration** and **communication.**

Understanding by Design







Stage 1:
Intended Outcomes

Stage 2:
Evidence

Stage 3:
Learning Plan

New Fairfield Public Schools

Unit Title:	Curriculum Area:	
Course	Grade:	Time:

Overview / Storyline:

About the Student:

STAGE ONE: INTENDED OUTCOMES

Standards	Transfer Goal(s)I
This curriculum is aligned with: **Priority Content Standards** **Practice Standards (as applicable)**	*Students will use their learning to …*

Meaning

Enduring Understandings (EUs)	Essential Questions (EQs)
Students will understand that …	

Acquisition

Knowledge	Skills
Students will know …	*Students will be able to …*

NFPS Vision of a Learner Competencies

Stage 1 Unit Design Example

Stage 1: Learning Goals

Established Goals

Standards

Next Generation Science Standards

Performance Expectations: Middle School Life Sciences

- Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. *(MS-LS1-1)*
- Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. *(MS-LS1-2)*
- Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. *(MS-LS1-3)*

Transfer

Long-Term Transfer Goals

What kinds of long-term, independent accomplishments are desired? Students will be able to independently use their learning to...

- Students will use their learning to model phenomena from multiple perspectives for understanding and communication to others. *(T1)*

Meaning

Understandings

What specifically do you want students to understand? What inferences should they make? Students will understand that...

- All living organisms are composed of cells that carry out essential functions such as energy transfer, growth, and response to stimuli, even if these functions are not always immediately observable (e.g., dormant seeds). *(U1)*
- The structure of cells and their organelles is directly related to their functions. These specialized structures work together to sustain life processes, enable growth, and support reproduction. *(U2)*

Essential Questions

What thought-provoking questions will foster inquiry, meaning making, and transfer? Students will keep considering...

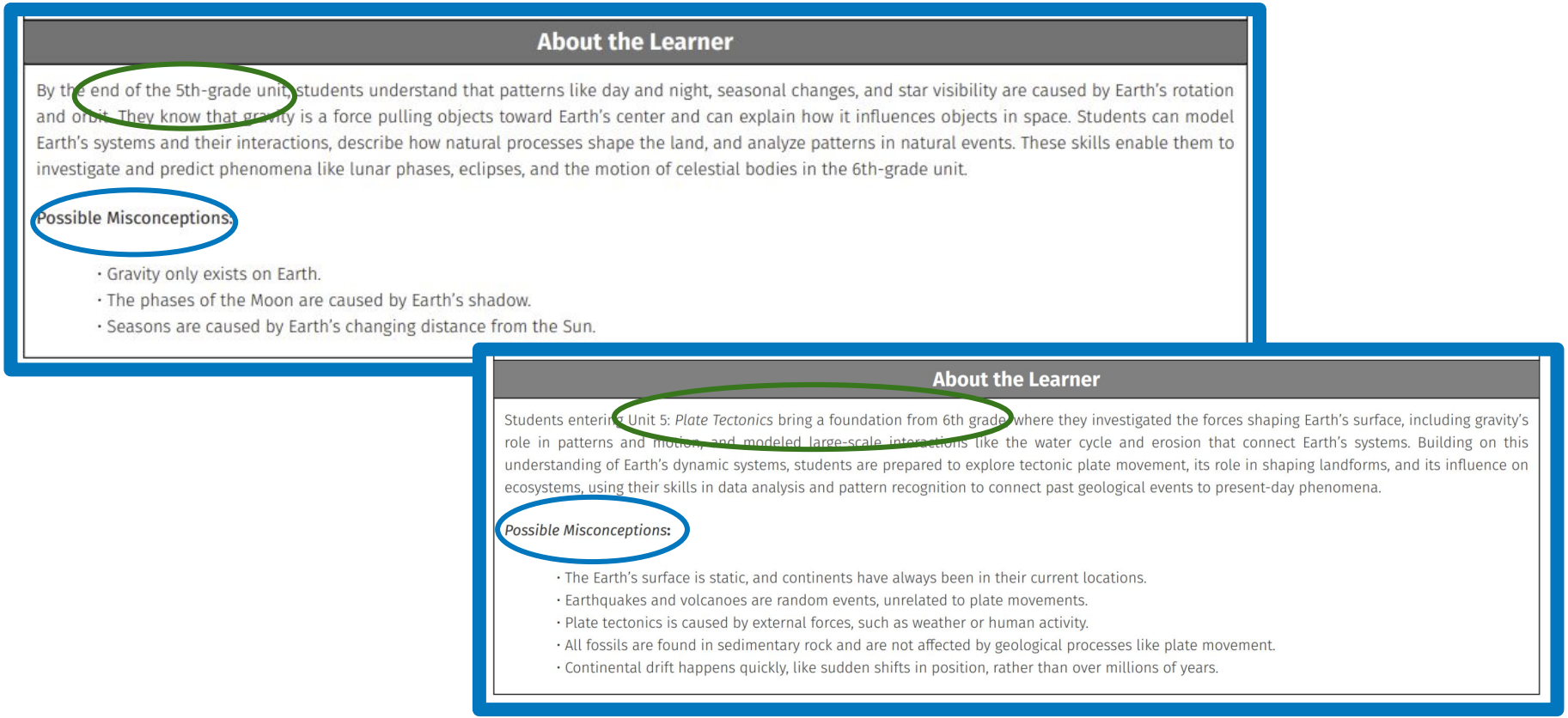
- How do we know if something is living or nonliving, and what evidence can we use to prove it? *(Q1)*
- Why do plant and animal cells have different structures, and how do these differences help them do their jobs and support life? *(Q2)*
- How do cells get the energy they need to function? *(Q3)*

Stage 1 Unit Design Example (continued)

Acquisition of Knowledge & Skill	
Knowledge	**Skills**
What facts and basic concepts should students know and be able to recall? Students will know...	What discrete skills and processes should students be able to use? Students will be skilled at...
■ All living things share characteristics, including having one or more cell(s) and the ability to grow, reproduce, respond to stimuli, and use energy. *(K1)* ■ Dormant organisms, like seeds, are alive but may not display all characteristics of life immediately. *(K2)* ■ Cell Theory states that all living things are made of cells, cells are the basic unit of structure and function in organisms, and all cells come from pre-existing cells. *(K3)* ■ Cells have specialized structures (organelles) that perform essential functions, including the nucleus, mitochondria, chloroplasts, cell membrane, cell wall, and vacuole. *(K4)* ■ Plant and animal cells share many organelles, but plant cells have unique structures like chloroplasts, large central vacuoles, and cell walls. *(K5)* ■ Photosynthesis converts light energy into chemical energy, producing glucose and oxygen. Cellular respiration breaks down glucose to release energy in the form of ATP, with carbon dioxide and water as	■ Observing and identifying structures of plant and animal cells using a microscope. *(S1)* ■ Comparing and contrasting plant and animal cells, including organelles and their function. *(S2)* ■ Planning and investigating to observe the effects of environmental factors (light, water, nutrients) on plant growth. *(S3)* ■ Analyzing and interpreting data on plant growth to identify patterns and explain the relationship between environmental factors and cellular activity. *(S4)* ■ Developing models to show how cells form tissues, organs, and systems in both plants and animals. *(S5)* ■ Constructing and interpreting models of cellular processes, such as photosynthesis and cellular respiration. *(S6)* ■ Constructing evidence-based arguments to answer the question, “Is a corn kernel alive?” using observations, models, and data. *(S7)*

About the Learner

- Prior knowledge and experiences
- Possible student misconceptions



About the Learner

By the end of the 5th-grade unit, students understand that patterns like day and night, seasonal changes, and star visibility are caused by Earth's rotation and orbit. They know that gravity is a force pulling objects toward Earth's center and can explain how it influences objects in space. Students can model Earth's systems and their interactions, describe how natural processes shape the land, and analyze patterns in natural events. These skills enable them to investigate and predict phenomena like lunar phases, eclipses, and the motion of celestial bodies in the 6th-grade unit.

Possible Misconceptions:

- Gravity only exists on Earth.
- The phases of the Moon are caused by Earth's shadow.
- Seasons are caused by Earth's changing distance from the Sun.

About the Learner

Students entering Unit 5: *Plate Tectonics* bring a foundation from 6th grade where they investigated the forces shaping Earth's surface, including gravity's role in patterns and motion, and modeled large-scale interactions like the water cycle and erosion that connect Earth's systems. Building on this understanding of Earth's dynamic systems, students are prepared to explore tectonic plate movement, its role in shaping landforms, and its influence on ecosystems, using their skills in data analysis and pattern recognition to connect past geological events to present-day phenomena.

***Possible Misconceptions*:**

- The Earth's surface is static, and continents have always been in their current locations.
- Earthquakes and volcanoes are random events, unrelated to plate movements.
- Plate tectonics is caused by external forces, such as weather or human activity.
- All fossils are found in sedimentary rock and are not affected by geological processes like plate movement.
- Continental drift happens quickly, like sudden shifts in position, rather than over millions of years.

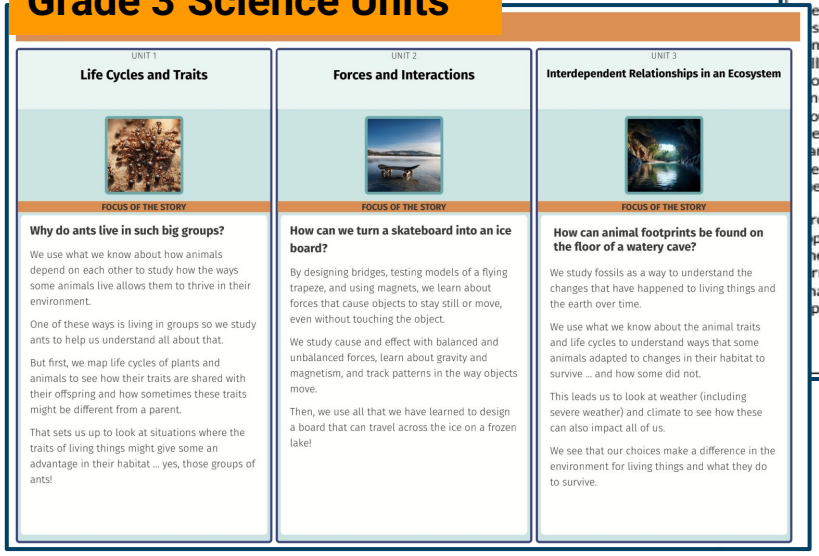
Curriculum Storyboards

Grade 7 Science Units

MS Science 7: Exploring Life's Connections

Unit 1: Uncovering the Role of Cells in Life	Unit 2: Understanding Genetic Inheritance and Variation	Unit 3: How Adaptations Drive Survival and Evolution	Unit 4: Human Choices and Their Impact on Ecosystems	Unit 5: Earth's History Through Fossils and Plate Tectonics
				
Is a corn kernel alive? How do you know? With a single popcorn kernel, we explore what it means to be alive. e use microscopes and sign experiments to mpare plant and animal lls and create models to ow their structure, nction, and how they ow. By tracking changes er time as seeds and ants grow, we learn to e patterns to answer estions as scientists. rcling back to our pcorn kernel, we argue ether or not corn rnels are alive and use at we have learned to pport it.	***Why do some people love dark chocolate while others find it too bitter?*** Using PTC paper to explore why some people detect bitterness while others cannot, we record traits in our class and use Punnett squares to predict how they might appear in future generations. Our data leads us to identify patterns in how traits pass from parents to children and create models to explain why family members are similar yet unique. Finally, we explore how bitterness detection, an inherited trait, inspired solutions to protect curious children from harm.	***Why did the peppered moth survive environmental changes, but the woolly mammoth did not?*** Using our understanding of genetics, we investigate these two fascinating mysteries about survival and extinction. We study fossils, learn to analyze population data, and explore case studies to track how traits spread and how a species' ability to survive can change over time. By examining how environmental changes and human actions impact species, we predict which organisms might adapt or struggle in the future.	***How could our snack choices affect the rainforest and animals that live there?*** Building on our 6th-grade understanding of ecosystems, we examine product labels and trace ingredients to their sources. Population data is analyzed to compare and evaluate different farming methods. With this evidence, we can support claims about the ecological impacts. Then, we argue and advocate for sustainable solutions and everyday human choices that help protect rainforests and wildlife.	***How could fossils from the same animal be found on continents separated by oceans?*** Finally, we become geoscientists, integrating all we have learned to solve Earth's greatest puzzles. We map fossil locations, analyze sedimentary rock formations, and track earthquake and volcanic data to develop evidence-based claims about Earth's changing surface. We argue solutions to the fossil mystery and create campaigns showing how plate tectonics affects our daily lives.

Grade 3 Science Units



UNIT 1

Life Cycles and Traits

FOCUS OF THE STORY

Why do ants live in such big groups?

We use what we know about how animals depend on each other to study how the ways some animals live allows them to thrive in their environment.

One of these ways is living in groups so we study ants to help us understand all about that.

But first, we map life cycles of plants and animals to see how their traits are shared with their offspring and how sometimes these traits might be different from a parent.

That sets us up to look at situations where the traits of living things might give some an advantage in their habitat ... yes, those groups of ants!

UNIT 2

Forces and Interactions

FOCUS OF THE STORY

How can we turn a skateboard into an ice board?

By designing bridges, testing models of a flying trapeze, and using magnets, we learn about forces that cause objects to stay still or move, even without touching the object.

We study cause and effect with balanced and unbalanced forces, learn about gravity and magnetism, and track patterns in the way objects move.

Then, we use all that we have learned to design a board that can travel across the ice on a frozen lake!

UNIT 3

Interdependent Relationships in an Ecosystem

FOCUS OF THE STORY

How can animal footprints be found on the floor of a watery cave?

We study fossils as a way to understand the changes that have happened to living things and the earth over time.

We use what we know about the animal traits and life cycles to understand ways that some animals adapted to changes in their habitat to survive ... and how some did not.

This leads us to look at weather (including severe weather) and climate to see how these can also impact all of us.

We see that our choices make a difference in the environment for living things and what they do to survive.

New Fairfield Public Schools Curriculum Unit Design Criteria - REFLECTION Tool

Curriculum Area / Course Title: Grade Level:

Unit Title: Date:

Unit Overview	Reflection Notes
The *unit overview* concisely tells the "story" of the unit in terms of content and concepts.	**Strengths**
	Areas for Growth
	Questions
"About the student" provides unit-relevant insights regarding how students learn, prior knowledge, and/or misconceptions.	**Strengths**
	Areas for Growth
	Questions
The unit makes connections to competencies of the NFPS *Vision of the Learner.*	**Strengths**
	Areas for Growth
	Questions
Stage 1 - Desired Results	**Reflection Notes**
Standards *Standards* from current national or state curriculum standards are prioritized and aligned to the core concepts and learning (e.g., the essence) of the unit.	**Strengths**
	Areas for Growth
	Questions
Standards balance "content" and "practice" standards (if applicable).	**Strengths**
	Areas for Growth
	Questions

This tool is intended to be used by curriculum design teams for reflection and self-assessment during curriculum unit design.

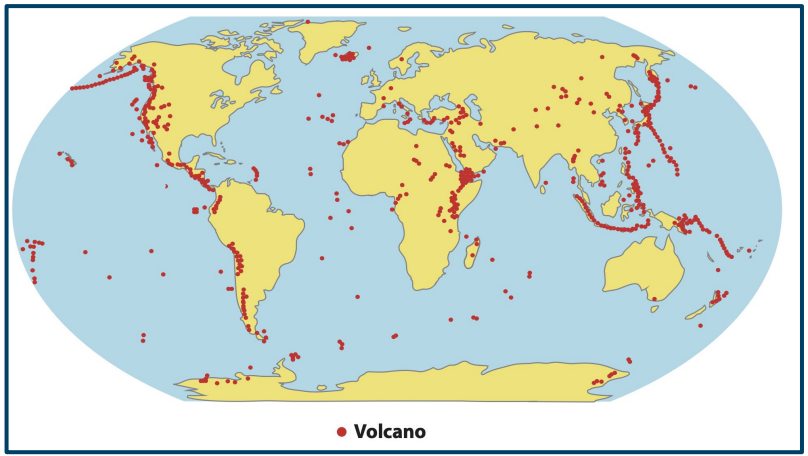
NFPS, 6-24

K-12 Science

K-12 NFPS Science Transfer Goals

Students will use their learning to:

- Question and seek answers as they make sense of real-world phenomena.
- Model processes and systems from multiple perspectives for understanding and communication to others.
- Collect and analyze data in order to derive meaning and support or refute an argument or claim.
- Engage in innovative thinking and design processes that can lead to solutions for complex problems in our world.



Phenomena-Based Design

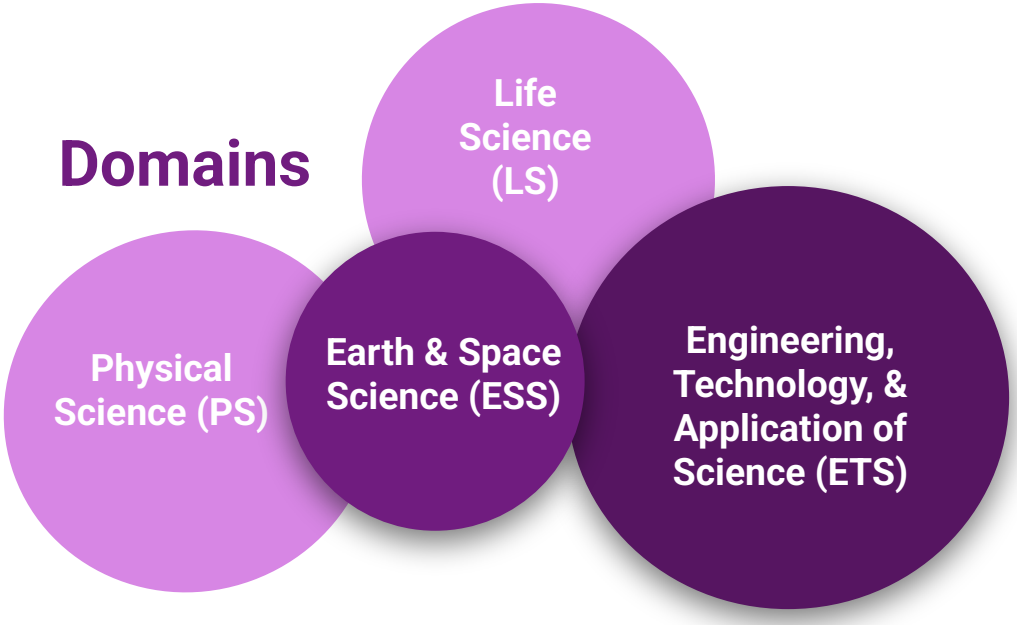
Next Generation Science Standards (NGSS)

Performance Expectations

Science & Engineering Practice Standards

Disciplinary Core Ideas

Crosscutting Concepts

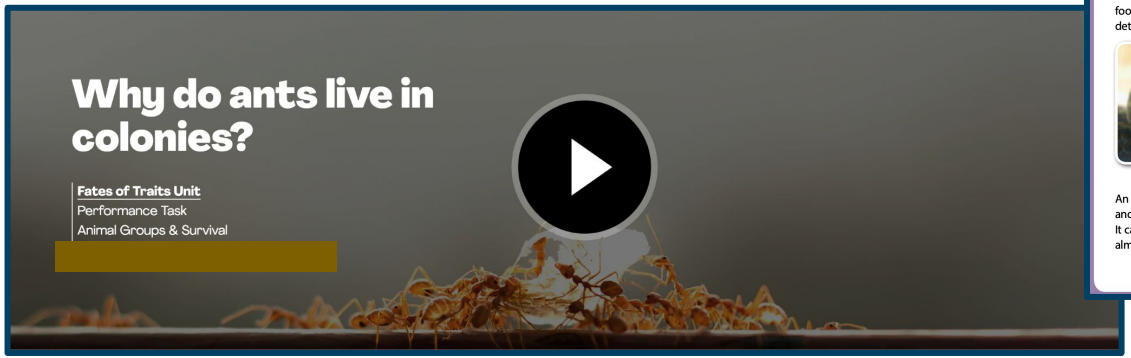


K-5 Grade-Level Unit Mapping

Kindergarten	Exploring Weather	Pushes and Pulls	Needs of Living Things
Grade 1	Waves: Light and Sound	Animal Traits and Adaptations	Sky Systems: Seeing Space
Grade 2	Interdependence of Plants and Animals	Properties of Matter	How the Earth Changes
Grade 3	Life Cycles and Traits	Forces and Interactions	Relationships in an Ecosystem
Grade 4	Understanding Energy	Processes that Shape the Earth	Structure, Function, and Information Processing: Animal Senses
Grade 5	Structures and Properties of Matter	It's All Connected: The Earth's Systems	Energy Flow: Food Webs and Ecosystems

Physical Science Life Science Earth & Space Science

Doing the Work of a Scientist



Name _____ Date _____

Ice Cube Inquiry Planning Sheet

Goal

I will design a way to for my ice cube to

_____

Draw a diagram. Label your materials.

List all the materials you will use:

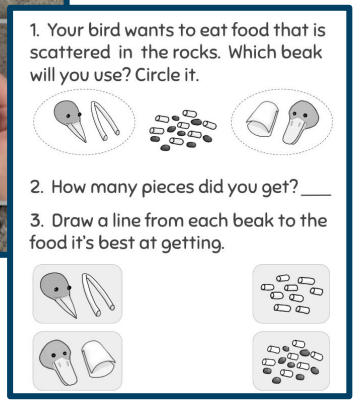
_____

_____

_____

Materials: Choose 3 Or less

clear cup	plastic wrap	paper plate	Other items
paper cup	Foil	foam plate	may be
foam cup	waxed paper	foil dish	approved
	plastic bag	cotton balls	by your
napkin	fabric	water	teacher.
paper towel	felt		



Learning Plans: Coherence, Clarity, Consistency

Learning Experience 4

Learning Experience

Learning Experience 4

Mystery Science, Grade 5 Web of Life Unit, Lesson 3 - Decomposers and Matter Flow

Where do fallen leaves go?

Students develop a model to describe the flow of matter between living things and the environment, with an emphasis on decomposers. In the activity, Decomposer Detectives, students gather information from suspects on the forest floor, and model the decomposition process of fallen leaves in order to solve the mystery of why those leaf piles seem to disappear.

After this lesson, students should go back to all the chains in their notebook so far and add a decomposer to the end if they do not have one already. Also, have them add decomposers as a section in their notebook and describe at least 2 ways they are important (as a formative assessment). Discuss with a partner.

Formative Assessment: Science Notebook Entry - Food Chain

Food Chain Student Notebook Prompt

Name _____ Date _____

Formative Assessment: Science Notebook Entry - Food Chain

Go back to all the food chains in your notebook so far and add a decomposer to the end if you do not have one already.

Also, add decomposers as a section in your notebook and describe at least 2 ways they are important.

K-12 Vertical Articulation ... Physical Science Example

Kindergarten

Unit 2 - Exploring Pushes and Pulls

FOCUS OF THE STORY

How are big machines - like barges on the water or excavators on land - so strong?

We use blocks, balls, toy cars, and other objects to learn how pushes and pulls make an object move. We learn how these pushes and pulls make an object move faster, go farther, or change direction. Using all that we learn, we can help a tug-boat guide a big boat back out to sea!

Grade 3

Unit 1 - Forces and Interactions

FOCUS OF THE STORY

How can we turn a skateboard into an ice-board?

By designing bridges, testing models of a flying trapeze, and using magnets, we learn about forces that cause objects to stay still or move, even without touching the object. We learn about balanced and unbalanced forces, study gravity and magnetism, and track patterns in the ways objects move. Then, we use all that we have learned to design a board that can travel across the ice on a frozen lake!

Grade 6

Unit 4: Energy Transformations

FOCUS OF THE STORY

What makes a roller coaster go fast?

We apply what we know about forces to explore how energy is stored and transformed. Through experiments, we learn how gravity, friction, and magnetism affect motion and energy. At the end of the unit, we design and build a Rube Goldberg device—a machine that uses multiple steps to perform a simple task—showing how energy transfers and transforms in creative ways.

Grade 8

Unit 1: Forces, Motion, and Energy in Action

FOCUS OF THE STORY

Why do some collisions cause more damage than others?

We work together to understand how forces, motion, and energy interact by looking at real-world crashes. We explore how crashes happen and predict the damage they might cause through experiments and models. Then, we use what we learn to design and build devices that make crashes safer and reduce damage.

HS Physics

Unit 4: The Physics of Motion

FOCUS OF THE STORY

Why do elite athletes, vehicles, and spacecraft move the way they do?

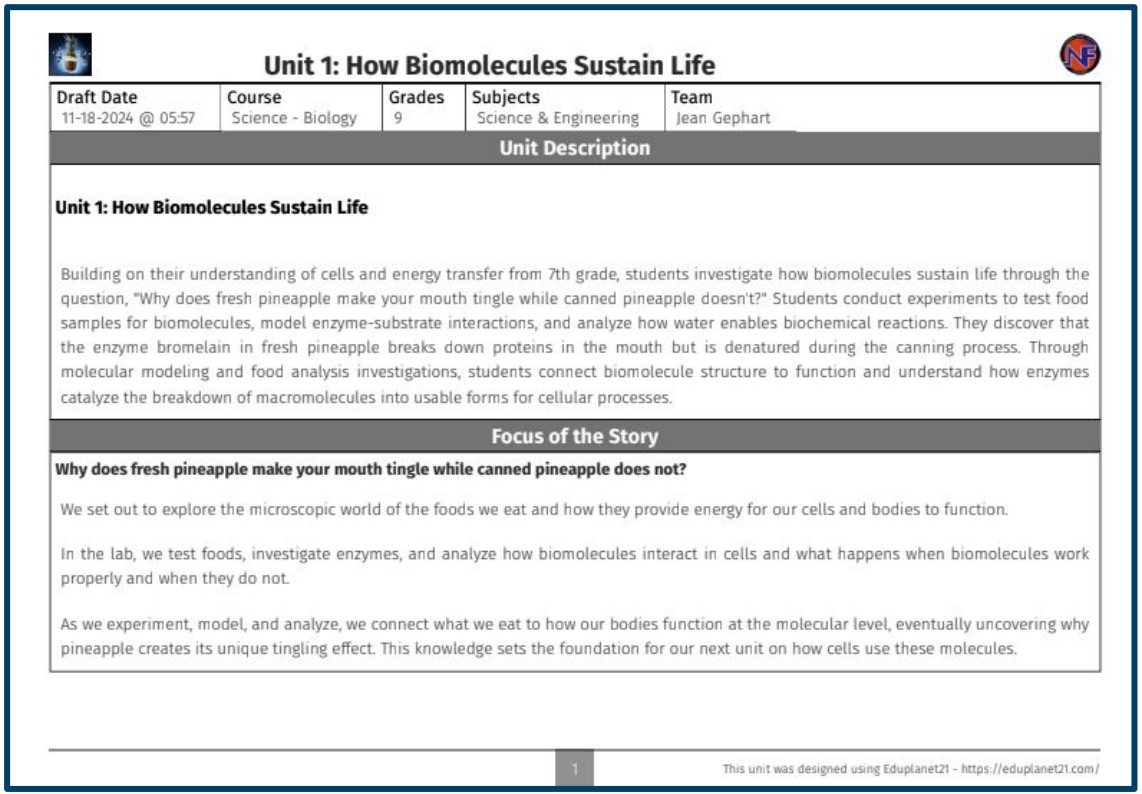
We build on our understanding of forces, energy, and waves to explore the science of motion through hands-on experiments, real-world examples, and mathematical modeling. Whether studying the sprint of an athlete or the launch of a spacecraft, we uncover the forces and energy that shape motion and connect these principles to the world around us.

6-12 Science

Every unit begins with a compelling real-world question that drives student investigation:

- How do humans impact the delicate balance of matter and energy in ecosystems? (Candlewood Lake)
- How could our snack choices affect the rainforest and animals that live there? (Global)
- How did papayas survive a devastating virus with the help of DNA? (Global)

Unit Curriculum Documents



Unit 1: How Biomolecules Sustain Life

Draft Date	Course	Grades	Subjects	Team
11-18-2024 @ 05:57	Science - Biology	9	Science & Engineering	Jean Gephart

Unit Description

Unit 1: How Biomolecules Sustain Life

Building on their understanding of cells and energy transfer from 7th grade, students investigate how biomolecules sustain life through the question, "Why does fresh pineapple make your mouth tingle while canned pineapple doesn't?" Students conduct experiments to test food samples for biomolecules, model enzyme-substrate interactions, and analyze how water enables biochemical reactions. They discover that the enzyme bromelain in fresh pineapple breaks down proteins in the mouth but is denatured during the canning process. Through molecular modeling and food analysis investigations, students connect biomolecule structure to function and understand how enzymes catalyze the breakdown of macromolecules into usable forms for cellular processes.

Focus of the Story

Why does fresh pineapple make your mouth tingle while canned pineapple does not?

We set out to explore the microscopic world of the foods we eat and how they provide energy for our cells and bodies to function.

In the lab, we test foods, investigate enzymes, and analyze how biomolecules interact in cells and what happens when biomolecules work properly and when they do not.

As we experiment, model, and analyze, we connect what we eat to how our bodies function at the molecular level, eventually uncovering why pineapple creates its unique tingling effect. This knowledge sets the foundation for our next unit on how cells use these molecules.

- Aligned all courses to NGSS
- Created through collaborative, iterative design process with teacher input.
- All curriculum documents accessible for teacher use.
- Units are currently being implemented.

Life Science: Instruction

MS Science 7: Exploring Life's Connections

Unit 1: Uncovering the Role of Cells in Life	Unit 2: Understanding Genetic Inheritance and Variation	Unit 3: How Adaptations Drive Survival and Evolution	Unit 4: Human Choices and Their Impact on Ecosystems	Unit 5: Earth's History Through Fossils and Plate Tectonics
				
Is a corn kernel alive? How do you know? With a single popcorn kernel, we explore what it means to be alive. We use microscopes and design experiments to compare plant and animal cells and create models to show their structure, function, and how they grow. By tracking changes over time as seeds and plants grow, we learn to use patterns to answer questions as scientists. Circling back to our popcorn kernel, we argue whether or not corn kernels are alive and use what we have learned to support it.	***Why do some people love dark chocolate while others find it too bitter?*** Using PTC paper to explore why some people detect bitterness while others cannot, we record traits in our class and use Punnett squares to predict how they might appear in future generations. Our data leads us to identify patterns in how traits pass from parents to children and create models to explain why family members are similar yet unique. Finally, we explore how bitterness detection, an inherited trait, inspired solutions to protect curious children from harm.	***Why did the peppered moth survive environmental changes, but the woolly mammoth did not?*** Using our understanding of genetics, we investigate these two fascinating mysteries about survival and extinction. We study fossils, learn to analyze population data, and explore case studies to track how traits spread and how a species' ability to survive can change over time. By examining how environmental changes and human actions impact species, we predict which organisms might adapt or struggle in the future.	***How could our snack choices affect the rainforest and animals that live there?*** Building on our 6th-grade understanding of ecosystems, we examine product labels and trace ingredients to their sources. Population data is analyzed to compare and evaluate different farming methods. With this evidence, we can support claims about the ecological impacts. Then, we argue and advocate for sustainable solutions and everyday human choices that help protect rainforests and wildlife.	***How could fossils from the same animal be found on continents separated by oceans?*** Finally, we become geoscientists, integrating all we have learned to solve Earth's greatest puzzles. We map fossil locations, analyze sedimentary rock formations, and track earthquake and volcanic data to develop evidence-based claims about Earth's changing surface. We argue solutions to the fossil mystery and create campaigns showing how plate tectonics affects our daily lives.

What does it mean to be alive?

🤔 Is a seed alive? 🤔

👤💡 **INDIVIDUAL THINKING** 💡👤

What are you thinking?

What ideas do you have about the seeds to explain your thinking?

What information or evidence do you need in order to be convinced (either way on the continuum)?

Make a claim (include 2 supporting details or ideas)…

🗣️💭👥 **DISCUSS YOUR THINKING WITH YOUR GROUP**
Engaging in an Argument from Evidence

👥📝 💡 👥 **GROUP THINKING** 👥📝 💡👥

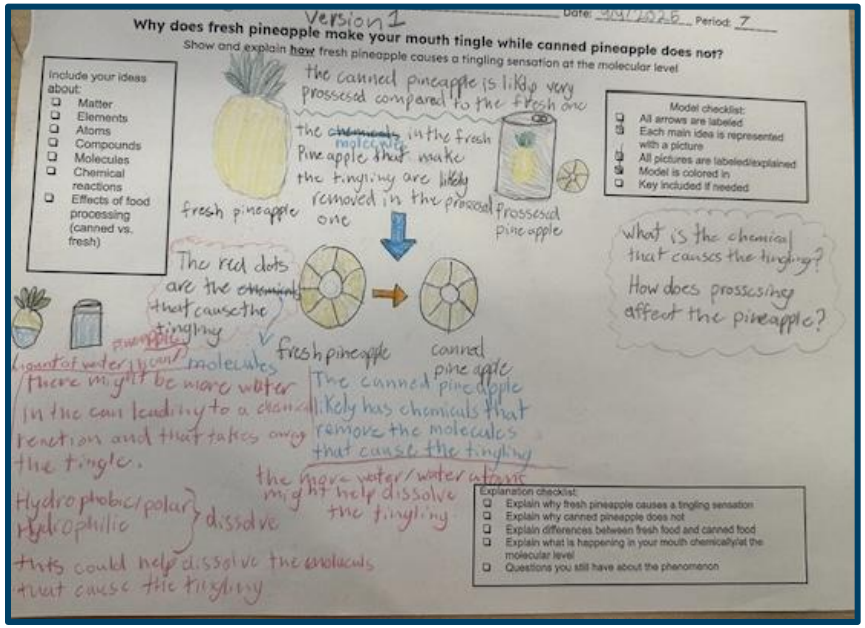
What different ideas were discussed in your group?

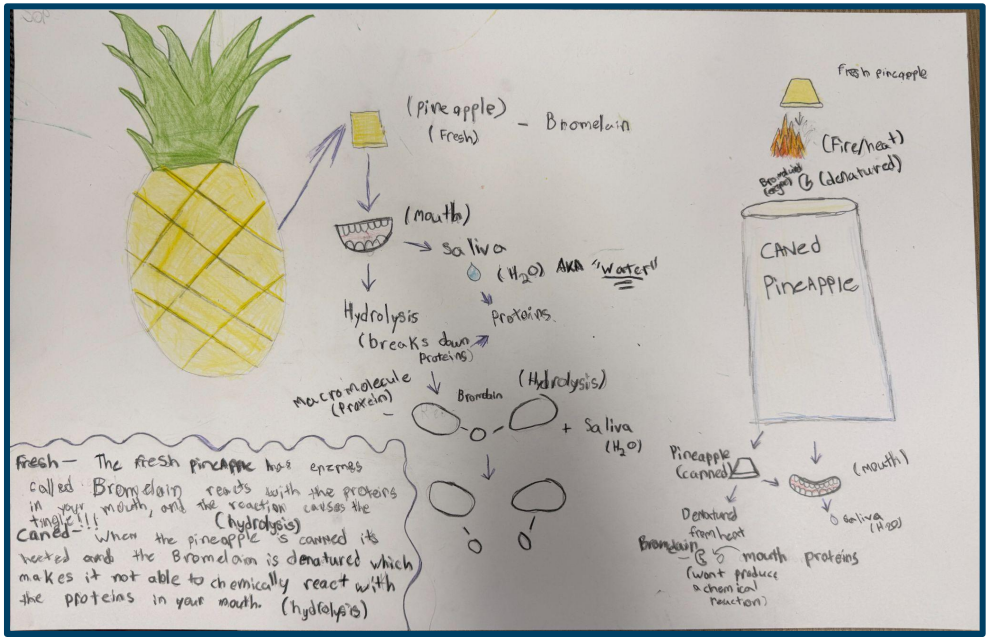
HS Biology

Modeling

HS Biology

Unit 1: How Biomolecules Sustain Life	Unit 2: Cells and Systems--Working Together, Powering Life	Unit 3: Growth and Repair-Understanding Cell Division	Unit 4: Genetics--The Blueprint of Life	Unit 5: Ecosystems, Evolution, and Extinction
				
Why does fresh pineapple make your mouth tingle while canned pineapple does not?	***How does what we eat affect our brain's ability to focus and learn?***	***Why do skin injuries heal, but brain injuries often cannot?***	***How did papayas survive a devastating virus with the help of DNA?***	***How could a giant, extinct animal help fight climate change?***





Why does fresh pineapple make my mouth tingle and canned pineapple does not?

I can identify

Biomolecules: enzyme (bromelain), substrate (protein), temperature effects on structure.

Label biomolecules and interactions in diagram.

I can use

Enzyme-substrate model to predict heated pineapple outcome (protein denaturation)

Apply the model to make testable predictions

I can analyze

Lactose intolerance: lactase enzyme breaks down lactose (carbohydrate biomolecule)

Transfer the model to the new body system

Assessment

Is a Seed Alive? – CER Science Argument Assignment

Essential Question:

Is a seed alive?

Throughout this unit, you've gathered observations, read texts, conducted experiments, and explored the structure and function of cells and life processes. Now it's time to use that evidence to construct a scientific argument that answers the question above.

Task:

Write a **CER** (Claim-Evidence-Reasoning) response to answer the question **"Is a seed alive?"** You must support your claim with:

- Data from your germination experiment and microscope observations
- At least **three pieces of text evidence** from our class readings or anchor charts
- Clear scientific reasoning using vocabulary and concepts from this unit

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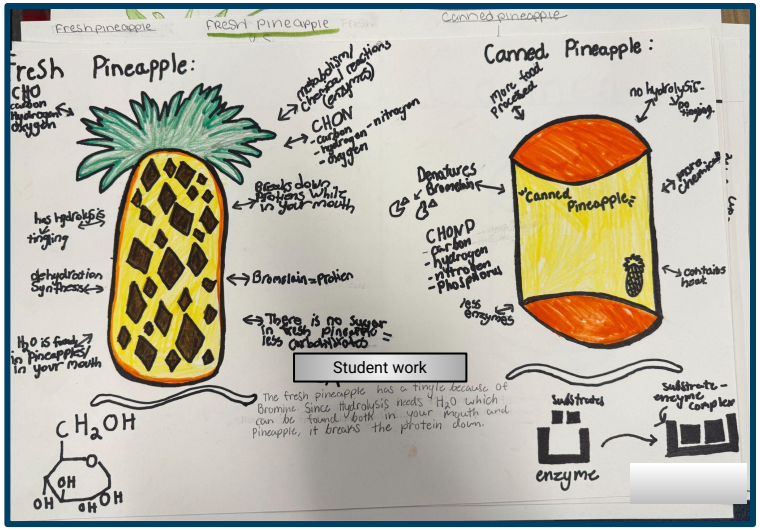


Tiered assessments measure student understanding from foundational knowledge through transfer to novel contexts

The fundamental unit of life is the

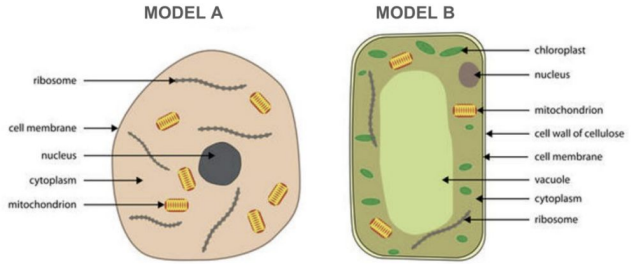
- organ
- water
- cell
- organism

Some organisms consist of one cell. Other organisms consist of multiple cells. Which of these is true of cells in a multicellular organism?

- All cells have the same function
- Every cell has a different function.
- Different types of cells have the same function.

Models A and B in Figure 2 show the structures found in different types of plankton cells. One model represents a plant cell, and the other represents an animal cell.

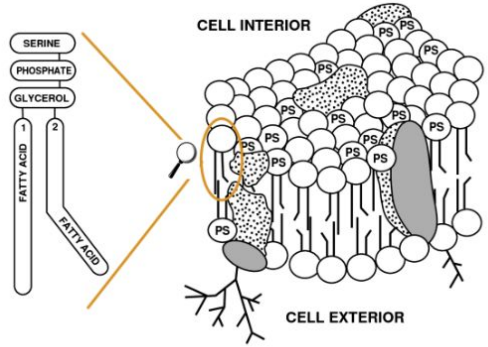
Figure 2
Models of Typical Animal and Plant Cell



How Might Sugar Help Stuff Stay in our Cells?

The cells in our body keep important things in and out, and maintain *homeostasis* (or balance) through the use of a cell membrane. This membrane is visualized in the GIF above, and is made up of a mix of lipid molecules known as *phospholipids*, which create a double layer of protection between the cell interior and the outside world (see Figure 1).

Figure 1
Model of Cell Membrane



One component (or part) of these phospholipids is serine. Serine is an amino acid, one of 20 that can be used to build proteins and other complex molecules in the body. Its chemical structure is compared to that of glucose, a simple sugar that our body gets from almost every meal.

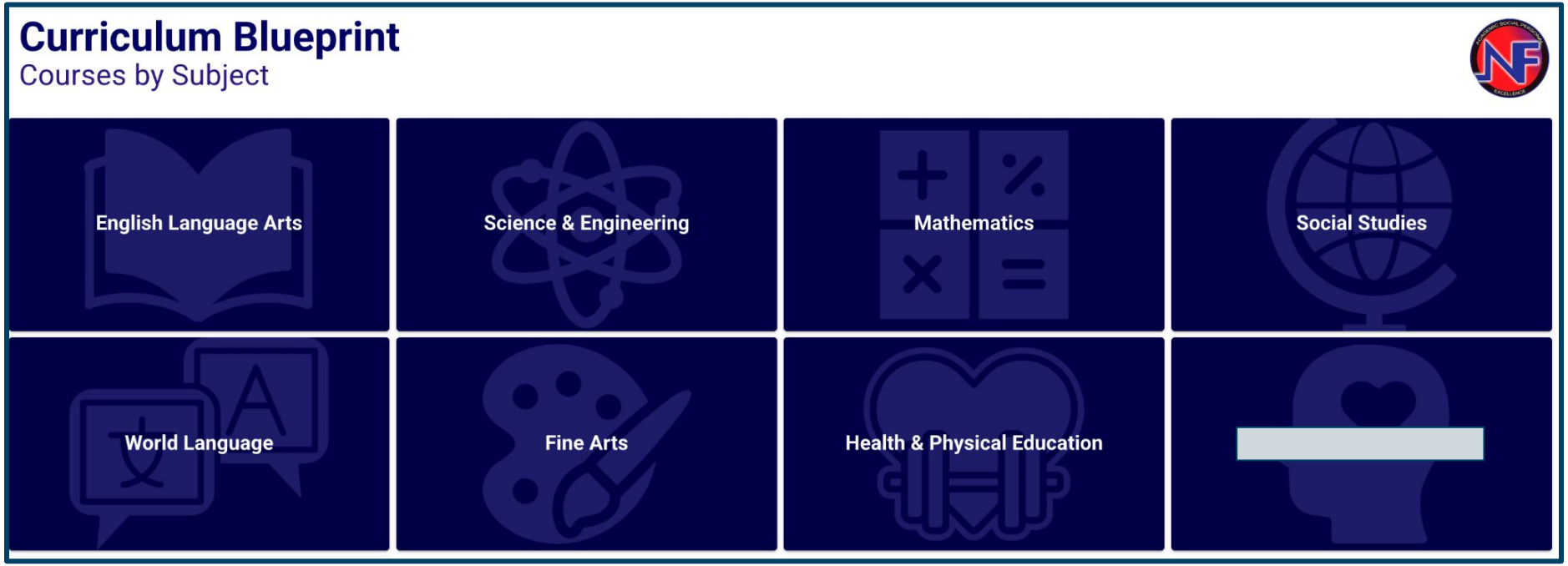
Figure 2
Glucose and Serine Chemical Structures

5. Refer to Figure 2. Which of the following statements accurately describes the relationship between the structures found in these cells and their functions?

A. Models A and B contain chloroplasts, which means both are capable of photosynthesis.
B. Models A and B contain chloroplasts, which means both are capable of cellular respiration.
C. Model B contains chloroplasts, which means only Model B is capable of photosynthesis.
D. Model B contains chloroplasts, which means only Model B is capable of cellular respiration.

- What excites you about what you have heard?
- What are you wondering?

NFPS Curriculum Blueprint



For Families

Grade 2 Unit Summaries

Unit 1 - The Interdependence of Plants and Animals

How can flowers bloom in one of the hottest, driest places on Earth? Second graders begin their year as scientists measuring and collecting data with plants to understand what they need to grow best. While studying the structure of plant seeds, they use models to understand seed dispersal and how animals play an important part in making sure plant seeds are able to spread and grow in new places. Students investigate how different seed structures function to allow seeds to do this in different ways. Finally, students examine the different habitats across the Earth - forests, oceans, deserts, grasslands, and swamps - and how different plants and animals are best suited for where they live.

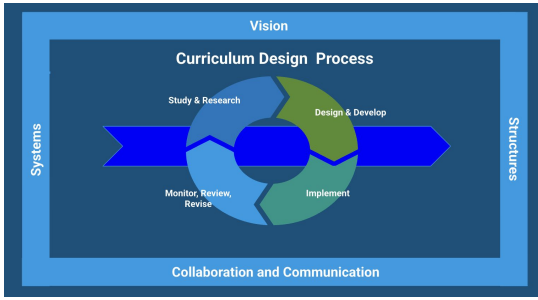
Unit 2 - Properties of Matter

How is a metal - like gold or silver - changed from solid to liquid? That real-world phenomenon launches second graders into their study of matter. Students use observation skills to describe different characteristics and properties of matter. They investigate the effects of heating and cooling on states of matter and which materials are good insulators of heat and which materials are not. They also study how different materials can change or be combined in ways that may be reversible or irreversible. Throughout this unit, students use what they learn about the properties of different materials to solve design problems, like designing an oven mitt and building a tower out of paper. They might even be able to keep an ice cube from melting!

Unit 3 - Earth's Systems: How the Earth Changes

How can rivers be different colors? In this unit, second graders integrate observation skills and mapping skills to study how the Earth's land and water has changed over time. They learn about erosion and use models to understand why there is sand on a beach and how water makes canyons through mountains. Students locate these landforms on maps to note the connections to nearby bodies of water. They conduct experiments to observe erosion and design solutions to prevent it, understanding that people can make choices to protect the land. While Earth's processes such as erosion are slow, students also learn about processes like earthquakes and volcanic eruptions that can cause much faster changes to the Earth.

And Beyond ... Next Steps



- **K-12 implementation**, 2025-2026
- **Design thinking & innovation (STEAM integration)**
- **Continued integration of VoL**
- **Ongoing professional learning / Feedback / LASW**
- **PreK connections**

Vision of a Learner

Thank you!