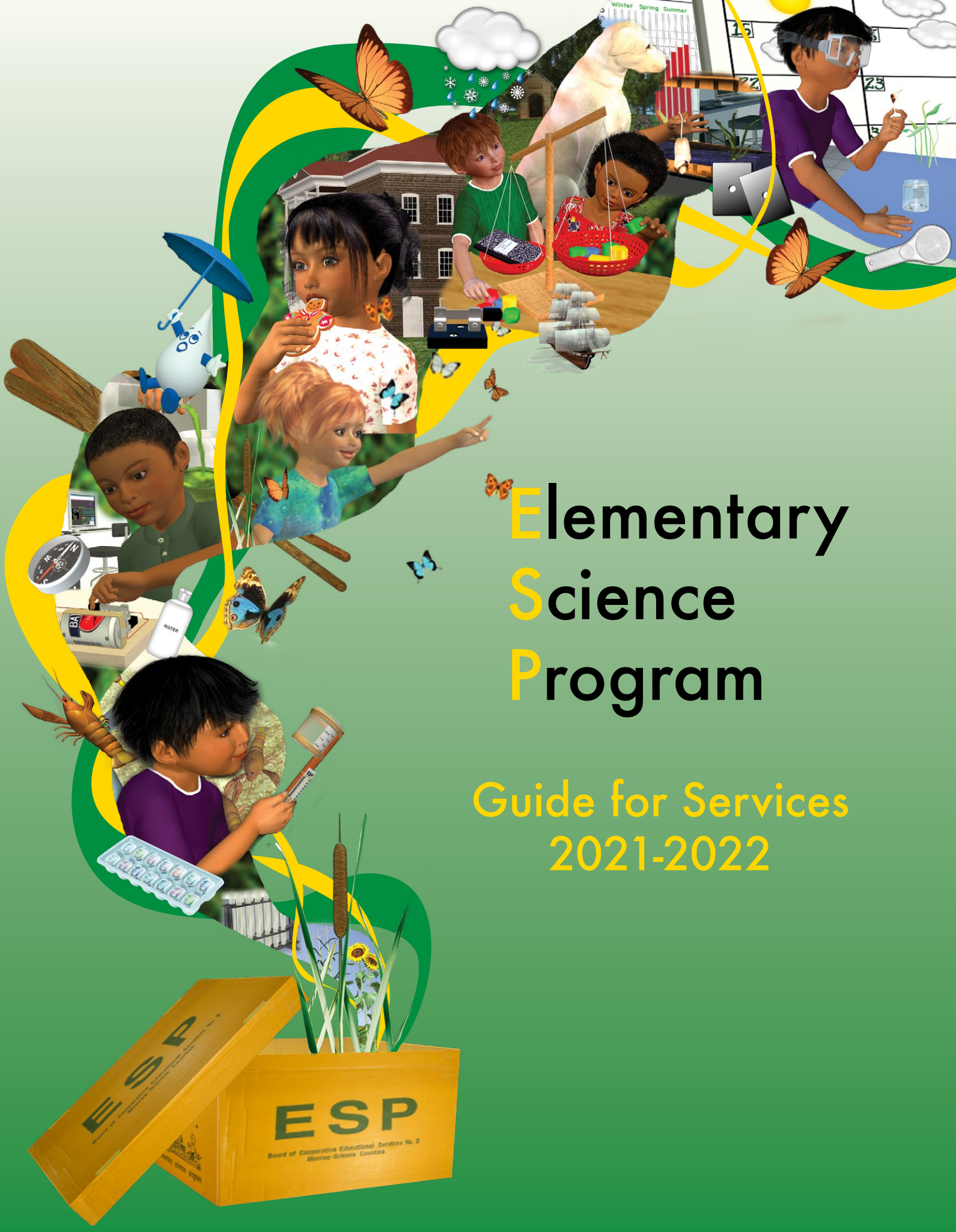

Elementary Science Program

Guide for Services 2021-2022

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Overview

What is ESP?

The Elementary Science Program (ESP) of the Monroe 2–Orleans BOCES provides a hands-on, interdisciplinary curriculum that engages students in "doing" science. It is a balanced content and process focused curriculum committed to providing students with concrete experiences that promote depth of understanding and science literacy.

Using the Elementary Science Program units, students learn to think, talk, and act scientifically. The inquiry process and problem solving is emphasized throughout the curriculum. Students are consistently building on their current knowledge, asking questions, conducting investigations, and asking more questions – like true scientists! The meaningful, hands-on activities with student processing of ideas in the ESP science units allow all students to use their hard-wired and learned processes to build meaning.

The ESP curriculum emphasizes the following inquiry, process and STEM skills:

- Classifying
- Communicating
- Comparing and contrasting
- Creating models
- Gathering and organizing data
- Generalizing
- Identifying variables
- Inferring
- Interpreting data
- Making decisions
- Manipulating materials
- Measuring
- Observing
- Predicting

New York State Science Learning Standards Correlation

The goal of ESP has always been to support students' understanding of science as determined through state standards established by the New York State Department of Education. Recently, New York has transitioned to a new set of science standards.

In 2016, the Board of Regents adopted the New York State Science Learning Standards (NYSSLS). The following pages provide more detailed information about the NYSSLS.

We have been working for several years to develop new science units of instruction written directly from the NYSSLS – these have become the BOCES 4 Science units. We encourage you to consider transitioning from ESP units of instruction to BOCES 4 Science (B4S) units of instruction. B4S units are fully aligned with the NYSSLS and provide a comprehensive curriculum for students in grades K-5.

Again, the following pages provide more detailed information about this transition – including a crosswalk from ESP units to BOCES 4 Science units. Please see http://www.boces4science.org or contact Steven Montemarano, Director of BOCES 4 Science, at smontema@monroe2boces.org for more information.

Overview

ESP vs. BOCES 4 Science Units

ESP and BOCES 4 Science units come from the same place. BOCES 4 Science units have been developed by four New York State BOCES and their component districts. These BOCES are Wayne Finger Lakes, Genesee Valley, Monroe One, and Monroe 2. The Elementary Science Program (ESP) was founded more than 60 years ago by Monroe 2 BOCES. When New York State adopted new science standards in 2016 – the ESP units no longer correlated. BOCES 4 Science was born.

The New York State Science Learning Standards (NYSSLS) are grade specific; therefore, there is specific science instruction that happens at each grade level. The learning is then "built on" from one grade level to the next. The NYSSLS are a series of performance expectations that outline what students should understand and be able to do because of their study of science. These standards include three dimensions (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) that are interwoven within a lesson to provide students with a high quality science education. The BOCES 4 Science units embed these three dimensions within each lesson of each unit.

The NYSSLS standards also incorporate a **Life Science**, **Physical Science**, and **Earth and Space Science** topic at each grade level. At each grade level, BOCES 4 Science has written units directly from the standards in each topic of study.

Significant connections are made within our units to the English Language Arts, Math, and Social Studies standards. Students are reading and writing about each topic of study. They are writing Claim, Evidence, Reasoning statements for investigations. The use of measuring tools in activities and investigations is prominent within our variety of units. Connections with geography and mapping is woven into several units, as well.

Engineering plays an essential role in science education. Therefore, Engineering Design is embedded within the NYSSLS Standards. Students are expected to define problems, meet specific criteria and constraints for acceptable solutions, build and test prototypes, and redesign to optimize a solution. At each grade level, there is at least one BOCES 4 Science unit in which students are solving a problem using the Engineering Design Process.

Each of the BOCES 4 Science units is focused around an anchoring phenomenon. This phenomenon "anchors" all the learning within the unit. Students are making sense of the phenomenon as they participate in the lessons within a unit. Students ask questions about the phenomenon, and those questions drive the learning within the unit. There is also an investigative phenomenon that begins each lesson within a unit. The lesson level phenomenon focuses on topics that will help students build an understanding about the anchoring phenomenon.

Currently, New York State is in the implementation phase of the NYSSLS standards. Therefore, we highly encourage districts to use the BOCES 4 Science units in their classrooms. However, we understand that change happens slowly. Therefore, teachers in districts may decide to start slowly and teach one or two BOCES 4 Science units in addition to an ESP unit that they are familiar with and have taught before. The following chart may be helpful in seeing where each BOCES 4 Science unit and ESP unit fit within the NYSSLS standards.

KINDERGARTEN

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
The **Classroom Plants** unit can be used as a year-long basis for science, mathematics and language arts skill development. Students plant, grow and care for common plants.	The **Life Science** focus of the NYSSLS standards in Kindergarten is the basis of the B4S unit, **Worm Scouts**. These standards address both plant and animal needs for survival. Link to website
In the **Senses** unit, students investigate and learn about the five senses.	In the NYSSLS standard, how plants and animals use their external parts for survival is a Pre-Kindergarten standard. Instead, the NYSSLS has students use their senses to make observations about the Earth in the **Weather for Kindergarten** unit. This unit addresses the **Earth and Space Science** standards for Kindergarten. Link to website
The **Sunshine, Shadows, and Silhouettes** unit has students investigating objects as they interact with light.	The NYSSLS Standards for Grade 1 has students exploring with light and shadows (**Sending Messages with Light and Sound).** The **Physical Science** unit for Kindergarten is **Pushes and Pulls**. Link to website

Overview

GRADE 1

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
In the **Earthworms** unit, students learn about the characteristics and needs of animals, especially the earthworm. Emphasis is placed on the earthworm's structure, function, and role as a decomposer.	Kindergarteners investigate with earthworms in B4S **Worm Scouts** unit (Link to website) and have the first graders study the unit, **A Bunny's Life**. This unit meets the **Life Science** focus of the NYSSLS standards in Grade 1. Link to website
The unit **From Seed to Plant** asks students to classify seeds by properties, plant seeds, and learn about plant needs and structure by caring for plants and recording their growth.	The plant life cycle has moved to Grade 3 in the NYSSLS standards (**Generations of Butterflies** unit - Link to website). Instead, students in first grade can look to the sky as they study the **Earth and Space Science** focus of the NYSSLS standards in the **Sky Patterns** unit. Link to website
The **Properties** unit develops fundamental science skills along with awareness that everything has properties that can be used for classification. Students observe and describe objects by their color, shape, texture, size, weight, and whether they sink or float. Different states of matter are also observed.	Properties of materials has moved to Grade 2 in the NYSSLS standards (**Made of Matter** unit- Link to website). The B4S **Physical Science** unit for Grade 1 focuses on light and sound waves in the unit **Sending Messages with Light and Sound**. Link to website

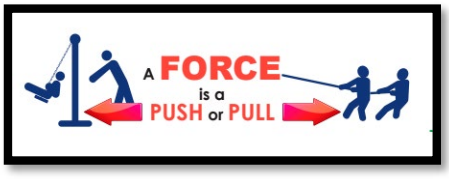
GRADE 2

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
In the **Eggs to Toads** unit, students raise toads from eggs, provide care for tadpoles and observe and record their growth. Emphasis is placed on physical and behavioral adaptations which enable amphibians to change environments as they mature. ***<no longer being offered>***	The **Save the Bees** unit addresses the **Life Science** standards for Grade 2 in the NYSSLS. Interdependent Relationships in Ecosystems is the topic addressed. Parts of the ESP Grade 3 Pollination unit are used in this unit. Link to website The life cycle of plants and animals and adaptations of plants and animals are addressed in Grade 3 units based on the NYSSLS (**Generations of Butterflies** - Link to website **and Where are the Wolves** - Link to website).
Interactions is a unit in which students observe the chemical and physical interaction of objects. The focus is on the interaction of energy and matter.	The **Made of Matter** unit is the **Physical Science** unit for Grade 2 in the NYSSLS. Students explore concepts about matter, properties of matter, and how matter is used. Link to website
In the **Measuring** unit, students use nonstandard and standard units of measurement to compare objects. The properties of length, temperature, volume and mass are investigated.	Measuring is embedded into many of the BOCES 4 Science units in Grades K-5. Students use measuring tools to measure length, temperature, volume, and mass in various investigations they conduct. The unit titled **Earth's Features** addresses the **Earth and Space Science** standards in NYSSLS for Grade 2. Geography and maps are integrated into this unit. Link to website

Overview

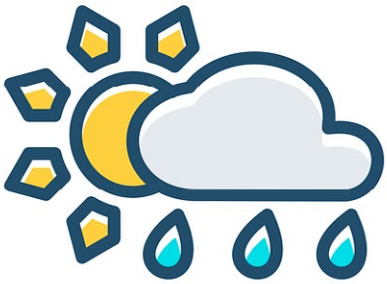
GRADE 3

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
In the **Butterflies** unit, students observe the biological process of metamorphosis and learn to care for and feed butterflies.	In the third grade NYSSLS **Life Science** standards, the focus is on life cycles and traits of both plants and animals. The **Generations of Butterflies** unit focuses on these standards. Link to website
In the **Pollination** unit, students grow Wisconsin Fast Plants® that go through a complete life cycle in a little over forty days. Students use dried honeybees to pollinate flowers to produce fruit.	Several different lessons from the Pollination unit are now being used in the **Save the Bees** (Link to website) unit for Grade 2 as students learn about how plants need animals for survival. The second **Life Science** unit in Grade 3 is the **Where are the Wolves?** unit. This unit also addresses the NYSSLS topic of Interdependent Relationships in Ecosystems. Link to website
In the **Sky Calendar** unit, students observe the sky and use models to understand the astronomy behind a month, a year, and the seasons.	The focus of the Sky Calendar unit is now split between the Grade 1 **Sky Patterns** unit (Link to website) and the Grade 5 **Earth and Space Explorers** (Link to website) due to the NYSSLS standards. Instead, the **Earth and Space Science** Standards for grade 3 are addressed in the **Investigating Weather and Climate** unit. Link to website
The **Systems and Simple Machines** unit focuses on how simple and compound machines are examples of systems. The relationship between forces and work is explored.	The **Invisible Forces** unit addresses the **Physical Science** topic in the NYSSLS for Grade 3. The forces addressed are balanced/unbalanced forces, gravity, friction, static electricity, and magnetism. Link to website



GRADE 3, cont.

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
Students investigate the concepts of volume and density and explore other properties that affect whether a material will sink or float in the **Buoyancy** unit.	The topic of buoyancy is not addressed in the NYSSLS for Grades K-5. However, properties of materials is addressed in several K-5 units. This includes Grade 2 **Made of Matter** (Link to website) and Grade 5 **Toys Matter** (Link to website).
The **Structures** unit challenges students to design and construct structures that meet certain specifications, such as height, strength and limited use of material.	Engineering Design is woven within the NYSSLS standards (K-5). At the Grade 3 level, students use the Engineering Design Process to design a Rube Goldberg machine in the **Invisible Forces** (Link to website) unit and **Investigating Weather and Climate** (Link to website).



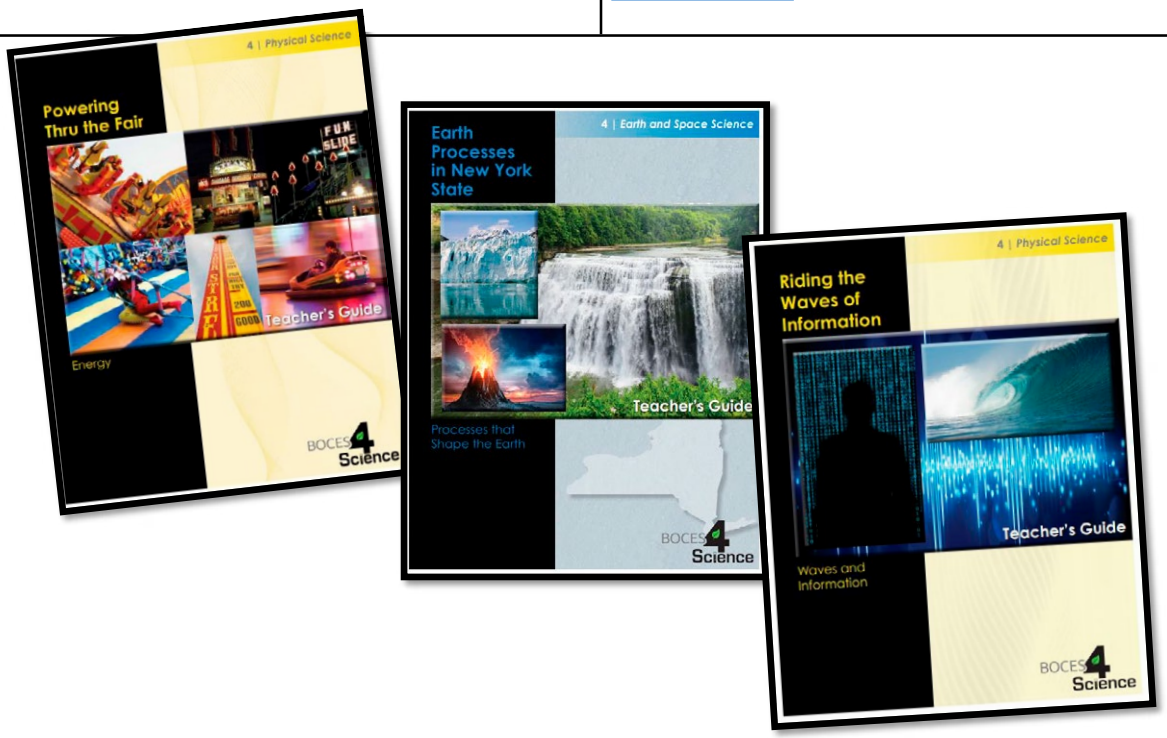
Overview

GRADE 4

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
The **Birds and their Adaptations** unit focuses on observing birds in the wild to learn about their physical and behavioral adaptations.	The **Life Science** unit for grade 4 is **A Walk in the Park**. This unit meets the NYSSLS standards that address the topic of Structure, Function, and Information Processing. The focus in the standards is on how animals use internal and external structures for survival, growth, and reproduction – instead of adaptations. Link to website
In the **Mystery Matter** unit, students explore matter and its properties. The properties of an unknown material are collected and used to help identify it.	A second **Physical Science** unit for Grade 4 is **Riding the Waves of Information** (Link to website). Students are learning about waves and the properties of amplitude, wavelength, and energy. This unit builds on the Grade 1 unit **Sending Messages with Light and Sound** (Link to website).
The **Electrical Circuits** unit gives students the opportunity to construct and test simple circuits. Investigations include series and parallel circuits, conductors, resistance and how to make a fuse. Energy transformations and properties of matter are a focus.	The **Powering Thru the Fair** unit addresses the **Physical Science** standards on energy for Grade 4 in the NYSSLS. In this unit, students will be learning about different types of energy (sound, light, heat, electrical) and energy conversions. Link to website In addition, static electricity is addressed in the Grade 3 unit, **Invisible Forces**, based on the NYSSLS standards. Link to website
There is no Earth and Space Science unit at Grade 4.	The unit, **Earth Processes in New York State**, addresses the **Earth and Space Science** standards for Grade 4 in the NYSSLS. The main ideas of this unit include rock formations and fossils, effects of weathering and erosion, and patterns of Earth features. Link to website

GRADE 4, cont.

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
Students explore the properties of magnets and magnetic materials in the **Magnets** unit. Students devise their own procedures for making magnets and testing the strength of magnets.	Magnetism is addressed in the Grade 3 unit **Invisible Forces** based on the NYSSLS. Students explore a magnet's properties and its magnetic field. Link to website
In the **Crayfish** unit, students practice humane treatment of animals while they learn about the structure and behavior of crayfish. This unit also includes the exploration of acquired and inherited traits.	Many of the topics addressed in the Crayfish unit are part of the Grade 3 standards in the NYSSLS. See the Grade 3 description of the **Generations of Butterflies** unit. Link to website
The **Design Technology – Wheels** unit asks students to research, plan, construct, test and evaluate models of their own design. Models will be built to scale from drawings made on centimeter grid sheets.	Engineering Design is woven within the K-5 NYSSLS standards. At the Grade 4 level, students use the Engineering Design Process in the **Powering Thru the Fair** unit and the **Earth Processes in New York State** unit. Link to website



Overview

GRADE 5

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
In the **Astronomy** unit, students observe the sky with telescopes and use models to understand basic astronomy concepts and to develop observation skills.	The **Earth and Space Explorers** (Link to website) unit addresses both **Physical Science** and **Earth and Space Science** standards in the NYSSLS for grade 5. This unit builds on the learning in the Grade 1 **Sky Patterns** unit (Link to website).
The **Rocks and Minerals** unit asks students to investigate the properties of rocks and minerals.	The unit, **Got Water?**, for Grade 5 has students investigating the Earth's systems. This unit also meets the **Earth and Space Science** standards for Grade 5 in the NYSSLS. Link to website
In the **Ecosystems and Habitats** unit, the concepts of community and populations are emphasized through exploration of energy flow, photosynthesis and decomposition.	The **Deer, Deer Everywhere** unit is the **Life Science** unit for Grade 5 in the NYSSLS. In this unit, matter and energy of organisms and ecosystems are explored through the lens of deer overpopulation. Link to website
The **Renewable Energy** unit studies different forms of energy and experiment with transforming one type of energy into another. Special emphasis is placed on how electrical energy can be generated by renewable sources such as wind and sun.	Energy transformations is addressed in the Grade 4 unit, **Powering Thru the Fair** based on the Grade 4 standards in the NYSSLS. Link to website The **Toys Matter** unit is the **Physical Science** unit for Grade 5 based on the NYSSLS. In this unit, Structure and Properties of Matter is the focus. Students look at the properties of materials, including the states of matter. Link to website

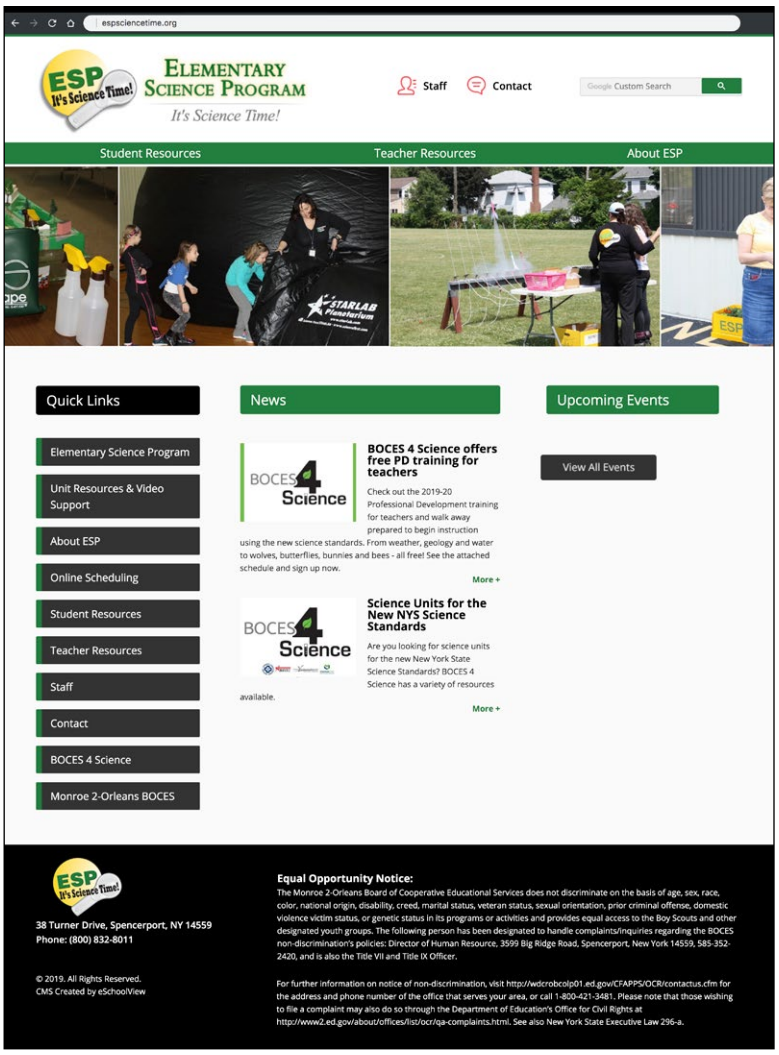
GRADE 5, cont.

ESP	BOCES 4 Science (For more information on each BOCES 4 Science unit, click on the link provided.)
In the **Electromagnetism** unit, students use magnets and electromagnets to investigate the relationship between electricity and magnetism. Students will construct various devices using electromagnets including a buzzer and a large motor.	The unit, **Waves and Electromagnetic Radiation**, is a Middle School unit based on the **Physical Science** standards in the NYSSLS. In this unit, students create and revise their own models of the behavior of light. Students learn about frequency, wavelength, and the energy of a wave. Ways of encoding and transmitting information is also explored. Link to website
In the **Plant Responses** unit, students study responses of seeds and seedlings to varying environmental factors such as water, light, gravity and nutrients.	The **Life Science** unit in Grade 5 is **Deer, Deer Everywhere**. Link to website Plants are studied in various units within our Grade K-4 curriculum. These units include the **A Bunny's Life** (Grade 1 - Link to website), **Save the Bees** (Grade 2 - Link to website), **Generations of Butterflies** (Grade 3 - Link to website), and **A Walk in the Park** (Grade 4 - Link to website).

Overview

Teacher Support

In addition to providing the resources for the classroom, the professional development and on-going support provided by ESP is a vital part of the program. Support for teachers is also provided through our website (www.espsciencetime.org) and over the phone. Our staff will also accommodate your school's professional development needs in the area of science instruction.



The Elementary Science Program is committed to help teachers and students engage in science instruction. The curriculum and materials provided through our program allow students to perform activities and pursue ideas and investigations on their own initiative while the teacher provides individual attention and direction.

Units of study are designed by administrators and teachers at ESP who are certified and experienced in teaching science to students at a variety of grade levels. It is an integrated curriculum that incorporates New York State Science core content with English language arts, math, social studies, and fine arts core content.

Science kits are manufactured and refurbished at the ESP.

All units include the hands-on materials for an entire class of students.

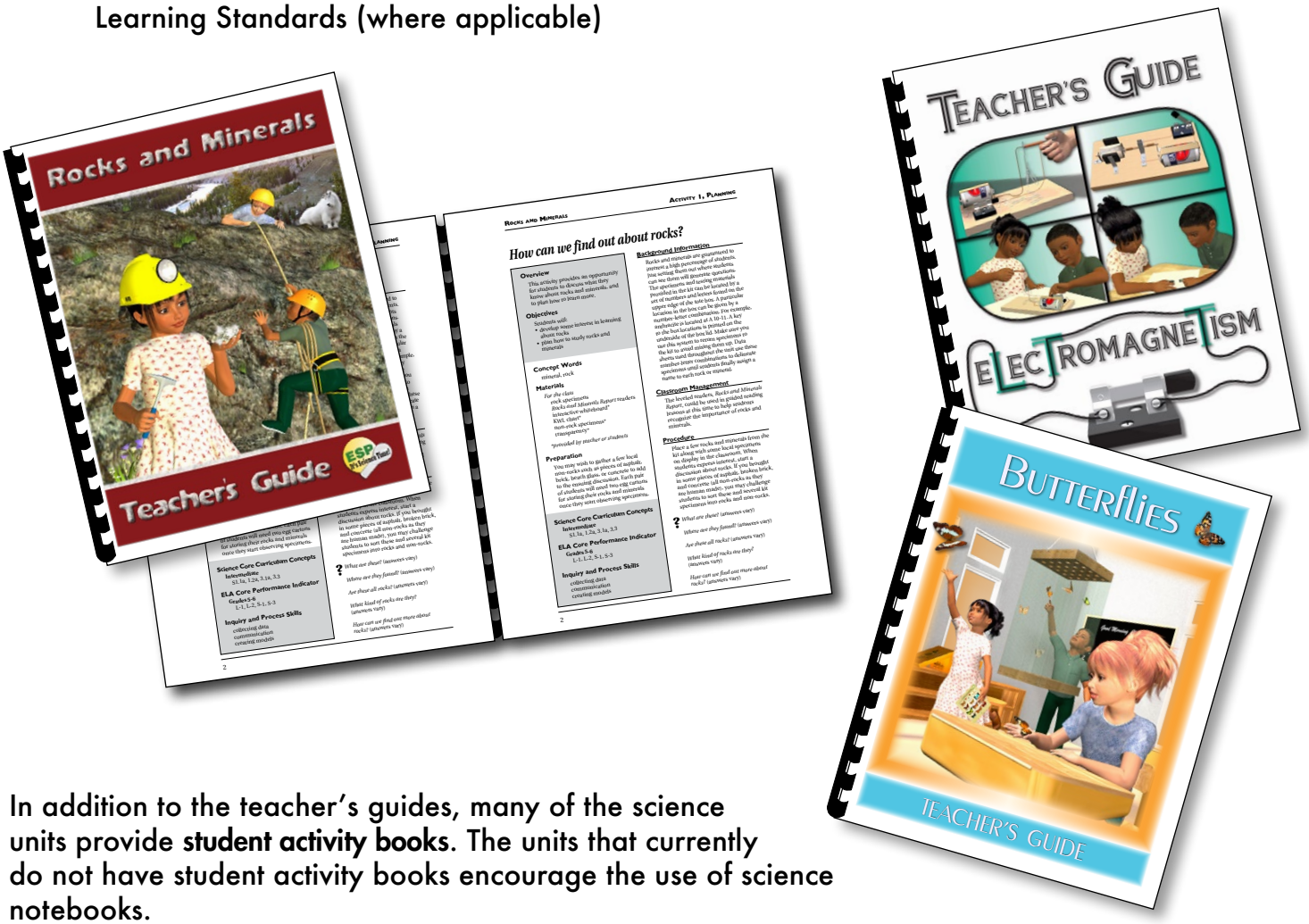
- Regular kits are for **thirty (30)** students.

Overview

The **teacher's guide** in each unit provides a wealth of information and guidance for the teacher.

These guides include...

- background information for the teacher on the topic of study
- materials lists
- guidance for preparation of each lesson
- classroom management ideas
- detailed procedures for each lesson
- suggestions for assessment, including when to administer the assessments provided with the unit
- indicators of suggested times to use the leveled readers throughout the unit
- extension ideas for your classroom
- correlations to the Common Core State Standards and the New York State Science Learning Standards (where applicable)



In addition to the teacher's guides, many of the science units provide **student activity books**. The units that currently do not have student activity books encourage the use of science notebooks.

Overview

How to Participate in ESP Services

The Monroe 2–Orleans BOCES Elementary Science Program has helped school districts share curricular resources, materials, costs, and services for elementary science since 1972. The core of the ESP's service is the recycling of science materials. Science units are developed and manufactured at ESP. Kits are shipped to classrooms, used for instruction, returned to ESP, cleaned, stored, and shipped out to other classrooms. This process keeps the costs down for districts and decreases waste.

For districts outside of Monroe 2–Orleans BOCES, science units are leased through your BOCES by using the regular cross-contracting procedure. After a budget is established, science units are scheduled for specific dates of use. Teachers are encouraged to participate in in-service training or professional development prior to using these materials. For more information about ESP's professional development, see page 18.

Services secured by cross-contracts through BOCES may be eligible for BOCES aid. To initiate a cross-contract for services your BOCES District Superintendent should send a written request to:

District Superintendent
Monroe 2–Orleans BOCES
3599 Big Ridge Road
Spencerport, New York 14559

Private schools may contract directly with this BOCES for services. Private schools are not eligible for BOCES aid.

For further information about the ESP, please contact the ESP at 585-352-1140 or (800)-832-8011.

Overview

Services Available in Your Area

Professional Staff

A staff of four professional science educators spends 100% of its time working on activities, methods and materials to improve the instruction of elementary science.

Professional Development

Many opportunities for science professional development are available. For further information see page 18.

Curriculum and Alignment

The ESP staff will meet with teachers, administrators, boards of education or parents to provide information about the ESP and science education in New York State. The ESP educators can work with curriculum committees to review, evaluate, or develop your science program.

State Assessments

The ESP is a New York State Education Department approved supplier for Performance Test materials for the Elementary-Level Science Test (ELS – Grade 4) and the Intermediate-Level Science Test (ILS – Grade 8). Training to administer, rate, and analyze data from these tests is also available from the ESP.

Hotline

Many times we can answer your questions or solve problems for teachers and administrators over the telephone. Call (585) 352-1140 or (800) 832-8011.

Website

The ESP website contains helpful links for students and teachers. See page 19 for more information.

Classroom Lessons

Demonstration lessons on any ESP unit are available upon request. The ESP educators can bring the STARLAB portable planetarium or a video microscope to classrooms in the Rochester area. Contact the ESP for more information.

Professional Development

Training is FREE to districts that lease ESP science units.

Teachers that have attended ESP workshops report that they are much better prepared to provide science content, scientific inquiry and hands on instruction in their classrooms. The ESP educators are available to help you train your teachers.

Unit Video Support

Training on revised units is available online (videostreaming) at the ESP website. The ESP educators present workshops for teachers to watch and listen to from the comfort of their homes or classrooms. In addition, sample Guided Reading lessons by a BOCES 2 Reading Specialist provide teachers with a model for the use of the Leveled readers.

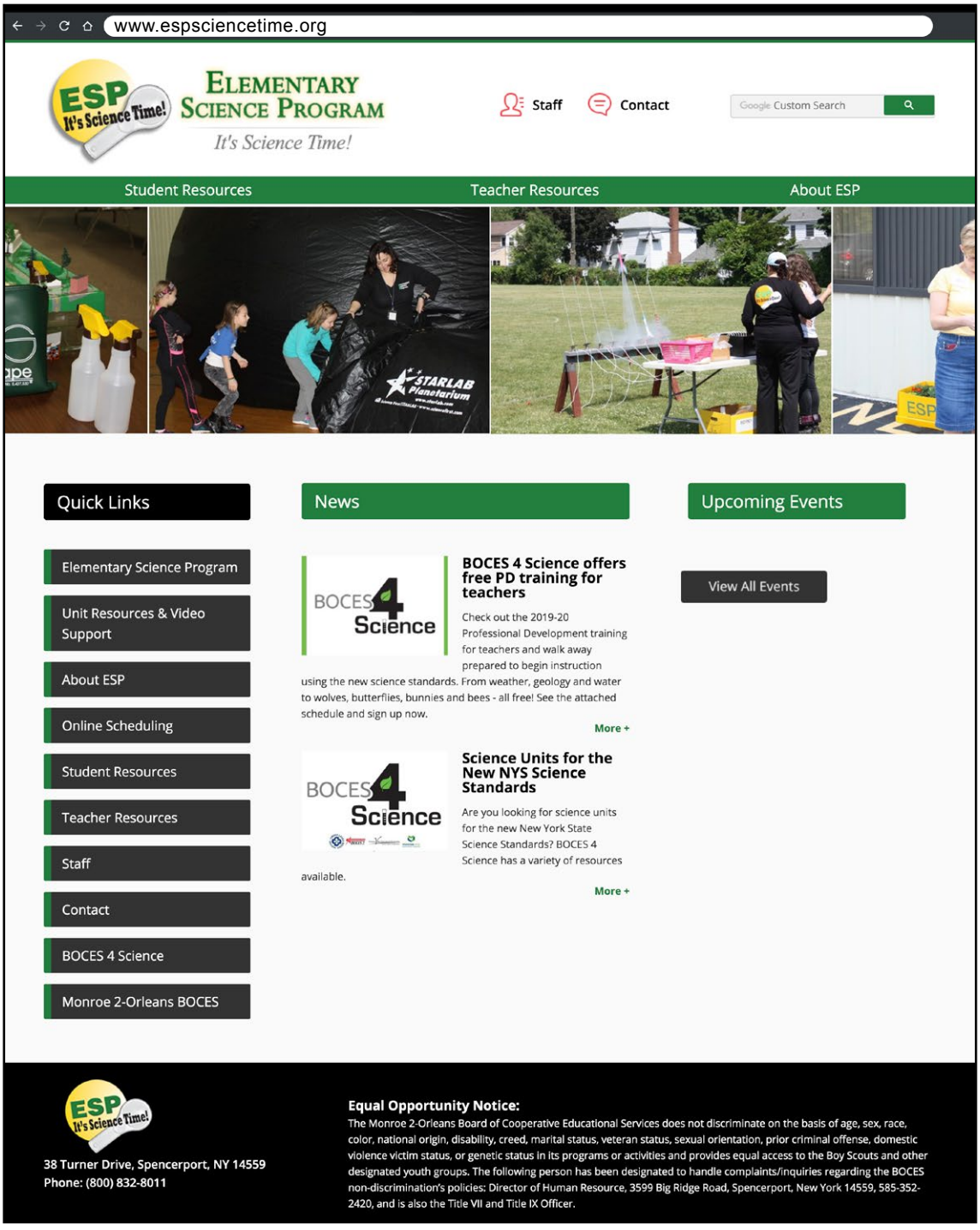
Distance Learning Technology

ESP educators will work with your district to use distance learning technology to provide a training session for teachers.

Web Support

www.espsciencetime.org

The ESP website is home to a wide variety of teacher, student and parent resources. There are unit specific resources including videos for teacher training, seasonal invitations to inquiry, annotated links, tips for ELA and science, measuring tasks, descriptions of the ESP units and more.



Online scheduling is available. Please contact the ESP for further information.

Kits Available

By Grade Level

Preschool
Waterplay 29

Kindergarten
Classroom Plants 23
Senses 28
Sunshine, Shadows and Silhouettes 29

Grade 1
Earthworms 24
From Seed to Plant 25
Properties 27

Grade 2
Interactions 25
Measuring 26

Grade 3
Buoyancy 22
Butterflies 23
Pollination 27
Sky Calendar 28
Structures 28
Systems and Simple Machines 29

Grade 4
Birds and their Adaptations 22
Crayfish 23
Design Technology - Wheels 23
Electrical Circuits 24
Magnets 26
Mystery Matter 26

Grade 5
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Rocks and Minerals 28

Intermediate (Grades 5 - 8)
Astronomy 22
Ecosystems and Habitats 24
Renewable Energy 27

Kits Available

By Alphabetical Order

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Birds and their Adaptations 22
Buoyancy 22

Butterflies 23
Classroom Plants 23
Crayfish 23
Design Technology-Wheels 23

Earthworms 24
Ecosystems and Habitats 24
Electrical Circuits 24

Electromagnetism 25
From Seed to Plant 25
Interactions 25

Magnets 26
Measuring 26
Mystery Matter 26
Plant Responses 26

Pollination 27
Properties 27
Renewable Energy 27

Rocks and Minerals 28
Senses 28
Sky Calendar 28

Structures 28
Sunshine, Shadows, and Silhouettes . . . 29
Systems and Simple Machines 29
Waterplay 29

Kit Descriptions

Astronomy

Students observe the sky with telescopes and use models to understand basic astronomy concepts and to develop observation skills. Correlates with Key Idea 1 of the Physical Setting portion of the NYS Intermediate Science Core. ***Leveled Readers included.***

Suggested Length: 6 weeks

Suggested Grade Level: Intermediate (5-8)

Birds and their Adaptations

STEM Focus

Students observe birds in the wild to learn about their physical and behavioral adaptations. Students consider the different habitats in which birds are found, and how birds are adapted to these habitats. Students dissect owl pellets to learn about food chains, food webs and the interdependence of different organisms on each other within an ecosystem. This unit addresses the concepts of survival through animal structures, behavior and interdependence that are expressed in Key Ideas 3, 5 and 6 in the Living Environment portion of the NYS Elementary Science Core. ***Leveled Readers included.***

Suggested Length: 10 weeks

Suggested Grade Level: 4

Buoyancy

Students investigate the concepts of volume and density, and explore other properties that affect whether a material will sink or float. Includes opportunity for inquiry as well as development of Physical Setting concepts. Strong correlation to Mathematics, English Language Arts and some Social Studies content. ***Leveled Readers included.***

Suggested Length: 4 weeks

Suggested Grade Level: 3

Kit Descriptions

Butterflies

Students observe the biological process of metamorphosis and learn to care for and feed butterflies. Includes excellent opportunities for inquiry and engineering design as well as correlation with Mathematics and Language Arts. ***Leveled Readers included.***

Suggested Length: 10 weeks

Suggested Grade Level: 3

Classroom Plants

Students plant, grow and care for common plants. Can be used as a year long basis for science, mathematics and language arts skill development. ***Leveled Readers included.***

Suggested Length: 34 weeks

Suggested Grade Level: K

Crayfish

Students practice humane treatment of animals while they learn about the structure and behavior of crayfish by observing respiration, reaction to stimuli, feeding habits and territorial behavior. Includes exploration of acquired and inherited traits. Culminates in inquiry as students design experiments to answer their own questions. Strong language arts component. Available fall only. ***Leveled Readers included.***

Suggested Length: 13 weeks

Suggested Grade Level: 4

Design Technology-Wheels

Students will research, plan, construct, test and evaluate models of their own design. Models will be built to scale from drawings made on centimeter grid sheets. Major focus on MST Standards 1 and 5, Technology and Engineering Design.

Suggested Length: 6 weeks

Suggested Grade Level: 4

Kit Descriptions

Earthworms

Students learn about the characteristics and needs of animals, especially the earthworm. Emphasis on structure, function, and role as a decomposer. Scientific inquiry is modeled and experienced. Correlates to NYS Elementary Science Core and Standard 1 and Standard 4, Living Environment. Not available December - February. ***Leveled Readers included.***

Suggested Length: 12 weeks

Suggested Grade Level: 1

Ecosystems and Habitats

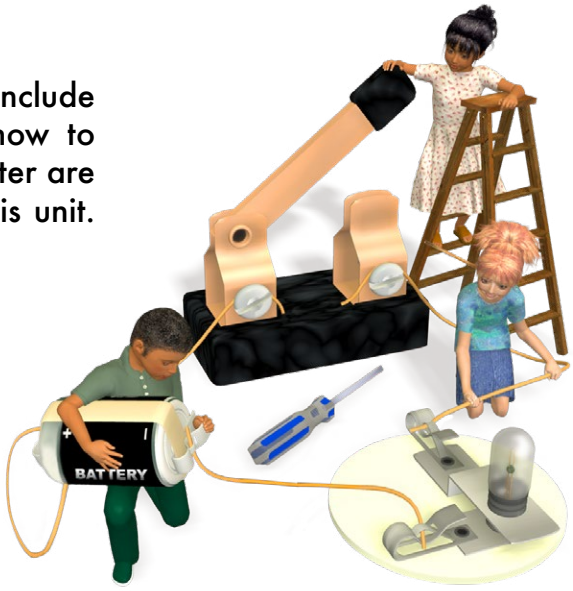
STEM Focus

Students explore the biomes, ecosystems and habitats of their local areas in New York State. The concepts of community and populations are emphasized through exploration of energy flow, food chains/food webs, ecosystem cycles, (water, carbon-oxygen, nutrient), photosynthesis and decomposition. Students develop a sense of stewardship and an understanding of the human impact on the environment. Correlates to the NYS Intermediate Core Standard 4 - The Living Environment, Key Ideas 6 and 7.

Suggested Length: 5 weeks

Suggested Grade Levels: Intermediate (5-8)

Electrical Circuits



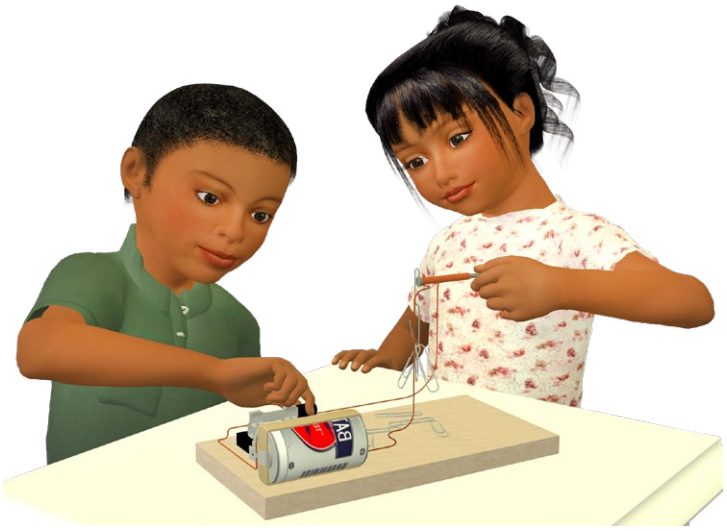
Students construct and test simple circuits. Investigations include series and parallel circuits, conductors, resistance and how to make a fuse. Energy transformations and properties of matter are the NYS Elementary Science Core Key Ideas central to this unit. ***Leveled Readers included.***

Suggested Length: 9 weeks

Suggested Grade Level: 4

Kit Descriptions

Electromagnetism

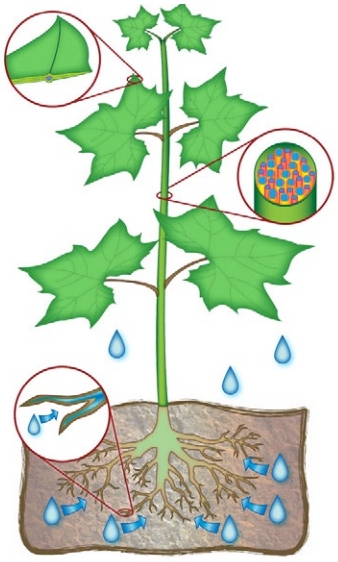


Students will use magnets and electromagnets to investigate the relationship between electricity and magnetism. Students will construct various devices using electromagnets including a buzzer and a large motor. Mathematics, English language arts and social studies content and skills are integral to the unit. ***Leveled Readers included.***

Suggested Length: 10 weeks

Suggested Grade Level: 5

From Seed to Plant



Students classify seeds by properties, plant seeds, and learn about plant needs and structure by caring for plants and recording their growth. Strong use of Mathematics and English Language Arts skills. ***Leveled Readers included.***

Suggested Length: 15 weeks

Suggested Grade Level: 1

Interactions

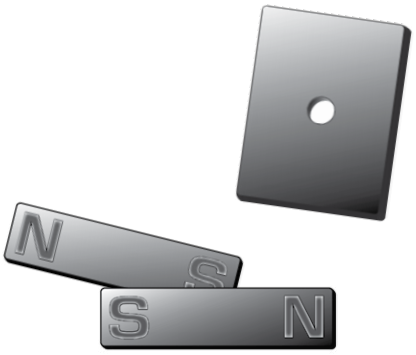
Students observe the chemical and physical interaction of objects, providing concrete experiences with examples of NYS Elementary Science Core Physical Setting Key Ideas 4 and 5, Interaction of Energy and Matter.

Suggested Length: 6 weeks

Suggested Grade Level: 2

Kit Descriptions

Magnets



Students explore the properties of magnets and magnetic materials. Inquiry is emphasized as students devise their own procedures for making magnets and testing the strength of magnets. Correlates to the NYS Elementary Science Core Physical Setting Key Idea 5. ***Leveled Readers included.***

Suggested Length: 4 weeks
Suggested Grade Level: 4

Measuring

Students use nonstandard and standard units of measurement to compare objects. The properties of length, temperature, volume and mass are investigated. Major emphasis on Mathematics skills and English Language Arts. ***Leveled Readers included.***

Suggested Length: 10 weeks
Suggested Grade Level: 2

Mystery Matter

Students explore matter and its properties. They also examine how energy affects the properties of matter. The properties of an unknown material are collected and used to help identify it. Process skills and scientific thinking are emphasized. Language arts skills are incorporated throughout. ***Leveled Readers included.***

Suggested Length: 8 weeks
Suggested Grade Level: 4

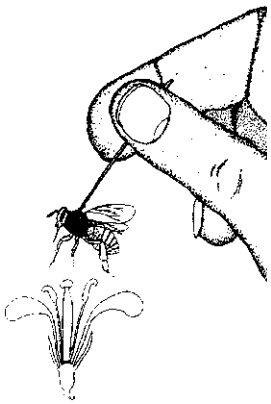
Plant Responses

Students study responses of seeds and seedlings to varying environmental factors such as water, light, gravity and nutrients. Focuses on NYS Elementary Science Core, Living Environment Performance Indicator 5.2.

Suggested Length: 9 weeks
Suggested Grade Level: 5

Kit Descriptions

Pollination



Students grow Wisconsin Fast Plants® which go through a complete life cycle in a little over forty days. Students use dried honey bees to pollinate flowers to produce fruit. An excellent exploration of the majority of the NYS Elementary Science Core, Living Environment content.

Suggested Length: 7 weeks

Suggested Grade Level: 3

Properties

Students observe and describe objects by their color, shape, texture, size, weight, and whether they sink or float. Students observe that materials can exist in different forms and that solids, liquids and gases are objects. Develops fundamental science skills along with awareness that everything has properties that can be used for classification. Strong language arts skill development. ***Leveled Readers included.***

Suggested Length: 10 weeks

Suggested Grade Level: 1

Renewable Energy

STEM Focus

Students study different forms of energy and experiment with transforming one type of energy into another. Special emphasis is placed on how electrical energy can be generated by renewable sources such as wind and sun. Correlates strongly with Key Idea 4 of the Physical Setting portion of the NYS Intermediate Level Science core. ***This unit is best taught in fall or spring.***

Suggested Length: 5 weeks

Suggested Grade Levels: Intermediate (5-8)

Kit Descriptions

Rocks and Minerals

Through the use of the skills of observing, classifying and communicating, students will investigate the properties of rocks and minerals. Students will use such properties as color, luster, texture, cleavage, hardness and attraction to magnets to identify 21 different rocks and minerals. Written materials discuss fossils, plate tectonics, the structure of the Earth and the rock cycle. ***Leveled Readers included.***

Suggested Length: 8 weeks

Suggested Grade Level: 5

Senses

Students investigate and learn about the five senses. Strong correlation to grade appropriate language arts development. ***Leveled Readers included.***

Suggested Length: 14 weeks

Suggested Grade Level: K

Sky Calendar

Students observe the sky and use models to better understand the astronomy behind the month, the year, and the seasons. Correlates with Key Idea 1 of the Physical Setting portion of the NYS Elementary Science Core. ***Leveled Readers included.***

Suggested Length: 5 weeks

Suggested Grade Level: 3

Structures

Students are challenged to design and construct structures which meet certain specifications, such as height, strength and limited use of material. Addresses content and skills from the Standards for Technology, Engineering Design and Mathematics, Measuring Strand.

Suggested Length: 6 weeks

Suggested Grade Level: 3

Kit Descriptions

Sunshine, Shadows and Silhouettes

Students investigate objects as they interact with light. Many outside activities are included. ***Teachers Guide only.***

Suggested Length: 35 weeks

Suggested Grade Level: K

Systems and Simple Machines

STEM Focus

Students learn that a system is a group of objects that interact. Students create a spoolmobile as their first introduction to a system. Students investigate how simple and compound machines are examples of systems. Levers, pulleys, inclined planes, screws, wheels and axles, and wedges are introduced and explored. The relationship between simple machines, forces, and work is a focus. Correlates to NYS Elementary Science Core Standard 6 and Standard 4 Physical Setting Key Ideas 4 and 5. ***Leveled Readers included.***

Suggested Length: 10 weeks

Suggested Grade Level: 3

Waterplay

Students experience free play, curiosity and discovery through the investigation of water and its properties and forms.

Suggested Length: 15 weeks

Suggested Grade Level: PK

Kit Descriptions Lease Cost

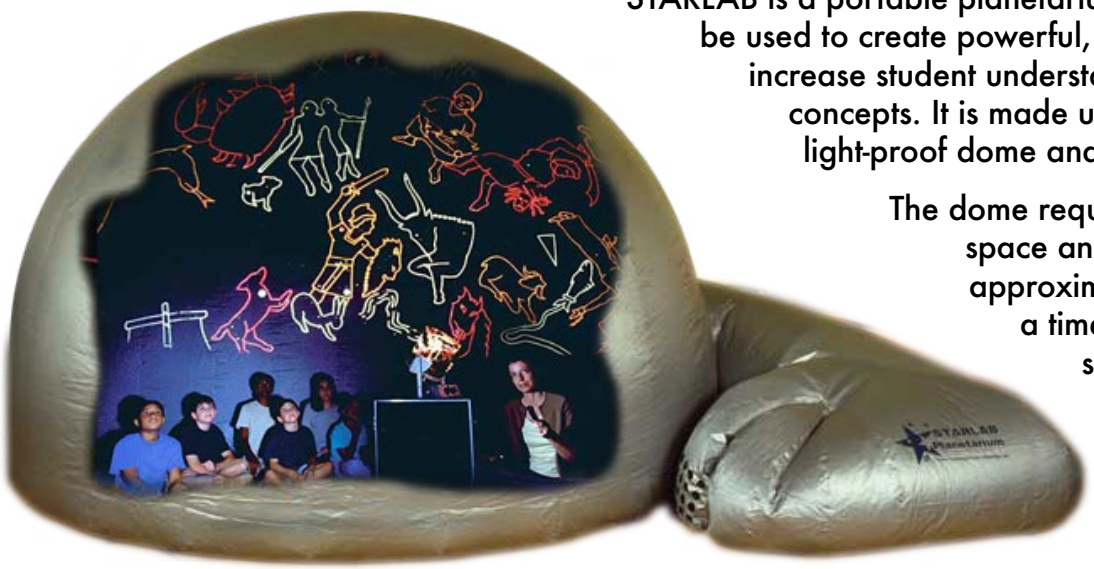
Kit Lease Pricing – 2021-2022 school year

Grade	Unit Title	Regular *(30 Students)*
5-8	Astronomy	$370.00
4	Birds and their Adaptations	405.00
3	Buoyancy	360.00
3	Butterflies	.245.00
K	Classroom Plants	305.00
4	Crayfish	.170.00
4	Design Technology-Wheels	475.00
1	Earthworms	.275.00
5-8	Ecosystems and Habitats	550.00
4	Electrical Circuits	485.00
5	Electromagnetism	535.00
1	From Seed to Plant	.210.00
2	Interactions	260.00
4	Magnets	365.00
2	Measuring	230.00
4	Mystery Matter	440.00
5	Plant Responses	.240.00
3	Pollination	.245.00
1	Properties	360.00
5-8	Renewable Energy	.710.00
5	Rocks and Minerals	380.00
K	Senses	305.00
3	Sky Calendar	290.00
3	Structures	200.00
K	Sunshine, Shadows and Silhouettes	(No charge when leasing other kits)
3	Systems and Simple Machines	460.00
PK	Waterplay	.115.00

ATTENTION: *Please advise us if you need a latex free kit this year.*

STARLAB Services

STARLAB *is available only to districts in Monroe or Orleans* Counties*



STARLAB is a portable planetarium system which can be used to create powerful, engaging models to increase student understanding of astronomy concepts. It is made up of a 10.5 foot tall, light-proof dome and a special projector.

The dome requires a 21 by 21 foot space and can accommodate approximately 30 students at a time. The projector uses specific cylinders that allow lessons to be designed for a broad variety of topics.

STARLAB Order Form

Description	Cost	Number of Days	Total
STARLAB with ESP instructor (up to 5 lessons per day)	$275.00 per day		
Sunshine, Shadows and Silhouettes (up to 6 lessons per day)	$75.00 per lesson		
STARLAB with District Supplied Instructor	$135.00 per day		
		TOTAL	

Your Name: _____ District _____

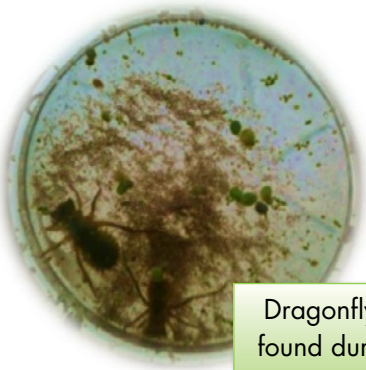
Phone Number: _____ Email _____

Call ESP at 585-352-1140 to schedule STARLAB uses.

** Delivery charges may apply*

POND STUDY Field Trip

Pond Lessons are available only to districts in Monroe or Orleans Counties



Dragonfly nymph found during local pond trip with students.

If you are teaching about the ecosystem of a pond in your science classroom, the teachers from the Elementary Science Program can help extend the learning outside the classroom with a Pond Study Field Trip.

ESP teachers will meet you and your students at a local pond, lead the lessons at the pond, and help students make various observations and discoveries at the pond. All tools and materials needed to collect data at the pond (air and water temperature, pH) are provided by ESP. The data is used to discuss how non-living factors have an impact on the pond. Tools are also provided for students to find macro-organisms and plant life living in the pond and observe their behaviors. The organisms found at the pond allow the ESP teachers to discuss a variety of topics that include but are not limited to: food chains/webs, structures or organisms, and life cycles.

Pond Study Field Trip Order Form

Description	Cost	Number of Days	Total
Pond lessons with ESP teacher at a local pond (up to 5 lessons per day)	$200.00 per day		
		TOTAL	

Your Name: _____ District _____

Phone Number: _____ Email _____

Call ESP at 585-352-1140 to schedule a Pond Study Field Trip.

STEM Resources

littleBits Kits

- littleBits are electronic components that snap together with magnets to help create complex circuits and various inventions. littleBits are for students from age 8 to 18 and beyond.
- littleBits can also turn any device into an internet-connected device. For example, build a remote controlled pet feeder or a doorbell that lets you know someone is at your door through a smartphone text.

- When receiving the littleBits Kits in your classroom, ESP provides teachers with the booklets, directions, and materials needed to create the projects in the Project Book. Plus, you will receive a Workshop Kit for initial whole class instruction with students.
- Teachers must be trained before using littleBits. Training provided by ESP in fall and spring.

fischertechnik Education Kits

ESP has two fischertechnik Education Kits available for teachers to use in their classroom:

1. **Construction Systems:** Students in grades 2-4 work together to build models using instruction sheets to show how simple machines actually work. Students answer questions about their model.
2. **Introduction to Coding:** A more in-depth introduction to technology and robotics. Students in grades 3-5 construct 12 easy-to-understand models. The provided ROBO Pro software allows students to write a control program that the LT Controller understands. The controller communicates with the computer and controls the models built.

The curriculum provided in both kits is designed to meet requirements in the ***Next Generation Science Standards (NGSS) and Common Core Learning Standards***.

- Teachers must be trained before using fischertechnik Kits. Training provided by ESP in fall and spring.

littleBits & fischertechnik Order Form

Description	Cost per Order	Number of Orders	Total
littleBits Kit Module with Space and SMART Home Kits *(Various littleBits modules with additional focus on space science and inventions that can be programmed and internet connected. Arduino included.)*	$350.00 per 2 weeks		
littleBits Kit Module with Synthesizer *(Various littleBits modules with additional focus on exploring the synthesizer instrument.)*	$350.00 per 2 weeks		
fischertechnik Education Kit - *Construction System*	$350.00 per 2 weeks		
fischertechnik Education Kit - *Introduction to Coding*	$350.00 per 2 weeks		
Cubelets	$350.00 per 2 weeks		
		TOTAL	

Your Name: _____ District _____

Phone Number: _____ Email _____

Call ESP at 585-352-1140 to schedule littleBits or fischertechnik lessons.

STEM Resources

The Elementary Science Program has the resources and technology you need to make STEM a focus in your classroom!

ESP STEM Units

Structures - Students are challenged to design and construct structures which meet certain specifications.

Design Technology - Students research, plan, construct, test and evaluate car chassis models of their own design.

Engineering Design Activities embedded into many of our units:

- Systems and Simple Machines (Gr. 3)
- Electrical Circuits (Gr. 4)
- Magnets (Gr. 4)
- Birds and their Adaptations (Gr. 4)

Design Challenge Activities—*one activity purchased for the class to create a final project based on specific criteria:*

- #1 - On Top of Spaghetti ($10)
- #2 - Boats and Floats ($60)
- #3 - Oil Spill ($75)
- #4 - Straw Rockets ($60)
- #5 - Solar Cooker ($75)

Technology on Loan to teachers for FREE with training:

- GPS units (Garmin e-trex 10)
- Bird Cams (orientation only needed)
- Digital Microscopes (150x)
- Vernier Probeware
- Enviroscapes (ESP teacher can teach the lessons for $175.00.)

All STEM Resources are available to districts in Monroe or Orleans Counties.
The Design Challenge Activities are available for purchase throughout the U.S.

Enviroscapes Order Form

Description	Cost	Number of Days	Total
Enviroscape Lesson with ESP Instructor (up to 5 lessons per day)	$175.00 per day		
		TOTAL	

Your Name: _____ District _____

Phone Number: _____ Email _____

Call ESP at 585-352-1140 to schedule Enviroscape lessons.

Shipping Information *

Understanding the Shipping Fees

*** Shipping charges only apply for non-courier delivery.**

KITS

Budget for Kits (lease or purchase)	Zip Code beginning with 130XX – 149XX	Zip Code beginning with 100XX – 129XX and 150XX – 157XX
$ 0 - 15,000	12%	13%
$15,001 - 25,000	11%	12%
$25,001 - 200,000	10%	11%

Examples: (1) If your budget is $16,000, and your zip code is 13309, multiply $16,000 by 11%. The shipping charges are $1,760.00.

(2) If your budget is $8,000 and your zip code is 11901, multiply $8,000 by 13%. The shipping charges are $1,040.00.

If you would like the ESP to pay the cost of **returning leased kits**, you must fill in the blanks on the lease order forms with the same dollar amount as you put on shipping blank.

For additional forms, go to www.espsciencetime.org.

Photocopy the completed form and please mail or fax to:

Monroe 2–Orleans BOCES
Elementary Science Program
38 Turner Drive
Spencerport, NY 14559

Fax #: 585-352-1157

Policies

Return Policy

Due to the cost of shipping and restocking of items returned, all sales of kits, kit parts and publications are final. If you are uncertain about a particular item, please call the ESP at 1-800-832-8011 for additional information. We will be happy to advise you.

Pricing

Due to the volatility of the wholesale prices on certain items, our prices are subject to change without notice. When placing an order for large quantities of materials, please call for current pricing.

Live Materials Policy

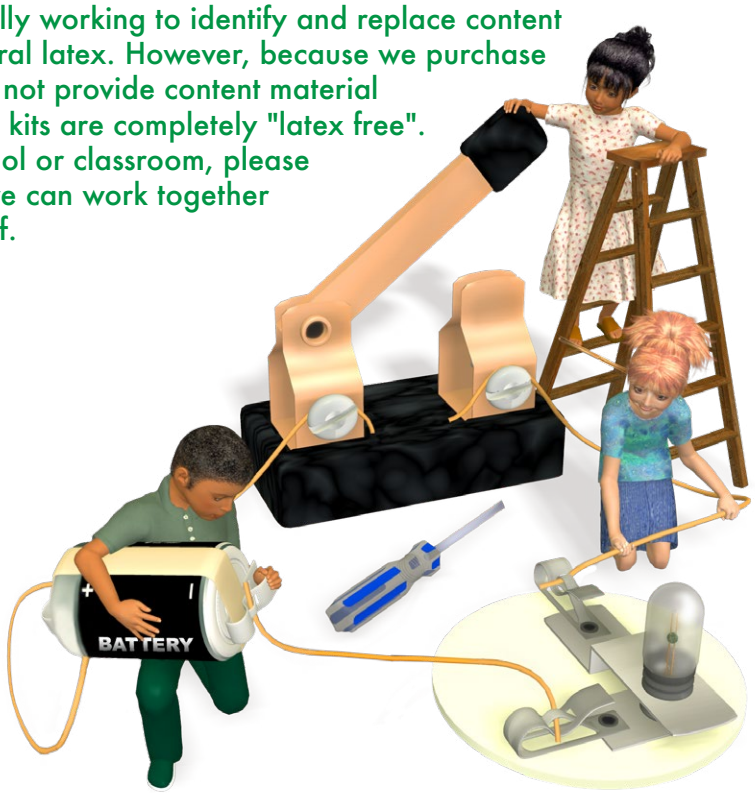
The ESP makes all attempts to package and ship live materials so that they arrive healthy. Because factors such as weather, shipping delays or improper handling are not within our control, we do not make refunds for live materials. Upon request, and when sufficient quantities allow, we will replace and reship live materials at no additional cost.

Inventory Policy

Please inventory your materials upon arrival! Any missing/damaged parts must be reported to the ESP within 2 weeks of UPS delivery date.

Latex Policy

The Elementary Science Program is continually working to identify and replace content items in our kits that potentially contain natural latex. However, because we purchase materials from many vendors, some who do not provide content material information, we are unable to claim that our kits are completely "latex free". If a latex allergay is of concern to your school or classroom, please contact us directly before ordering so that we can work together to insure the safety of your students and staff.



Your Educational Partner of Choice
BOCES 2
Elementary Science Program
Monroe 2–Orleans Board of Cooperative Educational Services
38 Turner Drive
Spencerport, NY 14559
www.espsciencetime.org

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