

Oakland VLAC

VIRTUAL LEARNING ACADEMY CONSORTIUM

Course Guide

Grades K-5

2023-2024 School Year

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Elementary Course Guide

Grades K-5

How to use this course guide:

Beginning with the 2023-2024 School Year VLAC will offer students in Grades K-5 Lincoln Learning Courses.

Students begin the school year with the following courses:

- Lincoln Orientation
- Lincoln ELA, Math, Science, and Social Studies

During the month of September, students will complete the Lincoln Orientation Course, i-Ready Reading and i-Ready Math diagnostic tests and complete several career exploration activities in Xello. Students will also begin their four core Lincoln courses. VLAC staff will analyze the results of these activities and share options for elective choices. Students will begin elective classes at the end of September. All students must have six classes on their schedule to participate in VLAC to be considered a full-time student.

Traditional Electives:

VLAC will continue to offer traditional electives such as physical education, art, music. Students enrolled in these three classes will be provided with the accompanying materials kit if the kit is available from Lincoln.

i-Ready Reading and Math Instruction:

Students scoring at a level who are recommended for support on the Fall i-Ready Reading and Math diagnostics will be enrolled in i-Ready Instruction as their elective choices. Students may choose to add traditional or Defined electives, but i-Ready instruction will be the priority expectation.

Defined Project-Based Electives:

Students may choose to add Defined Project-Based Electives to their schedules. Project-based electives should align with students' career readiness interests as shown in Xello and/or interests. Project-based learning allows students to use creativity and deeply explore concepts and apply learning resulting in a product. Students and families will attend a general kick-off meeting with your classroom teacher to understand the pacing and feedback process should you choose Defined Project-Based Electives.

Elementary Example Schedules

Traditional	Supported	Project Based	Other	Other
Lincoln English	Lincoln English	Lincoln English	Lincoln English	Lincoln English
Lincoln Math	Lincoln Math	Lincoln Math	Lincoln Math	Lincoln Math
Lincoln Science	Lincoln Science	Lincoln Science	Lincoln Science	Lincoln Science
Lincoln Social Studies	Lincoln Social Studies	Lincoln Social Studies	Lincoln Social Studies	Lincoln Social Studies
Music	i-Ready Math	Backpack Designer	i-Ready Reading	Music
Physical Education	i-Ready Reading	My Piggy Bank	Physical Education	Backpack Designer

Grade Level Advancement:

When students enter public school, they are entered into a grade level which is tracked by the State of Michigan. Parents who want students placed into a grade level other than their currently assigned grade must go through your enrolling district process. For example, if you want your child retained at a grade level, the request and process takes place with your enrolling district. Students who want to advance in a subject level (not entire grade) may request this from your VLAC teacher. The teacher will ask that you exhaust your grade level i-Ready instruction lessons. If after students exhaust their grade level i-Ready instruction they have time in the school year to complete a reasonable portion of another grade level, and with enrolling district's permission, we will enroll students in the next grade level subject.

ELEMENTARY Courses

Kindergarten

English Language Arts

English Language Arts K encompasses reading, writing, speaking, spelling, and listening skills for students who are emerging learners. This course places a heavy emphasis on the alphabet, as students learn letter names and both uppercase and lowercase letters. Students also learn letter sounds and how to articulate and blend those sounds. English Language Arts K focuses on building reading skills using high-frequency sight words—common prepositions, nouns, verbs, and adjectives. Through grade-level appropriate readings, students explore story elements and the ways in which pictures relate to text. They also learn to summarize a text and to compare characters, events, and ideas within texts. This course teaches foundational grammar and writing skills, including proper capitalization, spacing between words, and sentence punctuation. Students learn to print words and write complete sentences. Finally, interactive activities throughout the academic year help students develop their speaking and listening skills as well. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

In Mathematics K, students explore the world of mathematics all around them. They begin to develop foundational mathematics skills such as number identification, rote counting to 100 by memory, and place value. They learn the difference between more than and less than and explore the ways in which numbers can be decomposed. Students compare measurements, such as longer and shorter and heavier and lighter. They begin to develop problem-solving skills as they engage with simple addition and subtraction equations and word problems. Finally, students are introduced to basic geometry and learn the names and basic attributes of shapes. This course includes a Parent and Teacher Guide that supports student learning.

Science

Science K introduces emerging learners to the knowledge and skills that will help them discover and understand the natural world around them. In this course, students learn to formulate questions, to predict, and to investigate. They use basic scientific tools, such as a magnifying glass, a ruler, and a thermometer, to make observations and draw on those observations to communicate their findings. They learn to use their five senses as observational tools as well. They deploy their observational skills to describe animals and plants, their basic needs for survival, and their environments. Students discover the effect of sunlight on Earth's surfaces

and the difference between sun and shade. Students explore weather types, weather patterns, and seasonal changes. They also examine the characteristics of force, including the difference between a push and a pull. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Studies Social

Social Studies K introduces emerging learners to the knowledge and skills that will help them to become active and valued participants in their community. Students discover the importance of rules and regulations in guiding community behavior, and they explore good citizenship and values such as respect, democracy, cooperation, and equality. Social Studies K establishes students' understanding of the past by teaching them the importance of a sequence of events and developing their skill in distinguishing fact from opinion. Finally, students learn about the world around them, including how geography influences society, how maps represent places, and how communities rely on trade in goods and services. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

First Grade

English Language Arts

English Language Arts 1 focuses on developing reading, writing, spelling, speaking, and listening skills. In this course, students begin to understand that spoken and written language can be broken into phonemes. They use rhyming, blending, and segmenting to develop the foundation needed to become an emergent reader. Students read prose, poetry, and informational texts for comprehension. They learn to interpret the ways in which stories and poems appeal to the senses and to identify the main topic and key ideas within texts. Students increase their vocabulary by learning to use morphemic and contextual analysis to determine the meaning of unknown words. Students learn to spell new words using various spelling rules. In English Language Arts 1, students hone their writing skills by practicing grammar rules for noun usage, personal possessive and indefinite pronouns, verb tenses, capitalization, commas, and end punctuation. In doing so, they learn to produce and expand sentences and to write opinion pieces, informational pieces, and narratives. This year, students begin learning how to research information and how to use their research to answer questions. They identify and use various parts of a book, such as headings and the table of contents. They also use digital tools to publish their writing. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

In Mathematics 1, students begin to learn mathematics in a more formal way. They focus on rote counting to 120 and practice reading and writing these numbers. In addition to strengthening their addition and subtraction skills, they compare two-

digit numbers using place values and the comparison symbols for greater than, less than, and equal to. Students measure lengths and use measurements to compare the lengths of multiple objects using nonstandard measuring and units. They strengthen their geometry skills by drawing two-dimensional and three-dimensional shapes, and they explore fractions by dividing those shapes into halves and quarters. Students also organize, represent, and interpret data in pictures, tables, and charts. Additionally, they tell and write times in hours and half-hours. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Science

Science 1 extends students' exploration of the natural world. Along the way, students practice making predictions and observations, experimenting, and using scientific tools and problem-solving skills. In this course, students investigate animals and plants, identify the basic needs of all living things, and compare plant and animal families. They examine how humans solve problems by mimicking plant and animal structures and functions. This course also introduces patterns of the sun, moon, stars, and Earth that can be predicted. Students observe and discover the properties of light and sound and learn ways to communicate with light and sound. Finally, students develop their ability to distinguish problems from solutions and recognize the relationship between cause and effect. This course includes a printed Parent and Teacher Guide that supports student learning.

Social Studies

Social Studies 1 leads students beyond their local community to consider their place in their state, the nation, and the world. They explore the function and characteristics of government in the United States, including the role of rules and laws and the rights and responsibilities of citizens. Students also learn how to ask questions and gather information to understand history. The course focuses on developing students' knowledge of the interplay between the physical world and human societies, as they learn basic geography skills, such as map reading, and examine the impact of the environment on how and where people live and how regional variations drive trade in both goods and services. Finally, students build their understanding of good citizenship by identifying ways to contribute to the community and avoid conflict and by interacting respectfully with others. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Second Grade

English Language Arts

English Language Arts 2 central concepts are reading, writing, spelling, speaking, and listening. This year, students begin to transition from learning to read to reading to learn. In this course, students continue to develop their phonemic awareness by

learning to recognize word families, word origins, and irregularly spelled words. They also begin to use linking words to connect opinions and reasons and time-order words to signal the order of events. While reading, students work to distinguish fact from opinion, decipher an author's reason, and identify the main topic of a multi-paragraph text. Students sample multiple genres of literature, including fiction, nonfiction, poetry, folktales, and fables, while exploring story elements such as plot, setting, characterization, and the author's point of view. They also learn to distinguish between the main idea and the theme of a story. Students develop their writing skills by composing narrative, persuasive, and informative essays, as well as creative writing pieces. Additionally, they practice their research skills by finding facts in multiple sources and using them to produce a science report. Students use a dictionary to reinforce phonetic punctuation and spelling and to identify words with multiple meanings. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

In Mathematics 2, students begin to develop the skills to solve problems mentally and to explain how they solved a problem aloud or through writing. They count to 1,000 and identify even and odd numbers. Students discover multiple strategies for adding and subtracting numbers and determine which strategies work best for various problem types. They work with number lines and use them to represent whole numbers and their sums and differences. In this course, students expand their knowledge of place value to include thousands and use this concept to compare numbers. They use standard units of measurement to express the length of objects in inches, feet, centimeters, and meters. Mathematics 2 introduces digital and analog time and presents students with word problems involving money. In addition to learning monetary values, students also learn to use the dollar and cent symbols appropriately. Students also deepen their understanding of geometric shapes while exploring fractions by dividing shapes into halves, thirds, and fourths. They are introduced to new ways of representing data, including line plots, picture graphs, and bar graphs. This course uses mathematics' manipulatives to help students visualize problems in addition to a printed Parent and Teacher Guide that will help you support your student's learning.

Science

Science 2 encourages students to make sense of the world around them by observing and experimenting. Through focused readings and hands-on activities, students explore Earth and the matter that makes up its surface. They study the relationship between plants and animals through pollination and seed dispersion. They look deeply into several habitats on Earth and the plants and animals that live and grow there. Students examine and compare many different landforms and bodies of water. They research topics and formulate questions, make predictions, and then use scientific tools to observe and test their experiments. By recognizing patterns, solving problems, and identifying cause and effect, students develop the

ability to make inferences and communicate their findings. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Social Studies

Social Studies 2 empowers students to become productive citizens by developing their knowledge and skills in civics, history, geography, and economics. They deepen their understanding of the U.S. government by explaining the role of the three branches of government and of the U.S. Constitution. Students extend their knowledge of U.S. history to recognize the impact of important figures and movements of the past, and they begin to think like historians by identifying reliable sources, crafting compelling questions, distinguishing fact and opinion, and using timelines to structure a series of events. The course highlights the role of international relations, including both alliances and international trade, as well as the importance of geography and regional variations in resources and production. Finally, students learn core concepts of economics, including supply and demand, scarcity, and cost and benefits, as well as the functions of banks, and relate these concepts to individuals and communities. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Third Grade

English Language Arts

English Language Arts 3 focuses on expanding students' reading, writing, spelling, speaking, and listening skills. In this course, students read more complex texts and write to express themselves with greater sophistication. They practice reading at a natural pace while using intonation and expression appropriately. While reading, they interpret texts in more complex ways, by identifying cause and effect, determining tone and mood, and distinguishing shades of meaning in figurative language. This course introduces students to new genres, including opinion pieces, biographies, and blogs, while they continue to work with narratives, fiction, and informational texts. An emphasis is placed on grammar, punctuation, and spelling as students explore the functions of nouns, pronouns, verbs, adjectives, and adverbs; categorize nouns; explain the differences between various verb tenses; write simple, complex, and compound sentences; and use capitalization, commas, and quotation marks correctly. They learn the spelling of words with various prefixes and suffixes; regular and irregular nouns, verbs, and adjectives; and contractions, compound words, homophones, and words with various vowel sounds. Students develop their speaking and listening skills by planning, writing, and delivering an oral presentation and by creating visual aids to accompany the presentation. English Language Arts 3 also introduces students to new forms of writing, such as scripts, autobiographies, and outlines. They practice drafting and revising their writing through the development of journal entries, short stories, opinion pieces, and narratives. Students expand their research skills by learning to take notes while researching and to organize their notes into categories. They also

gather information using both print and electronic sources. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

Students in Mathematics 3 focus on multiplication and division, as this course aims to build strong foundational skills in these areas. Students explore the relationship between multiplication and division and practice using the order of operations to solve problems, including one- and two-step word problems. In addition to using place value to perform multi digit arithmetic, students round numbers to the nearest ten or hundred. They refine their mathematics skills in relation to money by making change using a combination of bills and coins. Mathematics 3 presents area and perimeter to students as they explore linear and area measurements. They also work with fractions as numbers in this course, representing them on number lines, generating equivalent fractions, and comparing fractions with the same numerator and denominator. Finally, students explore the ways in which various types of data can be displayed. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Science

Science 3 guides students on an exploration of the natural world, its animals, its plants, and its terrain. They learn how clouds form, what causes the cycles of seasons and of day and night on Earth, and that light and sound are actually energy. Students examine the Earth's eight major biomes and identify how adaptations help plants and animals to survive varying conditions. They become junior meteorologists, able to explain weather and climate and to use weather instruments and knowledge of patterns to observe and predict the weather. Students recognize the information fossils can provide about the Earth's past and use geologic time scales to identify the eras when fossilized organisms lived. They explain how chemical reactions can change the properties of matter, and they investigate energy, magnetism, and electricity. Finally, students research topics and formulate questions, make predictions and observations, experiment and measure using scientific tools, and draw inferences and identify patterns based on their scientific inquiries. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Social Studies

Social Studies 3 focuses on the United States, including its government and its laws. Students are encouraged to think about what it means to be productive, responsible citizens of both the nation and their own local communities. To support their learning about U.S. history and differing cultures and perspectives, students develop and research compelling questions on historical topics, work with credible sources, and distinguish between fact and opinion. Additionally, they learn to evaluate the validity of sources, especially websites. Students develop presentation skills that include constructing arguments to support their opinions and using

visual aids to add interest to oral reports. They also expand their map-reading skills and learn the fundamentals of financial literacy. In addition to studying the United States, students examine the geography, culture, history, government, and economy of three other world communities: Canada, Mexico, and India. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Fourth Grade

English Language Arts

Students in English Language Arts 4 focus on expanding their reading, writing, spelling, speaking, and listening skills, with a heavy emphasis on solidifying their writing skills. They use narrative, descriptive, opinion, persuasive, and informative pieces to learn to state ideas, facts, and opinions clearly while correctly using introduction, body, and conclusion paragraphs. Students create a plan for writing, revising and editing their work, and improve their writing using feedback from an adult. Through their writing, they continue to master the conventions of English grammar, including quotations, relative pronouns, progressive verb tenses, modal auxiliaries, prepositional phrases, antecedents, coordinating conjunctions, compound sentences, capitalization, and punctuation, while avoiding sentence fragments and run-on sentences. They learn to spell words with a wide variety of prefixes and suffixes in addition to homophones, possessives, compound words, and words with silent letters. While reading, students identify, describe, and analyze story elements and compare these elements in stories, myths, and literature from various cultures. Students further develop their research skills by conducting short research projects, taking notes during research, and creating bibliographies. They develop more concrete speaking skills by creating and delivering presentations on various topics. In addition, students create audio recordings and visual aids to supplement their presentations. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

In Mathematics 4, students refine their skills in the areas of place value, measurement, geometry, fractions, and decimals. They use the order of operations to solve problems with whole numbers up to 1 million, and they explore factors and multiples ranging from 1 to 100. Students use equations, arrays, and area models to explain multiplication calculations. They compare multi-digit whole numbers, fractions, and decimals using the symbols for greater than, less than, and equal to. Students practice converting measurements, such as feet to inches, and they use their understanding of size to determine whether measurements are reasonable answers to problems. Mathematics 4 introduces students to the protractor, which they use to measure angles in whole number degrees. Students learn to identify right triangles, and they sketch angles, lines, segments, and rays. Students look closely at fractions and decimals in this course by writing equivalent fractions,

ordering fractions from least to greatest, comparing fractions with different numerators and denominators, and writing fractions as decimals and vice versa. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Science

Science 4 lays a foundation for future excellence in the STEM fields by introducing technology and engineering concepts, such as simple and complex machines and the steps of the engineering design process. This course encourages students to become innovative problem-solvers equipped with the skills and knowledge necessary to address twenty-first-century issues. Students explore the technical and sometimes surprising facts behind the things they see and experience every day. They expand their knowledge and understanding of topics in the areas of physics, chemistry, Earth science, ecology, biology, and space science. Students investigate genetics and the physical characteristics of living things, ecosystems and extinction, agriculture and sustainable resources, and pollution and recycling. They get to know the Earth's landforms and the types of rocks and soil and extend their learning beyond the Earth to the solar system and the Milky Way. Finally, students encounter important concepts in physics, such as the types and properties of waves, and in chemistry, such as atoms, molecules, and the conservation of mass. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Social Studies

Social Studies 4 introduces students to critical analysis as they develop detailed knowledge of the United States, its regions, and the influence of individual perspectives on documents and events. Students assess and use a wide variety of primary and secondary sources to research compelling questions through supporting questions and present interpretations and arguments in both written and oral forms, supporting their positions with details drawn from reliable sources. Students learn the rights and responsibilities of citizens and how people and groups can work together to accomplish common goals. Students also explore how regional differences in physical environments and cultures affect how people live and work. This course fosters a command of the concepts and tools of geography, such as latitude, longitude, maps of various kinds, and scales. Students will also gain an understanding of core aspects of economics, including resources, production, consumption, and international trade. This course includes a Parent and Teacher guide that supports student learning.

Fifth Grade

English Language Arts

In English Language Arts 5, students solidify their foundational skills in reading, writing, spelling, speaking, and listening. Students read a variety of texts this year,

including fiction, nonfiction, and informational texts. They identify the author's purpose in multiple forms of writing, such as descriptive, expository, technical, persuasive, and narrative passages. Through these texts, they learn to make inferences and analyze multiple accounts of the same event. They also identify, interpret, and compare similes, metaphors, and idioms used in writing and learn to draw a plot diagram and to identify common themes in literature. This year, students write a five-paragraph essay and an effective thesis statement. They follow the writing process to develop essays, create outlines to organize their ideas, and revise and improve their original draft. Students also write a persuasive letter, a speech, and a script. This course teaches and reinforces spelling rules, such as i before e, while also focusing on the spelling of words ending in a silent e, commonly misspelled words, and words with multiple syllables. Students sharpen their research skills by learning to use notecards for research, gathering information about the same topic from multiple sources, and understanding plagiarism and the importance of writing in their own words. They also practice citing sources by creating a bibliography. Students enhance their presentation skills by reporting on a text or topic, telling a story, retelling an experience, or presenting an opinion in an organized way while using facts and details to support the main idea. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Mathematics

Mathematics 5 focuses on developing students' math skills and problem-solving strategies. Problems and activities are designed to get students reasoning abstractly and quantitatively, constructing arguments, and modeling with mathematics. Students add, subtract, and multiply fractions, divide fractions by whole numbers, and divide whole numbers by fractions. They perform multiple operations with decimals in addition to comparing, ordering, and rounding them. They use exponents to denote powers of 10. Students are introduced to volume and how to calculate it and classify two-dimensional shapes into categories. They also graph data on a plot line and the coordinate plane, using graphs to solve real-world and mathematical problems. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Science

Science 5 puts the emphasis on doing science. Students build their knowledge by crafting models, conducting experiments, creating terrariums, and making electromagnets. They learn about plant and animal cells and their functions, photosynthesis, and the roles of producers, consumers, and decomposers in an ecosystem. Students explore the global water cycle, the negative impacts of weather, and the relationship between weather and climate. They deepen their understanding of their home planet by investigating landforms, volcanic activity, the layers of the Earth's atmosphere and geosphere, the tilt of the Earth's axis, the impacts of its revolution around the Sun, and the Sun's role as the source of energy

for life on Earth. Students are introduced to elements as the basic substances of all matter and the relationship between matter and particles; they also encounter such core concepts of physics as energy transformation, gravitation, and Newton's first and second laws of motion. They design simple and parallel circuits and use the engineering design process to generate solutions to real-world problems. Finally, they conduct research, formulate questions, make predictions and observations, conduct fair tests using the scientific method, record their findings, and draw conclusions for future investigation. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Social Studies

Social Studies 5 puts American history front and center, as students learn about the Native American civilizations of the Americas, the discovery of the New World by European explorers, the founding of the United States, westward expansion, and the coming of the Industrial Revolution. Students leverage research skills to analyze historical events and documents, and they present their findings using arguments based on reliable sources with supporting facts. They refine their ability to distinguish fact from opinion in the context of historical investigation. Students also broaden their understanding of government by recognizing how the system of checks and balances works at both national and state levels, and they identify and interpret important songs and symbols of the United States. Civic responsibility is woven throughout the curriculum, and students recognize the value of public service and the traits of good leaders. Social Studies 5 also explores the themes, tools, and techniques of geography. Students learn how human interaction with the environment has caused change, both beneficial and detrimental, in the past and in the present. Finally, they learn how the U.S. economy functions, including the role of government and multinational organizations in domestic and international trade. This course includes a printed Parent and Teacher Guide that will help you support your student's learning.

Lincoln K-5 Electives

The VLAC Elementary Elective Program consists of two elective choices. Students will choose two electives (total) from **Lincoln Learning** and/or **Defined Learning** courses. Students may also choose to enroll in i-Ready Reading and/or i-Ready Mathematics as electives that support or advance their current learning in Reading and Mathematics.

Kindergarten- Lincoln Elective - Art

In Art K, students are introduced to the ways in which they can express ideas and demonstrate their creativity through art. Throughout this course, students are encouraged to use their imagination to create art. They use a wide variety of materials to make their artwork, and they learn safe methods for using those materials. They explore the importance of working with others by collaborating

both to create art and to solve artistic problems. Students use multiple techniques while working with the same artistic medium, and they create various scenes, including a nature scene, a construction scene, and an underwater scene. This course will teach students to develop and carry out a plan to create and revise their work, and it guides them through the process of creating a personal art portfolio. In addition, Art K encourages students to begin thinking about the artwork of others. They learn about well-known artists and the common tools those artists used. They also learn about art museums and consider how pieces of artwork make them feel. Finally, students create works of art that are of a more personal nature, including art depicting their own community, a self-portrait, and an illustration of their favorite book. Throughout Art K, students learn art terminology so that they are able to connect ideas and demonstrate the beginnings of a strong artistic foundation.

Kindergarten- Lincoln Elective - Music

In Music K, students are introduced to the expression of ideas and creativity in music through active involvement. Students respond, connect, perform, and create music to enhance gross and fine motor skills, vocal development, self-expression, personal connection, originality, visual recognition, and audiation while developing music terminology.

Kindergarten - Lincoln Elective - Physical Education

Physical Education K offers students a comprehensive physical education course where the focus is to get students motivated to be active. Students begin by learning about the course requirement of 36 hours of organized, supervised physical activity. They also learn to document their activity in their PE Log. Next, students learn about different aspects of physical education, including different exercise and activity techniques in addition to information on leading a healthier lifestyle that allows them to be more physically fit. Topics such as safety, following directions, friendships with peers, and basic health and nutrition are reviewed. Regardless of the content covered in the daily lesson, students are expected to get up and move every day. They can do so by using different movements, exercises, or the grade-appropriate physical education kit items, which are available to purchase. The kit is designed to work in conjunction with the course content and contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

First Grade- Lincoln Elective - Art

In Art 1, students explore the roles of both groups of people. Students learn how daily life can be used as inspiration and how it can be depicted through artwork. They categorize artworks according to the subject matter each is portraying. Additionally, students learn to recognize the elements of art and the principles of design, and they rate artwork. Students explore the ways in which artwork is created outside of the school setting, and they discover that art is made for different

reasons. As practicing artists, students will develop their art vocabulary, art understanding, and artistic skills as they work through prompts supplied in the course.

First Grade- Lincoln Elective - Music

In Music 1, students are introduced to music fundamentals such as solfège, rhythms, dynamics, meter, instrument families, and dance forms. Each topic is presented using music and movement activities that include reading, singing, dancing, and writing. Students improvise original rhythmic compositions. They sing using various forms of musical expression and dance. They learn and practice proper stage and performance etiquette techniques, and they explore the ways in which music and dance work together to create specific dance forms. Students also learn about American composers whose music has influenced American society.

First Grade - Lincoln Elective - Physical Education

Physical Education 1 offers students a complete physical education experience where students are encouraged to live healthy lifestyles through good food choices and daily activity. The course begins by introducing students to the requirements for completion, which include 36 hours of organized, supervised physical activity. Students document all activity within their PE Logs. From there, students learn about several different elements of a healthy lifestyle, including safety, working with others, responsibility, stretching, healthy versus unhealthy foods, and warming-up and cooling-down. Regardless of the activity students are asked to do on a given day, they are expected to get up and move for a certain amount of time within each lesson. This expectation encourages students to be active every day by creating a routine. Students can be active by performing different exercises, engaging in different activities, or by using items from their grade-appropriate physical education kits, which are available to purchase. The kit is designed to work in conjunction with the course content and contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

Second Grade- Lincoln Elective - Art

In Art 2, students explore artistic expression of their own personal interests. They learn to organize art into categories and to identify the various methods and materials used to create art. Throughout this course, students expand their artistic vocabulary, using it to describe the works they are studying. They explore the ways in which color can represent mood in artworks and create their own works to express their mood. While learning safe procedures for working with artistic materials, students experiment with mixing colors. In addition to creating artworks that depict family, school, and community life, students also gain familiarity with works from European and Asian cultures.

Second Grade - Lincoln Elective - Music

In Music 2, students explore musical expressions. They investigate how musical concepts such as tempo are used to achieve the musician's expressive intent. Students identify the role and responsibility of a music composer and seek out the connections between music, other arts, daily life, and history. Throughout the course, they perform songs with movements and improvise rhythmic patterns and melodies. They create and record musical ideas through a recording device or on paper. Students learn to identify how personal interests and experiences influence music selection and instrument choice. Through these studies, they evaluate music from the Irish, African, and Japanese cultures. Additionally, they work with standard and iconic notation. Finally, students use the musical skills learned in this course to evaluate recorded music and make suggestions for improvement.

Second Grade - Lincoln Elective - Physical Education

Physical Education 2 provides students with a comprehensive physical education course. Within this course, students are encouraged to discover ways to live a healthy lifestyle, including better food choices and consistent activity. Students begin the course by learning about the required 36 hours of organized, supervised physical activity. They also learn to document their activity within a PE Log. The course then moves into different aspects of healthy living, discussing components of health and safety, nutrition, working with others, following directions, and several new and different exercises, activities, and techniques. Regardless of the activity the student is asked to do within a given day, they are encouraged to get up and move for a certain amount of time within each lesson. This expectation helps them to create a routine-like schedule. Students can be active by performing different exercises, engaging in different activities, or by using items from their grade-appropriate physical education kits, which are available to purchase. This kit, which is designed to work in conjunction with the course content, contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

Third Grade - Lincoln Elective - Art

In Art 3, students create, experiment, revise, present, analyze, and respond to artwork. Students learn the importance of presenting their art and the necessary components to consider when doing so, such as the display space, artwork preparation, and display limitations. Students revise and enhance their art to tell a better visual story. They also learn how to ask important questions regarding the imagery and materials an artist uses to better understand the message of the work. Art 3 gives students the observation tools they need to perceive their world and create art based on what they see and how they feel.

Third Grade - Lincoln Elective - Music

In Music 3, students explore musical basics such as melody, harmony, dynamics, tempo, timbre, texture, and context. They also reflect upon how these elements affect a listener's response to the music. Students use standard notation to read and write notes and rhythm in the treble clef and then practice playing those notes on instruments including the hand drum, rhythm sticks, and the soprano recorder. They learn about new musical ideas such as the pentatonic sound, major and minor scales, and singing in solfège. Finally, students identify key classical composers and explore new musical genres such as blues, bluegrass, country, jazz, and pop music.

Third Grade- Lincoln Elective - Physical Education

Physical Education 3 offers a comprehensive physical education course where students learn how to live a healthy lifestyle and are motivated to be active. Students begin by learning about the required 36 hours of organized, supervised physical activity required in the course and how to document their activity within a PE Log. After students learn the guidelines, they move into the course content, which covers topics ranging from safety, rules, and etiquette to various new, fun, and challenging activities and exercise techniques. Students learn the basic elements of each new activity, along with the proper way to execute the motions so that they can get the most benefits from the exercise. Regardless of the activity the student is asked to do within a given day, they are encouraged to get up and move for a certain amount of time within each lesson. This expectation helps them to create a routine-like schedule. Students can be active by performing different exercises, engaging in different activities, or by using items from their grade-appropriate physical education kits, which are available to purchase. This kit, which is designed to work in conjunction with the course content, contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

Fourth Grade - Lincoln Elective - Art

In Art 4, students begin thinking about the meaning behind works of art. They work both independently and collaboratively to brainstorm ideas for visual art, set artistic goals, and create meaningful artistic pieces. Students experiment with oil pastels and nontraditional art-making approaches and materials. They explore how regional influences can inspire an artist and create their own art based on regional inspirations. Students observe the various ways in which art can be displayed, where it can be displayed, and how its placement can impact the artist's message. Students compare works from different cultures and create art to reflect their own cultural traditions. They also learn to use context to interpret artwork and infer information about the time, place, and culture in which works were created.

Fourth Grade - Lincoln Elective - Music

In Music 4, students identify how the elements of music (melody, harmony, timbre, dynamics, and tempo) affect what a piece of music communicates to a listener. Students label or perform three different examples of rhythm in addition to musical notes such as the eighth note and the sixteenth note. They identify notes on the bass and treble clef. Students learn the difference between sharps and flats and major and minor scales. They create simple melodies with chords and mark tempo, time signature, and signature key. Students explore different musical characteristics and instruments from Africa in addition to Latin American and Celtic music and dance. Finally, students explain how social and cultural contexts influence a musical performance.

Fourth Grade - Lincoln Elective - Physical Education

Physical Education 4 provides students with a complete physical education experience where they not only learn how to live healthier lifestyles, but they are also taught and encouraged to be active every day. The course begins with an introduction to the requirements for completing the course successfully. Students must participate in, and document, at least 36 hours of organized, supervised physical activity within a PE Log. Then, students move into the content, which ranges in topics from the five components of physical fitness and safety, rules, and etiquette to various new, fun, and challenging activities and exercise techniques. Before attempting each activity, students receive instruction on the basic elements and the proper execution of each movement so that they can get the most benefits from the exercise. Regardless of the activity the student is asked to do within a given day, they are encouraged to get up and move for a certain amount of time within each lesson. This expectation helps them to create a routine-like schedule. Students can be active by performing different exercises, engaging in different activities, or by using items from their grade-appropriate physical education kits, which are available to purchase. This kit, which is designed to work in conjunction with the course content, contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

Fifth Grade- Lincoln Elective - Art

Art 5 gives students opportunities to work with a wide range of materials, from metal to watercolors, all while further developing their techniques and skills as artists through repeated practice. Students learn to analyze, interpret, and talk about art with their peers as well as other admirers of art. They are introduced to the idea of cultural associations and perceptions and are asked to look at imagery critically. In doing so, students learn to decide how the details of their own work could be interpreted by others. Throughout this course, students create artwork that will bring attention to topics they find important. Their work will illustrate their awareness of their surroundings and will show their developing artistic abilities.

Fifth Grade - Lincoln Elective - Music

In Music 5, students demonstrate their ability to create, perform, analyze, and respond to music while making connections to personal, social, cultural, and historical perspectives. By the end of the course, students will be able to read music notation, compose music, and improvise original melodies. Students will also apply what they learn through interactive learning activities and performances on a variety of instruments including, but not limited to, the tambourine, rhythm sticks, maracas, and the soprano recorder.

Fifth Grade - Lincoln Elective - Physical Education

Physical Education 5 offers a comprehensive physical education course where students are taught the basics for healthy and active living. Students begin by learning about the 36 hours of organized, supervised physical activity required for the course and how to document their activity in a PE Log. Next, students begin to engage with the content, which includes topics about safety and journaling in addition to new, fun, and challenging activities and exercise techniques. Before attempting each activity, students receive instruction on the basic elements and the proper execution of each movement so that they can get the most benefits from the exercise. Regardless of the activity the student is asked to do within a given day, they are encouraged to get up and move for a certain amount of time within each lesson. This expectation helps them to create a routine-like schedule. Students can be active by performing different exercises, engaging in different activities, or by using items from their grade-appropriate physical education kits, which are available to purchase. This kit, which is designed to work in conjunction with the course content, contains age-appropriate exercise and activity items. Adaptive physical education activities are available for this course.

i-Ready

i-Ready is an online program for reading and mathematics that helps teachers determine students' needs, personalize learning, and monitor progress throughout the school year. i-Ready allows teachers to meet students exactly where they are and provides data to increase students' learning gains. i-Ready consists of two parts: Diagnostic and Personalized Instruction.

The i-Ready Diagnostic is an adaptive assessment that adjusts its questions to suit students' needs. Each item a student sees is individualized based on their answer to the previous question. For example, a series of correct answers will result in slightly harder questions, while a series of incorrect answers will yield slightly easier questions.

i-Ready Personalized Instruction provides students with lessons based on their individual skill level and needs, so students can learn at a pace that is just right for them. These lessons are fun and interactive to keep your student engaged as they learn.

Xello

Xello is an online program that students at VLAC use to help them prepare for the future. It offers a variety of career and college readiness activities for students in grades kindergarten through the end of high school. These activities help students build self-knowledge, explore their options, and create achievable plans. They develop the 21st-century skills needed to thrive in the world of work. Students discover a variety of careers and their clusters, develop their problem-solving and community building skills, and gain a better sense of self.

Xello playlist for families:

<https://www.youtube.com/playlist?list=PLBqDBylN16Vfvm2jTqgDyXg8EAf38nn8J>

Defined Project-Based Learning

When choosing Defined Projects to add as electives, we encourage choosing the entire Unit and subsequent projects within the unit.

Defined K-2 Multi-Subject Projects Grades K-2

Unit	Projects	Project Description
Park Design: Math/Science	Park Designer (Math)	In this task students will use design thinking to create a park based on geometric shapes and their properties. They will also be determining the perimeter and area of each section of their park. Products in this task include a blueprint and design sketch.
	Park Designer: Producers and Consumers (Science)	In this task students will learn how producers, consumers, and decomposers have their needs met and impact the environment. Products in this task include a park model, presentation and brochure.
Astronaut: Math/Science	Lunar Astronaut (Math)	In this task students will be multiplying and dividing numbers to determine weights and creating a bar graph based on the sizes of craters on the Moon. Products in this task include a gravity chart and a lunar crater bar graph.

	Astronaut: Space Travel (Science)	In this task, students will use resources to plan a trip to outer space and communicate this plan with their intended audience. Products in this task include a space travel presentation, living space diagram and space travel list.
Zookeeper: Math/Science	Zookeeper (Math)	In this task, students will learn about odd or even numbers (as a foundation for multiplication and division), create rectangular arrays and write additional equations. Products in this task include an animal exhibit and a feeding pen diagram.
	Zookeeper (Science)	In this task, students are encouraged to collaborate with other students to research zoo animals and create innovative products to share learned information. Products in this task include a zoo habitat drawing, digital presentation, and poster.
My Piggy Bank: Math/Social Studies	My Piggy Bank (Math)	In this task students will explore the different ways people earn and save money. They will also learn the importance of following a budget. Products in this task include counting coins and making a dime.
	Money Manager: My Piggy Bank (Social Studies)	In this task students will explore how people find ways to earn and save money. They will learn what a budget is and how to spend their money. Students will understand the differences between wants and needs. Products in this task include counting coins and a need and wants chart.
Robot Designer: Math/Engineering	Robot Engineer: Robots	In this task students will use the design process to create a robot that can solve a problem. Products in this task include a model, online advertisement, and program design.
	Robot Designer	In this task, students will create a robot design out of geometric shapes and measure and compare the parts of their robot.

		Products in this task include a robot measurement and model.
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Defined 3-5 Multi-Subject Projects Grades 3-5

Unit	Projects	Project Description
Classroom Design: Math/Science	Classroom Design (Math)	This task requires students to apply their knowledge of 2-D geometric shapes, and measurements such as perimeter and area, to compose a design of a classroom. They will also be finding factor pairs to determine different dimensions of a room. Products in this task include room sizes and drawing.
	Classroom Architect (Science)	In this task students will design their ideal classroom based on their individual learning needs. Engineering design is a creative process that anyone can do which may result in new inventions and innovations. Products in this task include a desk diagram, classroom learning list and drawing.
Zookeeper: Math/Science	Zookeeper (Math)	In this task students will learn about odd or even numbers (as a foundation for multiplication and division), create rectangular arrays and write additional equations. Products in this task include animal exhibits and feeding pen diagrams.
	Zookeeper (Science)	As a zookeeper, you will choose two new animals to add to your zoo. You will create two habitats that showcase your knowledge of what the animals need to survive in the wild, including natural habitats, food, whether they are group or solitary animals, how they rear young, and what kind of exercise they need. You will use your skills to educate the public and encourage them to support initiatives that conserve animals and habitat in the wild. Products in this task include a presentation and habitat design.

Aircraft Designer: Math/Science	Aircraft Designer (Math)	This task has students building and flying paper airplanes. They will time the flight, measure the distance, display the fractional distance data on a line plot and answer questions based on the data which will require operations with fractions. Products in this task include distance line plot and models.
	Aircraft Designer (Science)	The Aircraft Designer focuses on designing airplanes and understanding the effect gravity has on objects. Products in this task include a multimedia presentation, line plot and models.
Toy Designer: Computer Science/ SEL	Toy Designer: Build a Toy (Computer Science)	Computational Thinking is the primary focus of this task. Students are encouraged to break down the problem into manageable pieces to better focus their products. Students use computational thinking to develop a scale drawing of their prototype, and plan and design a website. Products in this task include a webpage, flowchart, and scale drawing.
	Toy Designer (SEL)	Students will develop language to talk about their group identities. This task will allow students to develop a positive sense of self. Products in this task include a picture book and a doll design.
Park Designer: Math/Science	Park Designer (Math)	In this task students will use design thinking to create a park based on geometric shapes and their properties. They will also be determining the perimeter and area of each section of their park. Products in this task include a blueprint and a design sketch.
	Park Designer: Producers and Consumers (Science)	In this task students will learn how producers, consumers, and decomposers have their needs met and impact the environment. Products in this task include a park model, presentation, and a brochure.

Rain Barrel Manufacturer: Math/Science	Rain Barrel Manufacturer (Math)	As a manufacturer, you will study how rain barrels work to help conserve water and stop pollutants from moving through the environment. You will share your designs for rain barrels at a national environmental awareness conference and educate buyers about water conservation. Products in this task include an oral presentation, flier and prototype.
	Rain Barrel Manufacturer (Science)	In this task students will be applying their knowledge of several standard areas to create three different products. Students will be performing operations with decimals, multiplying mixed numbers, graphing, converting metric measurements and determining volume. Products in this task include a pizza box model, pricing chart and ingredients budget.
Pizza Shop Entrepreneur: Math/ Computer Science	Pizza Shop Owner (Math)	In this task students will be applying their knowledge of several standard areas to create three different products. Students will be performing operations with decimals, multiplying mixed numbers, graphing, converting metric measurements and determining volume. Products in this task include a pizza box model, pricing chart and ingredients budget.
	Restaurant Entrepreneur: Pizza Shop Owner (Computer Science)	This task also focuses heavily on several computer science standards, such as computational thinking, pattern recognition and creative communicator. Products in this task include a flowchart, webpage and ingredients budget.
Backpack Designer: Math/ Science	Backpack Designer (Math)	In this task students will explore how math and engineering play a significant role in product design. They will be measuring to $\frac{1}{4}$ inch and determining areas to help design and manufacture a backpack for a specific audience. Products in this task include design, prototype, and cost analysis.

	Backpack Designer (Science)	Backpacks are used in many ways by many people. As a lead designer for a backpack company, you must design and create a unique backpack. It will have to have a feature that no other backpack has. Products in this task include a blueprint, prototype, and infomercial.
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Defined Grades K-1 Math Projects

Unit	Projects	Project Description
Counting & Place Value Concepts	My Piggy Bank (Money Manager)	In this task students will explore the different ways people earn and save money. They will also learn the importance of following a budget. Products in this task include counting coins and making a dime.
	Game Designer	In this task, students will count and write whole numbers to create different types of puzzles. Products in this task include a jigsaw puzzle and matching game.
	Toy Store Stockperson	This task includes 2 products. In the Earthquake in the Stockroom task, students will be faced with a stockroom where all the bouncy balls have fallen off the shelves and out of their packaging. Students will package the bouncy balls in tens and ones in different ways and list how many are in their inventory. In the Bouncy Ball Display task, students will count the numbers of bouncy balls they have in stock, using tens and ones to count and to report the bouncy ball inventory in their store. They will then create a way to display the bouncy balls in the store. For each task, students will use colored chips (representing the bouncy balls) to guide their work. It may help students to have linking cubes to use for modeling as they take ones and form them into tens.

Adding and subtracting	Candy Shop Owner	In this task students will apply their understanding of the Base 10 number system to find combinations and create additional sentences to represent amounts of candy. Products in this task include order slip and a chart.
	Puppet Show	In this task students will use puppets to model addition and subtraction word problems involving numbers to ten. Students will write equations to match the word problems. The products in this task include a written script and creating a show.
	Jewelry Designer	Students will work as bracelet designers, designing bracelets with five beads to explore different combinations that sum to five. Students will also plan and draw beaded bracelets using different shaped beads, naming the shapes they use. Products in this task include a bracelet design and bead design.
	Puzzle Creator	In this task, students will be puzzling creators as they work with missing addend problems. They will need to use addition and subtraction facts through 20 to solve and create missing number-type puzzles. Products in this task include solving number puzzles and creating number puzzles.
	Flower Arranger/Florist	Students act as flower arrangers as they decompose ten to fulfill customer special orders. Students will also find the missing number that makes ten to complete flower vases. Products in this task include flowers for customers and arrangements.
Money, Time, and Data	Neighborhood Pet Sitter	In this task, students will add and subtract using one, five, and ten dollar amounts as they run a business pet sitting for neighborhood pets. Products in this task include feeding the fish and dog walking invoice.
	Census Worker	In this task, students will act as census takers as they collect data about their classmates and

		display the data in a way that is easy to understand. Students will also make simple numeric comparisons of the data they collect. Products in this task include a research study and new cafeteria lunch.
	Cupcake Baker	In this task, students will be taking on the role of a Cupcake Baker and using their knowledge of addition and subtraction as well as displaying analog and digital time and displaying and answering questions about a pictograph. Products in this task include a birthday graph and baking list.
Measurable Attributes & Shapes	Shapes Around the Neighborhood (Building Inspector)	In this task students will explore the different shapes all around them. They will find the differences between two-dimensional and three-dimensional shapes. Students will also classify different shapes by their geometric name and properties such as sides, angles, vertices, edges, etc. Products in this task include picture identification and scavenger hunt.
	Vehicle Design	In this task students will discover that two and three-dimensional objects can be described, put in groups with other similar shapes, and studied by their different parts. Products in this task include a collage and vehicle design.
	Landscape Architect: Landscaping your School	In this task, students will classify objects based on their attributes. They will also compare objects with measurable attributes to determine which object has more or less of the attribute. Products in this task include a drawing and design.
	Shoe Designer	In this task students will learn how shoe designers use math in their job. Students will make a shoe design in their shoe size, order the shoes by length and apply geometric concepts to shoe design. Products in this task include a shoe parade and shoe design.

	Robot Designer	In this task, students will create a robot design out of geometric shapes and measure and compare the parts of their robot. Products in this task include a drawing and model.
Culminating Projects	Tailor: Buttons	In this task students will be applying their knowledge of several standard areas to create three different products. They will be counting and writing numbers, using attributes to describe and compare and answering questions based on data while using addition and subtraction. Products in this task include a button bar graph, button design and button search.
	Entomologist: Caterpillars & Butterflies	In this task students will be applying their knowledge of several standard areas to create three different products. They will be creating a pictograph and answering questions based on the data. They will be measuring and comparing lengths with an object of your choice, they will also be drawing geometric shapes on the wings of butterflies. Products in this task include a graph, measurements, and a garden design.

Defined Grades 2-3 Math Projects

Unit	Projects	Project Description
Adding & subtracting	Banker	In this task students will explore the importance of saving money. They will practice adding and subtracting sums of money. Products in this task include a money counting contest and monthly statement.
	Camp Counselor	In this task students will use addition and subtraction to make sure there are enough tents and s'more supplies for all campers. They will also write a song including addition and subtraction about the camp mascot. Products in

		this task include a tent setup list, s'more supply list and campfire song.
	Travel Agent	In this task, students will use technology and math skills to design a dream road trip. They will apply math concepts such as rounding, multiplication, and addition to a real-world situation. Products in this task include a route and mileage chart and a budget.
	Iditarod Sled Driver	In this task students will use addition and subtraction to determine how an Iditarod sled driver needs to travel each day to finish the race. Students will also use multiplication and division to determine what to pack in their sled. Products in this task include a tracking log and packing list.
Multiplying & dividing	Paramedic	In this task students will explore how math is used in the medical field. They will use multiplication and division to help solve problems. Products in this task include a simulation and dosage chart.
	Band Director	In this task students will apply their knowledge of arrays and connect it to addition and multiplication to create a flag and formation for a band. Products in this task include a color guard flag, band formation and video.
	Zookeeper	In this task students will learn about odd or even numbers (as a foundation for multiplication and division), create rectangular arrays and write additional equations. Products in this task include animal exhibits and a diagram.
Representing Fractions	Olympic Floral Designer	In this task students will research and use math skills to design Olympic floral arrangements. They will apply math concepts such as fractions, estimation and multiplication to this real-world situation.
	Food Pantry Coordinator	Through the design process, students will explore the role math plays in food and nutrition. Students will use their knowledge of equivalent fractions represented as a visual fraction model and on a

		number line to bring healthy food options to people in their community. Products in this task include Garden Bed Plan and Meal Plate Design.
	Pastry Chef	In this task, students will create arrays of dessert displays by partitioning rectangles into rows and columns, counting to find the number of same-sized squares created. Students will also partition circles and rectangles into two, three, and four equal shares, using fraction vocabulary to describe the shares they create. Products in this task include a cupcake display and plated dessert diagram.
	Artist: Stained Glass Designs	In this task students will explore how math and art play a significant role in the design process. They will be designing stained glass windows using equivalent fractions and completing a cost analysis for each window.
Money, Data & Time	Entrepreneur: Lemonade Stand	In this task students will learn about managing their own business. They will practice adding, subtracting, and making changes to run their own Lemonade Stand. Products in this task include change chart and budget.
	Reptile Land Curator	In this task students will determine and show time both on an analog and digital clock. They will also be representing data from a bar graph and answering questions based on the data. Products in this task include a bar graph and feeding schedule.
	Lunar Astronaut	In this task students will be multiplying and dividing numbers to determine weights and creating a bar graph based on the sizes of craters on the Moon. Products in this task include a gravity chart and crater bar graph.
	Movie Theater Manager	In this task students apply knowledge of time and calculate elapsed time to create a movie theater schedule. They will also use multiplication and addition to determine ticket prices. Products in this task include a schedule and price chart.

	Ice Cream Company Co-Owner	In this task students will collect and display data using a bar graph and a pictograph. Students will make conclusions based on the data displayed. Products in this task include a survey and bar graph.
	Toy Store Owner	In this task, students will learn about picture graphs and solve different problems based on information presented in their graph. Products in this task include picture graph and advertisement.
Shapes & Measurable Attributes	Park Designer	In this task students will use design thinking to create a park based on geometric shapes and their properties. They will also be determining the perimeter and area of each section of their park. Products in this task include a blueprint and design sketch.
	Backpack Designer	In this task students will explore how math and engineering play a significant role in product design. They will be measuring to $\frac{1}{4}$ inch and determining areas to help design and manufacture a backpack for a specific audience. Products in this task include a cost analysis, prototype and backpack design.
	Activity Director	In this task, students use the skills of addition, subtraction, multiplication by 10, and comparisons of whole numbers to determine weights allowable in each raft. Products in this task include a partner list and cost invoice.
	Cartographer	In this task students will learn how cartographers use math to make a map and model of their school. They will use measurements to make a map and model of their school. Products in this task include a map and model.
	Toy Designer/ Mascot Mania	In this task students will apply their knowledge of measurement and connect it to addition and multiplication to create a class mascot and book for the class. Products in this task include a mascot model and journal.

Culminating Projects	Event Planner: Pizza Party	In this task, students will be applying their knowledge of several standard areas to create four different products. Students will determine fractional parts of a circle to slice a pizza. They will survey and use a tally sheet to determine the number of pizzas and which toppings to order. Students will display and answer questions based on data about favorite pizza toppings with a pictograph or bar graph and determine the cost of the pizzas. Products in this task include Pizza Slices Tally Sheet and Favorite Pizza Toppings Graph.
	Concession Stand Manager	In this task students will apply their knowledge of various math standards to create items needed to run a concession stand. Students will apply knowledge of fractions, graphs, and multiplication. Products in this task include a table, poster, and sales graph.
	Advertising Manager: Student Supply	In this culminating task, students will integrate graphic design and math to solve real world problems as product designers. Students will create a school supply kit while demonstrating their ability to add and subtract numbers within 1000 and multiply whole numbers by factors of 10. They will create a cost analysis sheet and either a scaled picture or bar graph to represent their data or creatively share their ideas for the supply kit by creating an infographic.

Defined Grades 4-5 Math Projects

Unit	Projects	Project Description
Place Value, Comparing/Ordering, Patterns & Expressions	Family Math Night Coordinator	In this task students will create a board game and a Jeopardy game to review and apply the concepts of place value, rounding, factors & multiples and patterns. Products in this task include a board game and Jeopardy game.
	Escape Room Designer	Through this design process, students learn how math and technology can be

		combined to create challenging and engaging puzzles that require both logic and content knowledge to solve. Students will use their knowledge of place value, comparing and ordering decimals, and their ability to identify number patterns & solve expressions to create an immersive content review. Products in this task include a digital and physical escape room design.
Whole Number & Decimal Operations	Online Store Owner	In this task, students will be using four operations with whole numbers to determine costs and profits of products they will sell in an online store. They will also need to round the prices they found in their research to the nearest dollar. Products in this course include a price comparison chart and cost analysis.
	Bank Teller	In this task students will be using multiplication and division to determine the number of coins and amounts of money. Products in this task include coins chart and money dispensing.
	Spirit Shop Manager	In this task students will use decimal and fraction computational skills to determine a budget and calculate profits for a school spirit shop that is donating proceeds to a charitable cause. Products in this task include a budget, profit analysis and charity proposal.
	Tiny House Business Owner	As a Tiny House Business Owner, you understand how living in a smaller home can help people save money and energy. You will use decimal and fraction computational skills to determine energy savings and a budget for a Tiny House that will help people with disabilities. Products in this course include an energy comparison and personal budget.

Fractions	Music Composer: Drums	In this task students will connect their understanding of fraction representation, equivalence and addition to music notes and compositions. Products in this course include a music notes chart and composition.
	Dessert Catering Company	In this task, students will be using their understanding of fractions and operations with fractions in the context of baking desserts for a gala. Products in this course include a measurement write-up and instruction sheet.
	School Food Activist	In this task students will be applying their understanding of fractions to collect data, display it on a line plot and create questions to analyze the data based on fraction addition and comparisons. Products in this course include a line plot, food chart and garden design.
	Event Planner: Cultural Festival	In this task students will be applying their knowledge of multiplication and division of fractions to create a blueprint and determine prices. Products in this course include an admission chart and blueprint.
	Aircraft Designer	This task has students building and flying paper airplanes. They will time the flight, measure the distance, display the fractional distance data on a line plot and answer questions based on the data which will require operations with fractions. Products in this course include a line plot and model.
Measurement & Geometry	Marine Biologist: Sharks	This task requires students to use the Oearch website or app to collect data on sharks. They will use this data to convert to a larger unit of measurement using fractional parts and plotting this data on a line plot. Products in this course include a line plot and shark size chart.

	Mini Golf Course Designer	In this task, students will be applying knowledge of geometric shapes and properties to design a few holes of a mini golf course and create a 3D model of one hole. Products in this course include 3D Model and hole sketches.
	Classroom Design	This task requires students to apply their knowledge of 2D geometric shapes, and measurements such as perimeter and area, to compose a design of a classroom. They will also be finding factor pairs to determine different dimensions of a room. Products in this course include room sizes and a drawing.
	Rain Barrel Manufacturer	In this task, students will be determining dimensions and volume in inches and converting them to feet. Products in this task include a sales flier and illustration.
	Kite Designer	In this task, students will be using symmetrical and geometric shapes and properties to design kites. The design will be created on a coordinate grid and students will measure the sides and angles of their kite design. Products in this task include a photostory, kite design and kite measurement.
Culminating Projects	Animal Shelter Manager	In this task students will be applying their knowledge of several standard areas to create three different products. Students will be determining all factors of a number, multiplying, dividing and rounding whole numbers, determining perimeter and area, and using operations with fractions. Products in this task include a sketch, budget and feeding chart.
	Pizza Shop Owner	In this task students will be applying their knowledge of several standard areas to create three different products. Students will be performing operations with decimals, multiplying mixed numbers,

		graphing, converting metric measurements and determining volume. Products in this task include a model, graph and budget.
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Defined Grades K-2 Earth and Space Projects

Unit	Projects	Project Description
Weather & Climate	Weather Reporter: Natural Hazards	In this task students will explore local weather changes based upon several environmental factors. They will understand that forecasting the weather is important for keeping safe during severe weather possibilities. The products in this task include a poster, season bag and chart.
	Natural Hazards: Weather Reporter	In this task students will explore local weather changes based upon several environmental factors. They will understand that forecasting the weather is important for keeping safe during severe weather possibilities. Products in this task include a poster, seasons bag and predictions chart.
Earth's Systems: Processes that Shape the Earth	Geologist: Earth's Surface Erosion	In this task students will explore how the earth's systems change constantly as air, water, soil, and rock interact. They will learn that a force is required to change an object's speed or direction. Products in this task include a slideshow, erosion project and model.
	Geologist: Volcanology Contest	In this task students will explore how the earth system changes constantly as air, water, soil, and rock interact, and the earth is a part of a larger sun, earth, moon system.
Space Systems: Patterns and Cycles	Astronomer	In this task students will observe patterns and cycles in the sky. They will observe and present their findings. The products in this task include a multimedia presentation, sky map and sunlight chart.

	Puppeteer: Shadow Puppet Show	In this task students will take on the role of a puppeteer that performs shows using shadow puppets. They will learn how shadows are made on Earth using light from the Sun and why they change throughout the day.
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Defined Grades K-2 Engineering Projects

Unit	Projects	Project Description
Mechanical Engineering	Engineer: Robots	In this task students will discover that a technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live.
	Engineer: Vehicle Design	In this task students will explore how technology is created, used and changed by humans. They will explore how technology is used in science and industry to help solve common problems of life.
	Inventor: Smart Product, Smart Consumer	In this task students will explore the world of invention. A technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live. They will understand that technological design is a creative process that anyone can do which may result in new inventions and innovations.
Industrial Engineering	Where is it Windiest	In this task, students will design and construct a tool they will use to measure wind around their school. They will collect data and have a chance to redesign their tool before sharing the project with an audience. Products in this task include a drawing, build and a presentation.
	Agricultural Engineering: Corn Farmer	In this task, students will design and create a device for a farmer to use to plant corn more efficiently so he can plant more fields. Students will have the opportunity to receive feedback and redesign their device, which will be based on ways in which animals in the wild carry and

		spread seeds. Products in this task include a diagram, build and presentation.
Environmental Engineering	Landscape Architect: Stop the Playground from Flooding	In this task, students will design a solution to stop the local playground from flooding. Students will design a solution that will keep water off the playground or allow the water to drain away from the playground. Products in this task include a drawing, build and presentation.
Structural Engineering	Classroom Architect	In this task students will design their ideal classroom based on their individual learning needs. Engineering design is a creative process that anyone can do which may result in new inventions and innovations. Products in this task include a desk diagram, classroom learning list and drawing.
	Safety and Design: Building a New Town	In this task students will help solve a design problem. They will come up with innovative ideas to help build a community near a flood zone and develop products to improve the way people live.
	Farmers: Farm Animal Shade Structure	In this task, students will design a structure to provide shade for animals on a farm. Criteria for the shade structure will include some way to block the light and allow air to flow through it to keep the animals cool. Products in this task include a drawing, build and presentation.
	Engineer: Character Playground	In this task, students will design and create a prototype of a playground element tailored specifically for a fictional character from a book they have read as a class. Students will have the opportunity to receive feedback and redesign their playground element before presenting it to an audience. Products in this task include a drawing, build and presentation.
Aerospace Engineering	Spacesuit Designer	In this task, students will design and create a prototype of an insulated glove that could be used as part of a spacesuit. Students will have the opportunity to receive feedback and

		redesign their prototype before presenting it to an audience. Products in this task include a drawing, build and presentation.
	Astronaut: Space Travel	In this task students will explore how to use the engineering design process to solve a problem.

Defined Grades K-2 Life Science Projects

Unit	Projects	Project Description
Animals, Plants, and Their Environment	Scientist: Honey Bees	In this task students will explore the important role of the honey bees and what living things need to live and grow. They will learn that all living things are made of parts that have specific functions. Products in this task include a nonfiction book and skit.
	Gardener: Creating a Garden	Students will learn that living things depend on their habitat to meet their basic needs. They will also explore how nutrition and eating habits impact a person's overall health and well-being. Products in this task include a graph, plant study and brochure.
Structure, Function, and Information Processing - The Revolution	Horticulturist: From Seed to Plant	Students will learn that living things depend on their habitat to meet their basic needs. They will also explore how nutrition and eating habits impact a person's overall health and well-being. Products in this task include seed planting, as story book and plant dissection.
	Park Ranger: Animal Adaptations	In this task students will learn that environments are full of different types of plants and animals that have adapted to their environment. Products in this task include a model, research map and photostory.
Interdependent Relationships in Ecosystems	Park Designer: Producers and Consumers	In this task students will learn how producers, consumers, and decomposers have their needs met and impact the

		environment. Products in this task include a park model and presentation and brochure.
	Nature Walk: Seed Dispersal	In this task students will explore the different types of seed dispersal and how plants depend on living and nonliving things for seeds to spread. They will learn that all plants are made of parts that have specific functions.

Defined Grades K-2 Physical Science Projects

Unit	Projects	Project Description
Forces and Interactions	Event Planner: Field Day Forces	In this task students will explore forces and their interactions with objects. They will learn that forces are pushes and pulls that can change the speed or direction of an object. Products in this task include a poster and field day activity.
	Playground Inspector: Pushes and Pulls	In this task, students will learn that a push or pull can change the way an object is moving. They will also learn that it takes energy to make an object move or change the motion of the object. Products in this task include a scavenger hunt and neighborhood poster.
Waves: Light and Sound	Musician: Drums and Vibrations	In this task students will learn that materials have observable and measurable physical properties. They will explore that artists use tools and resources as well as their own experiences and skills to create art. Products in this task include models and a poster.
	Scientist: Light and Energy	In this task students will explore how energy exists in many forms and can be changed from one form to another (transformed) as it moves through a system.
Structure and Properties of Matter	Scientist: States of Matter	They will also learn that sustainable use of natural resources is essential to provide for the needs and wants of all living things now and in the future. Products in this task include a picture collage and matter and change experiment.

	Materials Engineer: Durable Lunch Bag	In this task students investigate different materials to find out which materials have the properties needed to create a design for a long lasting lunch box for elementary school students.
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Defined Grades 3-5 Earth and Space Projects

Unit	Projects	Project Description
Weather and Climate	Weather Reporter: Reducing the Impact of Severe Weather	As a weather reporter, you will study weather patterns in your region and make predictions about future weather. You will share information with your school community about daily weather conditions and how to prepare for extreme weather by organizing safety drills. Products for this project include a weather report, weather safety plan, and weather graph.
	Rain Barrel Manufacturer	As a manufacturer, you will study how rain barrels work to help conserve water and stop pollutants from moving through the environment. You will share your designs for rain barrels at a national environmental awareness conference and educate buyers about water conservation. Products in this task include oral presentation, flier and prototype.
Processes that Shape the Earth	Erosion Management Specialist	As an Erosion Management Specialist, you will study coastal erosion and how it impacts beach communities. You will share an explanation about the causes of erosion and ideas for solutions to slow down or stop the impacts on local beaches. Products in this task include demonstration, webpage, and newspaper article.
	Student: Rain Gardens	Your school is working with a local conservation group to study the flow of water and pollutants around your school building. You will convince the school board of the importance of adding a rain garden to reduce stormwater runoff and stop pollutants from flowing into the local environment. Products in

		this task include rain garden creation, model, and oral presentation.
	River Rafting Guide: Wind and Water Erosion	Your goal is to entice visitors to join a whitewater rafting tour. They will identify evidence of changing landscapes over time and learn how it contributes to a great rafting experience. Products in this task include a YouTube video, model, and brochure.
Renewable and Non-Renewable Resources	Earth Scientist: Alternative Energy	As an earth scientist, you study geothermal energy and how it is an alternative energy source that is more environmentally friendly than fossil fuels. You will share information about the benefits of using geothermal energy with the national leaders of an island community. Products in this task include a webpage, podcast, and brochure.
	Wind Energy Systems Installer	As a team member from an alternative energy company, you will help the principal and School Committee better understand the value of using wind energy to generate electricity. You will share information about the space and materials needed to build wind turbines on school property. Products in this task include 3D models, editorial and flowchart.
	Solar Energy Systems Installer	As a team member from an alternative energy systems installer company, you will help the school community better understand the value of using solar energy to generate electricity as an alternative to fossil fuels. You will share information about the space, materials, and environmental benefits of using solar energy. Products in this task include an oral presentation, editorial, and diagram.
	Energy Management Consultant	As an energy management consultant, you will help the school leaders and the school board better understand the importance of creating energy efficient and sustainable practices to benefit your school community and the environment. You will share information about renewable resources that can be used to

		conserve energy. Products in this task include an interview, observation form, and oral presentation.
Stars and the Solar System	Astronomer	As an astronomer, you explore the solar system, stars and other celestial bodies in the universe. Your team of astronomers will work with NASA to recommend a location for a telescope that will help further space exploration. Products in this task include a virtual field trip, scientific drawing, and research poster.
	Planetarium Host: Seasonal Constellations	A local science museum is interested in creating a new planetarium show to educate visitors about what they can see in the night sky. This show will highlight objects in the night sky such as star constellations, the moon, and the planets. Products in this task include oral story, model, and graph/pictures.
	Fall Foliage Tour: National Tour Company Owner	A national tour company is designing a fall foliage bicycle tour to add to their yearly schedule of tour offerings. By adding the bicycle tour to the company's popular bus and train tours visitors will be able to experience seasonal changes in a new way! Products in this task include a tour calendar, flier, and crop harvest calendar.

Defined Grades 3-5 Life Science

Unit	Projects	Project Description
Weather and Climate	Weather Reporter: Reducing the Impact of Severe Weather	As a weather reporter, you will study weather patterns in your region and make predictions about future weather. You will share information with your school community about daily weather conditions and how to prepare for extreme weather by organizing safety drills. Products for this project include a weather report, weather safety plan, and weather graph.
	Rain Barrel Manufacturer	As a manufacturer, you will study how rain barrels work to help conserve water and stop

		pollutants from moving through the environment. You will share your designs for rain barrels at a national environmental awareness conference and educate buyers about water conservation. Products in this task include oral presentation, flier and prototype.
Processes that Shape the Earth	Erosion Management Specialist	As an Erosion Management Specialist, you will study coastal erosion and how it impacts beach communities. You will share an explanation about the causes of erosion and ideas for solutions to slow down or stop the impacts on local beaches. Products in this task include demonstration, webpage, and newspaper article.
	Student: Rain Gardens	Your school is working with a local conservation group to study the flow of water and pollutants around your school building. You will convince the school board of the importance of adding a rain garden to reduce stormwater runoff and stop pollutants from flowing into the local environment. Products in this task include rain garden creation, model, and oral presentation.
	River Rafting Guide: Wind and Water Erosion	Your goal is to entice visitors to join a whitewater rafting tour. They will identify evidence of changing landscapes over time and learn how it contributes to a great rafting experience. Products in this task include a YouTube video, model, and brochure.
Renewable and Non-Renewable Resources	Earth Scientist: Alternative Energy	As an earth scientist, you study geothermal energy and how it is an alternative energy source that is more environmentally friendly than fossil fuels. You will share information about the benefits of using geothermal energy with the national leaders of an island community. Products in this task include a webpage, podcast, and brochure.
	Wind Energy Systems Installer	As a team member from an alternative energy company, you will help the principal and School Committee better understand the value of using

		wind energy to generate electricity. You will share information about the space and materials needed to build wind turbines on school property. Products in this task include 3D models, editorial and flowchart.
	Solar Energy Systems Installer	As a team member from an alternative energy systems installer company, you will help the school community better understand the value of using solar energy to generate electricity as an alternative to fossil fuels. You will share information about the space, materials, and environmental benefits of using solar energy. Products in this task include an oral presentation, editorial, and diagram.
	Energy Management Consultant	As an energy management consultant, you will help the school leaders and the school board better understand the importance of creating energy efficient and sustainable practices to benefit your school community and the environment. You will share information about renewable resources that can be used to conserve energy. Products in this task include an interview, observation form, and oral presentation.
Stars and the Solar System	Astronomer	As an astronomer, you explore the solar system, stars, and other celestial bodies in the universe. Your team of astronomers will work with NASA to recommend a location for a telescope that will help further space exploration. Products in this task include a virtual field trip, scientific drawing, and research poster.
	Planetarium Host: Seasonal Constellations	A local science museum is interested in creating a new planetarium show to educate visitors about what they can see in the night sky. This show will highlight objects in the night sky such as star constellations, the moon, and the planets. Products in this task include oral story, model, and graph/pictures.

	Fall Foliage Tour: National Tour Company Owner	A national tour company is designing a fall foliage bicycle tour to add to their yearly schedule of tour offerings. By adding the bicycle tour to the company's popular bus and train tours visitors will be able to experience seasonal changes in a new way! Products in this task include a tour calendar, flier, and crop harvest calendar.
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Defined Grades 3-5 Life Science

Unit	Projects	Project Description
Ecosystems: Environments and Organisms	Animal Shelter Manager	As the manager of an animal shelter, it is your job to prepare the facility and the staff for the arrival of 10 abandoned baby rabbits. It's your job to make the public aware of the new additions to the shelter to try to find them a "forever home". Additionally, you will use your knowledge to educate people interested in adopting rabbits by providing all the information they need to care for the rabbits and keep them safe and healthy. Products in this task include sketch and video.
	Landscape Architect: Botanical Design	As a landscape architect you understand the importance of mathematics and geometry in the design process. Additionally, you know you must be able to create unique and functional designs that not only beautify the spaces but also create functional places for the citizens of the community. Furthermore, to create a lasting design, you need to understand the internal and external structures that function to keep native plants healthy in their natural environments. In this task you must use all these skills to design a botanical garden that will serve as a place to learn about your area's native plants, a place that attracts native animals and insects, as well as a place to gather for recreation. Products in this task include a photostory and proposed design.

	Aquarium Designer	As an interior designer specializing in aquariums, you understand that plant and animal species need certain things to survive and thrive in their environment. You will use your skills to design functional and beautiful aquariums based on customer requests. Products in this task include a cost analysis and a drawing.
	Entomologist: Bee Population	As an entomologist, students will conduct research, and analyze and interpret data that provides evidence explaining the current trends in the declining bee population and the things that can be done to help increase the number of bees. Students will showcase their learning by creating a model, an infographic, and giving a multimedia presentation. Products in this task include a model, infographic, and multimedia presentation.
	Zookeeper	As a zookeeper, you will choose two new animals to add to your zoo. You will create two habitats that showcase your knowledge of what the animals need to survive in the wild, including natural habitats, food, whether they are group or solitary animals, how they rear young, and what kind of exercise they need. You will use your skills to educate the public and encourage them to support initiatives that conserve animals and habitat in the wild. Products in this task include an interactive presentation and habitat design.
Ecosystems and Organisms: Matter and Energy	Business of Farming	As head of the Department of Agriculture in your state, you are required to create advertising campaigns to educate the citizens about small farming and the need for family farms in your state. You must convince the public to support the local farmers to maintain a good economic flow as well as care for the needs of the environment. Products in this task include an advertisement, podcast, and a map.
	Ecologist: Invasive Species	As an ecologist, it is important to educate the public, especially in areas where they play a

		<p>role in the damage of local ecosystems. Your task is to create informational media explaining how, through the release of pets, invasive species damage local ecosystems. It is your job to make sure all pet owners understand the results of these actions and encourage them not to engage in this practice. You must be persuasive and informative! Products in this task include a webpage and a brochure.</p>
	Arborist: Urban Tree Canopy	<p>As an arborist, you understand the importance of urban forest habitats for both the environment as well as for the benefit to citizens health and well-being. It is your task to conduct research in an urban area considering the addition of an urban forest. You will use your knowledge to argue for the inclusion of the forest by presenting your findings to the city's council, who will have the final say. It is important to understand the state and health of the existing forest as well as explaining how you propose they move forward to increase the size and health of the forest to increase the benefits it provides. Products in this task include a city map, panel discussion and city council report.</p>
	Forester	<p>As a forester, it is your job to gather data, analyze that data, and make decisions about how to manage your local forests to ensure their health now and in the future. You must also create a presentation to present to the public, educating them on the importance of forests, what they need to stay healthy and how they can make choices that result in positive impacts on the local forests. The products in this task include an infographic, brochure, and virtual field trip.</p>
Life Cycles	Naturalist: Monarch Butterfly	<p>As a naturalist who specializes in studying the monarch butterfly, you understand the threats facing the monarch. You will use your knowledge to educate the public about the life</p>

		<p>cycle and environmental needs of the monarch, so they have a better chance of surviving in an ever-changing world. The products in this task include a newscast, brochure, and a butterfly drawing.</p>
	<p>Marine Biologist: Sharks</p>	<p>As a marine biologist who specializes in the study of sharks, it is up to you to educate the next generation of citizens about the life cycles and habitats of sharks so these amazing animals might be saved for future generations to enjoy. To do this, you must gain the interest of school aged children through presentation of important information about sharks in a way that is engaging and fun.</p>
	<p>Botanist: Vertical Garden</p>	<p>Students will use research skills to demonstrate an understanding of the relationship between plants and their environment by designing vertical gardens in which plants thrive. The gardens will be used to help with the fresh food problem facing city homeless shelters. Additionally, schools will be asked to help in the design process as well as creating and maintaining these gardens. The community benefits in many ways including providing opportunities for students to learn and grow through gardening, implementation of gardens that will benefit the community, and building a sense of community citizenship and civic duty. The products in this task include an oral presentation, diagram, and charts.</p>
<p>Inheritance</p>	<p>Research Geneticist</p>	<p>As a biologist focused on genetics, also known as a geneticist, you understand that each person's traits are controlled by genes, which are inherited, or passed down to us from our parents. Some traits are controlled only by genes that pass from parent to child. Others are acquired through learning. Most are formed by both genes and environmental factors. It is your task to use your knowledge to explain these differences to a group of students who are interested in going into the</p>

		field of genetics. Products in this task include an infographic, family tree poster and graph.
	Plant Biologist	As a plant biologist, you understand that millions of lives depend upon finding ways to improve crops that can feed the growing global population and survive in the changing climate. It is your job to determine what environmental factors affect a plant's ability to thrive and make a presentation to farmers at a local farm show. Products in this task include multimedia presentation, environmental effects, and an experiment.
Structure and Function	Nature Center Educator: Animal Adaptations	As a nature center educator, it is your job to educate people about the amazing adaptations of animals! Your focus is on students in grades 3-5 and you want to pay particular attention to the animals in your local area. However, animals are so amazing you can also include some cool animals from afar, just to get people excited! Products in this task include a matching game, signs, and flyer.
	Audiologist	As an audiologist you are tasked with educating elementary school children about hearing and the human ear. You will need to explain the anatomy of the ear as well as how sound is created, received, and processed in the brain. Additionally, explain to them how the inner ear helps us keep our balance. Finally, provide examples of how to take care of their ears and what to do if they have an ear problem. Products in this task include a brochure and model.
	Wildlife Biologist: Bats	As a wildlife biologist who specializes in the study of bats, you understand the important role they play in the environment. You also know what a bad reputation they can have with the public. It is your job to dispel all the negative myths surrounding this amazing and helpful creature, including explaining their unique ability to use echolocation to survive. You must get the public excited about having

		bats in the neighborhood! Products in this task include a multimedia presentation and infographic.
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Defined Grades 3-5 Physical Science Projects

Matter: Structure and Properties	Civil Engineer: Water Treatment	Water Treatment task helps students understand materials and their properties as different substances are mixed to treat water. Products in this task include an oral presentation, diagram and demonstrations.
	Space Flight Material	The Space Flight Materials task helps students graph quantities of matter and that the weight of matter does not change even if substances are mixed. Products in this task include a debate, investigation, and ingredients list.
Forces and Interactions	Test Laboratory Manager: Analyzing Baseball Bats	The Test Laboratory Manager task provides students with an opportunity to make observations and measurements of how far a baseball travels. Students can measure the baseball and bat motion to help determine a pattern. As a plant biologist, you understand that millions of lives depend upon finding ways to improve crops that can feed the growing global population and survive in the changing climate. It is your job to determine what environmental factors affect a plant's ability to thrive and make a presentation to farmers at a local farm show.
	Aircraft Designer	The Aircraft Designer focuses on designing airplanes and understanding the effect gravity has on objects.
	Magnet Engineer	The Magnet Engineer task provides students with an opportunity to use scientific understanding to solve problems using magnets.
Waves	Audiologist	The Audiologist task provides students with the opportunity to understand how wavelengths create different sounds for humans to hear. As an audiologist, the students will not only

		understand amplitude and wavelength, but also how humans are able to hear. Products in this task include demonstration, diagram and investigation.
	Transportation Engineer: Maglev Trains	The Transportation Engineer Task is focused on Maglev Trains to help students understand magnetic interactions and balanced and unbalanced forces. Products in this task include a multimedia presentation, train schedule and a map.
Energy	Wind Energy Systems Installer	The Wind Energy Systems Installer focuses on the transfer of energy. Students develop products to show their understanding and application of electricity and engineering design. Products in this task include a model, an editorial and diagram.
	Solar Energy Systems Installer	In this task students will use their knowledge of energy systems to explain why solar energy should be installed in their school. Products in this task include an oral presentation, poster and a diagram.
	Salad Maker	The Salad Maker task focuses on understanding and describing how matter is made up of particles that are too small to be seen. Products in this task include a multimedia commercial, model and an investigation.
	Technology Information Professional	In this task students will use their knowledge and understanding to compare solutions that use patterns to transfer information. Products in this task include transfer activity, video and code chart.

Defined Grades 3-5 Engineering Projects

Unit	Projects	Project Description
Mechanical Engineering	Alternative Fuel Vehicles	As a research scientist you understand that burning fossil fuels releases harmful gasses into the air. Powering our vehicles with a renewable

		resource, such as wind, water, or sunlight, would help keep the earth cleaner. You and your team will redesign an existing model or create a new vehicle that can function using a renewable energy source. Products in this task include a drawing, build and presentation.
	Roller Coaster Designer	Engineers want to understand why and how things work. As a member of an amusement park engineering team, you and your team will design a roller coaster to enter a competition. To be considered a finalist, you know your design must work but also have a unique theme or “twist” to make your coaster stand out from all the other entries. Will your team have what it takes to win? Products in this task include a drawing, build and presentation.
	Toy Designer	Toys are created for many reasons. You will be working on a toy design team that will design a new toy that uses some kind of physical science, for example balance or magnets. The toy should be fun and educational as well. Products in this task include a drawing, build and presentation.
Industrial Engineering	Protective Packaging	Some stores want to start using drones to drop orders at customers’ homes. Flights can be bumpy. Landing might be hard. You and your team must create a package and/or wrap that protects products in the worst conditions. It will be up to your team to make sure products arrive in one piece. Products in this task include a drawing, build and presentation.
	Invention Convention: Life Changing Gadgets	You and your team of engineers want to enter an invention contest to design the best new gadget. The gadget will have to help make life better or easier in some way. Your design will have to be unique if you want to win. Products in this task include a drawing, build and presentation.
	Backpack Designer	Backpacks are used in many ways by many people. As a lead designer for a backpack company, you must design and create a unique backpack. It will have to have a feature that no

		other backpack has. Products in this task include a drawing, build and presentation.
	Aquarium Designer	As a structural engineer, you and your team of marine biologists and zoologists want to enter a contest to design the best new aquarium. Teams from around the country will enter their designs. Your design will have to be unique if you want to win. Products in this task include a drawing, build and presentation.
Environmental Engineering	Water Filter	You and your team of scientists and engineers are working for an outdoor company to make or improve a portable water filter. The company wants to carry these filters in their stores. You will have to come up with a design that will be light and easy to use. Products in this task include a drawing, build and presentation.
	Park Designer	As a design engineer, you and your team of architects have been picked to design a new park for the local community. The community needs a clean, safe, and fun place for people to gather. You should include areas and structures that will be fun for young kids, teens, and adults. Products in this task include a drawing, build and presentation.
	Bat House Building	As a wildlife biologist, you understand the important role bats play in the environment. It is your job to work with an engineer to design and create bat houses. These bat houses will help increase the population of bats in the wild. Products in this task include a drawing, build and presentation.
	Extreme Weather	In this task, students will learn about an extreme weather event, such as a hurricane or blizzard, and design a solution to a danger related to the event. They will use the engineering design process to prototype and redesign their solution. Products in this task include a safety solution and advertisement.

	Repurposing Trash	As a marine biologist, you see the effects of trash in the oceans every day. It is your job to to work with an engineer to create a new product from trash. Keep in mind, your product should be something people will want. It should also be useful and teach people to make less trash and not to litter! Products in this task include a drawing, build and presentation.
Aerospace Engineering	Aircraft Designer	Scientists make new discoveries each day. These new ideas help engineers in their work. As a design engineer, you and your team will design three new types of aircraft, one to fly the fastest, one to fly the farthest, and one to fly the longest amount of time. Products in this task include a drawing, build and presentation.
	Martian Base Designer	One day in the not-too-distant future, humans will travel to Mars to explore, learn and live. Humans living on Mars will require living in a man-made habitat that supports their wants and needs to help them survive, live and work. Products in this task include a model, system overview and drawing.
	Parachute Designer	As an aerospace engineer, you and your team have been asked to create a parachute that will be used to drop a vehicle safely to the surface of the moon. You will need to use what you know about balanced and unbalanced forces to come up with a working model. Products in this task include a drawing, build and presentation.
Structural Engineering	Compact Greenhouse	As a design engineer you have been asked to create a compact greenhouse that can produce a variety of vegetables. You must use creativity to make a compact design that is functional and nice enough to be in someone’s kitchen. Products in this task include a drawing, build and presentation.
	Treehouse Hotel	As a structural engineer, you and your team of architects have been picked to design a new kid friendly hotel for a popular hotel chain. The company wants a treehouse theme. You will have

		to come up with a design that is safe and fun for kids. Products in this task include a drawing, build and presentation.
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Defined K-2 Social Studies Projects

Geography	City Council Member: Sister City	In this task students will explore how groups of people influence the environment. They will learn how places and regions have physical and human characteristics, and one's culture and experiences may influence perception of place. The products in this task include a virtual field trip, newscast, and map.
	Past, Present and Future Farming	In this task students will explore how to build a local garden. They will use their knowledge of their community, geography, the environment, and the history of farming to decide on a garden design. The products in this task include school letter and school garden design.
Civics	Architect: Housing and Culture	How are types of houses and culture connected? In this task students will explore how culture impacts a place. They will describe how people choose to live in different cultures and why. They will also compare how they live to how other people live. The products in this course include an oral presentation and model.
	Mayor: Community Events	In this task students will work together to plan events in their community. The purpose of the events is to bring people together and improve the community. The products in this task include a radio commercial, events poster, and event planning.
Economy	Money Manager: My Piggy Bank	In this task students will explore how people find ways to earn and save money. They will learn what a budget is and how to spend their money. Students will understand the differences between wants and needs. The products in this task include counting and needs and wants charts.
	Farmers and the Economy	Humans depend upon the management and practices of agricultural systems. Responsible consumers use effective resource management to accomplish individual, family and community goals. In this task

		students will explore why it is important to buy locally and how it affects the local economy. The products in this task include a brochure, chart, and map.
History	Historian: Changes Over Time	In this task students will explore how individuals or groups influence the environment. Places and regions have physical and human characteristics, and one's culture and experiences may influence perception of a place. The products in this task include a virtual field trip and a tale of your city.
	Reporter	In this task students will compare life in the past to life today. They will interview people from different generations to analyze how society and life has changed over time. The products in this task include a newspaper story, data display and interview.
	Genealogist: Family Culture	In this task students will explore their family culture and ethnicity. They will learn about their family history and how it's shaped who they are today. The products in this task include an interview, research map and scrapbook.
	Genealogist: Family Traditions	Genealogist: Family Traditions

Defined Grades 3-5 Social Studies

Unit	Projects	Project Description
Geography	Dinosaur Hunter: Fossils and the Past	In this task, students will explore dinosaurs, fossils, and the ever-changing landscape of the earth. Products in this task include a movie poster and 3D Map.
	Floral Designer	In this task, the students will design, create, and price floral arrangements. The students will also associate symbols and designs with culture. Products in this task include a proposal and cost analysis.

	Transportation Engineer: Maglev Trains	In this task, students will explore forces with magnets and friction, as well as the effects of transportation on the environment. Products in this task include a map, presentation, and model.
	Naturalist: Monarch Butterflies	In this task, students will explore monarch butterfly migration and how humans impact their migration and population. Products in this task include a map and newscast.
Civics	Botanist: Creating a Vertical Garden	In this task the students will explore the topic of vertical gardens as a botanist. They will discover why these gardens are beneficial, as well as the best plants suited for them. Products in this task include a prototype and garden plan.
	Management Consultant: Green Schools	In this task, students will explore sustainable methods for making the school more energy efficient. The students will identify the methods that could be adopted by their school in order to create a more energy efficient and sustainable building. Products in this task include a poster and 3D Model.
	Government Official: U.S. Constitution	In this task, students will explore the U.S. government and Constitution. The students will research and explain parts of the government or Constitution in order for people applying for U.S. citizenship to understand. Products in this task include a presentation and matching game.
	Arborist: Urban Tree Canopy	In this task, students will engage in understanding and determining the benefits of trees in urban areas. Products in this task include a newscast and presentation.
Economy	Assembly Lines	In this task, the students will explore the business of manufacturing. Students will identify how assembly lines are productive and a benefit to companies. Products in this task include a diagram and training video.
	Business of Farming	In this task, students will explore the importance of farms, organic farming and the benefits of locally grown food and products. Products in this task include an advertisement, cost analysis and a map.

	Chef: Locally Sourced Food	In this task, students will explore creating meals with locally sourced foods, making a profit, and agriculture. Products in this task include recipe, cost sheet and menu design.
History	Historian: Shipwreck	In this task, students will explore how historians can use sunken ships and artifacts on them to determine more about history. Products in this task include a radio broadcast and brochure.
	Engineer: Roman Roads	In this task, students will explore ancient engineers with a focus on building Roman roadways, as well as how ancient engineers contributed to some of the engineering in modern times. Products in this task include a model and presentation.
	Teacher: Egyptian Museum	In this task, students will explore the history and contributions of ancient Egypt. The students will use map and timeline skills to show what they learn. Products in this task include a timeline and map.

Defined K-5 Program of Inquiry

Unit	Projects	Project Description
Who We Are	Genealogist: Family (K-1)	In this task students will explore their family culture and ethnicity. They will learn about their family history and how it has shaped who they are today. Products in this task include a scrapbook, a research map and interview.
	App Developer: Friendships (2-3)	In this task students will explore the idea of friendship. They will explore what friendship means to them. Products in this task include a questionnaire, friendship video and sample profile.
	Advertising Director: Communities, Culture and Diversity (4-5)	In this task, students will explore their ideas about the communities they belong to and what they can do to make their communities safe and welcoming for all. Products in this task include a community college poster, podcast, and community video.

Where We Are in Place and Time	Toy Maker: Changes Over Time (K-1)	In this task students will explore how toys change over time. They will learn what toys were like in the past from their family members, a friend, or someone at school and how it has influenced the toys we have today. Products in this task include an interview, drawing and model.
	Documentary Film Producer: Changes in School (2-3)	In this task students will explore the history of their school and education system. They will begin to understand how and why the school community, building and learning tools have changed over time. Products in this task include a video interview, photo timeline and future school model.
	Newspaper Editor: Migration - The movement of people shapes our communities (4-5)	In this task students will explore migration over time and the movement of peoples around the world. Students will investigate the reasons why people choose to move from one country to another. Students will discover how the movement of people can change the world in which we live. Products in this task include mapping immigration, interview, and a newspaper.
How We Express Ourselves	Artist (K-1)	In this task students will explore a variety of ways to express themselves through art. They have the opportunity to use various forms of art to show and tell about special events of their family and their culture. Products in this task include a family picture book, collage, and models.
	Children's Book Author: Storytelling (2-3)	In this task students will explore the art of storytelling. They can practice oral and written storytelling, as well as use art to share more about their family culture and history. Products in this task include a TED talk, mural and a children's picture book.
	Dynamic Digital Detectives (4-5)	In this task, students will explore their ideas and opinions about living in, and communicating in, a digital world. Students will inquire into the creative ways digital

		technologies allow the sharing of information and discover how digital technologies provide a way to express ourselves. Products in this task include digital expression, debate, and contracts.
How the World Works	I'm a Scientist (K-1)	In this task students will explore the world around them. They will have the opportunity to work outside or inside to make observations. Students will have the chance to use their senses, observation skills, writing skills, and science creativity. Products in this task include a drawing, diagram and multimedia presentation.
	Engineer: Inventing Machines (2-3)	In this task students will explore machines that changed the world. They will also design a new machine to make their community a better place. This task incorporates writing skills, the design process as well as science standards. Products in this task include a model, grant proposal and timeline.
	Engineer: What a Disaster! (4-5)	In this task, students will explore types of natural disasters, including where in the world they happen and why they happen. Students will investigate how natural disasters continue to impact our environment and communities. Students will inquire how advances in technology are changing the way we respond to natural disasters and create an innovative design to cope in a natural disaster emergency. Products in this task include a flowchart, management plan and innovation.
How we Organized Ourselves	Helpers in Our Community (K-1)	In this task students will learn about the importance of helping others. They will particularly learn about helping others in their neighborhood and community. Products in this task include a survey, a poster, and a chart.
	Community Service Manager: Community Volunteering (2-3)	In this task students will learn about the importance of volunteer work and giving back to the community. They will also learn how a nonprofit organization works and how we can

		help those in need. Products in this task include a social media post, fundraising event plan and webpage.
	Election Organizer: Every Vote Counts (4-5)	In this task, students will explore types of government systems used in their home country and around the world. Students will investigate the roles and responsibilities of governments and their elected officials to represent the people who voted them into power. Students will create their own country, choose a preferred system of government, and provide a user-friendly guide for people to vote. Products in this task include a spider map, Venn diagram and voting guidebook.
Sharing the Planet	Zookeeper (K-1)	In this task students will learn about animals. They will explore what animals require to survive. Products in this task include a newspaper, care list and habitat drawing.
	Fashion Designer: Fast Fashion (2-3)	In this task students will learn about the environmental impact of the fashion industry. They will explore the slow fashion movement and how we can be caretakers of our environment. Products in this task include sustainability statement, design portfolio and an infographic.
	Student Council Candidate: Leadership in Action (4-5)	In this task, students will explore issues in their school, local community and the world that cause conflict. Students will investigate how our values and responsibilities can influence some people to become leaders. Students will study the stories and qualities of leaders they find inspirational. Students will present their own 'Leadership in Action' plan so they can make a difference. Products in this task include a poster, legends and action projects.

Defined K-2 Computer and Technology Integration

Unit	Projects	Project Description
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Knowledge Constructor	Scientist: Reptile House	In this task students will use basic research skills to learn about reptiles. They will communicate information about reptiles to an audience. Products in this task include a digital presentation, infographic, and poster.
	Dietician: Healthy Eating	In this task students will use basic research skills to learn and share facts about healthy eating. Products in this task include a meal menu, photo story and infographic.
	Scientist: Insect Zoo	In this task students will use basic research skills to learn about insects. They will communicate information about insects to an audience. Products in this task include a nonfiction eBook, diagram and model.
Innovative Designer	Vehicle Designer	In this task students will use the design process to create a new type of vehicle for a specific need or purpose. Products in this task include a vehicle model, presentation, and vehicle design.
	Inventions	In this task students will use the design process to create an invention that can solve a problem. Products in this task include a picture, model and book.
	Robot Engineer: Robots	In this task students will use the design process to create a robot that can solve a problem. Products in this task include a program design, online advertisement, and model.
Creative Communicator	Dentist: Dental Health	In this task students will use basic research and communicate learned information about dentists. Products in this task include a chart, eBook and poster.
	Curator: Technology Museum	In this task, students will look at technology and how it has changed over time. Products in this task include a model, poster, and presentation.
	Astronaut: Space Travel	In this task, students will use resources to plan a trip to outer space and communicate this plan with their intended audience. Products in this task include a presentation, diagram, and travel list.

Computational Thinker	Store Owner: Ice Cream Store	In this task students will use computational thinking to decompose a problem and use algorithmic thinking to create a plan for an ice cream store. Products in this task include a menu, infographic, and survey.
	Firefighter: Fire Safety	In this task students will use computational thinking to decompose a problem and use algorithmic thinking to communicate fire safety tips to an audience. Products in this task include an eBook, video and fire escape plan.
	Computer Programmer: Cartoon Creator	In this task students will use computational thinking to decompose a problem and use algorithmic thinking to develop an app. Products in this task include a scene, narration and storyboard.
Global Collaborator	Zookeeper	In this task, students are encouraged to collaborate with other students in order to research zoo animals and create innovative products to share learned information. Products in this task include a drawing, presentation, and poster.
	Scientist: Reduce Reuse Recycle	In this task students are encouraged to collaborate with other students to research ways to reduce waste in landfills and create products to share this information. Products in this task include a model, photo story and infographic.
	Health Worker: Germs!	In this task, students are encouraged to collaborate with other students in order to research germs and create innovative products to share learned information. Products in this task include a commercial, poster and book.

Defined Grades 3-5 Computer and Technology Integration

Unit	Projects	Project Description
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Digital Citizenship	Cybersecurity Specialist: School Cyber Squad	The products associated with the task put focus on Digital Citizenship and Cybersecurity, as well as areas associated with Knowledge Construction, Innovative Design, Computational Thinking (CT), and Creative Communication. Products in this task include an eBook, video lesson and game.
	Media Specialist: School News Team	The products associated with the task put focus on Digital Citizenship and Cybersecurity, as well as areas associated with Knowledge Construction, Innovative Design, Computational Thinking (CT), and Creative Communication. Products in this task include a report, presentation, and game design.
Knowledge Construction	Wildlife Biologist: Invasive Species	The products associated with the task put focus on Knowledge Construction. Students use multiple digital sources to research the topic and use that information to educate a targeted audience. Other standards addressed include Creative Communication, Computational Thinking, and Innovative Design. Products in this task include a video display, webpage, and brochure.
	Computer Technician: School Technology Team	Other standards addressed in this PBL are areas associated with Computational Thinking, Innovative Design, and Creative Communication. Specifically, students use research to develop an understanding of computing systems and develop products that demonstrate application of this knowledge. Students are challenged to break down complex problems into manageable solutions. Products in this task include a troubleshooting help guide, presentation and data collection.
Innovative Design	Food Truck Entrepreneur: Food Truck	A focus of this task is Innovative Design. These tasks focus on areas associated with Knowledge Construction, Innovative Design, Computational Thinking, and Creative Communication. Products in this task include a social media page, menu, and design.

	Artificial Intelligence Engineer: Wearable Technologies	Knowledge Construction is a key focus of the performance task. Students will use this research to plan, design, and share products that share this knowledge with the intended audience. Additionally, students will engage in tasks that highlight key ISTE Standards, including Innovative Designer and Creative Communicator. Products in this task include a presentation, advertisement, and presentation.
	Biomedical Engineer: Bionic Pets	The focus of this task is Innovative Design. These standards focus on areas associated with Knowledge Construction, Innovative Design, Computational Thinking, and Creative Communication. Products in this task include a scale drawing, prosthetics creation and presentation.
Creative Communication	Project Manager: Community Electronic Recycling Program	In the task, students conduct research on the problem of electronic waste materials, such as used and broken cell phones, computers, and tablets. Further, students research the benefits and methods of an electronic recycling program. Products in this task include even planning, PSA and blog post.
	Public Relations Specialist: Self-Driving Cars	This task and the associated products focus on Creative Communication. Students will research and focus on ways artificial intelligence technologies have changed the world and impacted consumers. Products in this task include a blog post, infomercial, and poster.
Computational Thinking	Entrepreneur: Online Store	This task focuses on areas associated with Knowledge Construction, Innovative Design, Computational Thinking (CT), and Creative Communication. Specifically, students use research to develop an understanding of budgeting for an online business, and plan and design a website. Students also are encouraged to plan and design prototypes of their products. Products in this task include a model, chart and cost analysis.

	Toy Designer: Build A Toy	Computational Thinking is the primary focus of this task. Students are encouraged to break down the problem into manageable pieces to better focus their products. Students use computational thinking to develop a scale drawing of their prototype, and plan and design a website. Products in this task include a webpage, flowchart, and scale drawing.
	Restaurant Entrepreneur: Pizza Shop Owner	This task also focuses heavily on several computer science standards, such as computational thinking, pattern recognition and creative communicator. Products in this task include a flowchart, webpage, and budget.

Defined Grades K-2 Engineering

Unit	Projects	Project Description
Mechanical Engineering	Alternative Fuel Vehicles	As a research scientist you understand that burning fossil fuels releases harmful gasses into the air. Powering our vehicles with a renewable resource, such as wind, water, or sunlight, would help keep the earth cleaner. You and your team will redesign an existing model or create a new vehicle that can function using a renewable energy source. Products in this task include a drawing, build and presentation.
	Roller Coaster Designer	Engineers want to understand why and how things work. As a member of an amusement park engineering team, you and your team will design a roller coaster to enter a competition. To be considered a finalist, you know your design must work but also have a unique theme or “twist” to make your coaster stand out from all the other entries. Will your team have what it takes to win? Products in this task include a drawing, build and presentation.
	Toy Designer	Toys are created for many reasons. You will be working on a toy design team that will design a new toy that uses some kind of physical science, for

		example balance or magnets. The toy should be fun and educational as well. Products in this task include a drawing, build and presentation.
Industrial Engineering	Protective Packaging	Some stores want to start using drones to drop orders at customers' homes. Flights can be bumpy. Landing might be hard. You and your team must create a package and/or wrap that protects products in the worst conditions. It will be up to your team to make sure products arrive in one piece. Products in this task include a drawing, build and presentation.
	Invention Convention: Life Changing Gadgets	You and your team of engineers want to enter an invention contest to design the best new gadget. The gadget will have to help make life better or easier in some way. Your design will have to be unique if you want to win. Products in this task include a drawing, build and presentation.
	Backpack Designer	Backpacks are used in many ways by many people. As a lead designer for a backpack company, you must design and create a unique backpack. It will have to have a feature that no other backpack has. Products in this task include a drawing, build and presentation.
	Aquarium Designer	As a structural engineer, you and your team of marine biologists and zoologists want to enter a contest to design the best new aquarium. Teams from around the country will enter their designs. Your design will have to be unique if you want to win. Products in this task include a drawing, build and presentation.

