Charlotte Lab Middle School
6th Grade Curriculum Overview
2017-2018

Workshop Model Approach

At Charlotte Lab Middle School, teachers generally follow the "workshop model" approach for classroom instruction. This means that the teacher-centered portion of the lesson is often short - a mini-lesson - with the bulk of classroom time spent on student-centered, hands-on, or collaborative activities. In this model, the teacher often takes on the role of facilitator of student learning, with the goal of making learning more engaging, personalized, and meaningful to students.

Student Work: Out-of-Class Work & Late Work Policies

At Lab Middle, we believe that homework should be relevant, purposeful, and reasonable, and acknowledge the research that shows that homework only begins to positively affect student academic performance beginning in middle school. We also know that students will need to be well-prepared to manage the workload in high school. Therefore, we will phase in homework over the course of the students' three years at Lab Middle. Students should do no more than 1 hour/night. Additionally, it is most important to us that students read independently each day and that they are well rested for the school day.

We also believe that if work is worth assigning, it is worth doing ANY time, and doing multiple times until the student "gets it." As such, all work will be accepted late and students will have the opportunity to retake quizzes and tests, and to redo assignments in order to demonstrate growth and mastery.

Grading

At Lab Middle, students will earn numerical grades, as part of their preparation for high school. In order to demonstrate Lab's value for both mastery and work habits, we will adopt the following scale for all 6th grade subject areas. Number grades will be earned in all classes and will be based on the following categories:

- 50% - Mastery of learning objectives (Is the student mastering the concepts, skills established as learning goals for the course?)
- 40% - Work Habits (Is the student developing and exhibiting the kind of positive work habits that lead to academic success? Such habits include the maintenance and organization of a notebook, timeliness of work completion, progress and effort made to improve and grow)
- 10% - Contributing Factors (Is the student exhibiting positive student behaviors, such as participating in class, engaging in discussing, attending regularly and on-time?)

Students will receive number grades on progress reports (and in Cortex), noting the following scale:

A (90-100), B (80-89), C (70-79), D (60-69), F* (55)

*Please note that, in keeping with best practices nationally, students must earn a 60 in order to pass and all failing grades are considered "55"; Charlotte Lab Middle School does not award "zeros".

Report Cards and Conferences

Students will receive a written progress report after first Trimester. During the first week of December, a conference will be scheduled for your family, your child, and your child's advisor to meet and discuss his/her progress. These conferences will be student-led, and will provide your student with opportunities for reflection, goal-setting, and self-advocacy.

Learning Management System/Communication Platform

Beginning in 2nd Trimester, Lab Middle will begin using a software program called Cortex, developed by our partners at Brooklyn Lab School in NY. This platform will house course materials, will provide personalized learning plans and materials, will track student progress, and will enable real-time communication with parents regarding a student's academic progress. As we prepare to launch this program, more details will be provided.

6th Grade 2017-18 ELA Curriculum Guide

Team Members: McClain, Serrano

CHARLOTTE lab SCHOOL

Trimester #1 - Workshop Mindset, Character Study, & Personal Narratives (August 28- November 21)

In the initial reading unit, "Adopting the Workshop Mindset," students will be introduced to a new mindset to bring to any fiction text they encounter throughout the year, leading to a deeper level of analyzing texts. This will help them to better connect these texts to themselves and the world around them, fostering a deeper fondness of reading. This reading unit will flow fluidly into a fiction "Character Study" aimed at building students' understanding of people, their actions, and their reactions to various pressures and internal/external motivators. In the initial writing unit, students will use their knowledge of conveying character development from mentor texts to create their own "Personal Narrative" that focuses on improving the sophistication of their structure, meaning, craft, and language use in narrative writing. In the first trimester, students should gain a greater understanding of themselves, people who are similar to them, and those who are different through the use of read alouds, discussions, individual conferring, and reading/writing partnerships.

Unit Topics & Objectives

Adopting the Workshop Mindset

Readers will…

- reflect on their past reading lives, learn how to set goals and track progress for their future reading lives, and find a peer to form a supportive partnership with
- approach all texts by thinking about what's in the book, their heads, and their hearts
- claim their growing ideas in response to the texts they read
- respond to the text by making an observation, providing supporting evidence, and explaining why their ideas matter
- extend their response to their reading using mind maps, illustrations, and flowcharts to track their development of their thinking on complex ideas from the text

Character Study

Readers will…

- track the changes in a character over time
- analyze the external pressures on a character and their relationship with internal character traits of the character
- understand that authors set them up to see the world of the story from a particular perspective using point of view
- think deeply about what motivates a character to act in certain ways and what deeper insight that brings them of the character
- note the importance of secondary characters and how they influence the main characters
- look for turning points, or big moments, in stories that hint at greater meaning and notice how the character responds to or changes
- pause at the end of the story to ask: What life lessons could a character or I have learned through this story?

Personal Narrative

Writers will…

- generate and continually add to a list of powerful life moments and writing inspiration
- take "watermelon-size" moments and zoom into the "seed-size" small moment to be the center of their narrative
- analyze mentor narrative texts for "expert narrative writing moves"
- plan out the plot that includes a beginning, middle, and end
- write an authentic, creative start to their narrative
- add meaningful combinations of dialogue, action, and thought to speed up or slow down specific parts of their narratives
- ensure that their personal narrative has a heart that communicates an intentional theme
- end their narratives in a meaningful, sophisticated way

- add in transitions that show the passing of time and location inside of their story and smooth over the hops

ELA Personalized Learning Approach

Students will work in differentiated groups based on their individual needs. Instruction will be a combination of: whole class instruction, small group instruction, book club work, partner work and independent work. Differentiated groups will be determined through ongoing formal and informal assessments and will support their work in strategy and guided reading groups.

Student Work

The majority of student work will be completed within their reader's and author's notebooks. This year, Charlotte Lab Middle School will also use an online system called Cortex which will enable students to independently showcase what they are learning in each one of their content areas and track their progress through units and learning targets. Both students and teachers will be able to view and assess progress and growth over time. Cortex will be used as a pilot in trimester one, and then rolled out in full in trimester two. In ELA, the teacher will provide feedback weekly through individual conferring aimed at emphasizing the process as much as the product of each unit. Families are invited to also follow along with their child's learning journey online and in their notebooks. For more information about Cortex go to: **www.innovateedunyc.org/cortex**.

Out-of-Class Work (OOC) and Home-School Connections

Out-of-Class work will only consist of daily reading and work that students did not finish during the school day. There will be no *formally* assigned work to be done at home this year. Rather, we ask that you spend your evenings doing other activities that correlate with student success - reading with your child, eating dinner together, playing outside, participating in afterschool activities, and getting your student to bed early. Students will be encouraged to read independently each weeknight for 20-30 minutes dependending on their personal reading stamina. Students will have a reading log for their out-of-class reading to foster independence and reflection on their reading habits over time. Families are *NOT* expected to sign this log. Students are responsible for filling out their logs in order for teachers to discuss and reflect on the student's book choices, stamina, and reading habits.

Teacher-Parent Communication

The best way to communicate general questions is through your student's advisor because multiple teachers work with each student. If a specific Humanities/ELA question arises, please directly email the Humanities/ELA team and an answer will be provided within 48 hours.

Alison McClain: amcclain@charlottelabschool.org
Denise Serrano (Student Support & Enrichment): dserrano@charlottelabschool.org
Seth Ellis (Social Studies Focus): sellis@charlottelabschool.org

6th Grade Math Curriculum Guide 2017 - 2018

Ms. Berry

Trimester #1 (August 28 - November 21)

In this unit, students will explore ordered pairs and how to use them on coordinate planes. They will also learn about numerical expressions and use the order of operations to determine the answers to various equations. Students will revisit multiplication and division standards from fourth grade, review what decimals are, and explore place value associated with decimals. Students will add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Students will also apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They will develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them.

Unit Topics, Objectives & Vocabulary

Below is a list of the topics that will be introduced this trimester. While this represents pacing for a typical 6th grader, teachers will group students according to their level of mastery in each of these concepts and will personalize pacing and work for the students; some students may need to review prerequisite topics while others may have already mastered what is listed below and will move on to deeper content.

Topics	Objectives Students will…	Vocabulary
Unit 1: Number Systems		
Divide multi-digit numbers using the Standard Algorithm	• Review finding whole-number quotients of whole numbers with multi-digit dividends and multi-digit divisors using the standard algorithm	*Quotient, standard algorithm, dividend, divisor*
Add, subtract, multiply, and divide decimals using the Standard Algorithm	• Review add, subtract, multiply, and divide decimals to thousandths, using standard algorithm. • Use estimation strategies to support the understanding of decimal operations.	*Decimal, decimal point, tenths, hundredths, thousandths, products, quotients, dividends, sum, difference*
Dividing Fractions	• Interpret and compute quotients of fractions and solving word problems involving division of fractions using visual fraction models, or equations. • Develop and understand the relationship with multiplying and dividing fractions.	*Reciprocal, multiplicative inverses, visual fraction model*
Finding common factors and multiples and express the sum using distributive property	• Finding the greatest common factor and least common multiple of numbers equal to or less than 100 • Use the distributive property to express the sum of two whole numbers with a common factor.	*Greatest common factor, least common multiple, prime numbers, prime numbers, composite numbers, relatively prime, factors, multiples, distributive property, prime factorization*
Unit 2: Number Systems		

Positive and negative numbers	• Understand that positive and negative numbers are used together to describe quantities having opposite direction values. • Use positive and negative numbers to represent quantities in a real word context.	*Positive, negative*
Rational Numbers	• Understand a rational number as a point on a numberline. • Extend number line diagrams and coordinate axis to represent points on the line and the plane with negative number coordinates. • Recognize that opposite signs of numbers are in locations on opposite sides of 0. • Understand signs of numbers in ordered pairs indicating locations in quadrants of a coordinate plane.	*Rational numbers, opposites, absolute value , greater than >, less than < or equal to =, origin, quadrants, coordinate plane, x-axis, y-axis, coordinates.*
Ordering and absolute value of rational numbers	• Interpret statements of inequality as statements about the relative position of two numbers on a number line. • Write, interpret, and explain statements of order for rational numbers in real-world contexts. • Understand the absolute value of a rational number as its distance from 0 on the number line • Interpret absolute as magnitude for a positive or negative quantity in a real-world situation. • Distinguish comparisons of absolute value from statements about order. For	*Rational numbers, opposites, absolute value , greater than >, less than < or equal to =*
Unit 3: Ratios and Proportional Relationships		
Ratios	• Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. • Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. • Use ratio and rate reasoning to solve real-world and mathematical problems by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	*Ratio, equivalent ratios, tape diagram, unit rate, part-to-part, part-to-whole, percent*

Trimester #2 (November 28 - March 2)

At the beginning of this unit, students will understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. In addition, students will apply and extend previous understandings of arithmetic to algebraic expressions and reason about and solve one-variable equations and inequalities. Student will also, represent and analyze quantitative relationships between dependent and independent variables

Topics	Objectives Students will…	Vocabulary
Unit 4: Expressions and Equations		
Exponents	• Write and evaluate numerical expressions involving whole-number exponents.	*exponents, base, numerical expressions, algebraic expressions, evaluate, sum, term, product,*
Expressions with variables	• Write expressions that record operations with numbers and with letters standing for numbers • Identify parts of an expression using mathematical terms and view one or more parts of an expression as a single entity. • Evaluate expressions that arise from formulas used in real-world problems. • Perform arithmetic operations, including those involving whole- number exponents, with the Order of Operations	*Exponents, base, numerical expressions, algebraic expressions, evaluate, sum, term, product, factor, quantity, quotient*
Equivalent Expressions	• Apply the properties of operations to generate equivalent expressions. • Identify when two expressions are equivalent	*Coefficient, constant, like terms, equivalent expressions, variables*
Unit 5: Expressions and Equations		
Solving inequalities	• Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true • Use variables to represent numbers and write expressions • Understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set • Solve real-world and mathematical problems by writing and solving equation • Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition • Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams	*Exponents, base, numerical expressions, algebraic expressions, evaluate, sum, term, product, factor, quantity, quotient, coefficient, constant, like terms, equivalent expressions, variables*

Trimester #3 (March 6- June 6)

In this unit we will continue work with equations and inequalities. Students will use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Building from 5th grade students will find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. In addition, finding the Volume and Surface Area of three-dimensional figures. To round out the year, students will start to explore Statistics and Probability such as developing an understanding of statistical variability and be able summarize and describe distributions.

Topics	Objectives Students will…	Vocabulary
Unit 6: Expressions and Equations		
Using variables to represent real world problems	• Use variables to represent two quantities in a real-world problem that change in relationship to one another • Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. • Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	*Exponents, base, numerical expressions, algebraic expressions, evaluate, sum, term, product, factor, quantity, quotient, coefficient, constant, like terms, equivalent expressions, variables*
Unit 7: Geometry		
Area	• Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes.	*Area, trapezoid, isosceles, right triangle, quadrilateral, rectangles, squares, parallelograms, trapezoids, rhombi, kites, diagonal*
Volume	• Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. • Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths	*Volume, edges, dimensions, base, height, right rectangular prism*
Polygons on a coordinate plane	• Draw polygons in the coordinate plane given coordinates for the vertices. • Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate	*trapezoid, isosceles, right triangle, quadrilateral, rectangles, squares, parallelograms, trapezoids, rhombi*
3-Dimensional Shapes and Surface Area	• Represent three-dimensional figures using nets made up of rectangles and triangles, and	

	use the nets to find the surface area of these figures	*Surface area, edges, dimensions, net, bas*
Unit 8: Statistics and Probability		
Recognize and understanding data	• Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers	*Statistics, data, variability, distribution*
Displaying Data	• Understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape	*Dot plot, histograms, box plots,*
Summarizing Data	• Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number	*Statistics, data, variability, distribution, dot plot, histograms, box plots, median, mean*

We will be reviewing all of the concepts from the year for the rest of the trimester. All of these topics are in the tables above.

Math Quest: Nutrition and Mathematics
This year Math quest will explore standards 6.RP.1-6.RP.3. Student will explore ratios and percentages and ratios when it comes to food labels. Student will also explore measurement conversions with recipes and recommended serving sizes. Student will get the opportunity to prepare nutritious food items and hear from professionals in the food industry.

Out-of-Class work and Flipped Classroom
In Math class, we will be using the the flipped classroom model. **Flipped classroom** is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the classroom. It moves activities, including those that may have traditionally been considered homework, into the classroom. In a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home and engage in concepts in the classroom with the guidance of a teacher or peer. Out of class work will be assigned 3-4 nights a week. Out of class work will be 30 minutes or less. Student will use the out of class work to prepare for the next lesson.

Teacher-Parent Communication
The best way to communicate general questions is through your student's advisor because multiple teachers work with each student. If a specific Math question arises, please directly email the Math team and an answer will be provided within 48 hours.
Erique Berry, 6th grade Math Teacher: eberry@charlottelabschool.org

6th Grade Humanities: Social Studies Curriculum Guide 2017-2018
Mr. Ellis

Course Description
This course is designed to increase student interest in the ideas, events, and people in world history that have produced our modern world. The students will focus on a selection of thematic concepts that connect the people and places of the past to one another and to each of us today.

Goals
The following are the goals toward which all course objectives and learning activities will be directed:

1. **Historical Comprehension:** describing history through the experiences of those who lived it, through their literature, art, and artifacts, to gain historical empathy and imagination.
2. **Geographic Literacy:** understanding and applying the concepts of absolute and relative location, the physical and human characteristics of place, human-environment interaction, movement and cultural diffusion, and the physical and cultural characteristics of regions.
3. **Chronological Thinking:** developing a clear sense of historical time in order to sequence events and explain patterns of historical succession, duration, continuity, and change.
4. **Critical Reading:** using multiple strategies and literacy resources to increase comprehension
5. **Historical Analysis and Interpretation:** creating and evaluating arguments and arriving at informed decisions based on available evidence about what happened, why and how it happened, and what implications result.

The specific skills that align with the above goals include:

1. **Reading Skills:** students can take a main idea from the reading and paraphrase it in their own words in addition to drawing inferences and ascertaining subjectivity of sources.
2. **Writing Skills:** students can organize an essay dealing with analysis of a historic theme
3. **Research & Documentation Skills:** given a topic, students can find reference material and cite reference properly
4. **Interpretation Skills:** students can demonstrate the ability to recognize patterns and deviations from patterns in history

<table>
<tr><td colspan="2">1st Trimester</td></tr>
<tr><td colspan="2"><u>Unit 1 - September 12th - Nov. 21st</u>
Prehistory
River City Valley (Western & Eastern)</td></tr>
<tr><td colspan="2"><u>National Curriculum Standards for Social Studies Theme(s)</u>
CULTURE & TIME, CONTINUITY, & CHANGE</td></tr>
<tr><td><u>NC STANDARDS</u>

<u>History</u>
6.H.1 Use of historical thinking to understand the emergence, expansion and decline of civilizations
• 6.H.1.2
• 6.H.1.3
• 6.H.2
• 6.H.2.3
• 6.H.2.4</td><td>OVERVIEW

For the first trimester students will focus on 2 early civilizations starting with our pre-history unit where we will focus on early man, cave art, Paleo lithic and Neolithic eras. The focus will be on understanding the emergence, expansion and decline of civilizations over time and their significance and influence on society (geographical location, culture, technology, government, etc)</td></tr>
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Geography & Environmental Lit **6.G.1** Understand geographic factors that influenced the emergence, expansion and decline of civilizations, societies and regions over time ● 6.G.1.1 ● 6.G.1.4 Civics & Government **6.C & G.1** Understand the development of government in various civilizations, societies and regions ● 6.C&G.1.1 ● 6.C&G.1.2 ● 6.C&G.1.4 Culture **6.C.1** Explain how the behaviors and practices of individuals and groups influenced societies, civilizations and regions ● 6.C.1.2	Unit Objectives Students will… ● Establish writing logs that: show deep reflection and connection/contrast from past to present day society. That assist with discovery, observation and developing opinions to clarify understanding ● Understand the origin of civilization and the beginning and establishment of societies ● Explain the origins and structure of government systems ● Design and engineer a historical structure or artifact from an ancient civilization

2nd Trimester	
Unit 2 - November 28th - March 2nd Ancient Greece Ancient Rome Islamic Civilizations African and MesoAmerican Civilizations	
National Curriculum Standards for Social Studies Theme(s) CULTURE, INDIVIDUALS, GROUPS AND INSTITUTIONS	
NC STANDARDS History **6.H.1** Use of historical thinking to understand the emergence, expansion and decline of civilizations ● 6.H.1.2 ● 6.H.1.3 ● 6.H.2 ● 6.H.2.3 ● 6.H.2.4 Geography & Environmental Lit **6.G.1** Understand geographic factors that influenced the emergence, expansion and decline of civilizations, societies and regions over time ● 6.G.1.1 ● 6.G.1.4 Civics & Government **6.C & G.1** Understand the development of government	**OVERVIEW** In the second trimester we will look over civilizations in particular regions such as Africa, South America and Asia. Once again the focus will be on their emergence, decline and their culture's impact on their environment and on present day society Unit Objectives Students will… ● Identify the societal changes and similarities of cultures and civilizations ● Compare, contrast and debate societal and political structures of civilizations ● Engineer a historical structure or artifact from an ancient civilization ● Read, analyze, and write about primary and

in various civilizations, societies and regions ● 6.C&G.1.1 ● 6.C&G.1.2 ● 6.C&G.1.4 Culture **6.C.1** Explain how the behaviors and practices of individuals and groups influenced societies, civilizations and regions ● 6.C.1.2	secondary passages

3rd Trimester	
Unit 3 - March 6th - June 6th Medieval Europe Renaissance Reformation Age of Exploration	
National Curriculum Standards for Social Studies Theme(s) CULTURE & POWER, AUTHORITY AND GOVERNANCE	
NC Standards History **6.H.1** Use of historical thinking to understand the emergence, expansion and decline of civilizations ● 6.H.1.2 ● 6.H.1.3 ● 6.H.2 ● 6.H.2.3 ● 6.H.2.4 Geography & Environmental Lit **6.G.1** Understand geographic factors that influenced the emergence, expansion and decline of civilizations, societies and regions over time ● 6.G.1.1 ● 6.G.1.4 Civics & Government **6.C & G.1** Understand the development of government in various civilizations, societies and regions ● 6.C&G.1.1 ● 6.C&G.1.2 ● 6.C&G.1.4 Culture **6.C.1** Explain how the behaviors and practices of	**OVERVIEW** In the final trimester students will focus primarily on Europe and it's emerging influence and impact on society from the Renaissance to the Age of Exploration. We will continue to delve into major players and events that in turn revolutionized their society and has had an impact on today's society Unit Objectives Students will… ● Identify the societal changes and similarities of cultures and civilizations ● Compare, contrast and debate societal and political structures of civilizations ● Engineer a historical structure or artifact from an ancient civilization ● Read, analyze, and write about primary and secondary passages

individuals and groups influenced societies, civilizations and regions • 6.C.1.2	

Student Learning

Students will work in differentiated groups based on their individual needs. Instruction will be a combination of: whole class instruction, small group instruction, partner work and independent work. Differentiated groups will be determined through ongoing formal and informal assessments and will be changed as needed throughout the year.

Student Work

The majority of student work will be completed within the student's Interactive Notebook and Writing Log. There will also be multiple project-based learning activities and STEM Challenges that will allow the students to demonstrate their knowledge of a particular culture or cultural topic through a variety of digital mediums. More details will be provided as projects are assigned.

Homework

Homework will only consist of guided notebooks, interactive notebooks, or projects that students did not finish during the school day. There will be no formally assigned homework this year. Rather, we ask that you spend your evenings doing other activities that correlate with student success - reading with your student, eating dinner together, playing outside, participating in after school activities, and getting your student to bed early. Students will be encouraged to read and write independently or with adults whenever possible and appropriate.

Teacher-Parent Communication

The best way to communicate general questions is through your student's advisor because multiple teachers work with each student. If a specific Humanities/SS question arises, please directly email the Humanities/SS team and an answer will be provided within 48 hours.

Seth Ellis, 6th grade Humanities/SS Teacher: sellis@charlottelabschool.org

Charlotte Lab School 6th Grade Science Curriculum

Jim Luft

Trimester 1 August 28- November 21, 2017	Understanding by Design: CLS Community Garden
Trimester 2 November 22- March 2, 2018	Understanding a Big Idea: Making Solar Energy Economical
Trimester 3 March 3- June 6, 2018	Understanding Creativity in Motion: A Rube Goldberg Challenge

6th Grade Science Quest: Understanding by Design: CLS Community Garden
Trimester 1 (August 28, 2017 - November 21, 2017)

The Challenge

How can one individual impact a community? This Quest will incorporate a study of individuals within Charlotte who have affected their communities and the effect a community garden has on the behavior and understanding of an individual. Students will also read and discuss the novel Seedfolks by Paul Fleischman as a connection to the focus of the Quest. Students will use the design cycle , their knowledge of community, individual influence, the science of gardening, and innovation principles to create a proposal for how the new CLS Middle School Garden should be used to create change in our community. In addition to building, planting and tending the new garden, students will explore the many diverse social issues related to poverty, food equity, access to healthy foods, and community gardens. The Quest will culminate in students making prototypes about the role and impact of the CLS Middle School Garden. Industry professionals will provide feedback. The 6th Grade will implement one or more of the ideas during this school year.

The Learning Goals

Big Ideas	NC Science Standards and Survival Skills	Content
Structure and functions of living organisms Ecosystems	**NC Science Standards** 6.L.1 Understand the structures, processes and behaviors of plants that enable them to survive and reproduce. 6.L.1.1 Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense. 6.L.1.2 Explain the significance of the processes of photosynthesis, respiration and transpiration to the survival of green plants and other organisms. 6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment. 6.P.1 Understand the properties of waves and the wavelike property of energy in light.	• Identify all parts of the plant and the flower • Explain the functions of each plant part and its role in the ecosystem • Read Seedfolks by Paul Fleischman • Understand the processes of photosynthesis and cellular respiration • Create models of photosynthesis and cellular respiration • Identify biotic and abiotic factors in the ecosystem. • Investigate energy flow in an ecosystem including producers,

	6.L.2.1 Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain or food web (terrestrial and aquatic) from producers to consumers to decomposers. 6.L.2.2 Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment. 6.L.2.3 Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.	consumers, and decomposers. ● Understand the role of bacteria in an ecosystem ● Understand how changes in environmental conditions impact ecosystems. ● Investigate dormancy and tropism ● Limiting factors in ecosystems

In addition to the big ideas, concepts and NC Science Standards listed above, students will focus on development of the **Seven Survival Skills** (based on the work of Tony Wagner):

- Creativity and Innovation
  - Think creatively and work creatively with others
  - Implement innovations through a business model
- Critical Thinking and Problem Solving
  - Reason effectively and use systems-based thinking
  - Make judgements and decisions
  - Solve problems in conventional & innovative ways
- Flexibility and Adaptability
  - Adapt to change and be flexible as project demands
  - Understand, negotiate, and balance diverse ideas
- Accessing and Analyzing Information
  - Note-taking skills from variety of web sources
- Effective Oral and Written Communication
  - Presentation skills - video-making
- Productivity and Accountability
  - Manage projects and produce results
  - Set and meet goals as a group
  - Be accountable

The Experience (Course Outline)

Week	Topics
Week 1 & 2	**Seedfolks by Paul Fleischman** Students will understand that an individual can have an impact, large or small, on their community. Our communities include various cultures. Communities have an impact on individuals. **Essential Questions:** ● How does one person impact a community? ● How do I impact my community? ● How does my community affect me? Garden Plan ● Size/ placement of garden beds (maximize space, sunlight, water source) ● Determine crops to plant based on growing season, ease of cultivation, potential yield and food culture (Seedfolks)

	• Soil needs (amounts and types of soil) **Walking Field Trip/ Partner Learning to Little Sugar Creek Community Garden** Garden Installation • Students will plant seeds, label crops, and tend to garden.
Week 3	Introduction to Parts and Functions of a Plant and Flower Garden Lab • On-going observation and care • Data collection
Week 4	**Walking Field Trip/ Partner Learning to Little Sugar Creek Community Garden** Plant Processes: Photosynthesis, Respiration, Transpiration Garden Lab • On-going observation and care • Data collection
Week 5	Energy Flow within an Ecosystem Garden Lab • On-going observation and care • Data collection
Week 6	**Walking Field Trip/ Partner Learning to Little Sugar Creek Community Garden** Plant Adaptation and Survival Abiotic Factors in Ecosystems/ Biomes Garden Lab • On-going observation and care • Data collection
Week 7	Food Equity and Access Food Deserts, Community Gardens, Farmer's Markets, Grocery Stores Guest Speakers: 100 Gardens and Pop Up Produce Garden Lab • On-going observation and care • Data collection
Week 8	**Walking Field Trip/ Partner Learning to Little Sugar Creek Community Garden** Innovation, Invention, Engineering, Technology and Social Justice in Gardening and Farming Guest Speakers: Elizabeth Dover of Dover Farms, Google Chat with Vollmer Farms, and Jamie Swofford of The Chef's Farmer Garden Lab

	• On-going observation and care • Data collection
Week 9	Innovation, Invention, Engineering, Technology, and Social Justice in Gardening and Farming - Cont'. Guest Speakers: Farm Hands Charlotte and Charlotte Food Innovation District Garden Lab • On-going observation and care • Data collection
Week 10	**Walking Field Trip/ Partner Learning to Little Sugar Creek Community Garden** Students create "blueprint" for how they believe the CLS Middle School Garden should be used to make an impact. Garden Lab • On-going observation and care • Data collection
Week 11	Students create "blueprint" for how they believe the CLS Middle School Garden should be used to make an impact. Garden Lab • On-going observation and care • Data collection
Week 12	Students present their ideas to community change makers Garden Lab • On-going observation and care • Data collection

Teacher-Parent Communication
The best way to communicate general questions is through your student's advisor. In addition, if you have a Quest specific question you can contact me at jluft@charlottelabschool.org.

Out Of Class Work and Home-School Connections
Homework will typically consist of work that your student did not finish during the school day. Since the purpose of Quest is to foster curiosity in your child, we encourage activities that include experiments, building, outdoor exploration, and making, using items easily accessible in your home! We also hope that you will ask your child many questions about what they're learning and doing in Quest each day.