Middle School Learning Outcomes

Literature

Sixth Grade Literature & Writing

Culture: Values, Beliefs & Rituals

- What factors shape our values and beliefs?
- How do our values and beliefs shape who we are as individuals and influence our behavior?
- What happens when belief systems of societies and individuals come into conflict?
- How do beliefs, ethics, or values influence different people's behavior?
- When a person's individual choices are in direct conflict with his/her society, what are the consequences?
- What purpose or function do ethics / philosophy have in governing technological advances?

Among other readings throughout the year Literature will include:

- Short Stories by Ray Bradbury and other authors
- A Long Walk to Water by Linda Sue Park
- Literary works by Edgar Allan Poe
- Breadwinner by Deborah Ellis
- Material World, A Global Family Portrait by Peter Menzel - cross curricular unit
- The Alchemist by Paulo Coelho

Learning Outcomes

Sixth grade Literature and Writing provides ample opportunity to develop written and verbal communication skills as well as the ability to think and question. Cultural awareness, morality, and global empathy often take center stage when discussing literature. A selection of novels, short stories, essays, non-fictional text, and poetry serve as a channel to develop the art of conversation, while acting as a springboard to further the journey as a writer. A toolbox of strategies for expository and narrative writing is presented and practiced throughout the year to empower students to write.

- Students will read and analyze short stories, novels, non-fiction text, essays and poetry from a variety of authors and cultures.
- Students will compare and contrast one author's presentation of events with that of another.
- Students will develop verbal communication skills through socratic dialogue.
- Students will use specific strategies to develop close reading and annotating skills.
- Students will gain an understanding of essay writing form and structure through directed mini lessons, modeling and mentor text.
- Students will write a variety of essays, reflections, and poems that relate to the literature.
- Students will expand vocabulary abstracted from the literature.
- Students will gain an understanding of culture and develop global empathy by conducting research and comparing data, photos, and biographies of families around the world.

Seventh Grade Literature

Texts: *Knights of the Roundtable, American Born Chinese, The Graveyard Book, Poetry Matters, Julius Caesar*

Adversity, Conflict, and Change

- How does conflict lead to change?
- What problem-solving strategies can individuals use to manage conflict and change?
- How does an individual's point of view affect the way they deal with conflict?
- What personal qualities have helped you to deal with conflict and change?
- How might it feel to live through a conflict that disrupts your way of life?
- How does conflict influence an individual's decisions and actions?
- How are people transformed through their relationships with others?
- What is community and what are the individual's responsibilities to the community as well as the community's responsibilities to the individual?

Learning Outcomes:

Students entering seventh grade have read literature from many standpoints: in pursuit of answers to a question; in consideration of a theme or literary element; and as a way of gaining insight into character's trait, and developmental passage as they move through difficult situations in life. In seventh grade they continue with this process, which is viewing the story or novel from different angles. Seventh graders read Julius Caesar and study Rome over 2,000 years ago in order to gain

insight into character and what drove the conspirators to act in this play by Shakespeare. They focus on the element of perseverance and determination in a wide variety of their fictional and historical text.

Essential Questions:

How do individuals, real and fictional, use words and actions to demonstrate perseverance?

- Students describe the relationship between characterization techniques and the development of theme in a story.
- Cite textual evidence, especially as it relates to characterization.
- Explain the importance of balancing historical accuracy with "creative license" when writing historical fiction (DAR Essays); evaluate the ways in which authors achieve that balance.
- Explain the historical context of a story and how authors make historical fiction believable.
- Write "Character with Character" narratives that uses effective technique, relevant descriptive details and well-structured event sequences.
- Read their own composed short story for classmates.
- Read and discuss fictional and informational texts featuring real people or characters that demonstrate perseverance.
- Analyze how the setting (historical context) of a story or biography affects character development.
- Explain the use of literary techniques such as diction and imagery.
- Explain how an author's style can help convey the theme of the stories, poems, or speeches.
- Discuss how the authors' use of literary techniques in narration, such as flashback and point of view, engage the reader.
- Take comprehensive notes and marginalia in texts or plays that we read to use for later discussions.
- Compare and contrast the settings, characters and unusual circumstances among science fiction stories and discuss the unique aspects of this genre.

Eighth Grade Literature

(see Eighth Grade Humanities)

Math

Level 6 Math

Math students study the following topics:

- Operations with fractions and decimals
- Operations with integers with the goal of gaining automaticity
- Write and simplify expressions and solve one and two step equations with applications
- Simplify ratios and unit rates
- Write and solve proportions algebraically
- Percent/fraction/decimal equivalencies
- Percent markup and discount applications
- Collect, organize, and analyze data
- Identify geometric figures based on angle relationships
- Use information to construct triangles and quadrilaterals
- Apply algebra to formulas of polygons, circles and solids – perimeter, area, circumference, and surface area
- Coordinate geometry – graphing points, linear equations, and functions

A sample of enrichment topics and applications in Level 6 math may include:

- Problem solving: California Math League (CML)
- Problem solving: Math Olympiads for Elementary and Middle School (MOEMS)
- Mathematician Investigation
- Constructions of solids

Essential Questions:

- How do we translate verbal ideas to the language of mathematics?
- What are the different ways of communicating mathematics with clarity?
- How is balance relevant to mathematics?

Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.

- Students develop an appreciation for number systems and will be able to classify types of numbers in the real and imaginary number systems.
- Students develop fluency of operations with fractions, decimals, integers, and percent/fraction/decimal equivalencies.
- Students make connections between mathematical ideas, unknowns, and real world applications.
- Students practice basic algebraic concepts of writing, evaluating, and solving expressions and equations.
- Students exercise deductive reasoning, critical thinking, and flexible thinking to apply core concepts to word problems and new mathematical experiences.

Text: *Big Ideas: Course 1 Advanced*

Pre-Algebra

Text: Larson and Boswell: *Big Ideas Math Advanced 2*

Pre-Algebra Students study the following topics:

- Variables, expressions, and integers
- Properties and operations
- Linear equations and inequalities in one variable
- Factors and multiples of variable expressions
- Properties of exponents
- Operations with fractions and decimals
- Ratios, proportions and percent
- Elementary counting and probability
- Graphs of linear functions and their equations
- Introduction to linear systems
- Properties of real, rational, and irrational numbers
- Square roots
- Polynomials and simple non-linear functions
- Right triangle geometry, including basic trigonometric ratios
- Regular geometric polygons, circles and solids
- Simple geometric translations, rotations, and reflections
- Data displays and interpretation

Additionally, Pre-Algebra students are challenged with enrichment opportunities:

- Problem solving: Math Olympiads for Elementary and Middle School (MOEMS)
- Problem solving: California Math League (CML)
- Mental math challenges: Math Mania
- Celebration of Pi Day

Essential Questions:

- How do we translate verbal ideas into the language and notation of mathematics?
- In primary math your focus was on manipulating numbers. But is mathematics really about numbers?
- How is a mathematical equation like a balance scale?

Learning Outcomes:

- Students are adept at the language of mathematics.
- Students are familiar with the different types of real numbers and are able to categorize numbers accordingly.
- Students master fraction/decimal/percent equivalencies.
- Students perform correct order of operations instinctively.
- Students are able to solve all types of linear equations in one variable regardless of complexity.
- Students understand the concept of linear inequalities, solve simple inequalities, and graph them on a number line.
- Students can perform basic operations with variable expressions and simplify them.
- Students are familiar with the various ways percentages and proportions are used in applications and are able to select and execute an appropriate solution method.
- Students are able to solve simple probability, permutation, and combination real world problems.
- Students realize the relationship between a linear equation in two variables and its graph in the coordinate plane.
- Students are able to correlate the slope of a line with rate.
- Students are able to identify whether or not a relation is a function.
- Students recognize the possible solutions of linear systems and are able to solve simple systems graphically.

- Students recognize perfect squares and are aware of their significance.
- Students identify, add, and multiply simple polynomial expressions.
- Students know and use the Pythagorean Theorem as it applies to right triangles and the distance formula.
- Students can identify basic geometric polygons and solids.
- Students demonstrate an understanding of area, volume, and surface area.
- Students are able to conduct basic statistical analysis of data sets, recognize different ways of displaying data, and interpret data representations.

Algebra 1A

Text: Larson and Boswell: *Big Ideas Math Algebra 1*

Algebra 1A math students study the following topics:

- The Real Number System
- Numeric Bases other than base 10
- Solving Linear Equations and Inequalities
- Solving Absolute Value Equations and Inequalities
- Graphs of Linear Functions
- Slope and Writing Equations of Lines
- Functions, Domain and Range
- Graphing Linear Inequalities in one and two variables
- Graphing and Solving Systems of equations in two variables
- Solving Systems in three variables

Pre-Advanced Placement topics to be covered as well:

- Operations with Imaginary Numbers
- Introduction to Permutations, Combinations & Probability
- Math Modeling with real world applications
- Linear Regression Analysis
- Linear Programming
- Venn Diagrams
- Writing Programs on the TI-83 Calculator

Enrichment activities to be integrated into the curriculum:

- Math Olympiads for Elementary and Middle School (MOEMS)
- AMC8 and AMC10
- Math Counts Competition
- SAT preparation
- Math Jeopardy
- Historical perspectives, Documentary Films, and Mathematician Reports

Essential Questions:

- How do we translate verbal sentences into mathematical equations?
- How can we distinguish between actual solutions vs. extraneous solutions? How does the brain utilize mathematics to formulate conclusions?

Algebra 1A Math Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.
- Students develop an appreciation for all number systems.
- Students make connections between mathematical algorithms and the path needed to solve real world applications.
- Students learn how to write and solve equations, evaluate and simplify expressions.
- Students learn to use deductive and inductive reasoning, critical and lateral thinking to apply core concepts to applications and mathematical adventures.
- Students learn how to utilize previous knowledge in order to tackle advanced topics.
- Students learn all the topics specified above.

Algebra 1B

Text: Larson and Boswell: *Big Ideas Math Algebra 1*

Algebra 1B math students study the following topics:

- The Real Number System
- Numeric Bases other than base 10
- Factor Patterns and Solving Polynomials by Factoring
- Graphing and Writing Quadratic Functions

- Solving Quadratic equations and Inequalities
- The Quadratic Formula and Completing the Square
- The Discriminant and its role in Applications
- Graphing and Solving Exponential Equations
- Graphing and Solving Radical Functions
- Finding Inverse Functions
- Simplifying and Solving Rational Equations and Inequalities
- Simplifying Complex Fractions

Pre-Advanced Placement topics to be covered as well:

- Operations with Imaginary Numbers
- Introduction to Permutations, Combinations & Probability
- The use of Synthetic Division to solve Higher Ordered Polynomials
- Quadratic Math Modeling with Real World Applications
- Growth and Decay Models
- Graphs of Rational Functions
- Linear Regression Analysis and Linear Programming
- Venn Diagrams
- Writing Programs on the TI-83 Calculator

Enrichment activities to be integrated into the curriculum:

- Math Olympiads for Elementary and Middle School (MOEMS)
- AMC8 and AMC10
- Math Counts Competition
- SAT preparation
- Math Jeopardy
- Historical perspectives, Documentary Films, and Mathematician Reports

Essential Questions:

- How do we translate verbal sentences into mathematical equations?
- How can we distinguish between actual solutions vs. extraneous solutions?
- How does the brain utilize mathematics to formulate conclusions?

Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.
- Students develop an appreciation for all number systems.
- Students make connections between mathematical algorithms and the path needed to solve real world applications.
- Students learn how to write and solve equations, evaluate and simplify expressions.
- Students learn to use deductive and inductive reasoning, critical and lateral thinking to apply core concepts to applications and mathematical adventures.
- Students learn how to utilize previous knowledge in order to tackle advanced topics.
- Students learn all the topics specified above.

Geometry

Text: Larson and Boswell: *Big Ideas Math Geometry*

Geometry math students study the following topics:

- The Real Number System
- Numeric Bases other than base 10
- Area, Volume, Perimeter, Circumference, Sectors & Arc Lengths
- Triangular Trigonometry
- Triangles, Quadrilaterals, Polygons & Circles
- Slope, Midpoint & Distance Formulas
- Similarity & Congruence
- Deductive, Inductive & Indirect Reasoning & Proofs
- Coordinate Geometry & Proofs
- Review of Algebra 1 concepts in preparation for Algebra 2

Pre-Advanced Placement topics to be covered as well:

- Operations with Imaginary Numbers
- Introduction to Circular Trigonometry & Radian Measure
- Approximating Areas under Parabolas using Newton's Method $f(x)\,\Delta x$
- Finite Induction Proofs

- Synthetic Division and Solving Higher Ordered Polynomials
- Writing Programs on the TI-83 Calculator

Enrichment activities to be integrated into the curriculum:

- Math Olympiads for Elementary and Middle School (MOEMS)
- AMC8 and AMC10
- Math Counts Competition
- SAT preparation
- Math Jeopardy
- Historical perspectives, Documentary Films, and Mathematician Reports

Essential Questions:

- How does the Geometry of Euclid compare & contrast with the Geometry of Descartes?
- How does the brain utilize the different types of reasoning to formulate conclusions in everyday decisions?

Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.
- Students develop an appreciation for all number systems.
- Students make connections between mathematical algorithms and the path needed to solve real world applications.
- Students learn how to write and solve equations, evaluate and simplify expressions.
- Students learn how to draw conclusions by utilizing the procedures delineated by deductive, inductive & indirect reasoning.
- Students learn how to utilize previous knowledge in order to tackle advanced topics.

Algebra 2

Text: Larson and Boswell: *Big Ideas Math Algebra 2*

Algebra 2 Students study the following topics:

- Real and complex number systems
- Linear functions, equations and inequalities, including absolute value equations

- Linear systems and basic matrix algebra
- Quadratic functions, equations, and inequalities, including those with complex solutions
- Polynomial functions, equations, and graphs
- Rational exponents and radical functions
- Inverse functions
- Exponential and logarithmic functions
- Direct, inverse, and joint variation
- Rational functions, equations, and graphs
- Conic sections
- Counting and Probability
- Data analysis and statistics
- Sequences and series
- Trigonometric ratios, functions, graphs, identities, and equations

Additionally, Algebra 2 students are challenged with enrichment opportunities:

- Problem solving: MOEMS, AMC 8, MathCounts, San Diego Middle School Math Field Day, Purple Comet Math Contest, CML
- Mental math challenges: Math Mania
- Celebration of Pi Day
- SAT math prep

Essential Questions:

- How do we translate verbal ideas into the language and notation of mathematics?
- What types of patterns and relationships do we see in our exploration of various mathematical functions?
- How do we relate mathematical functions to the world around us?
- Why is discrete math important and how do we use it?
- How do we analyze and interpret data?

Algebra 2 Learning Outcomes:

- Students are adept at the language of mathematics.
- Students understand and appreciate all number systems.

- Students make connections between mathematical algorithms and real world problems.
- Students are able to solve linear, quadratic, polynomial, exponential, logarithmic, radical, rational, and trigonometric equations.
- Students are able to model linear, quadratic, polynomial, exponential, logarithmic, radical, rational, and trigonometric problems using appropriate functions.
- Students comprehend the significance of matrices and are able to perform matrix algebra operations.
- Students identify and understand the characteristics of conic sections.
- Students apply the principles of combinations, permutations, and the binomial theorem to real world counting and probability problems.
- Students are adept at creating and interpreting various methods of displaying data.
- Students identify and analyze both arithmetic and geometric sequences and series.
- Students comprehend the geometric significance of trigonometric ratios and are able to manipulate trigonometric relationships using basic properties and identities.

Calculus/Pre-Calculus

Text: Brooks/Cole, *Calculus with Pre-Calculus*, Larson, and Edwards, 2012
Calculus/Pre-Calculus math students study the following topics:

- Review of Graphing & Solving Polynomial, Absolute Value & Radical Equations
- Review of Functions, their Inverses & Composites, Direct & Inverse Variation
- Review of Rational Functions, Restrictions on the Domain and Asymptotes
- Limits & Their Properties, Continuity & Infinite Limits
- Basic Differentiation Rules, Related Rates, & the Chain Rule
- Product & Quotient Rules, Higher-Order Derivatives & Implicit Differentiation
- 1st & 2nd Derivative Tests, Concavity, Increasing/Decreasing Functions
- Rolle's Theorem & The Mean Value Theorem
- Curve Sketching & Optimization Problems
- Integration & the Fundamental Theorem of Calculus
- Exponential & Logarithmic Functions: Growth, Decay, Gaussian & Logistic

Models

- Differentiation & Integration of Exponential & Logarithmic Functions
- Review of Trigonometry: Solving Equations, Applications, Graphs, Identities & Proofs
- Differentiation & Integration of Trigonometric Functions
- Conics & Implicit Integration
- Parametric Equations
- Trigonometric Form of Complex Numbers: DeMoivre's Theorem

Pre-Advanced Placement topics to be covered as well:

- Vectors in the Plane, Polar Coordinates & Calculus
- L'Hôpital's Rule & Indeterminate Forms
- Areas Between Curves
- Volumes of Revolution: Washer, Disk & Shell

Methods Enrichment activities to be integrated into the curriculum:

- Math Olympiads for Elementary and Middle School (MOEMS)
- AMC8 and AMC10
- Math Counts Competition
- SAT preparation
- Math Jeopardy
- Historical perspectives, Documentary Films, and

Essential Questions:

- How are Integration & Differentiation used in modeling & solving real world problems?
- How does Calculus help to describe models mathematically that otherwise would necessitate impossible or unethical experimentation.

Learning Outcomes:

- Students learn essential vocabulary and communicate using mathematical rhetoric.
- Students make connections between mathematical algorithms and the path needed to solve real world applications.
- Students learn how to write and solve equations involving motion, areas & volumes of irregular objects.

- Students learn how to draw conclusions by utilizing the procedures delineated by deductive, inductive & indirect reasoning.
- Students learn how to utilize previous knowledge in order to tackle advanced topics.
- Students learn all the topics specified above.

Social Studies

Sixth Grade Social Studies

Sixth grade students examine the ancient world from a comparative perspective from 10,000 BCE to 500 CE. Students engage in the methodologies of social studies' disciplines such as archaeology, anthropology, geography, and history. Students read and analyze primary and secondary sources. Students think critically about the causes of human progression from simple farming societies to the complex civilizations exemplified by Mesopotamia, Egypt, the Indus Valley, China, and Mesoamerica.

Essential Questions:

- How do maps and timelines give us perspective about the world?
- How did geographic and environmental factors help or hinder the growth of civilizations?
- What impact did complex societies have on the environment?
- How did advances in technology lead to population growth, the expansion of empires, and environmental damage?
- How did expanding networks of exchange help shape belief systems?

Learning Outcomes:

- Understand and use concepts of scale and proportion in chronography and chronology.
- Demonstrate mapping skills.
- Differentiate among various flat world map projections in terms of their relative distortion of land shape and area.
- Identify the earth's continents and investigate alternative ways of naming them.

- Compare views of earth from different vantage points and distinguish several large regions as stages of world history.
- Analyze the relationship between vegetation zones, population distribution, and paths of interaction in historical time.
- Explain what is meant by the domestication of plants and animals and how farming affected world population growth and density.
- Compare the differences between a hunting-gathering way of life and a settled agricultural one.
- Discuss how agricultural societies developed around the world.
- Formulate how and where complex societies evolved and recognize the significant characteristics of civilization.
- Describe ways in which the rate of change in population accelerated between 10,000 BCE and 1,000 BCE.
- Understand social and environmental consequences of population growth between 1,200 BCE and 500 CE.
- Locate major networks of exchange established in Afroeurasia from 1,200 BCE to 500 CE.
- Synthesize changes resulting from new cultural encounters.
- Identify world religions and belief systems that flourished between 1,200 BCE and 500 BC.
- Hypothesize about causes of the rise of large, enduring empires.

Resources:

World History for Us All http://worldhistoryforusall.sdsu.edu/
Big History Project https://school.bighistoryproject.com/bhplive
Diamond, J. *Guns, Germs, and Steel: The Fate of Human Societies*. 1997
Pollard, E. *Worlds Together Worlds Apart: From the Beginnings of Humankind to the Present*. 2015

Seventh Grade Social Studies

In line with the College, Career & Civic Life (C3) Framework for the Social Studies, as well as the work of Peter Seixas (The Big Six Historical Thinking Concepts), The Rhoades School's seventh grade program is dedicated to instilling in our students the means by which to engage in historical thinking. In other words, they are guided through the process of how to understand the connections between historical eras (as well as connections across the curriculum) and to determine the context,

significance, and interpretation of events that transpire over time. Students are taught to weigh the veracity of sources, issues of causality, and the interpretation of evidence. Through the use of numerous primary and secondary sources to support the students' investigations into the past, the curriculum is designed to promote thinking that is equally creative and critical, equally collaborative and highly individualistically rich, students examine a multitude of primary sources, both written and visual.

Because historical inquiry demands that students access, interpret, and assemble information from a variety of means, research is an important component of this program. Always encouraged to follow lines of inquiry that they themselves find interesting, students use questions generated through their own research to further their investigations, perhaps changing their paths entirely as they delve more deeply into specific topics. Although the process of inquiry remains fluid, the students are required to produce writing that is historically sound, accurately cited, and academically sophisticated. The curriculum also offers opportunities for students to explore the correct application of different forms of essay responses to match varying prompts, noting the difference between such patterns of writing as argumentation, informative, and narrative.

In keeping with both the C3 Framework for the presentation of knowledge and ideas, this curriculum offers repeated opportunities for students to present the content of their research in both formal and informal ways. While the substance of their research is important, delivery of their knowledge is paramount in this category. Students are coached on best ways to present information orally, having been given rubrics in advance that delineate such speaking attributes as rate, posture, eye contact, and movement. Not being allowed to use note cards or text integrated within multimedia encourages students to connect more closely with their intended audience and trains them for discussions and presentations that will extend beyond middle school.

Geographic inquiry is also an important component of the social studies curriculum as spatial awareness is integral to understanding one's own place in the world—as well as that world itself. By asking questions such as why the lack of interior rivers on the Saudi peninsula led to rich trade routes in that area, for instance, students are able to construct meaning regarding the complexity of the Earth's diverse environments and cultures. They use a variety of geographic representations to arrive at their conclusions, including such resources as maps, atlases, iPads, and Google Earth.

Because technology and social studies form a very natural alliance, many of the International Society for Technology in Education (ISTE) standards are addressed in the curriculum (noted here in italics). From individual projects to multi-student collaborations, students create original work as a means of personal or group expression, notably such technology-driven products as radio plays, films, iBooks, and digital comics. While honing their historical thinking skills, students also communicate information and ideas effectively to multiple audiences using a variety of media and formats, as well as interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media. In the great canvas of world history, such programs as Edmodo have proven to be effective tools for kick-starting

deep and abiding thoughts on such essential questions as, for instance, “What is art?”

This curriculum in no way envisions history as a simple compendium of dates but rather as a living entity that has deep connections with current times and the lives of our own young students. It is designed to foster curiosity about other cultures, as well as our own, and to encourage a love of learning for its own sake.

Content and Essential Questions:

Seventh grade students make an in-depth study of the Roman world, from its beginnings to its fall in the fifth century. They go on to study the rise of Islam and its establishment as an empire and finish the year examining the Middle Ages. Honing their skills in research and academic prose, the students are required to write two formal research papers, each one on a topic of their choice within the larger frameworks of the Roman Empire and medieval history. They are required to formulate an essential question, the response to which will provide the focus for these papers. Because the art, architecture, and literature of this era are particularly rich, students examine a multitude of primary sources, both written and visual, from analyzing the symbolism of Gothic cathedrals, for example, to listening to or reading passages from such diverse texts as the histories of Suetonius, The Canterbury Tales, the Arabian Nights’ Entertainment, and Arabic nature poetry. They students are encouraged to integrate technology and practice collaboration in creating final unit projects, such as a radio play in which their researched topics on Rome must be conveyed solely through the use of dialogue and sound imagery.

Enduring Understanding:

Empires are impermanent.

A Sampling of Essential Questions:

- How are empires created?
- Why do empires fall?
- How much power is too much power?
- Why is loyalty important?

Learning Outcomes:

- Students analyze how the relationship between the Romans and the environment of the Mediterranean region extended patterns of expansion through trade, science, and warfare.
- Students explain multiple causes and effects of events and developments in ancient Rome that led to, on the one hand, the fall of the Western Roman Empire, while, on the other, the continuation of the Eastern Roman (or

Byzantine) Empire.

- Students use questions generated about individuals (Alexander the Great, Julius Caesar, Cleopatra, Attila the Hun) or groups to analyze why they, and the developments they shaped, are seen as historically significant within the context of the ancient Roman Empire and the period immediately succeeding the collapse of the Western Roman Empire.
- Students gather information from multiple sources regarding ancient Rome while evaluating the credibility of those sources and determining their relevance for the intended purpose of writing a research paper and producing a radio play.
- Students use maps, satellite images, photographs, and other representations to explain the relationship between the environment and the culture(s) of the Saudi Arabian peninsula.
- Students explain how the physical and human characteristics of a desert region led to far reaching trade routes and the dissemination of Islam.
- Students explain how the technological changes, notably in transportation and education, that occurred in medieval Europe influenced the diffusion of ideas.
- Students analyze multiple factors that influenced the perspectives of people during the Middle Ages and how these perspectives allowed the feudal system to flourish.
- Students determine the central themes and purposes of Norse mythology and how such stories offer insights into the human condition.

Resources:

While the list below is in no way complete, it does include several of the resources used in seventh grade social studies:

- Library of Congress: “Working with Primary Sources”
- The Great Courses: “Visualizing Rome”
- TED-Ed
- History Channel: *The Barbarians*
- World History for Us All: *Big Era Four*
- Google Earth
- California History-Social Science Project: *Sites of Encounter*

Eighth Grade Humanities:

Humanities is a collaborative course for eighth grade students, taking the connection between U.S. History and Literature to a higher level. Students work together on several units in both U.S. History and Literature providing opportunities to discuss, share, write, and analyze historical events and literary themes.

Colonial Society and The Scarlet Letter

The unit will begin with an in-depth look at the development of Puritanism and its philosophies. As an anti-transcendentalist, Nathaniel Hawthorne criticized the theocracy in Puritan Salem through his characterization, plot, themes, and symbols in The Scarlet Letter. Students will ponder issues of the human heart and soul; they will empathize with characters' inner turmoil and the stigmas placed on them in society. In so doing, students will understand that there are consequences for the choices they make, which affect the individual and others with whom they interact.

Essential Questions:

- How was Puritan immigration changing colonial society?
- How did the family being at the center of economic life influence roles for women?
- How did the Salem Witch Trials illustrate social crisis during this period?
- How does the time in which one lives impact one's beliefs and actions?
- Is sin a conflict with oneself, society, or God? Should there be punishment, and if so, by whom?
- How are women held to a different moral standard than men?

Revolutionary America, The Odyssey and Founding Brothers

Students will explore the essential question, What is a Hero? We begin this exploration by reading letters between the founding fathers. In our study of the Revolutionary War, and the founding of a new nation, students read Founding Brothers by Joseph Ellis. This book will provide a springboard for a collaborative research project with the purpose of comparing and contrasting a founding father and his journey with the fictional journey of Odysseus. This joint Humanities project is unique in that it is both a research paper and literary analysis.

In our study of The Odyssey, we will define the epic poem and its roots in oral tradition. We will understand the epic hero cycle and how to recognize the pattern of events and elements in Odysseus' journey. We will interpret the historic journeys in light of the epic hero cycle.

Essential Questions:

- What is a hero?
- How does the literary epic hero influence our perception of the historic hero?
- How does modern society judge heroism?

Slavery in America and Frederick Douglass' Narrative of the Life of an American Slave and Sue Monk Kidd's The Invention of Wings

Students read Douglass' autobiography in conjunction with learning about the institution of slavery in the South during the antebellum period. Students explore how slavery was a political, social, cultural and economic institution in the South, and how this institution permeated politics, society, culture and economics in the North. Other important historical and social concepts we explore are the abolitionist movement, and other reform movements in the early 19th C, and the connection between education and freedom.

Essential Questions:

- In the novel, The Narrative of the Life of Frederick Douglass, how is education related to human freedom?
- How did enslaved people create community and a culture that allowed them to survive in an oppressive society?
- How does literature affect social justice, reconciliation and transformation.
- What was economic rationale for slavery in the South and in the North?
- Why is reading comprehension a statement about freedom?
- What is a human right?

Civil Rights Oral History

Students create oral history projects focusing on an aspect of the Civil Rights Movement. They reflect on the past by researching about the Civil Rights Movement and make meaningful connections by interviewing someone who experienced it first hand. This project also helps students understand the uneven trajectory of civil, political, economic and human rights for African-Americans from Reconstruction to Jim Crow to the Civil Rights Movement.

Essential Questions:

- What is oral history and why is it important to collect oral histories?
- How does individual experience fit into the larger Civil Rights Movement?
- How does one listen with understanding and empathy?
- How does one fill in the gap between what one knows and wants to learn?

Science

Sixth Grade Science

Learning Objectives:

The sixth grade curriculum is designed to lay an insightful and indelible foundation for the fundamentals of physics and astronomy. The students will contemplate and investigate a myriad of ideas across the concept realms of introductory physics and basic astronomy. The students will hone pertinent academic skills as they develop a profound appreciation for the exciting and complex world around them. Through scientific principles, intellectual conversation, applied technology and laboratory experiences, the students will explore the laws that govern the physical world and ponder the enigmas and wonders of the universe.

1. Students will be able to apply concepts regarding center of gravity to a variety of laboratory experiments.
2. Students will know Newton's First Law of Motion and be able to apply its concepts to laboratory experiments.
3. Students will know Newton's Second Law of Motion and be able to apply its concepts to laboratory experiments.
4. Students will know Newton's Third Law of Motion and be able to apply its concepts to laboratory experiments.
5. Students will know the Impulse-Momentum Equation and be able to apply its concepts to laboratory experiments.
6. Students will know the concept of magnetism as based and be familiar with Weiss domains.
7. Students will know the Earth generates a magnetic field.
8. Students will know the order of the planets in our solar system.
9. Students will know the definition and measure of one astronomical unit.
10. Students will know the stages of the star cycle, beginning and ending with a nebula and possible alternative pathways (nebula, protostar, main sequence, red giant, white dwarf, black dwarf, supernova, neutron star, black hole).
11. Students will know a black hole lies at the center of every galaxy, and we are a part of the Milky Way Galaxy.
12. Students will know the most common element in the universe is hydrogen.
13. Students will know the next nearest large galaxy is the Andromeda Galaxy and that there are closer, smaller galaxies.
14. Students will comprehend word problems involving acceleration due to gravity.

15. Students will develop a science project based on the scientific method, including research, experimentation and analysis of results.
16. Students will know characteristics of Mercury, including orbit, rotation, geology, and related Missions.
17. Students will know characteristics of Venus, including orbit, rotation, geology, atmosphere and related Missions.
18. Students will know the characteristics of Earth, including orbit, rotation, geology, layers of the atmosphere and molecules potentially contributing to global warming.
19. Students will know the characteristics of Earth's moon, including orbit, rotation, geology and history of formation.
20. Students will know the characteristics of Mars, including orbit, rotation, geology, atmosphere and related Missions.
21. Students will know the characteristics of Mars's moons, including orbits, geology, probable origins, discovery and related Missions.
22. Students will know the characteristics of the Asteroid Belt, including dwarf planet Ceres and main geologic varieties of asteroid and meteorite types.
23. Students will know characteristics of Jupiter, including orbit, rotation, geology, atmosphere and related Missions.
24. Students will know the characteristics of Jupiter's moons, including orbits, geology, possible origins, discovery and related Missions.
25. Students will know characteristics of Saturn, including orbit, rotation, geology, atmosphere and related Missions.
26. Students will know the characteristics of Saturn's moons, including orbits, geology, possible origins, discovery and related Missions.
27. Students will know characteristics of Uranus, including orbit, rotation, geology, atmosphere, discovery and related Missions.
28. Students will know the characteristics of Uranus's moons, including orbits, geology, possible origins, discovery and related Missions.
29. Students will know characteristics of Neptune, including orbit, rotation, geology, atmosphere, discovery and related Missions.
30. Students will know the characteristics of Neptune's moons, including orbits, geology, possible origins, discovery and related Missions.
31. Students will know dwarf planets of our solar system, including Ceres, Pluto and its moons, and the geology, orbits, discovery and related Missions.
32. Students will be able to explain what a comet is and know the locations of the Kuiper Belt and the Oort Cloud.

Seventh Grade Science

Learning Objectives

The seventh grade course focuses primarily on the study of life and the many types of biological organisms known to exist today or known to exist through the fossil record. The seventh grade year pursues an intricate investigation into a broad range of life forms and their ecosystems. The students evaluate impacts of change and intellectual responsibility. Advanced technology, high level discussion and experimental observation are employed in the analysis of structures and functions of biological traits. Thoughtful questions and sophisticated challenges comprise a unit of in depth examination into genetic diversity. The students develop a keen sense of awareness and a realization of the importance of their role as a part of the living community here on Earth.

1. Students will know basic taxonomic classifications for living organisms.
2. Students will know the scientific name indicates the genus and species of an organism.
3. Students will know the difference between native and endemic species.
4. Students will understand the definition of an invasive species and will be able to provide examples of invasive plant and animal species.
5. Students will know plankton is made up of meroplankton and holoplankton, including zooplankton and phytoplankton.
6. Students will know the difference between dinoflagellates and diatoms.
7. Students will know problems associated with red tide.
8. Students will be able to identify the three main divisions of algae (Chlorophyta, Rhodophyta and Phaeophyta) and the types of pigments (including chlorophylls) they contain.
9. Students will know ways in which algae provide benefits to the ecosystem.
10. Students will know the anatomy of basic algae (such as Macrocystis pyrifera).
11. Students will know the three main classes of fish (Agnatha, Chondrichthyes and Osteichthyes).
12. Students will know how to classify fish based on the characteristics of Agnatha, Chondrichthyes and Osteichthyes.
13. Students will know the basic structures and functions in fish anatomy (including the gills, lateral line, caudal fin, etc.)
14. Students will know local species of fish and their adaptations.

15. Students will be able to identify important marine invertebrate phyla and their members (Annelida, Cnidaria, Porifera, Mollusca, Echinodermrata, Arthropoda, and Platyhelminthes).
16. Students will know marine mammal orders, suborders, local members and their status (Cetacea, Mysticeti, Odontoceti, Carnivora, and Pinnipedia).
17. Students will know cell theory and cell organelle structures and their functions.
18. Students will know the basic concepts of tonicity and be able to predict net movement of water.
19. Students will know the double lipid structure of cellular membranes.
20. Students will know the processes of DNA transcription and translation.
21. Students will be able to write a peptide chain based on the mRNA code.
22. Students will know the stages of mitosis and meiosis.
23. Students will be able to identify gross chromosomal errors, such as deletion, duplication, translocation, inversion and nondisjunction.
24. Students will know the results of nondisjunction errors, such as Down Syndrome, Trisomy X, Turner Syndrome, Klinefelter Syndrome, Edwards Syndrome and Patau Syndrome.
25. Students will know the purpose of an amniocentesis.
26. Students will be familiar with the history of Gregor Mendel as the father of genetics.
27. Students will know vocabulary associated with genetics, such as gene, allele, trait, genotype, phenotype, dominant, recessive, codominance, incomplete dominance, pedigree, homozygous, heterozygous and carrier.
28. Students will know how to use Punnett squares, including the dihybrid cross.
29. Students will be able to predict probabilities for genotypes and phenotypes with examples of autosomal or sex-linked traits.
30. Students will be able to apply the Castle-Hardy-Weinberg Principle for large population genetics to predict the frequencies of genotypes given a large population.
31. Students will be able to solve problems involving epistasis to predict genotypic and phenotypic outcomes.
32. Students will be familiar with Charles Darwin and his theories of evolution along with modern modifications.
33. Students will learn that many factors are used to compare and classify organisms, including biochemistry and anatomy.

Eighth Grade Science:

Learning Objectives:

The primary aim of the eighth grade curriculum is to acquaint the students with the basics of chemistry and to inspire the students to contemplate what is known and what is yet to be discovered. The students will study important principles of introductory chemistry and participate in a wide variety of applications through exciting laboratory explorations.

Scientific principles and classroom discussions will equip the students with the academic skills necessary to evaluate experimental results and master problem-solving successfully. Enlisting the concepts of chemistry, investigational surprises will fill the students with awe and capture the imagination.

1. Students will know the four fundamental forces.
2. Students will know the structure of an atom.
3. Students will know the charges on subatomic particles and the quark composition of protons and neutrons.
4. Students will know how to predict ionic charges based on the number of valence electrons.
5. Students will be able to write the spectral notation for elements.
6. Students will be able to write the general formula for beta negative decay and apply to an example.
7. Students will be able to list the possible states of electrons in an element according to orbital angular momentum, magnetic quantum number and spin magnetic quantum number.
8. Students will be able to explain magnetism in terms of Weiss domains.
9. Students will understand the difference between static and current electricity.
10. Students will know the scientific method.
11. Students will be able to develop a science fair project of their own based on the scientific method.
12. Students will know the different types of chemical bonds (Vander Waals forces, hydrogen bonds, metallic bonds, ionic bonds, covalent bonds).
13. Students will know the structures of proteins (primary, secondary, tertiary, quaternary; alpha and beta).
14. Students will know the DNA alpha helix structure is formed through hydrogen bonding.
15. Students will understand the differences between polar and non-polar

molecules.

16. Students will be able to identify types of chemical reactions (synthesis, decomposition, combustion, single replacement and double replacement).
17. Students will be able to balance inorganic equations.
18. Students will be able to write neutral compounds from various ions, including polyatomic ions.
19. Students will be able to name neutral compounds, including hydrate compounds.
20. Students will be able to identify concepts in experiments that demonstrate polar and non-polar molecular behaviors or types of reactions.
21. Students will know properties and pH of acid versus base.
22. Students will know when a single replacement reaction will occur based on the activity series of metals.
23. From word problems, students will be able to calculate the number of moles or gram yield for a balanced equation based on principles of stoichiometry.
24. From word problems, students will be able to identify a limiting reactant.
25. Students will be able to predict outcomes of experiments based on stoichiometry.
26. Students will be able to define solute, solvents and solutions.
27. From word problems, students will be able to calculate the molarity of a solution or calculate the moles or grams of solute needed to produce a specific molarity.
28. Students will be able to convert temperatures (Fahrenheit, Celsius, Kelvin).
29. Students will know the volume of one mole of gas at STP (standard temperature and pressure).
30. Students will be able to identify the gas laws concepts in laboratory experiments.
31. In word problems, students will be able to apply Charles' Law, Boyle's Law, Gay- Lussac's Law, the combined gas law or the ideal gas law to calculate the outcomes.

Spanish

Spanish 1

In middle school, Rhoades students continue their Spanish studies with greater

intensity. The curriculum is interactive, conversational, hands-on, and culturally rich. In the classroom, students engage in listening, speaking, reading, and writing through authentic conversations, simulations, games, and activities. As a class, we read the Spanish novel *Pobre Anna*. At home, students use the eBook text *Descubre* on their iPads with web-based homework activities. In Spanish 1, students complete the first six chapters of *Descubre 1*.

Essential Questions:

How might learning a language open "doors of opportunity"?

How can I enhance my connections with people through language?

Learning Outcomes:

1. Students will be able to engage in basic greeting conversations, ask introductory questions, express feelings, describe where they are from, and know multiple ways of saying hello and goodbye.
2. Students will form questions in Spanish, and use correct punctuation in forming questions in writing.
3. Students will conjugate present tense –ar, -er, and –ir verbs, and be able to use present tense verbs in conversation and in writing.
4. Students will understand when to use the verbs ser and *estar* (to be), and how to conjugate these verbs.
5. Students will conjugate stem changing verbs, including e:ie, o:ue, and e:ei.
6. Students will know how to conjugate common irregular verbs such as *tenir*, *venir*, *ir*, *hacer*, *poner*, and *salir*.
7. Students will know when to use the verbs saber and *conocer* (to know), and how to conjugate these verbs.
8. Students will be able to use the present progressive tense in conversation and in writing.
9. Students will know numbers 0-100 in conversation and in writing.
10. Students will tell time and ask and answer what time an activity begins.
11. Students will ask what the date is and say the date including the day of the week and month.
12. Students will understand what direct and indirect object pronouns are in Spanish and will be able to use them in oral and writing activities.
13. Students will engage in conversation about school including school subjects, schedules and classroom items.

14. Students will talk about their favorite sports and pastimes, describe locations in their community, and talk about where they go and with whom.
15. Students will talk about activities outside of school. They will extend, accept, and decline invitations, as well as tell when and where events will happen.
16. Students will understand popular sports in the Spanish-speaking world.
17. Students will describe families, talk about celebrations and parties, ask about and describe age, and express possession.
18. Students will understand family structure, traditions, celebrations in a Latin American country, and compare and contrast to their own families.
19. Students will talk about clothes, shopping, and prices, describe their plans, tell what they want and what they prefer, and point out specific items.
20. Students will talk about activities they do while on vacation, describe places they like to visit, and will begin talking and writing about events using the past tense.

Spanish 2

Spanish 2 at The Rhoades School begins the *Descubre I* curriculum as an extension of their studies over the previous two years. We start the year with a review assessment of concepts learned in the previous year. Our primary goal is to complete the last four chapters of *Descubre Level I* before the end of the year.

Essential Questions:

What are the challenges of communicating in a foreign language?
Why are the rules of grammar necessary?

Learning Outcomes:

1. Students will describe clothing and fashion, talk about going shopping, describe events in the past, point out specific objects, and avoid repetition when comparing similar things.
2. Students will review how to talk about themselves and others, talk about things they and others do, and talk about how often they do certain things.
3. Students will describe their daily routines, describe people and things, give reassurance to others, and express opinions.
4. Students will talk about things they did and where they did them, explain why they could not complete certain activities.
5. Students will talk about extracurricular activities, compare people and things, say what people know or what they know how to do, say with whom or what people are familiar, and ask and tell how long something has been going on.

6. Students give directions for getting to places eat, order food, and talk about familiar places and people.
7. Students will describe holiday celebrations, talk about their family and relatives, describe people, places, and situations in the past, express gratitude, and talk about the ways in which people interact.
8. Students will discuss emergencies, crises, rescues, and heroic acts, describe past situations and settings, and describe weather conditions.
9. Students will describe an accident scene, talk about injuries and treatments, and talk about what they were doing when an accident occurred.

Spanish 3

Spanish 3 at The Rhoades School continues with the *Descubre* curriculum. We start the year with a review assessment of concepts learned during the previous year.

Essential Questions:

To what extent are English and the target language different?

How will my knowledge of English grammar help me understand Spanish grammar?

How will careful attention to sentence set up and structure help me to better communicate with others?

Learning Outcomes:

1. Students will use health and medical terms to talk about visiting a doctor's office and describe symptoms, pain, injury and how they affect parts of the body.
2. Students will talk about what they see on television, explain how they feel about watching television, and practice using stem-change and reflexive verbs.
3. Students will discuss movie plots and characters, give opinions about movies, and talk about activities they have done using the present perfect.
4. Students will talk about food and cooking, tell others what not to do, and describe what people do in general using the personal *se*.
5. Students will discuss food and outdoor cooking, tell people what to do and what not to do, indicate duration, exchange, reason, and other expressions, and learn the uses of *por*.
6. Students will talk about visiting the airport, plan a trip to a foreign country, make suggestions about safe travel, and read about travel destinations in Spanish-speaking countries.

7. Students will discuss traveling in a foreign city, talk about staying in a hotel, explain how to be a good and responsible tourist, and make recommendations for sightseeing to others.
8. Students will discuss professions and make plans for the future and talk about future events.
9. Students will make predictions about the future, express doubts about ecological issues, and discuss environmental problems and possible solutions.

Computer Science/Technology

The Middle School Computer Science program is designed around the ISTE Nets Standards for students. Our program is centered around: creativity & innovation; information fluency; digital citizenship; communication & collaboration; critical thinking, problem solving and decision making; and technology operations and concepts. The middle school Computer Science program is a balance between integration of technology into core subject areas and using technology to develop programming and code. All middle school students set attainable goals based on the Habits of Mind.

Sixth Grade Computer Science/Technology

Preparing, Creating and Designing a Web Page: HTML/CSS:

Our 6th grade students make decisions on the type of topic they would like to use for their webpage. Students research and gather data, then organize their ideas in logical order before typing their webpage content. They compare good and bad webpage layouts and discuss the properties of both. Students create a personalized digital design layout for their webpage before learning to use HTML/CSS tags.

Essential Questions:

- Why learn HTML and CSS?
- How can learning how to create a web page help us in our daily lives?
- How can efficient programming be beneficial?

Students will understand:

- How learning to code web pages develops other skills necessary for the work place.
- How front end technologies are used to create a web page.
- The importance and purpose of using comments when using code.
- How hexadecimal numbers are related to decimal and binary numbers.

- The importance of writing efficient programs.

Students will be able to:

- Research, access, retrieve, evaluate and organize information pertaining to their web page topic.
- Think creatively and apply past knowledge to generate new ideas to create a personalized web page.
- Apply what they know and use problem solving skills to identify, define and solve coding problems.
- Work collaboratively and assist others when needed.
- Reflect on their learning and clearly explain HTML and CSS code using comments.
- Reflect on their learning and apply what they know to personalize their web page content with text, styling, images, banners and links.
- Use hexadecimal colors when formatting their webpage.

Engineering

Engineering is the branch of science and technology concerned with the design, building, and use of engines, machines, and structures. The engineering design is a process of understanding a problem and designing a solution. In this class, students will learn the engineering design process and use their powers of innovation to solve a real world problem. There are 4 projects (and project management planning) that take the first half of the school year. They are part of the Future City Competition. Future City is an international engineering competition for 6th – 8th grade students.

Seventh Grade Computer Science/Technology

Our 7th grade students revisit the 6 simple machines, starting with the lever and pulley and moving on to incline plane. Students will use simple design challenges (such as building a catapult) to learn about the simple machines. Simultaneously, 7th graders will learn about Arduino. Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino is intended for anyone making interactive projects. It uses step-by-step instructions to teach simple electronics and coding.

Essential Questions:

- How does programming stimulate thought and creativity?

- Why is creativity important, how can creativity help us in our daily lives?

Students will be able to:

- Make decisions and work collaboratively to create personalized programs.
- Apply what they have learned to new situations, think logically, persevere, solve problems and reflect on their learning.
- Add programming comments and update a digital notebook to explain how their program works, the program code and the program flow.
- To create flowcharts to explain the program flow
- Share their ideas, creations, problems and solutions and accept feedback and suggestions from others on how to improve their programs.

Eighth Grade Computer Science/Technology

Our 8th grade technology class focuses on getting students ready for high school level thinking. Students learn about sustainable living here on Earth and experiment with living on the moon. Students practice thinking, designing and building like engineers and use the engineering design process. Students program EV3 Lego Mindstorms with advanced coding

With EV3 Robotics, students use block-based programming languages through hands on, project based assignments in a collaborative and sharing environment. They explore the arts using elements of music, design, drawing and animations. Students use computational concepts of sequence, loops, conditions, operators, data, functions, algorithms, parallelism, events and computational practices of abstracting, modularizing, being iterative and incremental, predicting, testing and debugging, while creating personalized programs. Using digital notebooks and comments, students reflect on what they have learned, then share their experiences, problems and solutions.

The robotics program incorporates math, technology, science and engineering. Students learn how to program robots to move and respond to the environment. They learn how sensors and gears work and how named LEGO elements are used to build robot structures. Flowcharts and digital notebooks are used in the planning and reflecting portion of the programming process. Students download firmware and have an understanding of input and output ports used to connect the robot to sensors and motors.

Essential Questions:

- How does programming stimulate thought and creativity?
- Why is creativity important, how can creativity help us in our daily lives?

Students will be able to:

- Make decisions and work collaboratively to create personalized programs.
- Apply what they have learned to new situations, think logically, persevere, solve problems and reflect on their learning.
- Add programming comments and update a digital notebook to explain how their program works, the program code and the program flow.
- To create flowcharts to explain the program flow
- Share their ideas, creations, problems and solutions and accept feedback and suggestions from others on how to improve their programs.

Student Outcomes Robotics Curriculum:

Students will understand:

- How the light, touch, ultrasonic, and gyro sensors work.
- The programming process.
- The process for programming sensors to respond to the environment.
- The mode and parameter options available for each programming block and how to combine these options to create a specified result.
- Loops, conditional statements, iterations, variables, functions, blocks, input and output wires.
- The effects of the environment and how a robot's weight and design can affect the results.
- The process for calculating exact turns for two-wheel and one-wheel turns.
- Gear ratios and how gears can be used to increase force and speed.
- The flowcharting process and the importance of using a flowchart as a means to plan and reflect on the program flow.

Students will be able to:

- Follow instructional directions on how to build a robot.
- To name the group elements and know how to use them to build a robot.
- Connect input and output port cables to sensors and motors and connect the robot to the computer.
- Use programming blocks to create programs to move a robot that interacts with the environment.
- Use computational concepts and computational practices while creating and debugging programs.

- Describe and create a flowchart to plan and reflect on the program flow.
- Calculate exact turns for one-wheel and two-wheel turns.
- Use the content editor (digital notebook) to record precisely and clearly what they learned, answer questions and share problems and solutions experienced while programming their robots.
- Add photos, create and insert videos to the content editor to support their findings.
- Collaborate with others, offer suggestions, and help others with the planning and debugging processes.
- Plan a personalized program using the concepts introduced.

Physical Education

Students within this age range should have mastered many loco motor and non-loco motor skills and are able to manipulate objects in a variety of ways. Students should play cooperatively and come up with group goals and support when necessary, as well as being able to work and play independently when given the chance. Understanding how exercise, movement, and fitness play a role in their health and wellness in general is an overarching principle that is important to understand at this time.

As this age group progresses, the idea of linking in social appropriateness and sportsmanship becomes very important to a sense of team, self, and school community. Individuality becomes more important and students start to gain a greater confidence with more time. Long-term fitness and sport performance goals become easier and clearer as the student grows into their own individual. The connections of movements to other movement patterns or sports becomes more clear with time, and the connection of exercise and exertion to overall health and wellness also should be more clear.

Essential Questions:

- What physical and social skills are necessary to have a successful game or experience in physical education class?
- What are good examples of sportsmanship? Should sportsmanship look different in different sports/games?
- Can you be a leader without being overly vocal or "bossy"?
- Does this game/sport/activity relate to any other? How is it similar? How is it different? What skills overlap?
- How do you know that you are improving?

Learning Outcomes:

Students will be able to:

- Define appropriate rules, class, structure, and procedures for PE class.
- Apply given rules for class.
- Demonstrate willingness to participate in PE.
- Demonstrate sportsmanship and mutual respect for others regardless of any differences.
- Understand basic ways of how PE affects overall health and wellness as well as how physical activity improves academic performance.
- Demonstrate ability of positive social interaction within our class structure.
- Demonstrate the ability to agree on a common goal with a group.
- Display the ability to perform age appropriate loco motor and physical manipulation skills.
- Show participation and skill competency in aerobic, anaerobic, strength, endurance, sport and other physical exertion activities.
- Show flexibility, understanding, and compassion for others in all aspects of PE class.