Summers-Knoll School
Scope and Sequence by Subject

April 2017

Introduction

Teachers at Summers-Knoll are committed to knowing their students well, connecting the school program to the world beyond the school walls, and to preparing students for the next step in their educational experience and their lives beyond formal schooling. The school employs a number of unique structures, (class sizes of 14 or fewer students, block scheduling, etc.) and techniques (project and place based learning, interdisciplinary study, public presentation opportunities, etc.) to ensure that the student experience is aligned with these commitments.

The Summers-Knoll Scope and Sequence is designed to be a **road map** of the curricular program at the school. Like a road map, singular in dimension, it would be impossible for this single document to show the complete depth of the school's program. After all, this is a program that engages students in deeper "real-world" learning experiences; develops collaboration, problem solving and presentation skills; is responsive to current events and happenings in the world beyond the school walls; and is built on the interests of students. Summers-Knoll does all this while maintaining a rigorous environment that prepares students with the academic skills that are the foundation of any K-8 school. After reviewing the scope and sequence, those interested in learning more about the activities that students are involved in at the school may want to review the various blog entries found on the school's website.

A few notes about the structure of this document:

The document is arranged by subject area, with each program level explained in order, K through 8th.

Mathematics, English language arts, fine arts, music, Latin, French, and physical education are laid out in a largely skills based structure. As much as possible, an effort is made to connect the skills with interdisciplinary topics or projects during these classes, though there is a focus on ensuring that students develop the skills listed at each grade level.

At each grade level, both the **science and social studies** sections contain lists and paragraphs of concepts and questions that are developed by teachers (and sometimes, with assistance from students) to inspire and engage student interest in project based learning. From these bigger questions/ideas flow a series of skills that are covered through the course of the program. Below the concepts and skills components of these two sections, there is also a component containing examples of **project and place based learning**. These larger projects make up the bulk of student homeroom activity and considerable effort is made to integrate the more traditional skills based subject areas throughout the projects. That being said, the **projects listed are examples** of projects teachers have done in the past and should **not** be read as projects in which classes engage each year. The responsive nature of our curriculum requires teachers to develop units of study based on that which is occurring in the world, that which is of interest and importance to a particular group of students, and that which the teacher deems relevant and authentic at a particular time. That being said, regardless of the details of the project itself, the **driving questions and objectives remain aligned with the overall concepts and skills** articulated within each section of this document.

Our goal in publishing this document is to demonstrate that the Summers-Knoll program is comprehensive in its approach to ensuring students develop subject area skills *and* to provide a broad snapshot of the kind of learning that happens when teachers plan projects that engage students in interdisciplinary study and are project and/or place based.

Science, K-8

Kindergarten

Concepts

What is living and nonliving? What kinds of lifeforms exist, and where do they live on Earth? How are things recycled in nature? How do people use and impact natural resources? What is energy? What are scientific tools? What is the scientific method? How do you communicate scientific information? What is an "experiment"? What is the natural and physical world and what are its naturally-occurring relationships? What are things made of? What are the basic needs and characteristic of living things? What are the properties of rocks, soil, water, and air? What are seasons? Why does weather change? What is the universe made of?

Skills

- Begin to learn how to organize their observations into thoughts.
- Learn to sort, make comparison, discover patterns in nature, and start to discover differences and similarities in objects.
- Learn to use simple tools and how to gather data.
- Begin to learn how to form explanations and communicate scientific information. This is done through speaking, drawing, and writing.
- Use sensory explorations to discover properties of objects.
- Begin to discover what things are made of and are to describe attributes of objects.
- Begin to differentiate living and nonliving objects.
- Begin to discover the relationship between plants and animals and the environments they live in.
- Use skills to observe, collect information, and use it to ask questions, predict, explain, and draw conclusions.

Project and place based learning

Students go out in the world to visit various area parks such as County Farm Park, Lillie Park, science museums, and nature centers, such as the Howell Nature Center and the Leslie Science Center. Classes also visit farms to pick berries, pumpkins, and apples. We also harvest from our own garden areas and take care of a variety of animals in our classrooms.

1st/2nd Grade

Concepts

What are the characteristics of living things, and how do they grow, change, and survive? What kinds of lifeforms exist, and where do they live on Earth? How has Earth changed over time? What are cycles? What are their characteristics? How are things recycled in nature? How do people use and impact natural resources? What is energy? How is it used by humans and other living things? What is the scientific method and how is it used? How do I design experiments? How do I select and use tools in

science? Cause and effect; classification of plants, animals, and minerals; plant and insect anatomy; garden habitats; sunlight and shadows; seasons and cycles; physical and chemical changes

Skills

- Actively investigate through observation.
- Explore variation and diversity of living things.
- Observe, describe, and identify.
- Develop questions, form explanations, draw conclusions.
- Explore cause and effect.
- Use scientific tools for discovery.

Project and place based learning

Students go out in the world to visit various area parks such as County Farm Park, Lillie Park, science museums, and nature centers, such as the Howell Nature Center and the Leslie Science Center. While learning about raptors, we dissect owl pellets and visit Leslie Science Center to visit a raptor we sponsor. Classes also visit farms to pick berries, pumpkins, and apples. We harvest from our own garden areas (which often leads to a cooking or baking project). and take care of a variety of animals in our classrooms. We also raise beetles from mealworms to learn first hand about the life cycle of an insect.

3rd/4th Grade

Concepts

What are the properties of light and sound? How do different organisms perceive light and sound? What are the properties of water? Why is energy from the sun essential to the survival of life on Earth? What are physical forms in nature and how do they change and grow? Why are plants so critical to the survival of humans and animals? How does nature solve problems and how can we learn from solutions found in nature? How do machines work? What is electricity? How is electricity used? How can we use the scientific method to find answers to our questions?

Skills

- Observe, describe and identify natural phenomena and patterns.
- Recognize and use simple machines and electrical circuits.
- Formulate questions based on observations.
- Use single variable experiments to answer questions.
- Use tools for observation and experimentation.
- Explain results in written and verbal form.
- Formulate and communicate theories to explain results.

Project and place based learning

Students use real world tools and objects to perform simple experiments to observe and manipulate light and sound in the laboratory. Students design, engineer, and build simple machines and electrical circuits to solve practical problems. With a focus on Ecosystem Restoration and in partnership with a

local naturalist, students identify native and exotic plants at County Farm Park and Summers-Knoll and make changes to increase native plant numbers and improve biodiversity.

5th/6th Grade

Concepts

What is an ecosystem and and how are members of an ecosystem interdependent? What does it mean if something is "endangered"? What is evolution and how does it occur? What is force? How do forces and motion behave in our solar system and universe? What are the major parts and systems of the human body? What are the senses, and how do they affect our perceptions? What is the nature of the the brain and mind?

Skills

- Web research and information gathering.
- Observation, collection and analysis of quantitative and qualitative data.
- Creation and presentation of charts and graphs to convey information and demonstrate findings.
- Observe, describe and identify natural phenomena and patterns.
- Formulate questions based on observations.
- Use tools for observation and experimentation.
- Explain results in written and verbal form.
- Formulate and communicate theories to explain results.
- Use appropriate vocabulary to discuss and record scientific findings and concepts.

Project and place based learning

Through an in depth study of the monarch butterfly, students learn to become citizen scientists. By visiting local areas like County Farm park, students observe the plants and animals in the ecosystems, learn about the importance of local insect populations, both to the health of wildlife areas and to the production of human food supplies. In another project, students work in small groups to create their own version of a game designed to highlight an alternate habitat. After compiling a list of supplies and equipment needed for their fictitious excursion, they "travel" to this destination, "observe" the animal in it's natural habitat, write an expedition journal, and make field sketches.

7th/8th Grade

Concepts

What is the nature of matter? What is the relationship between weather and climate? How are physical traits inherited? What is genetic engineering and how is it used? What are internal biomes, and how may they affect our health? What is a chemical reaction? What kinds of chemical reactions occur in our daily lives? How is technology used to produce our food supply? What is the use and importance of

water in our personal biology, local ecology, and global economy? What is sustainability, and how is it important in our consumption of energy and natural resources?

Skills

- Ask clarifying questions.
- Identify and analyze patterns
- Collect and interpret data.
- Use data to make predictions.
- Conduct, monitor, and modify experiments and investigations over time.
- Construct arguments supported by evidence.
- Develop scientific models.
- Use appropriate vocabulary to discuss and record scientific findings and concepts.
- Write scientific explanations that demonstrate understanding of concepts.
- Evaluate solutions to problems using scientific understanding of root causes .

Project and place based learning

Students develop scientific questions based on their own interests, and formally investigate those questions using experimentation. They conduct background research, develop a protocol, gather materials, perform experiments, collect raw data, interpret data, and convert raw data into a graphic format that conveys meaning to others and highlights their experimental conclusions. They then present their findings to an audience and respond to questions.

Social Studies, K-8

Kindergarten

Concepts

Students engage in a comparative study of self and family, including families, traditions, importance and awareness of feelings, and teamwork. They work to develop their awareness of others through the arts, storytelling, and thematic activities Students also hone in on their developing awareness of time and how the past influences people's lives. They begin to understand that people rely on others for goods and services. Students articulate and demonstrate their understanding of the reasons for rules.

Skills

- Participate in group discussions and group life of the classroom.
- Develop empathy and concern for others.
- Continue to develop self awareness and their impact in our classroom community, including following rules.
- Express beginning geographic thinking, including basic map reading skills.
- Use simple strategies to make social decisions and solve problems.

Project and place based learning

Projects focus on increasing students' understanding of their place in their community and how they are impacted by their community. Students visit a local neighborhood garden twice each year (once to plant and once to harvest) and then take harvested produce to a local food bank. As a response to the Flint water crisis, students participated in a reading exchange with Flint students and visited the Flint school to donate 1,000 bottles of water. This project was a direct result of students having heard about the crisis in the local media and wanting to get involved in supporting the people of Flint. Students study ancient Egypt as a way to make comparisons between our modern-day culture and practices and those of people who lived long ago. Studying creation myths from around the world helps students to consider a variety of perspectives on the way the world may have originated and how these myths impact their own culture and belief systems. Students also spend a significant amount of time learning in the community, with visits to a variety of galleries, parks, theaters, other organizations, and exhibits. Starting in kindergarten, students participate in reflection activities in order to deepen their learning.

1st/2nd Grade

Concepts

Students continue to engage in a comparative study of self and family, including families, traditions, importance and awareness of feelings, and teamwork. They continue to develop their awareness of others through the arts, storytelling, and thematic activities. Students demonstrate awareness about state and country and start to develop their awareness of the past and how the past influences people's lives. Students recognize some ways people rely on others for goods and services. Students also demonstrate understanding of the reasons for rules and show how they are beginning to understanding what it means to be a good leader. Students show beginning understanding of government functions.

Skills

- Participation in group discussions and group life of the classroom.
- Develop empathy and concern for others.
- Develop self awareness and their impact in our classroom community, including following rules.
- Show beginning understanding that maps represent actual places.
- Use simple mapping skills.
- Conduct surveys and interviews to learn about the community; interprets and presents findings visually.
- Use simple strategies to make social decisions and solve problems

Project and place based learning

Projects focus on increasing students' understanding of their place in their community and how they are impacted by their community. Students work with partners from other classes and the Washtenaw County Water Resources Commissioner's Office to design and construct a rain garden on the school grounds. Students explore the concept of "sustainability" in the context of natural resources and what they can do to help maintain the world in which they live. In partnership with a local seed farm, students work to learn about the importance of seed saving, the processes by which seeds have been saved for generations, and the ways in which people harvest seeds today. Students also spend a significant amount of time learning in the community, with visits to a variety of galleries, parks, theaters, other organizations, and exhibits. At grades 1-2, students also participate in reflection activities in order to deepen their learning.

3rd/4th Grade

Concepts

With a goal of taking action to advance social justice causes, students will examine the concept of identity, as it relates to power and privilege and the individual and group. By gathering and exchanging stories with others, they will build a picture of the forces that shape identities and the ways in which our local stories connect to global ones.

Skills

- Formulate and ask questions.
- Listen attentively.
- Connect the local and present with the historical and global.
- Critically view sources (primary and secondary) with an eye towards the stories both told and untold. Gather data.
- Organize information and present using digital media tools.
- Take civic action.

Project and place based learning

In the "Expert Eyes Project," students walk the Summers-Knoll grounds and neighborhood guided by various experts, each one lending their perspective and with it revelations of how we perceive or miss

aspects of our ordinary environment. In the “Out of Eden Learn,” students follow the journey of National Geographic Fellow, Paul Salopek, as he journeys by foot across the globe, retracing our ancestors’ footsteps out of Africa. They also interact with peers across the country and globe in an online community, exchanging stories and observations. In the “Ypsi-Arbor Forest Project,” students collaborate with local schools to explore the Ypsi-Arbor Corridor with a focus on both the history of the area as well as opportunities for green infrastructure projects. In work related to the southeast Michigan water crises, students visit communities affected by water crises in southeast Michigan to interview residents and investigate the systems that have given rise to the current crises.

5th/6th Grade

Concepts

Students examine the relationship between the individual and society, examining the origins of power and privilege in a culture. They evaluate the interplay between rights and responsibilities and examine how being a member of different social groups influences one’s perspectives and behaviors. They continue to explore the concept of “social justice” and consider different ways that people participate in their communities.

Skills

- Research and analyze textual, visual and auditory information, looking at primary and secondary sources.
- Develop interview, data collection, note taking and field research skills.
- Compile information into presentation format and demonstrate basic presentation skills.
- Write an organized research paper, citing sources.
- Compare different cultures and perspectives.

Project and place based learning

Students study the myths and stories told by specific cultures or groups, learning to identify key elements that can inform what beliefs and values are being reinforced by the tales. They then identify and articulate the values of communities that they themselves are members of, which they incorporate into stories of their own that communicate those values. In the annual Place Out of Time simulation, students research the life, times, and culture of a notable individual. They then portray that character in a series of online and in-class conversations and activities, attempting to bring the perspective of their character to contemporary issues. The books chosen for reading groups, read alouds, and individual reading are heavily weighted toward stories featuring underrepresented voices, which are supplemented with additional primary and secondary sources that provide additional context.

7th/8th Grade

Concepts

In a civil and just society, what are the responsibilities of a citizen? How can students develop and pursue their own visions for their individual contributions to that society? How are relationships amongst people developed and sustained over time and across cultures? What are the lenses through

which students should consistently examine history in order to understand influences upon human behavior? How can students learn to interact with assorted texts to explore the above questions? In grades 7-8, students work to develop answers to these questions.

Skills

- Acquire, synthesize, and use historical information.
- Seek and identify history's manifestations in modern society.
- Participate actively in discussions.
- Work collaboratively with peers and adults.
- Develop research skills.
- Write informatively, analytically, and persuasively.
- Produce substantive digital texts, such as websites and electronic slide shows.
- Identify, understand, and rightfully value the characteristics of ethical behavior.
- Evaluate and choose behavior through ethical and contextual lenses.
- Employ both the bird’s-eye and worm’s-eye perspectives on history to identify and utilize multiple perspectives.

Project and Place-Based Learning

The class took time to define “civic systems” and then took a bus around Ann Arbor identifying them in action. The students were then assigned to work on one of those systems in pairs. Each pair prepared a questionnaire and then interviewed a person connected to that system. Finally, each pair conducted an exhibition on site, in which they taught an active lesson to their parents and the class on their system. In another project, students were assigned different institutions in the city of Detroit that were doing socially valuable work (e.g. a school, an urban farm). All students spent time working with these institutions. Exhibitions were once again conducted on site, with students explaining the history and objectives of the organizations. The 7-8s have maintained longer-term relationships with several of these institutions.

Language Arts, K-8

Kindergarten

Reading

- Take pleasure in books.
- Listen to others read.
- Look at books and identifies words versus pictures.
- Experiment with reading (could be actual reading, memorizing, making up stories around the pictures, etc.)
- Explore the use of reading for many dIfferent purposes: pleasure, art, stories that have a message, history, scientific knowledge, etc.
- Explore reading of different genres: poetry, folk tales, true stories, instruction manuals, etc.
- Visualize stories (acts them out, draws them in pictures, etc.).
- Develop a sense of structure (retells the story, discusses why things happened the way they did).
- Understand that in Western culture, words are arranged from left to right on a page.

Writing

- Experiment with the idea of marks on paper as a means of communication (links to history, such as the Rosetta Stone, cuneiform, Lascaux caves).
- Develop a sense of letters as building blocks for words.
- Explore how letters go together to make sounds.
- Compare accurate spelling with creative spelling.
- Begin phonics.
- Understand that in Western culture, words are arranged from left to right on a page.

Speaking

- Participate in discussions: learning to take turns, learning that their comments are valuable, learning to talk about the subject at hand.
- Speak for presentation and performance: reading poems aloud, presenting at morning meeting, etc.
- Use storytelling to process meaning.

Listening

- Learn to listen to a story without off-topic interruption.
- Learn to listen to peers respectfully.
- Learn how to be a good audience member.

1st/2nd Grade

Reading

- Take pleasure in books.

- Listen to others read.
- Look at books and identify words versus pictures.
- Experiment with reading (could be actual reading, memorizing, making up stories around the pictures, etc.)
- Explore the use of reading for many dIfferent purposes: pleasure, art, stories that have a message, history, scientific knowledge, etc.
- Explore reading of different genres: poetry, folk tales, true stories, instruction manuals, etc.
- Visualize stories (act them out, draw them in pictures, etc.).
- Develop a sense of structure (retell the story, discuss why things happened the way they did).
- Develop a simple understanding of consonants, vowels and punctuation.
- Is able to read words sequentially.

Writing

- Experiment with the idea of marks on paper as a means of communication (links to history, such as the Rosetta Stone, cuneiform, Lascaux caves).
- Develop a sense of letters as building blocks for words.
- Explore how letters go together to make sounds.
- Compare accurate spelling with creative spelling.
- Continue understanding of phonics.
- Develop understanding of consonants, vowels and simple punctuation.
- Is able to write words sequentially.
- Develop understanding how to separate words with spaces.
- Begin handwriting training.

Speaking

- Participate in discussions: learning to take turns, learning that their comments are valuable, learning to talk about the subject at hand.
- Speak for presentation and performance: reading poems aloud, presenting at morning meeting, etc.
- Use storytelling to process meaning.

Listening

- Learn to listen to a story without off-topic interruption.
- Learn to listen to peers respectfully.
- Learn how to be a good audience member.

3rd/4th Grade

Reading

- Read fluently and independently.
- Identify elements of story arc.
- Describe how aspects of characters are revealed through words and actions in a story.
- Identify parts of a story such as: conflict, character, plot, theme, and setting.
- Use prior knowledge and context clues to analyze and incorporate new vocabulary.

- Summarize chapters and stories.
- Make inferences and predictions based on what was read.
- Note how the author reveals character or advances action.
- Develop an appreciation and understanding for the craft of storytelling through fiction, nonfiction and other media.
- Reason with evidence and speak to how authors reveal character and advance action.

Writing

- Apply mechanical and grammatical conventions with a focus on the following:
    - Capitalization
    - Punctuation
    - Sentence Construction
    - Paragraph Construction
- Build explanations, interpretations and theories.
- Edit and revise drafts individually and with peers.
- Develop understanding and use of naming: being able to identify parts and pieces.

Speaking and Visual Communication

- Reason with evidence.
- Make connections to prior knowledge, across subject areas, and personal lives.
- Capture the heart and make firm conclusions.
- Make text to text connections.
- Make text to self connections.
- Communicate ideas clearly in small and large group settings.
- Use precise vocabulary.
- Describe how images and language can be used to express ideas, beliefs, and values.
- Analyze and use visual media to communicate.
- Analyze and respond to ways visual media represents a perspective, evokes an emotion, and influences perception.

Listening

- Develop sense of inquiry: questioning that uncovers complexity.
- Explore perspectives and viewpoints (stories told and untold).
- Capture the heart and make firm conclusions.
- Gain meaning by listening.

5th/6th Grade

Reading

- Read fluently and independently.
- Choose appropriate strategies to construct meaning from text.
- Analyze and interpret information from various texts.
- Locate and use a variety of text to gain information.

- Read about current events weekly.
- Select and read fiction individually.
- Read widely across genres.
- Read stories and novels about historically underrepresented cultures and communities.
- Read fiction in literature circle, discussing and evaluating.
- Read primary and secondary sources from a variety of time periods.
- Make connections between texts and the wider world.

Writing

- Use different forms of writing to communicate.
- Use the conventions of written language with increasing accuracy.
- Write in an organized and coherent manner.
- Reread, reflect, and make revisions.
- Proofread a rough draft and make corrections in its mechanics.
- Show control of standard spellings.
- Demonstrate research-writing skills.

Speaking and Visual Communication

- Convey ideas confidently and coherently.
- Use language flexibly for a variety of purposes.
- Deliver focused, appropriate, well-researched, and well-rehearsed presentations to peers, parents, faculty, and members of the larger community.
- Speak clearly; make eye contact; and communicate respectfully.
- Use appropriate tools (digital or pencil/paper) to create artifacts, displays, representations, or other supporting materials to complement oral presentations.

Listening

- Ask thoughtful and articulate questions.
- Actively listen to acquire information and understanding.
- Explore perspectives and viewpoints (stories told and untold).
- Make meaning by listening.

7th/8th Grade

Reading

- Read daily for pleasure and purpose.
- Analyze and annotate literary texts in order to make connections and deepen understanding.
- Read a variety of historically and culturally significant literary texts, including: essays, poetry, plays, short stories, and novels.
- Identify the elements of fiction (character, plot, point of view, setting, style, and theme).
- Inquire and think critically when reading and evaluating an informational text.
- Determine the reliability and authenticity of a source.
- Articulate rationale for choosing or not choosing a particular source for a particular purpose.
- Use information ethically and responsibly.

- Read a variety of informational texts, including: narrative nonfiction, research proposals, technical articles, scientific writings.

Writing

- Write expository and persuasive essays using correct grammar and context-appropriate vocabulary.
- Write technical pieces (such as, but not limited to summary writing and science reports).
- Write creative pieces (such as, but not limited to poetry, scripts, fiction, and creative nonfiction).
- Edit for grammar, content, organization, style, spelling, and mechanics.
- Understand and independently use the writing process of drafting, revising, and finalizing a piece of writing.
- Identify and use literary devices such as, but not limited to, metaphor, simile, symbolism, and irony.
- Use the relationship between words and student's understanding of word roots, suffixes, and prefixes to better understand each word.
- Interpret figures of speech (such as, but not limited to literary, biblical, and mythological allusions) in context.

Speaking and Visual Communication

- Participate actively in discussions.
- Use appropriate vocabulary depending on the context of the conversation.
- Deliver focused, appropriate, well-researched, and well-rehearsed presentations to peers, parents, faculty, and members of the larger community.
- Speak clearly; make eye contact; and communicate respectfully.
- Use appropriate tools (digital or pencil/paper) to create artifacts, displays, representations, or other supporting materials to complement oral presentations.
- Use correct grammar and context-appropriate vocabulary in all multimedia and visual displays.
- Try new tools for projects and evaluate their usefulness for a variety of tasks.

Listening

- Ask thoughtful and articulate questions.
- Actively listen to acquire information and understanding.
- Explore perspectives and viewpoints (stories told and untold).
- Make meaning by listening.

Mathematics, K-8

A Note on Mathematics at Summers-Knoll School

Summers-Knoll approaches the study of mathematics with a **unique focus on allowing individual students to proceed at their own pace** through a pre-set curriculum. Specifically, with approval from their teacher, students have the opportunity, as they move through the curriculum, to "test" into the next level. For the purposes of this document, we lay out a typical progression of mathematics study, resulting in the completion of an Algebra 1 curriculum by the end of 8th grade -- our basic goal for all students -- despite a number of our students exceeding this level by the time they leave the school.

Kindergarten

Number and operations

- Beginn concept of addition and subtraction with physical manipulatives.
- Show understanding of number and quantity.
- Begin to understand relationships between quantities.
- Count by ones to 100, count by 2s, 5s, 10s to 100.
- Compare numbers using greater than, less than, equal to up to 20.
- Count objects in a set, read and write numerals to 10.
- Use place value models to represent numbers to 100.

Data Collection, Analysis, Probability and Statistics

- Collect and organize data into bar graphs and draw conclusions.
- Sort objects and data by common attributes.
- Use words and representations to describe mathematical ideas.
- Communicate and represent mathematical thinking.

Geometry and Spatial Relationships

- Recognize and describe some attributes of shapes.
- Find symmetry.
- Show understanding of and uses direction, location, and position words.

Measurement

- Order, compare, and describe objects by size, length, capacity, and weight.
- Explore common instruments for measuring during work or play.
- Estimate and measure using non-stand and standard units.
- Show awareness of time concepts.
- Show awareness of coin values.
- Show awareness of beginning fractions: quarter, half, whole.

1st/2nd Grade

Number and operations

- Use mental math to do addition and subtraction.
- Apply concepts and strategies to solve mathematical problems.
- Show understanding of number and quantity and their relationship (less than, greater than, equal to).
- 2 and 3 digit number addition and subtraction with renaming.
- Make reasonable estimates of quantities and check for accuracy.
- Begin to understand multiplication and division.
- Use repeated addition and arrays to solve multiplication problems within 40.
- Using sharing and grouping to divide.
- Relate division to multiplication.
- Multiply and divide by 2s, 3s, 4s, 5s, and 10s.
- Place value to 10,000.

Data Collection, Analysis, Probability and Statistics

- Collect and organize data into bar graphs, pie graphs, Venn diagrams, and draw conclusions.
- Uses graphs to answer questions.
- Practice sampling to extrapolate.
- Communicate and represent mathematical thinking.
- Make predictions based on data.
- Collect, record, and interpret data using tallies, lists, charges, and graphs.

Geometry and Spatial Relationships

- Recognize and describe some attributes of shapes.
- Find and explore symmetry.
- Show understanding of and use of direction, location, and position words.
- Describe and extend repeating patterns involving color and shapes.

Measurement

- Order, compare, and describe objects by size, length, capacity, and weight.
- Explore common instruments for measuring during work or play.
- Estimate and measure using non-standard and standard units, imperial and metric systems.
- Tell time to the nearest 5-minute mark.
- Know coin values, can count small piles of change, make exchanges to a dollar.

3rd/4th Grade

Number and operations

- Estimate by rounding; including correct use of rounding to an indicated place value.

- Use factors and multiples.
- Can tell time on an analog clock; know how to calculate elapsed time.
- Can identify place value to 100,000.
- Use accurate algorithms to multiply and divide whole numbers; both single digit and multidigit numbers.
- Display a beginning understanding of negative numbers and how they apply in real world contexts.
- Display an understanding of the relationship between mathematical operations including multiplication as repeated addition and division as repeated subtraction.
- Understand commutative and associative properties of addition and multiplication and is able to represent these ideas pictorially.

Data Collection, Analysis, Probability and Statistics

- Can create and read bar graphs and pie charts and is able to collect and use data from these charts.
- Can draw conclusions/make suggestions based on data.
- Able to use number lines for concrete data.

Fractions

- Can add and subtract fractions of same and different denominators.
- Can use equivalent fractions to compare fractions of different denominators.
- Can determine fractions of a given set.
- Simplifies fractions using common denominators.

Geometry and Spatial Relationships

- Demonstrates an understanding of parallel and perpendicular lines.
- Can identify types of angles in a given geometric shape.
- Can apply knowledge of angles in a given geometric shape to find missing angles
- Display an introductory understanding of perimeter and area of a shape.

Measurement

- Can measure accurately using rulers and protractors.
- Can measure length, weight, and capacity in both standard and metric units.

5th/6th Grade

Number and operations

- Apply estimation strategies to solve problems with decimals and fractions.
- Understand mixed numbers, improper fractions, and decimal representations as interchangeable.
- Comprehend situations with numbers not in base 10 (clocks, calendar, directional headings).
- Master place value; understands "moving the decimal point" idea of powers of ten.

- Master algorithms for long division and multiplication with whole numbers and decimals.
- Master arithmetic operations with positive rational numbers (fractions, decimals, percents).
- Understand order of operations of the four basic functions and parentheses.
- Use addition and subtraction with integers.
- Use the concepts of mathematical properties to assist in problem solving strategies.

Data Collection, Analysis, Probability and Statistics

- Graph paired data on the coordinate plane, including making scatterplots.
- Recognize and use number lines in a variety of contexts and for problem solving.
- Choose between measures of center (median, mean, mode) as appropriate.
- Use probability to make real world arguments.
- Calculate probability in real-world contexts.
- Collect data and use data displays for one-variable data (such as histogram, stem-leaf, and box-whiskers).

Geometry and Spatial Relationships

- Identify and classify quadrilaterals based on comparison of sides and angles, and parallelism.
- Fully understand area and perimeter; see area as multiplication and perimeter as addition and understand why.
- Find area, perimeter, and volume of compound shapes.
- Use formulas for area and circumference of circles and parts of circles.

Measurement

- Use SI and important imperial units confidently
- Understand SI as extension of base 10.
- Use appropriate units in all problems.
- Compare and contrast linear vs. two and three dimensional measurements.

7th/8th Grade

Number and Operations

- Understand and use absolute value.
- Understand and use exponents (integers and square roots).
- Understand and use scientific notation.
- Understand and use order of operations with exponents.
- Understand and use properties of arithmetic, especially inverses and identities.

Algebraic Reasoning

- Use algebra to model real-life situations.
- Fluently convert between verbal and mathematical expressions.
- Understand the introduction to functions.
- Solve linear equations and inequalities in one variable.

- Graph linear equations and inequalities on the number line and coordinate plane.
- Solve systems of linear equations and inequalities in two variables.
- Use algebra to represent and solve geometric problems.

Probability, Statistics and Data Analysis

- Identify linear and nonlinear trends in data.
- Interpolate and extrapolate from scatterplots.
- Design and conduct a statistical investigation.
- Analyze data using assistive software (spreadsheets).
- Recognize common statistical misconceptions and deceptive practices.

Art, K-8

K-8 Art: Essential Questions

What is art?
Who are artists?
How does art impact culture, individuals, and day-to-day life?
What is the language of art, and how is it used?
How can one use tools, mediums, and related ideas to create their vision?

Kindergarten

Concepts

What is art? How does the work of different artists and illustrators impact history and society? What are the methods for creating art?

Skills

- Use of language to discuss art.
- Introduction to elements and principles of art.
- Basic techniques in drawing, painting, clay and mixed media are introduced, as well as experimentation with non-traditional mediums.

Expression

Use art as a venue to express ideas, experiences and emotions, and integrate art throughout other domains of the curriculum. Respond to artistic creations of self and others.

1st/2nd Grade

Concepts

What is meaningful creation? What inspiration do artist take from one another? What is color theory? What are the elements of art?

Skills

- Use of language to discuss art, focusing on color, line, shape, and emphasis.
- Continued exploration of different mediums.
- Relate various age-appropriate artists' works to each other and their own work.

Expression

Successfully use various wet and dry mediums to create meaningfully. Develop hands-on technique. Understand art as fun, exploratory, interesting, and part of culture.

3rd/4th Grade

Concepts

How is color theory used in art? What are the elements and principles of art? How is a multi-step piece of artwork planned out? Who are the influential artists of the Western World?

Skills

- Further develop use of language to discuss art, focusing on form, space, texture, value, proportion and variety; and how to use those elements and principles in their own artwork.
- Understand multi-step processes relating to artwork.

Expression

Plan out and execute basic multi-stepped artwork (ex. paper mache on a clay mold). Successfully integrate color theory and elements/principles into personal work, use language to express purpose. Relate work of influential artists to each other and their own work.

5th/6th Grade

Concepts

What are the principles of art? What are the different schools on Western Art? How do you design and plan out a piece of artwork?

Skills

- Continued development of the language of art, focusing on balance, movement, and color harmony.
- Mastery of basic drawing materials and techniques.
- Utilize sketchbook and resources for planning of artwork, process of thought before and during execution of work.

Expression

Use sketchbooks, notes, and research into other artists to plan out larger projects. Effectively use color as a tool of expression within work. Consistent successful usage of graphite, charcoal, ink, and related tools.

7th/ 8th Grade

Concepts

What are the principles of art? What is appropriation in art? How is individual style expressed?

Skills

- Continued use of the language of art, focusing on emphasis, unity and color theory.

- Research into chosen artists of interest, create projects based on those artists' work.
- Continued development of individual style and voice, continued development of sketchbook utilization.

Expression

Successful use of language to express ideas and techniques in art. Students explore choice mediums and have more freedom deciding on projects. Distinct individual expression through materials and subject matter.

Latin, K-8

Overview

Our unique program embraces every student in the school beginning at the Kindergarten level. Young children are open to what is new to them. They are eager to explore. They are full of questions and we are eager to celebrate this time in their lives and to introduce them to Latin, which is the root of modern Romance languages - Italian, French, Spanish, Portuguese and Romanian - and which supports English spelling. Latin also has a rich cultural and literary legacy and all our students as they move onward from Kindergarten and, at 8th grade, begin to prepare for high school, have the advantage of studying a language that helps promote analytical thinking and a culture that has provided the foundation for many aspects of modern civilization. Our program is based on the work of Roman poets and historians and supports the development of sound grammatical understanding and of the enrichment of English vocabulary.

Concepts

The study of Latin offers our students the opportunity and the means to develop the ability to make connections, to think logically and to appreciate the importance of the transmission of ideas from one culture to another, from one age to another. Building a facility in Latin helps the student develop the ability to engage in thoughtful discussion, to engage opinion and to crystallize arguments, skills we all need.

Kindergarten

Language and Literature

We focus on Latin words which resonate immediately with our city, Ann Arbor - arbor (tree) and with the themes of metamorphosis in Greek and Roman myths about the natural world. Ovid's Metamorphoses is our main source. We look to enrich our own vocabulary by exploring those words that are derived from Latin. As an introduction to Latin grammar, we introduce Latin nouns in nominative case in both singular and plural forms.

History and Civilization

The lives of Roman children, family life, and education are the primary focus.

Application

Students participate in storytelling, talking about and articulating the underlying message of myths, art and craft, acting out stories, and playing the games Roman children played.

1st/2nd Grade

Language and Literature

Students focus on Latin words relevant to the mythology of Greek and Roman heroes, e.g. Hercules and Aeneas. At this level, the grammatical emphasis is on a selection of nouns that are the roots of English, on numbers and adjectives and on introducing first conjugation verbs in the 3rd person singular and plural forms. Students also learn Roman numerals.

History and Civilization

Roman society - life in the city and in the countryside - is the focus of study.

Application

Students participate in plays and presentations in Latin on myths and on the people of Roman society. Students do art and craft activities to give visual form to the themes of mythology and history. Students complete short translation exercises using a selection of nouns, verbs, numbers and adjectives.

3rd/4th Grade

Language and Literature

Students continue their mythological study with an emphasis on the definition of 'heroism'. Students learn Latin words as part of derivational spelling program in support of homeroom teachers' work in English. At this stage, the accusative singular forms of a number of nouns are introduced.

History and Civilization

The foundation of Rome and the first kings are the focus of study.

Application

Students play quis sum? and qui sumus?, mythological and historical identity games that use Latin vocabulary. Students give presentations on mythological and historical themes in Latin, highlighting Latin words that help with derivational spelling. Students complete translation exercises that support an understanding of English grammar as well as building confidence in recognizing Latin nouns as subjects and objects in simple sentences.

5th/6th Grade

Language and Literature

Students engage in a review of elementary school curriculum to help support new students entering the school at this level; Introduction to the 4 conjugations and the 5 declensions. Students also study

personal pronouns. Students are introduced to ancient Greek and exploration of English words derived from both ancient Greek and from Latin.

History and Civilization

Students study aspects of Roman society economy and government during the time of the Roman Republic. Students continue to learn Greek and Roman mythology and, for a comparative study, aspects of Norse and Egyptian mythology.

Application

Students complete translation of edited passages from the historical writing of Livy and the poetry of Ovid. Students complete individual or small group projects on literary and historical topics, such as Roman epic, religion, trade and politics.

7th/8th Grade

Language and Literature

Students engage in a review of 5th and 6th grade grammar. Students are introduced to adjectives in the positive, comparative and superlative forms and of verbs which are followed by the infinitive.

History and Civilization

Roman history - the Empire and the role of a Roman governor. is one of the units of study. Students examine the Trojan War as depicted in one Greek source (the Iliad) and one Roman source (the Aeneid). Students study travel in the ancient world as seen through the eyes of the Roman poet and satirist, Horace. Students also examine the role of a Roman governor.

Application

Students complete translations of extracts from Pliny's epistolae on his work as a governor for the Emperor Trajan, but also on the eruption of Vesuvius, Roman attitudes to slavery and Roman villas. Students give individual presentations on Roman rulers based on the writing of the Roman historian, Suetonius. Students write papers on the characters and themes of the Trojan War and on the Roman experience of travel.

French, K-8

Overview

The program is a journey developing fluency in the context of the histories and cultures of French speaking nations, and with reference to current events and trends in science and the arts. The four skills of listening and speaking and of reading and writing are developed through the gradual building of confidence in handling linguistic structures and through applying grammatical understanding in creative projects embracing 'real life' scenarios and by means of art, music and drama.

Concepts

Education should not only advance knowledge, but should also enhance our ability to relate to one another with perception, compassion and understanding. Accurate and expressive communication is the goal of language teaching and it supports and promotes a sensitivity toward our shared humanity. Embracing another language also encourages the development of a degree of courage and of the confidence to take risks in the pursuit of competence.

1st/2nd Grade

Vocabulary

Students learn greetings, the French pronunciation of the alphabet, numbers, fruits, colors, animals, the family, the days of the week, the seasons, and the home (rooms and garden).

Grammar

Students learn pronouns (when to use tu and when to use vous). They begin to learn the conjugation of être and avoir.

Application

Students practice answering questions about their names and age. They sing songs and play games responding to instructions in French. They learn short French poems to help practice accent and phrasing. They listen to French stories and begin to recognize words in the narrative. They act out real life scenarios in the context of a market or a restaurant. They decorate and label rooms in a doll's house.

3rd/4th Grade

Vocabulary

Students review of 1st and 2nd grade work. They learn the date, the time, the weather, parts of the body, clothes, and buildings.

Grammar

Students learn how to ask and how to respond to a question and how to state a preference. Students learn the plural endings of a selection of nouns. They are introduced to adjectival agreement.

Application

Students take part in a French interview project and practice conversations with a partner. They create games based on the design of a town or city in order to practice giving directions. They sing French songs and learn French poems. They listen to and translate French stories. They learn about current trends in climate, science and the arts through translating and discussing selected headlines from the French news.

5th/6th Grade

Vocabulary

Students engage in a review of 1st - 4th grade vocabulary as our middle school begins at 5th/6th grade and this will help both new and returning students. Students learn expressions of time and place, shopping vocabulary, food, recipes, weather, climate, and geographical features.

Grammar

Students learn the singular and plural forms of nouns, adjectival agreement, pronouns, and the present and imperfect tenses.

Application

Students practice conversations with partners. They participate in our French interview project. They act out scenes in shops or restaurants, including shopping lists and menu design. They cook. They sing songs and learn poems. They read articles on current topics relevant to the French speaking world in the French magazine Allons-y, and through following items in the French press on climate and ecology.

7th/8th Grade

Vocabulary

Students learn countries, their geographical features, systems of government and aspects of their history. Students learn about travel (the train station, the airport, town, village, leisure, and vacations).

Grammar

Students engage in a review of the present and imperfect tenses. They develop their understanding of pronouns and reflexive verbs. Looking forward to high school French programs, they are introduced to the future and past tenses.

Application

Students create presentations in French on countries of their own choice. They read articles on current topics relevant to the French speaking world in the French magazine Bonjour, and follow political trends through French headline news. They research and present information about contemporary and historical personalities through our interview projects. They design pamphlets advertising excursions and leisure activities. They enjoy singing in French and learning French poems.

Music, K-8

Overview

At Summers Knoll, we believe in fostering a thriving musical community in which students can work together and share music. We have a composition-based music curriculum designed to empower students with the ability to love and learn music through playing and composing. We sing, dance and learn to play multiple instruments. All SK students learn to compose and have many opportunities to play music together and share their compositions.

Kindergarten

- Sing and dance.
- Introduce piano, ukulele, drums and voice.
- Introduce music literacy.
- Play and compose together as a group.
- Create a musical together.

1st/2nd Grade

- Sing and dance.
- Develop basic skills on piano, ukulele, drums and voice.
- Develop basic music literacy skills.
- Play and compose together as a group and in small groups.
- Create a musical together.

3rd/4th Grade

- Sing and dance.
- Continue to strengthen skills on piano, guitar, ukulele, drums and voice.
- Read music autonomously.
- Play and compose individually and in groups.
- Create a musical together.

5th/6th Grade

- Introduce orchestra instruments.
- Choose music and rehearse autonomously.
- Create a performance event together.
- Introduce basic recording skills.
- Study and emulate composition techniques.

7th/8th Grade

- Develop strong basic skills on orchestra instruments.
- Choose music and lead a group.
- Create and organize a performance event together.

- Develop autonomous recording ability.
- Develop an individual compositional voice.

Physical Education, K-8

Kindergarten

Movement Patterns and Motor Skills

- Space awareness movement - location, directions, levels, pathways, and time.
- Show some elements of relationship movement.
- Show selected elements of non-locomotor skills.
- Show selected elements of mature form of manipulative skills.

Physical Activity and Nutrition

- Understand beneficial effects.
- Participate in activities that help with muscular strength and endurance.

Participation

- Focus on skill building rather than on formal game structure.
- Focus on skill building during a variety of locomotor and developmentally appropriate manipulative skills.

1st/2nd Grade

Movement Patterns and Motor Skills

- Space awareness movement - location, directions, levels, pathways, and time.
- Show some elements of relationship movement.
- Show and identify selected elements of non-locomotor skills.
- Show and identify select locomotor skills.
- Show selected elements of mature form of manipulative skills.

Physical Activity and Nutrition

- Understand the beneficial effects of physical activity and nutrition.
- Understand the beneficial effects of muscular strength.
- Understand the beneficial effects of flexibility.

Participation

- Focus on skill building rather than on formal game structure.
- Focus on skill building during a variety of locomotor and developmentally appropriate manipulative skills.
- Demonstrate effort, cooperation, and compassion.
- Achieve moderate levels of physical activity.

3rd/4th Grade

Movement Patterns and Motor Skills

- Demonstrate all space awareness movement concepts.
- Apply knowledge of movement concepts during non-locomotor and locomotor skills.
- Demonstrate relationship movement concepts.
- Demonstrate all elements of the mature form of non-locomotor skills.
- Show elements of mature form of manipulative skills.
- Apply knowledge of movement concepts while performing locomotor/non-locomotor skills and manipulative skills.
- Apply knowledge of critical elements of movement.
- Participate in aerobic activity/fitness activities.
    - Abdomen/lower back strength, arm/shoulder strength, hip/low flexibility

Games

- Develop strategies for tactical problems in target games.
- Develop on-the-ball tactical movements for maintaining possession in invasion games.
- Develop strategies for tactical problems in net/wall games.
- Maintain a rally in net/wall games.
- Defend space in net/wall games.
- Identify tactical problem in striking/fielding games.

Physical Activity and Nutrition

- Understand the beneficial effects of physical activity and nutrition.
- Understand the beneficial effects of muscular strength.
- Understand the beneficial effects of flexibility.

Participation

- Focus on skill building rather than on formal game structure.
- Demonstrate effort, cooperation, and compassion.
- Achieve moderate levels of physical activity.
- Take initiative and demonstrate leadership skills.
- Enjoy positive feelings associated with participating in physical activities.
- Be able to explain the effects that physical activity and nutrition have on the body.

5th/6th Grade

Movement Patterns and Motor Skills

- Demonstrate all space awareness movement concepts.
- Demonstrate all relationship movement concepts.
- Apply knowledge of movement concepts during non-locomotor and locomotor skills.

- Demonstrate all relationship movement concepts.
- Demonstrate all elements of the mature form of non-locomotor skills.
- Show elements of mature form of manipulative skills.
- Apply knowledge of movement concepts while performing locomotor/non-locomotor skills and manipulative skills.
- Apply knowledge of critical elements of movement.
- Participate in aerobic activity/fitness activities.

Games

- Develop strategies for tactical problems in target games.
- Develop on-the-ball tactical movements for maintaining possession in invasion games.
- Develop strategies for tactical problems in net/wall games.
- Maintain a rally in net/wall games.
- Defend space in net/wall games.
- Identify tactical problem in striking/fielding games.

Physical Activity and Nutrition

- Understand the beneficial effects of physical activity and nutrition.
- Understand the beneficial effects of muscular strength.
- Understand the beneficial effects of flexibility.

Participation

- Focus on skill building rather than on formal game structure.
- Demonstrate effort, cooperation, and compassion.
- Achieve moderate levels of physical activity.
- Take initiative and demonstrate leadership skills.
- Enjoy positive feelings associated with participating in physical activities.
- Be able to explain the effects that physical activity and nutrition have on the body.

7th/8th Grade

There is considerable research demonstrating that physical exercise and fresh outdoor air (in all weathers) stimulates the brain and improves the mood. Furthermore, the collaboration intrinsic in competitive, collective, and student-created games is a crucial element of the middle school curriculum. Our emphasis is generally, but not exclusively, on games that all students can enjoy: those who are more athletically competitive, and those who are not. The 7-8s' kinesthetic program includes sledding, ice skating, hiking, soccer and team handball (using soccer balls, tennis balls, yoga balls, and rugby balls), Quidditch, Mile Week (six laps around the school every day), assorted versions of tag, shoe golf, and a variety of original games.