

SCHOOL ADMINISTRATIVE UNIT THIRTY-NINE

Amherst, Mont Vernon, and Souhegan Cooperative School Districts



STEVEN CHAMBERLIN
Interim Superintendent of
Schools

CHRISTINE M. LANDWEHRLE
Assistant Superintendent

MARGARET A. BEAUCHAMP
Director of Student Services

AMY FACEY
Business Administrator

Mont Vernon School Board Meeting

Thursday, January 5th – 6:00 PM

Mont Vernon Village School- Library

1 Kittredge Road

Mont Vernon, NH 03057

Please click the link to join the webinar

<https://sau39.zoom.us/j/82472187155?pwd=bVh1ZTIHRWcwUE0wWWMrCS84bUozdz09>

Passcode: 945073

All times listed below are approximate

Agenda Item	Time	Desired Action	Backup Materials
Call to Order	6:00 PM	Ms. Sarah Lawrence, Mont Vernon School Board Chair, to call the meeting to order	None
Public Input I of II	6:00 PM		Public Comment Procedure
Consent Agenda -Approval	6:15 PM	<ol style="list-style-type: none"> 1. AMS December Principal's Report 2. MVSD Dec. Facilities Update 3. Kindergarten Science Unit 4. Grade 1 Science Unit 5. Grade 2 Science Unit 6. Grade 3 Science Unit 7. Grade 4 Science Unit 8. Grade 5 Science Unit 9. Grade 6 Science Unit 10. July 2022 MVSD Treasurer's Report 11. August 2022 MVSD Treasurer's Report 12. Budget Transfer 2023 002 13. December 1st, 2022 Draft Minutes 	AMS Dec. Principal's Report MVSD Dec. Facilities Update Kindergarten Science Unit Grade 1 Science Unit Grade 2 Science Unit Grade 3 Science Unit Grade 4 Science Unit Grade 5 Science Unit Grade 6 Science Unit July 2022 Treasurer's Report Aug. 2022 Treasurer's Report Budget Transfer Memo 12 01 2022 Draft Minutes
FY24 Draft 3 Budget Presentation, Warrant Article Finalization and Public Hearing Preparation	6:25 PM	SAU #39 Business Administrator, Ms. Amy Facey, to present the FY24 Draft 3 Budget. The Board to finalize Warrant Articles and prepare for the Public Hearing	None

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Board Vote	6:55 PM	<i>The Board to vote on Warrant Articles</i>	None
Deliberative Discussion	7:00 PM	<i>The Board to discuss the Deliberative Session</i>	None
First Reading Policies	7:10 PM	<i>The Board to review policies as a first reading</i>	Policy Summary Policy Packet
Public Input II of II	7:20 PM		
Non-Public (If needed)	7:35 PM	<i>RSA 91: A 3 II ()</i>	
Meeting Adjourned	7:40 PM		

Amherst Middle School

Principal's Report



December 2022



AMS Turkey Day

We hosted a very successful Turkey Day for staff on November 17th. This long-standing tradition, where staff bring in food to share for a Thanksgiving luncheon, had been put on pause since November 2019. It takes an incredible amount of work from those who organize, cook, prepare and serve, and a wonderful time was had by all who attended.



On a separate note, the cafeteria staff at AMS prepared a delicious Thanksgiving meal for our students on the same day, so no one missed out on a heartwarming holiday meal. We are grateful for the hard-working kitchen staff for the nutritious meals they prepare for our students each day.

2023-2024 School Schedule

As middle school educators, we are always looking to ensure that our practices meet the needs of our students. One major piece of any successful middle school is the building schedule. We are currently having conversations with staff regarding our current school schedule and what things we can add, subtract, change, or keep for the 2023-2024 school year. Already it seems that there are some major themes: common planning time for teachers, maximizing instructional time, and providing special education services. In addition, building administrators will be taking advantage of professional development opportunities with PowerSchool and NELMS (New England League of Middle Schools) in order to help support this mission. We will keep SAU Leadership and the Amherst School Board apprised of any updates as this process continues.

AMS Music Performances

We are really looking forward to our winter music performances. This is one aspect of our learning community that has had to constantly adapt throughout the pandemic and it is so exciting to see and hear our talented performers share their gifts with us this winter. Band concerts are scheduled for December 13th and chorus concerts are scheduled for January 12th.



Winter Carnival - 5th & 6th Grade

On Friday, December 9th, our 5th and 6th grade students were invited to an after school social organized by Student Leadership and Service. Students had the opportunity to play games and participate in activities with their peers after school. This is a wonderful social opportunity for our 5th and 6th grade students. 6th graders from Mont Vernon Village school were also invited to attend this event as part of the transition process, in an effort to help students from Mont Vernon acclimate to Amherst Middle School prior to 7th grade.

Ways & Means Tours

On November 29th, three members of the Amherst Ways & Means committee visited Amherst Middle School and joined Principal Kristen Gauthier and Assistant Principal John Schuttinger for a tour of the facility. They were able to see structural aspects of the building as well as what the building looks like in action while students were in attendance. We were able to meet briefly as a group afterwards to discuss observations and brainstorm ideas for future improvements to benefit staff and students.

Thank You

The staff at Amherst Middle School are grateful for the support of the Superintendent, Amherst School Board, and community in response to the loss of our beloved teacher and coach, Ms. Lindsay Toomey. We are especially appreciative of the Board's willingness to allow the AMS staff time to attend services on December 1st.

CAST Summit

A group of 7th and 8th grade students from AMS joined middle school students from Milford, Hollis/Brookline and Wilton/Lyndeborough for the CAST (Community Action for Safe Teens) Youth Summit at the Boys and Girls Club. The students were able to participate in team building activities and discussion groups with students from the other middle schools to talk about topics such as pressure for success, bullying, anxiety/depression, making healthy choices, etc. Our students were then able to work together as a group to develop an action plan on issues they feel need to be addressed within our own school!



Teacher Supervision and Evaluation

On Tuesday, October 11th, we started visiting classrooms for documented observations (formal and informal) as part of the teacher evaluation process. We will continue to update the board each month about our progress toward completion of this process for the 2022-2023 school year.

As of 12.07.2022:

Type	Completed	Remaining	Total
Informal	21	155	176
Formal	22	16	38

Staffing Update

Amherst Middle School is still actively hiring for 2 open positions. At the time of this report, we are actively hiring for a Lunch/Recess Monitor and a Licensed Practical Nurse to support our Health Office.

Upcoming Events

December 8 (Thur): Student Leadership & Service Meeting, 3:30-4:30

December 9 (Fri): Winter Carnival for grades 5 & 6

December 12 & 20: SEE Science visits 7th grade (snow date 12/19)

December 13 (Tues): Late start day, school begins at 10:30AM

December 13 (Tues): Winter Band Concerts (snow date 12/20) Grade 5 - 6:00pm, Grade 6 - 6:30pm, Grades 7, 8 & Jazz Band 7pm

December 16 (Fri): Winter Athletic Team Photos

December 16-22 (Fri-Thur): Spirit Week (details to come)

December 20 (Tues): Amherst PTA meeting in AMS Library

December 23-January 2: NO SCHOOL, Holiday Break

January 3 (Tues): School is back in session

January 10 (Tues): Late Start Day, School begins at 10:30AM

January 12 (Thurs): Chorus Concerts (snow date 1/17)

Enrollment

	August 2022	Sept. 2022	Oct. 2022	Nov. 2022	Dec. 2022
TOTAL	634	638	640	639	639
5th	136	138	138	138	138
6th	152	150	151	151	151
	August 2022	Sept. 2022	Oct.2022	Nov.2022	Dec. 2022
7th	167 (29MV)	169 (32MV)	170 (33MV)	170 (33MV)	169 (33MV)
8th	179 (34MV)	181 (33MV)	181 (33MV)	180 (33MV)	181 (33MV)

Respectfully submitted to the Amherst School Board on December 7, 2022

Kristen Gauthier, Principal, Amherst Middle School

SAU #39

12/16/2022

Mont Vernon Village School

December Facilities Update

Vendor Maintenance Completed

- Repair to front fence damaged by car
- Temporary facilities cleaning services
- Waste management services weekly schedule
- Monthly pest services monitoring program

MVVS Facilities Staff Projects Completed

- Setup and breakdown of school events
- Installed curtain in art room
- Installed power for new range and dishwasher
- Installed new floor mat at bus entrance
- [Daily water meter readings are being recorded](#)
- [Daily cleaning and disinfecting](#)
- Weekly generator test
- [Weekly fuel readings are being recorded \(building fuel and generator\)](#)
- [Monthly fire extinguisher inspection](#)
- [Monthly underground storage tank inspection](#)

Upcoming Work



Consent Agenda
Item #3

SAU 39 Kindergarten Science Curriculum



Year Long Scope and Sequence:

	Animal Secrets (4-8 weeks)	Plant Secrets (3-6 weeks)	Wild Weather (3-6 weeks)	Circle of Seasons (3-6 weeks)	Sunny Skies (3-6 weeks)	Force Olympics (6-9 weeks)
Week 1	Why do woodpeckers peck wood? <i>(K-LS1-1)</i>	Are plants alive? <i>(K-LS1-1)</i>	How can you get ready for a big storm? <i>(K-ESS3-2)</i>	How do you know what to wear for the weather? <i>(K-ESS2-1)</i>	How could you walk barefoot across hot pavement without burning your feet? <i>(K-PS3-1, K-PS3-2)</i>	What's the biggest excavator? <i>(Foundational for K-PS2-1, K-PS2-2)</i>
Week 2	Where do animals live? <i>(K-ESS3-1)</i>	How do plants and trees grow? <i>(K-LS1-1)</i>	Have you ever watched a storm? <i>(K-ESS2-1)</i>	What will the weather be like on your birthday? <i>(K-ESS2-1)</i>	How could you warm up a frozen playground? <i>(K-PS3-1, K-PS3-2, K-2-ETS1-2, K-2-ETS1-3)</i>	Why do builders need so many big machines? <i>(Foundational for K-PS2-1, K-PS2-2)</i>
Week 3	How can you find animals in the woods? <i>(K-LS1-1)</i>	Why would you want an old log in your backyard? <i>(K-ESS3-3)</i>	How many different kinds of weather are there? <i>(K-ESS2-1)</i>	Why do birds lay eggs in the spring? <i>(K-ESS2-1, K-ESS2-2)</i>	Why does it get cold in winter? <i>(K-PS3-1,)</i>	How can you knock down a wall made of concrete? <i>(K-PS2-1 and K-PS2-2)</i>
Week 4	How do animals make their home in the forest? <i>(K-ESS2-2)</i>					How can you knock down the most bowling pins? <i>(K-PS2-1)</i>
Week 5						How can we protect a mountain town from falling rocks? <i>(K-PS2-2, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 6						How could you invent a trap? <i>(K-PS2-2, K-2-ETS1-2)</i>

SAU 39 Kindergarten Science Curriculum

Unit Overview
Unit Title: Life Science - Animal and Plant Secrets
Unit Summary
<p>Animal Secrets - In this unit, students use observations to understand what animals need to survive. Students explore how animals need things to eat and a safe place to live.</p> <p>Plant Secrets - In this unit, students use observations to understand what plants need to survive. Students explore how plants need water and sunlight. They also observe how plants grow from seed to seedling.</p>
Approximate Time Needed
7- 14 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Systems and System Models
Standards
<ul style="list-style-type: none">● LS1.C● ESS2.E● ESS3.A● ESS3.C
Curriculum Framing Questions
Enduring Understandings
<p>Students will understand that...</p> <ul style="list-style-type: none">● all animals have behaviors that include seeking out food and safety to survive.● plants need water and lean towards the light.● all living things live where their needs are met.● plants, animals, and their surroundings make up a system as parts that work together.● living things have needs (food & water for animals; water & sunlight for plants). Non-living things like rocks don't have needs.● changes people make to their environment has an impact on other living things that share their habitat.

SAU 39 Kindergarten Science Curriculum

Essential Questions
<i>How are the parts of a system related to the entire system?</i> <i>How do organisms live, grow, respond to their environment and reproduce?</i>

How are the parts of a system related to the entire system?

How do organisms live, grow, respond to their environment and reproduce?

SAU 39 Kindergarten Science Curriculum

Unit Overview
Unit Title: Earth Space Science
Unit Summary
<p>Wild Weather - In this unit, students explore storms and severe weather! They obtain information from weather forecasts to prepare for storms and stay safe. They also practice describing the various characteristics of weather (wind, clouds, temperature, and precipitation) in order to make their own predictions about storms.</p> <p>Circle of Seasons - In this unit, students gather evidence in order to identify daily and seasonal weather patterns. They use those patterns to explain mysteries like why you might lose your jacket during the day or why birds lay their eggs at certain times of the year.</p>
Approximate Time Needed
Weeks 6 - 12
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Structure & Function
Standards
<ul style="list-style-type: none">● ESS2.D● ESS2.E● ESS3.B
Curriculum Framing Questions
Enduring Understandings
<p>Students will understand...</p> <ul style="list-style-type: none">● weather as a pattern in the natural world.● temperature changes throughout the day as a pattern in the natural world.● the relationship between weather tracking and storm preparation.● the order of the seasons, and notice the pattern that all four seasons repeat each year.● seasonal weather patterns affect the environment and the organisms that live in those environments.

SAU 39 Kindergarten Science Curriculum

Essential Questions

What is involved in identifying a pattern?

SAU 39 Kindergarten Science Curriculum

Unit Overview
Unit Title: Physical Science
Unit Summary
<p>Sunny Skies - In this unit, students make observations to explore how sunlight warms the Earth's surface. The Sun's energy heats up the pavement, keeps us warm, and can even melt marshmallows. Using what they learn, students think about ways that shade and structures can reduce the warming effect of the Sun.</p> <p>Force Olympics: In this unit, students are introduced to pushes and pulls and how those affect the motion of objects. Students observe and investigate the effects of what happens when the strength or direction of those pushes and pulls are changed.</p>
Approximate Time Needed
Weeks 9-15
Unit Foundation
Competencies
<ul style="list-style-type: none">● Cause & Effect● Structure & Function
Standards
<ul style="list-style-type: none">● PS2.A● PS2.B● PS2.C (<i>Foundational</i>)● PS3.B● PS3.C● ETS1.A● ETS1.B● ETS1.C
Curriculum Framing Questions
Enduring Understandings
Students will understand...
<ul style="list-style-type: none">● that direct sunlight on an area causes surfaces to heat up.● that shade structures can reduce the warming effect of the Sun.

SAU 39 Kindergarten Science Curriculum

- the cause and effect relationship between sunlight exposure and the temperature on Earth's surface.
- the effect of parking a car in a sunny area and how the heat of the Sun can cause things to heat up and melt.
- the effects that machines can have when completing a task.
- the cause and effect relationship between the movement of a machine and the work it can do.
- the cause and effect relationship between the size of the force on an object and the direction or speed it goes.

Essential Questions

How can cause and effect relationships help predict or explain future events?
How do engineers solve problems?



SAU 39 Grade 1 Science Curriculum

Consent Agenda Item #4

Year Long Scope and Sequence:

	Animal Superpowers (5-10 weeks)	Plant Superpowers (3-6 weeks)	Sun & Shadows (4-8 weeks)	Moon & Stars (3-6 weeks)	Lights & Sounds (6-9 weeks)
Week 1	How can you help a lost baby animal find its parents? <i>(1-LS3-1)</i>	What will a baby plant look like when it grows up? <i>(1-LS3-1)</i>	Could a statue's shadow move? <i>(1-ESS1-1)</i>	When can you see the full moon? <i>(1-ESS1-1)</i>	How do they make silly sounds in cartoons? <i>(1-PS4-1)</i>
Week 2	Why do birds have beaks? <i>(1-LS1-1)</i>	Why don't trees blow down in the wind? <i>(1-LS1-1, K-2-ETS1-2, K-2-ETS1-3)</i>	What does your shadow do when you're not looking? <i>(1-ESS1-1)</i>	Why do the stars come out at night? <i>(1-ESS1-1)</i>	Where do sounds come from? <i>(1-PS4-1)</i>
Week 3	Why do baby ducks follow their mother? <i>(1-LS1-2)</i>	What do sunflowers do when you're not looking? <i>(1-LS1-1)</i>	How can the sun help you if you're lost? <i>(1-ESS1-1)</i>	How can stars help you if you get lost? <i>(1-ESS1-1)</i>	What if there were no windows? <i>(1-PS4-3)</i>
Week 4	Why are polar bears white? <i>(1-LS1-1)</i>		Why do you have to go to bed early in the summer? <i>(1-ESS1-2)</i>		Can you see in the dark? <i>(1-PS4-2)</i>
Week 5	Why do family members look alike? <i>(1-LS3-1)</i>				How could you send a secret message to someone far away? <i>(1-PS4-4, K-2-ETS1-2)</i>
Week 6					How do boats find their way in the fog? <i>(1-PS4-4)</i>

SAU 39 Grade 1 Science Curriculum

Unit Overview
Unit Title: Life Science - Animal and Plant Superpowers
Unit Summary
<p>Animal Superpowers - In this unit, students explore how parts of animals are essential for survival. Students also make observations of parents and their offspring, determining how they are similar and how their behaviors help offspring survive.</p> <p>Plant Superpowers - In this unit, students explore how parts of plants are essential for survival. Students also make observations of plant parents and their offspring, determining how they are alike and different.</p>
Approximate Time Needed
8 - 16 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Structure & Function
Standards
<ul style="list-style-type: none">● LS1.A● LS1.B● LS1.D● LS3.A● LS3.B● ETS1.A● ETS1.B● ETS1.C
Curriculum Framing Questions
Enduring Understandings
<p><i>Students will understand...</i></p> <ul style="list-style-type: none">● that offspring do not look exactly the same, but do have many traits in common with their parents.● all plants and animals have structures that help them accomplish unique functions and help them survive.

SAU 39 Grade 1 Science Curriculum

- patterns in animal behavior of parents and offspring help offspring survive.

Essential Questions

How do organisms live, grow, and respond to their environment?

How do the structures of organisms enable life's functions?

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Unit Overview
Unit Title: Earth Space Science - Sun and Shadows / Moon and Stars
Unit Summary
Sun and Shadows - In this unit, students observe that the Sun and shadows seem to move in patterns. Students make observations of the Sun and shadows throughout the day and across the seasons. Moon and Stars - In this unit, students observe that the Moon and stars seem to move in patterns in the sky. They also determine why stars are only visible at night.
Approximate Time Needed
7- 14 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect
Standards
<ul style="list-style-type: none">● ESS1.A● ESS1.B
Curriculum Framing Questions
Enduring Understandings
Students will understand that... <ul style="list-style-type: none">● movement of shadows is caused by the pattern of the Sun's movement across the sky.● the height of the Sun in the sky will affect a shadow's length and direction.● there are more hours of daylight during the summer than there are in the winter.● the Moon's phases follow a cyclical pattern that repeats every four weeks (each month).● stars are only visible in the night sky.● stars are in different places in the sky during different seasons.
Essential Questions
<i>What are the predictable patterns caused by Earth's movement in the solar system?</i>

SAU 39 Grade 1 Science Curriculum

Unit Overview
Unit Title: Physical Science - Lights and Sounds
Unit Summary
In this unit, students investigate light and sound! They explore how materials vibrate and how vibrating materials can make sounds. They also investigate light and illumination and use those investigations to create simple devices that allow them to communicate across a distance.
Approximate Time Needed
6 - 9 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect
Standards
<ul style="list-style-type: none">● PS4.A● PS4.B● PS4.C● ETS1.B
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● the relationship between vibrations (cause) and sound (effect).● the relationship between the type of material (cause) and the amount of light that can pass through it (effect).● the relationship between light (cause) and being able to see objects (effect).● that different light and sound signals form a pattern used for communication.
Essential Questions
<i>How can cause and effect relationships help predict or explain future events?</i> <i>How can patterns be used to predict results and solve problems?</i> <i>What is light? How can one explain the varied effects that involve light?</i> <i>How are instruments that transmit and detect waves used to expand human senses?</i>



Year Long Scope and Sequence:

	Animal Adventures (4-8 weeks)	Plant Adventures (5-10 weeks)	Work of Water (5-10 weeks)	Material Magic (6-12 weeks)
Week 1	How many different kinds of animals are there? <i>(2-LS4-1)</i>	How did a tree travel halfway around the world? <i>(2-LS2-2)</i>	If you floated down a river, where would you end up? <i>(2-ESS2-2, 2-ESS2-3)</i>	Why do we wear clothes <i>(2-PS1-1, 2-PS1-2, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 2	Why would a wild animal visit a playground? <i>(2-LS4-1)</i>	Could a plant survive without light? <i>(2-LS2-1)</i>	Why is there sand at the beach? <i>(2-ESS2-2)</i>	Can you really fry an egg on a hot sidewalk? <i>(2-PS1-1, 2-PS1-2)</i>
Week 3	Why do frogs say “ribbit”? <i>(2-LS4-1)</i>	Why do trees grow so tall? <i>(2-LS2-1)</i>	Where do flash floods happen? <i>(2-ESS2-2, 2-ESS1-1)</i>	Why are so many toys made out of plastic? <i>(2-PS1-1, 2-PS1-2 and 2-PS1-4)</i>
Week 4	How could you get more birds to visit a bird feeder? <i>(2-LS4-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)</i>	Should you water a cactus? <i>(2-LS2-1, -LS4-1)</i>	What’s strong enough to make a canyon? <i>(2-ESS1-1, 2-ESS2-1, 2-ESS2-2)</i>	What materials might be invented in the future? <i>(2-PS1-1, 2-PS1-2, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 5		Where do plants grow best? <i>(2-LS2-1, 2-LS4-1)</i>	How can you stop a landslide? <i>(2-ESS2-1, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3)</i>	Could you build a house out of paper? <i>(2-PS1-1, 2-PS1-3, K-2-ETS1-2, K-2-ETS1-3)</i>
Week 6				How do you build a city out of mud? <i>(2-PS1-1, 2-PS1-2)</i>

SAU 39 Grade 2 Science Curriculum

Unit Overview
Unit Title: Life Science - Animal and Plant Adventures
Unit Summary
<p>Animal Adventures - In this unit, students begin to develop an understanding of the world's animal biodiversity. They explore animal classification and the traits that define each group. Students then turn their focus to habitats and how the surrounding environment affects what organisms live in a particular environment.</p> <p>Plant Adventures - In this unit, students continue to explore the needs of plants through hands-on investigations. They explore why and how plants disperse their seeds, what those seeds need in order to grow, and what the adult plants need in order to survive and thrive.</p>
Approximate Time Needed
5 - 10 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Structure & Function
Standards
<ul style="list-style-type: none">● LS2.A● LS4.D
Curriculum Framing Questions
Enduring Understandings
<p><i>Students will understand...</i></p> <ul style="list-style-type: none">● patterns in animal's characteristics in order to group them.● that patterns can be used to help determine how biodiverse a habitat is.● that the structure of a seed helps it disperse (function).● the effect sunlight has on plant growth.● the role of the leaves (structure) in helping the plant capture sunlight (function).● the cause and effect relationship between a plant's needs and the habitat it survives best in.● how plants have structures that help them survive in their environment (function).
Essential Questions

SAU 39 Grade 2 Science Curriculum

What is the relationship between patterns and natural phenomena?

What is biodiversity, how do humans affect it, and how does it affect humans?

How do organisms live, grow, and respond to their environment?

How do the structures of organisms enable life's functions?

SAU 39 Grade 2 Science Curriculum

Unit Overview
Unit Title: Earth Space Science - Work of Water
Unit Summary
In this unit, students explore how water shapes the Earth's surface. Students construct and use models of mountains to demonstrate that water flows downhill, and in the process, transforms huge rocks into the tiny grains of sand we find at the beach. Students also construct and use model hills to determine the causes of erosion, and to design solutions to problems caused by erosion.
Approximate Time Needed
5 - 10 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Structure & Function
Standards
<ul style="list-style-type: none">● ESS1.C● ESS2.A● ESS2.B● ESS2.C● ETS1.A● ETS1.B● ETS1.C
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● where rivers start and end on earth's surface.● the cause and effect of rocks tumbling in a river (cause) and turning into sand (effect).● that changes to the earth's surface can happen slowly through the process of erosion.● types of land that are associated with the locations of where flash floods occur.● how heavy rains (cause) create canyons on earth's surface (effect).● that changes to the earth's surface can happen slowly through the process of erosion or rapidly during a landslide.

SAU 39 Grade 2 Science Curriculum

Essential Questions

How can cause and effect relationships help predict or explain future events?

How and why is Earth constantly changing?

How do the properties and movements of water shape Earth's surface and affect its systems?

SAU 39 Grade 2 Science Curriculum

Unit Overview
Unit Title: Physical Science - Material Magic
Unit Summary
In this unit, students explore the properties of materials and matter! They describe and classify different types of materials by properties like hardness, flexibility, and absorbency, and they investigate how those properties are useful in meeting basic human needs (such as clothing and cooking). They also investigate how heating and cooling affect the properties of materials.
Approximate Time Needed
6-12 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Energy & Matter● Structure & Function
Standards
<ul style="list-style-type: none">● PS1.A, ETS1.A, ETS1.B● PS1.B● PS1.A, ETS1.A, ETS1.B, <i>Foundational</i> ETS1.C● PS1.A, ETS1.B, ETS1.C●
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● Students consider the pattern that different materials share similar properties. Students test the effect a material's properties have on its function.● Students consider the pattern that different materials share similar properties. Students test the effect a material's properties have on its function.● Students observe the pattern that different materials share similar properties. Students consider the cause and effect of heat being added to meltable substances. They observe that when heat (energy) is applied to a meltable substance (matter) it changes shape.● Students observe the pattern that different materials share similar properties. Some materials have properties that cause them to be better suited to a purpose. They begin to explore how the structure of a designed object relates to its function.

SAU 39 Grade 2 Science Curriculum

- Students consider that **matter**, in this case paper, can be broken into smaller pieces or change shapes.
-
- Students consider the **cause and effect** relationship between a material's properties and its uses.
- Students observe the **pattern** that only certain types of soil have the properties that make them good for building adobe homes.
-

Essential Questions

Consent Agenda

Item #6

Year Long Scope and Sequence:

SAU 39 Grade 3 Science Curriculum



	Animals Through Time (7-14 weeks)	Circle of Life (3-6 weeks)	Power of Flowers (4-8 weeks)	Stormy Skies (5-10 weeks)	Invisible Forces (5-10 weeks)
Week 1	Where can you find whales in a desert? <i>(3-LS4-1, 3-LS4-4)</i>	How is your life like an alligator's life? <i>(3-LS1-1)</i>	Why do plants grow flowers? <i>(3-LS1-1)</i>	Where do clouds come from? <i>(Foundational 3-ESS2-1)</i>	How could you win a tug-of-war against a bunch of adults? <i>(3-PS2-1)</i>
Week 2	How do we know what dinosaurs looked like? <i>(3-LS4-1)</i>	What's the best way to get rid of mosquitos? <i>(3-LS4-3, 3-LS4-4, 3-5-ETS1-2)</i>	Why do plants give us fruit? <i>(3-LS1-1)</i>	How can we predict when it's going to storm? <i>(Foundational 3-ESS2-1)</i>	What makes bridges so strong? <i>(3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, Foundational 3-PS2-1)</i>
Week 3	Can you outrun a dinosaur? <i>(3-LS4-1)</i>	Why are there so many different kinds of flowers? <i>(3-LS1-1)</i>	Why are some apples red and some green? <i>(3-LS3-1)</i>	Where's the best place to build a snow fort? <i>(3-ESS2-1)</i>	How can you go faster down a slide? <i>(3-PS2-1, 3-PS2-2)</i>
Week 4	What kinds of animals might there be in the future? <i>(3-LS3-1, 3-LS4-2)</i>		How could you make the biggest fruit in the world? <i>(3-LS3-1)</i>	Why are some places always hot? <i>(3-ESS2-1, 3-ESS2-2)</i>	What can magnets do? <i>(3-PS2-3, 3-PS2-4)</i>
Week 5	Can selection happen without people? <i>(3-LS3-1, 3-LS4-2, 3-LS4-3, 3-LS4-4)</i>			How can you keep a house from blowing away in a windstorm? <i>(3-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)</i>	How could you unlock a door using a magnet? <i>(3-PS2-3, 3-PS2-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)</i>
Week 6	Why do dogs wag their tails? <i>(3-LS2-1)</i>				
Week 7	How long can people (and animals) survive in outer space? <i>(3-LS3-2)</i>				

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Unit Overview
Unit Title: Life Science - Animals through Time
Unit Summary
In this unit, students develop an understanding of how animals and their environments change through time. Fossils provide a window into the animals and habitats of the past. Analyzing the traits of animals provides evidence for how those traits vary, how they are inherited, and how they have changed over time. Students also examine how the environment can affect inherited traits and determine which animals will survive in a particular environment.
Approximate Time Needed
7-14 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Systems and System Models● Structure & Function● Stability and Change
Standards
<ul style="list-style-type: none">● LS2.C● LS2.D● LS3.A● LS3.B● LS4.A● LS4.B● LS4.C● LS4.D
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● that organisms have traits (structures) that help them survive (function) in a particular environment.● the stability and change of an environment over time is based on the different types of fossils found in one particular area.● fossilized evidence of organism's teeth (structure) can determine which type of food they ate (function) and the type of environment they inhabited.

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- patterns of dinosaur leg lengths and footprints.
- patterns in traits between parents and offspring.
- the cause and effect relationship between a change in the environment and the survival of organisms that inhabit it.
- environments as a system, made up of interdependent parts that function as a whole. They can be stable and change over time at different rates of speed.
- the cause and effect relationship between animals living in a group and the members of that group surviving.
- the cause and effect relationship between the environment and its influence on physical traits (physical characteristics).

Essential Questions

What is the connection between structure and function?

How are the parts of a system related to the entire system?

What happens to ecosystems when the environment changes?

How do organisms interact in groups so as to benefit individuals?

How does the environment influence populations of organisms over multiple generations?

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Unit Overview
Unit Title: Life Science - Circle of Life and Power of Flowers
Unit Summary
<p>Circle of Life - In this unit, students develop an understanding of life cycles. Students explore how both animal life cycles and plant life cycles can look very different, but they all have in common birth, growth, reproduction, and death. Changes to one stage of the life cycle can affect all of the following stages.</p> <p>Power of Flowers - In this unit, students discover how plants reproduce by exploring the process of pollination and fruiting. They also investigate how plant traits are inherited from parent plants, and how favorable plant traits can be enhanced by humans via artificial selection.</p>
Approximate Time Needed
7-14 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Systems and System Models● Structure & Function
Standards
<ul style="list-style-type: none">● LS1.B● LS2.C● LS3.A● LS3.B● LS4.C● LS4.D● ETS1.B
Curriculum Framing Questions
Enduring Understandings
<p><i>Students will understand...</i></p> <ul style="list-style-type: none">● what all animals share (birth, growth, reproduction, death) across their unique and diverse life cycles.

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- the cause and effect relationship between a change in the environment and the survival of organisms that live there.
- the environment as a system, made up of interdependent parts that function as a whole.
- the pattern of similarities in life cycles among organisms.
- that fruit (structure) contains seeds and helps them spread (function).
- the similarities and differences shared between offspring and their parents, or among siblings as a pattern.
- similarities and differences among the traits of different plants as a pattern.

Essential Questions

What is the connection between structure and function?

How are characteristics of one generation passed to the next?

How are the characteristics of one generation related to the previous generation?

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Unit Overview
Unit Title: Earth Space Science - Stormy Skies
Unit Summary
In this unit, students investigate and make predictions about the weather through careful observation of the clouds and wind. Students also learn to differentiate between weather and climate and use models to reveal global climate patterns.
Approximate Time Needed
5-10 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect
Standards
<ul style="list-style-type: none">● ESS2.D● ESS3.B● ETS1.A● ETS1.B● ETS1.C
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● the relationship between heated liquid water and the evaporation of gas water that forms into clouds.● that exploring patterns of changing clouds can be one way to help predict weather.● that temperature patterns of the past can help predict temperature and weather conditions that will occur in the future for particular regions.● climate across the world as an observable pattern.● the cause and effect relationship between strong winds and the problems they cause.
Essential Questions
<i>How can cause and effect relationships help predict or explain future events?</i> <i>How can patterns be used to predict results and solve problems?</i> <i>Weather and Climate What regulates weather and climate?</i> <i>How do natural hazards affect individuals and societies?</i>

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Unit Overview
Unit Title: Physical Science - Invisible Forces
Unit Summary
In this unit, students explore the forces all around them. They investigate the effects of balanced and unbalanced forces, the pushes and pulls of bridge structures, and the effects of friction on the motion of objects. Students also explore the power of magnetic forces and investigate firsthand how these forces can be used to help us in our everyday lives.
Approximate Time Needed
5-10 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Cause & Effect● Structure & Function
Standards
<ul style="list-style-type: none">● PS2.A● PS2.B● ETS1.A● ETS1.B● ETS1.C
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● the cause and effect relationship between the forces acting on an object and the direction of its motion.● the relationship between a material's surface and the amount of friction it has.● the relationship between this distance of a magnet and the strength of the force.● the relationship between which direction two magnets are facing and if they will push or pull on one another.
Essential Questions
<i>How can cause and effect relationships help predict or explain future events?</i> <i>How can one predict an object's continued motion, change in motion, or stability?</i> <i>What underlying forces explain the variety of interactions observed?</i>



SAU 39 Grade 4 Science Curriculum

Consent Agenda Item #7
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Year Long Scope and Sequence:

	Human Machine (4-8 weeks)	Birth of Rocks (5-10 weeks)	Waves of Sound (3-6 weeks)	Energizing Everything (8-16 weeks)
Week 1	Why do your biceps bulge? (4-LS1-1)	Could a volcano pop up where you live? (4-ESS1-1, 4-ESS2-2)	How far can a whisper travel? (4-PS4-1, 4-PS4-3)	How is your body similar to a car? (4-PS3-1, 4-PS3-4)
Week 2	What do people who are blind see? (4-LS1-1, 4-LS1-2, 4-PS4-2)	Why do some volcanoes explode? (4-ESS1-1)	What would happen if you screamed in outer space? (4-PS4-1)	What makes roller coasters go so fast? (4-PS3-1, 4-PS3-3)
Week 3	How can some animals see in the dark? (4-LS1-1, 4-LS1-2, 4-PS4-2)	Will a mountain last forever? (4-ESS1-1, 4-ESS2-1)	Why are some sounds high and some sounds low? (4-PS4-1)	Why is the first hill of a roller coaster always the highest? (4-PS3-3)
Week 4	How does your brain control your body? (4-LS1-1, 4-LS1-2)	What did your town look like 100 million years ago? (4-ESS1-1)		Could you knock down a building using only dominoes? (4-PS3-4, 3-5-ETS1-1)
Week 5		How could you survive a landslide? (4-ESS2-1, 4-ESS3-2)		Can you build a chain reaction machine? (4-PS3-4, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3)
Week 6				What if there were no electricity? (4-PS3-2, 4-PS3-4)
Week 7				How long did it take to travel across the country before cars and planes? (4-PS3-2, 4-PS3-4)
Week 8				Where does energy come from? (4-ESS3-1)

SAU 39 Grade 4 Science Curriculum

Unit Overview
Unit Title: Life Science - Human Machine
Unit Summary
In this unit, students investigate structures and functions of the human body. Students explore how our bones and muscles are interconnected, how our eyes interact with light and impact our vision, and how our brain responds to stimuli in our environment.
Approximate Time Needed
4-8 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Systems and System Models
Standards
<ul style="list-style-type: none">● LS1.A● LS1.D● PS4.B
Curriculum Framing Questions
Enduring Understandings
<i>Students will understand...</i> <ul style="list-style-type: none">● that human motion is made possible by a system of muscles, tendons and bones.● the cause and effect relationship between tendons and the muscles and bones that they move.● the eye is a system of different parts that interact to facilitate vision.● the eye works as a system and how changes to each part impact the system as a whole.
Essential Questions
<i>How are the parts of a system related to the entire system?</i> <i>How do the structures of organisms enable life's functions?</i> <i>How do organisms detect, process and use information about the environment?</i>

SAU 39 Grade 4 Science Curriculum

Unit Overview
Unit Title: Earth Space Science - Birth of Rocks
Unit Summary
In this unit, students investigate features and processes of the Earth's surface. Students explore the rapid process of volcanic eruptions! In contrast, students also explore the gradual Earth processes of weathering and erosion. Students apply their knowledge and design solutions to mitigate the impacts of these processes on humans.
Approximate Time Needed
5-10 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect
Standards
<ul style="list-style-type: none">● ESS1.C● ESS2.A● ESS2.B● ESS3.B
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● the pattern of the location of the world's volcanoes.● the cause and effect relationship of the type of lava (cause) and the nature of the eruption (effect) as well as the shape of the volcano (effect).● the causes of landslides.● the cause and effect of ice and root wedging on rock as it is broken down into small pieces.
Essential Questions
<i>What is the relationship between patterns and natural phenomena?</i> <i>How can cause and effect relationships help predict or explain future events?</i> <i>Why do the continents move, and what causes earthquakes and volcanoes?</i> <i>How do natural hazards affect individuals and societies?</i>

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Unit Overview
Unit Title: Physical Science - Waves of Sound and Energizing Everything
Unit Summary
<p>Waves of Sound - In this unit, students investigate the science of sound. Students construct physical devices to feel the vibrations that allow us to communicate across distances. Students also use digital devices to visualize the characteristics of different sound waves that cause us to hear different things.</p> <p>Energizing Everything - In this unit, students explore energy. Students investigate how energy is stored, how it can make objects move, and how collisions transfer energy between objects. Students also construct devices that convert energy from one form into another, such as heat into motion and electricity into light.</p>
Approximate Time Needed
11- 22 Weeks
Unit Foundation
Competencies
<ul style="list-style-type: none">● Patterns● Cause & Effect● Systems and System Models● Energy & Matter
Standards
<ul style="list-style-type: none">● PS3.A● PS3.B● PS3.C● PS3.D● PS4.A● ESS3.A● ETS1.A
Curriculum Framing Questions
Enduring Understandings
Students will understand... <ul style="list-style-type: none">● how different materials affect the quality of the sound that is transmitted.● the effect of vibrations on the movement of distant objects.● patterns made by sounds with low and high pitches.● how energy is stored, released, and transferred in a system.

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- that electricity is a form of energy that can be stored (such as in batteries) and transferred via wires, where it is used to produce not only movement, but also light, heat, and more.
- heat is a form of energy that can be transferred to create movement.
- that natural resources such as coal, the sun, wind, and wood can be used for energy. Using these resources (cause) can damage the environment (effect).

Essential Questions

How are waves used to transfer energy and information?

What are the characteristic properties and behaviors of waves?

What is energy?

What is meant by conservation of energy?

How is energy transferred between objects or systems?

How are forces related to energy?

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Consent Agenda Item #8

Year Long Scope and Sequence:

	Space Systems	Structure and Properties of Matter	Earth Systems and Ecosystems
Month	Sept - Nov	Dec - Feb	March - June
Weeks	11 weeks	10 weeks	12 weeks

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Unit Overview
Unit Title: Space Systems (Patterns of the Sun, Moon, and Stars)
Unit Summary
Students explore shadows throughout the day to understand the patterns created by the sun at different times and in different seasons. Students compare the brightness of stars and constellations during different seasons. To understand the concept of gravity, students learn how the rates at which objects fall differ based on the atmosphere.
Approximate Time Needed
September through November
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Patterns of Scale, Structure, and Function● Causal Relationships (Cause and Effect)
Assessed Standards
<ul style="list-style-type: none">● Celestial Motion:<ul style="list-style-type: none">○ ESS1-2: Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.● Celestial Objects<ul style="list-style-type: none">○ ESS1-1: Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.● Gravity:<ul style="list-style-type: none">○ PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">● The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)● The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)● The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the

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planet's center. (5- PS2-1)

Essential Questions

What causes shadows to change in size and position over the course of the day and year?
What patterns are formed through the interaction of the sun, moon, and earth?
How does gravity affect objects on Earth?

Cross-Cutting Concept Questions or Content Level Questions

How does the Earth's Rotation and revolution affect the observable patterns of the sun?

- What is Earth's Rotation?
- What is Earth's revolution?
- What is a shadow?
- How do you know a pattern when you see one? (Repeating Vs. Growing)
 - What are the defining characteristics?

What happens when objects are dropped on Earth and why?

How does a star's characteristics affect its brightness?

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Unit Overview
Unit Title: Structure and Properties of Matter
Unit Summary
Through investigations, students begin to build conceptual models for the particulate nature of matter. Students learn that matter is made of particles too small to be seen. Students learn how properties can be used to identify matter. Students learn that matter cannot be created or destroyed. Further, students explore whether the mixing of two or more substances result in new substances. Students will conduct experiments to model that the mass of the substances remains constant.
Approximate Time Needed
<i>December through February</i>
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Patterns of Scale, Structure, and Function● Causal Relationships (Cause and Effect)
Assessed Standards
<ul style="list-style-type: none">● <u>Physical/Chemical Changes</u><ul style="list-style-type: none">○ PS1-4: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.● <u>Matter</u><ul style="list-style-type: none">○ PS1-1 Develop a model to describe that matter is made of particles too small to be seen.● <u>Law of Conservation of Mass</u><ul style="list-style-type: none">○ PS1-2: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.● <u>Properties of Matter</u><ul style="list-style-type: none">○ PS1-3: Make observations and measurements to identify materials based on their properties.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">● When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space

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can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)

- Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)
- No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)

Essential Questions

What is matter made of?

How can matter be tested and sorted based on its properties?

How can matter be altered without being created or destroyed?

Cross-Cutting Concept Questions or Content Level Questions

- What microscopic structures are present in macroscopic matter?
- How do properties help identify matter?
- What evidence is there that matter is conserved?
- What observable evidence supports the claim that the mixing of 2 or more substances caused a new substance to form?
- How can we test whether matter is changing, even though it looks like it's not?

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Unit Overview
Unit Title: Earth's Systems
Unit Summary
Students explore and develop a model to describe the interactions among Earth's spheres. During the study of the hydrosphere, students will learn about the uneven distribution of water on Earth. Students also identify and communicate ways that communities can protect Earth's resources and environment.
Approximate Time Needed
March - June (Ecosystems unit will be a subunit of this unit and will take approximately 6 weeks.)
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">• Energy, Matter, and Systems
Assessed Standards
<ul style="list-style-type: none">• <u>Earth Systems</u><ul style="list-style-type: none">○ ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.○ ESS2-2: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.• <u>Earth & Human Interactions</u><ul style="list-style-type: none">○ ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">• Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)• Nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)• Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are

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doing things to help protect Earth's resources and environments. (5-ESS3-1)
Essential Questions
What are the Earth systems and how do they interact? How is water distributed on Earth? How do humans impact Earth systems?
Cross-Cutting Concept Questions or Content Level Questions
How do the spheres of Earth's system interact? What is the proportion of freshwater to saltwater? How can humans use science to protect Earth's resources and environment?

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Unit Overview
Unit Title: Energy in Organisms and Ecosystems (subunit in Earth's System)
Unit Summary
Students explore how organisms depend on one another and form an interconnected ecosystem. Students investigate food chains, food webs, and the importance of producers, consumers, and decomposers.
Approximate Time Needed
<i>Ecosystems is a subunit of the Earth's Systems unit and will take approximately 6 weeks.</i>
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Energy, Matter, and Systems
Assessed Standards
<ul style="list-style-type: none">● <u>Resources for Plants</u><ul style="list-style-type: none">○ LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.● <u>Resources for Animals</u><ul style="list-style-type: none">○ PS3-1: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.● <u>Food Webs</u><ul style="list-style-type: none">○ LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">● The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)● The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

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- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gasses, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)
- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)
- Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

Essential Questions

Where does energy in a food web originate and how does it flow through an ecosystem?

Cross-Cutting Concept Questions or Content Level Questions

How do plants get their energy?

How are matter and energy transferred in an ecosystem?

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Consent Agenda item # 9

Year Long Scope and Sequence:

	History of Earth	Structure and Properties of Matter	Chemical Reactions	Ecosystems
Month	Sept - Nov	Nov - Jan	Jan - March	April - June
Quarter	Quarter 1	Quarter 2	Quarter 3	Quarter 4

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Unit Overview
Unit Title: History of Earth
Unit Summary
Students will learn that Earth’s geoscience processes are the result of energy flowing and matter cycling within and among the planet’s systems. The energy is derived from the sun and Earth’s hot interior. The energy that flows and matter that cycles produce chemical and physical changes in the Earth’s material and living organisms. Tectonic processes continually reshape our planet. Plate Tectonics are key to the rock cycle, forming igneous rocks and recycling sedimentary and metamorphic rocks. Students will analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
Approximate Time Needed
First unit (quarter 1) September to beginning of November
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Patterns of Scale, Structure, and Function● Energy, Matter, and Systems
Assessed Standards
<ul style="list-style-type: none">● <u>Earth Changes</u><ul style="list-style-type: none">○ MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.● <u>Plate Tectonics</u><ul style="list-style-type: none">○ MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.● <u>Rock Cycle</u><ul style="list-style-type: none">○ MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">● Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth’s plates have moved great distances, collided, and spread apart. (MS-ESS2-3)● Tectonic processes continually generate new ocean sea floor at ridges and destroy old seafloor

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at trenches. (HS.ESS1.C GBE),(secondary to MS-ESS2-3)

- Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)
- The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)
- All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1)

Essential Questions

How do Earth's geologic systems change its surface and structure over time?

Cross-Cutting Concept Questions or Content Level Questions

- How does energy flow into and/or out of the system?
- What scale of a model would allow you to gain insights into Earth's changes?
- How is Earth changing over time? What do you predict will happen to Earth in the future?
- How can earthquakes and volcanoes help us to understand and predict the movement of tectonic plates?

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Unit Overview
Unit Title: Structure and Properties of Matter
Unit Summary
Students will learn how atoms organize to create larger structures (for example, model different types of atoms, elements, molecules, and compounds to determine similarities and differences between their structures). Students will also understand that each pure substance has characteristic physical and chemical properties. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and the new substances have different properties from those of the reactants. The total number of each type of atom is conserved, and thus mass does not change. The three methods of heat transfer, convection, conduction, & radiation, will be explored. Finally, students will develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
Approximate Time Needed
Second unit (quarter 2) Mid-November to January
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Causal Relationships (Cause and Effect)● Patterns of Scale, Structure, and Function
Assessed Standards
<ul style="list-style-type: none">● <u>Thermal Energy</u><ul style="list-style-type: none">○ MS-PS1-4: Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.● <u>Atomic Structure</u><ul style="list-style-type: none">○ MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.
Curriculum Framing Questions
Enduring Understandings
<ul style="list-style-type: none">● Gasses and liquids are made of molecules or inert atoms that are moving about relative to each other. (MS-PS1-4)● In a liquid, the molecules are constantly in contact with others; in a gas, they are widely spaced except when they happen to collide. In a solid, atoms are closely spaced and may vibrate in position but do not change relative locations. (MS-PS1-4)

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- The changes of state that occur with variations in temperature or pressure can be described and predicted using these models of matter. (MS-PS1-4)
- The term “heat” as used in everyday language refers both to thermal energy (the motion of atoms or molecules within a substance) and the transfer of that thermal energy from one object to another. In science, heat is used only for this second meaning; it refers to the energy transferred due to the temperature difference between two objects. (secondary to MS-PS1-4)
- The temperature of a system is proportional to the average internal kinetic energy and potential energy per atom or molecule (whichever is the appropriate building block for the system’s material). The details of that relationship depend on the type of atom or molecule and the interactions among the atoms in the material. Temperature is not a direct measure of a system’s total thermal energy. The total thermal energy (sometimes called the total internal energy) of a system depends jointly on the temperature, the total number of atoms in the system, and the state of the material. (secondary to MS-PS1-4)
- Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms. (MS-PS1-1)
- Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals). (MS-PS1-1)

Essential Questions

How does matter form and change?

Cross-Cutting Concept Questions or Content Level Questions

- How do the patterns in the periodic table help us to make predictions about the elements?
- Describe the physical and chemical properties used to classify matter?
- How is heat transferred within a system?
- When thermal energy is added or removed, what happens within the system?

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Unit Overview
Unit Title: Chemical Reactions
Unit Summary
<p>Students will understand the foundations of substances that allow for chemical reactions to occur. Through hands-on experimentation, students will be able to identify when and if a chemical reaction has occurred based on the properties of the substances before and after interaction. Related to this, students will also conduct experiments and model how the matter and mass of the substances involved in reactions stays the same (law of conservation of mass).</p> <p>Further, students will begin exploring heat and energy transfer within the frame of chemical reactions. That is, students will design devices that release or absorb thermal energy during a chemical reaction as endo- or exothermic reactions.</p> <p>Lastly, the unit will conclude with an investigation into the ways energy is transferred through matter, and using their understanding of this transfer, be able to design and test a project that minimizes or maximizes thermal energy transfer.</p>
Approximate Time Needed
Third unit (quarter 3) Mid-January to end of March
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Patterns of Scale, Structure, and Function● Energy, Matter, and Systems
Assessed Standards
<ul style="list-style-type: none">● <u>Chemical Reactions</u><ul style="list-style-type: none">○ MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.● <u>Conservation of Mass</u><ul style="list-style-type: none">○ MS-PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.● <u>Endo & Exothermic Reactions</u><ul style="list-style-type: none">○ MSPS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.● <u>Energy Transfer</u><ul style="list-style-type: none">○ MS-PS3-4: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.○ MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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Curriculum Framing Questions

Enduring Understandings

- Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. (MS-PS1-2) (Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)
- Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-2),(MS-PS1-5) (Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)
- The total number of each type of atom is conserved, and thus the mass does not change. (MS-PS1-5)
- Some chemical reactions release energy, others store energy. (MS-PS1-6)
- The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment. (MS-PS3-4)
- Energy is spontaneously transferred out of hotter regions or objects and into colder ones. (MS-PS3-3)

Essential Questions

How do the structure and properties of matter determine how it interacts with other types of matter?

Cross-Cutting Concept Questions or Content Level Questions

- What evidence is there that a chemical reaction has occurred?
- How does energy flow into/out of the system?
- Identify the properties of the reactants that constrain the behavior of the reaction.
- Is something happening in the system? If so, what?

SAU 39 Grade 6 Science Curriculum

Unit Overview
Unit Title: Ecosystems
Unit Summary
<p>Students will learn about the interactions among and between organisms as an integral part of this unit on ecology. Students examine relationships and the effects of these relationships on the ecosystem in which the organisms live, leading to an exploration of the cycling of matter in an ecosystem and the populations of organisms within the ecosystem.</p> <p>Students also identify and develop models to explain how energy moves through organisms via cellular respiration and photosynthesis. The work of this unit culminates with the bio-alert project in which students design an imaginary organism and models the relationships that this organism would have in its environment.</p>
Approximate Time Needed
Fourth unit (quarter 4) April to June
Unit Foundation
Assessed Competencies
<ul style="list-style-type: none">● Cause & Effect● Energy & Matter● Structure & Function
Assessed Standards
<ul style="list-style-type: none">● <u>Ecosystem Populations</u><ul style="list-style-type: none">○ MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.○ MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.● <u>Food Webs</u><ul style="list-style-type: none">○ MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.● <u>Biodiversity</u><ul style="list-style-type: none">○ MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.● <u>Organism Interactions</u><ul style="list-style-type: none">○ MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.● <u>Organism Needs</u><ul style="list-style-type: none">○ MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

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- MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Curriculum Framing Questions

Enduring Understandings

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.
- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.
- Growth of organisms and population increases are limited by access to resources.
- Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared.
- Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem.
- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations.
- Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health.

Essential Questions

How does matter and energy move through the ecosystem?

Cross-Cutting Concept Questions or Content Level Questions

- How does matter cycle and energy flow within the system?
 - What would happen in a habitat or ecosystem if you increased or decreased resources?
 - How and why do ecosystems change over time?
 - How does resource availability affect populations?
- How could we test whether photosynthesis is occurring even though it looks like it's not?

PROPOSED AMHERST SCHOOL DISTRICT TAX CAP WARRANT ARTICLE PETITION

Shall we adopt the provisions of RSA 32:5-b, and implement a tax cap whereby the governing body (or budget committee) shall not submit a recommended budget that increases the amount to be raised by local taxes, based on the prior fiscal year's actual amount of local taxes raised, by more than the lesser of (a) 2% (two percent); or (b) the annual percentage increase in the U.S. Consumer Price Index- All Urban Consumers for the Northeast, published by the U.S. Bureau of Labor Statistics, as of the month of December of the immediately-preceding year? (3/5 Majority Vote Required).

RECEIVED
12/22/22

Name (please print)	Signature	Address
Brenda Alexander	<i>Brenda Alexander</i>	15 Martingale Rd.
TERRANCE REIBER	<i>Terrance Reiber</i>	15 Martingale Rd.
Guybaine R Araujo	<i>Guybaine R Araujo</i>	4 BRIMSTONE HILL Rd
Joseph A Sylvestre	<i>Joseph A Sylvestre</i>	3 Hickory Dr Amherst
Joseph Duboc	<i>Joseph Duboc</i>	6 Hickory dr Amherst
Richard Cross	<i>Richard Cross</i>	122 Amherst St. Amherst, NH
JOHN GUBOWSKI	<i>John Gubowski</i>	60 Lynceonough rd AMHERST NH 03031
Cheryl Patten	<i>Cheryl Patten</i>	8 Hickory dr Amherst NH 03031
Robert Patten	<i>Robert Patten</i>	8 Hickory dr Amherst NH 03031
Frances Martino	<i>Frances Martino</i>	5 Douglas dr Amherst NH 03031


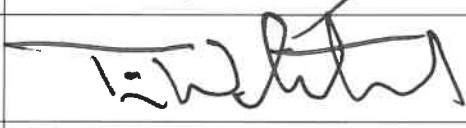
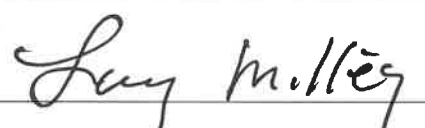



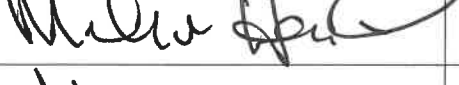

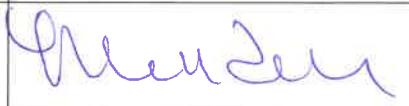

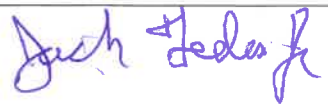
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Name (please print)	Signature	Address
Lynn Fedas	<i>Lynn Fedas</i>	1 Douglas
Lynn Briggs	<i>Lynn Briggs</i>	4 Golden Pond
EC Ruffell	<i>EC Ruffell</i>	4 Golden Pond
T J Kachmar	<i>T J Kachmar</i>	15 MACK HILL RD
Lee Kachmar	<i>Lee Kachmar</i>	15 Mack Hill Rd
Carolyn McKinney	<i>Carolyn McKinney</i>	4 Northfield Rd.
CHARLIE MCKINNEY	<i>Charlie McKinney</i>	4 NORTHFIELD RD.
BENJAMIN CURTIS	<i>Benjamin Curtis</i>	5 WINDSOR DR
Jason Lozzi	<i>Jason Lozzi</i>	57 Seaverns Bridge Rd Amherst NH
James O'Mara	<i>James O'Mara</i>	12 Tamarack Ln Amherst, NH
David Pronier	<i>David Pronier</i>	31 STORY BROOK LN
Judith PiekarSKI	<i>Judith PiekarSKI</i>	31 Story Brook Ln


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Name (please print)	Signature	Address
Molly Archambault		18 Merrimack rd Amherst, 03031
Tom Whitcomb		18 Cricket Court Rd
Lucy Milley		29 Story Brook Ln
Vince Milley		29 Story Brook Lane
Sonny Berry		9 Blueberry Hill Rd
Laurene Berry		9 Blueberry Hill Rd
Michael Hayden		1 Jasper Lane
ALISON HAYDEN		1 Jasper Lane
Michelle Renaud		3 Northfield Rd
Jason Renaud		3 Northfield Rd
Jack Fedas JR		1 Douglas Dr



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Name (please print)	Signature	Address
Tom & Hendrix		44 Christeen Hill Rd
CYNOL CAROL	Cynthia Carol	44 Christian Hill Rd Amherst NH 03031
Colleen Tapley		1 Beechtree Way
Margan Doty		5 Beechtree Way
Nate Doty		5 Beechtree Way
Kyle D Morse		79 County Rd
Ryan D. Morse		79 County R.D
Carole Fedas	Carole Fedas	11 Veterans Rd ^{Sept 11/9}
JUDIA ABBOT		452 BOSTON POST RD AMHERST
Kevin Abbot		452 Boston Post Rd Amherst NH

PROPOSED AMHERST SCHOOL DISTRICT TAX CAP WARRANT ARTICLE PETITION

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Name (please print)	Signature	Address
WALTER A. ROSKOSKI		5 GENERAL AMHERST AMHERST, NH 03031
PENNY ROSKOSKI		5 GENERAL AMHERST RD AMHERST, NH 03031